

Professional Video Monitor

Operating Instructions

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

BVM-HX3110

Software Version 1.0

TRIMASTER HX 4K HDMI®

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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 40 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 10 cm of space in the left and right sides, 10 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.

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 Screen Saver

This unit has a screen saver function to reduce burn-in. When "Screen Saver" in "System Setting" is set to "On", the screen brightness is reduced when an almost static image is displayed for the amount of time set in "Time".

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.

LCD image display

Due to the physical characteristics of LCD panels, there may be a decrease in brightness or change in color temperature over a long period of use. These problems are not a malfunction. In addition, these occurrences will not affect recorded data.

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 17:9
- 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 5).

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 as 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 26) 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.

About the Description of Brightness

The peak brightness described in this manual is the standard value at the time of the 10% white window image and D65 (x, y = 0.3127, 0.329), and is not a guaranteed value.

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

- This product is used with a leased line or intranet connection. Do not connect to an external network, as security issues may occur.
- 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.
- From a safety standpoint, when using the unit connected with the network, it is strongly recommended to access the Control window via a Web browser and change the access limitation settings from the factory preset values.
Also, it is recommended that you set a password with a sufficiently long character string that is hard to guess by others, and that you store it safely.
- Do not browse any other website in the Web browser while making settings or after making settings. Since the login status remains in the Web browser, close the Web browser when you complete the settings to prevent unauthorized third parties from using the unit or harmful programs from running.
- This unit is equipped with a maintenance function performed via a network. Maintenance may be performed with your consent.

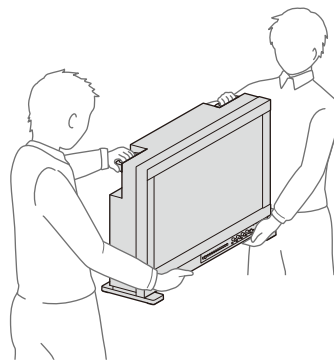
On Long Periods of Continuous Use

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. There is a risk that surrounding sand or dust may enter the unit. Also, pack the unit in the protective bag provided and place it in a box in an environment free from sand or dust to prevent dust from entering the unit. Failing to do so may cause the unit to fail.

Caution

- This unit is heavy. Make sure to unpack and move the unit with two or more people.
- When transporting this unit, move it while maintaining a firm grip on the handles located on the back part and the bottom part of the unit as illustrated.

Dustproofing

Use of the unit in an environment with sand or dust may cause the unit to fail.

Avoid locations with a lot of sand or dust.

Disposal of the Unit

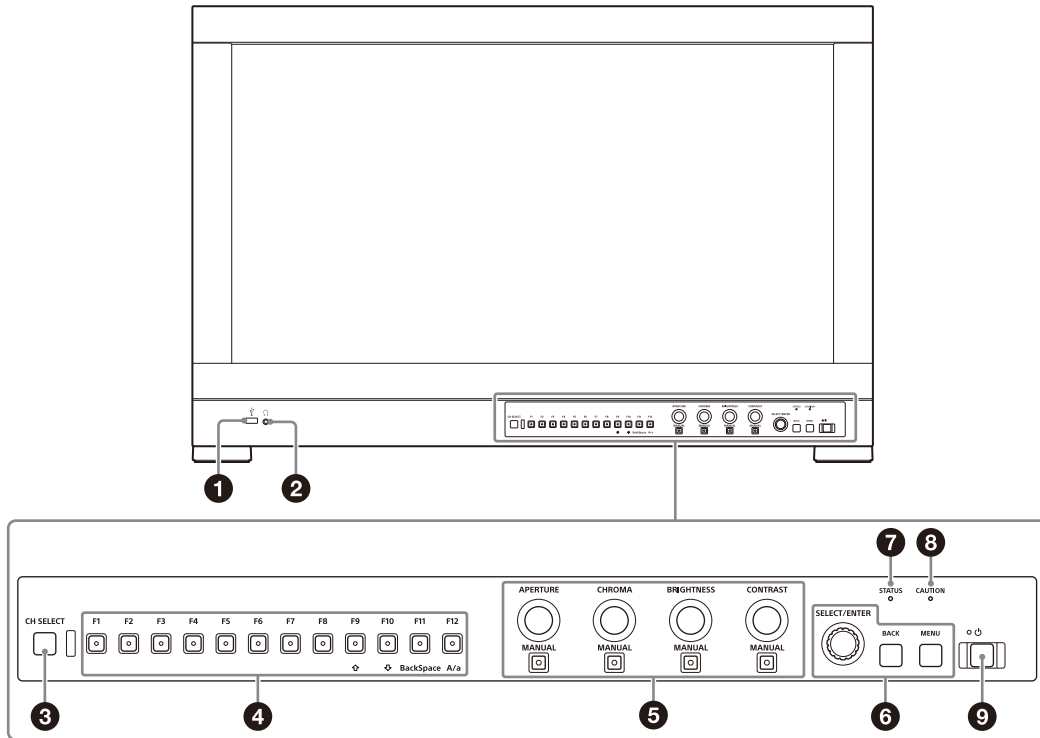
- Do not dispose of the unit with general waste. Do not dispose of the unit with household waste.
- Dispose of the used products according to the laws and regulations of your country or region.

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.
- SONY WILL NOT BE LIABLE FOR CLAIMS OF ANY KIND MADE BY USERS OF THIS UNIT OR MADE BY THIRD PARTIES.
- SONY WILL NOT BE LIABLE FOR THE TERMINATION OR DISCONTINUATION OF ANY SERVICES RELATED TO THIS UNIT THAT MAY RESULT DUE TO CIRCUMSTANCES OF ANY KIND.

Location and Function of Parts and Controls

Front Panel



❶ USB connector

Used for loading 3D LUT files, copying setting data, firmware updates, and activating optional licenses. For details, refer to “User LUT” (page 31), “Data Copy” (page 67), “Update” (page 68), and “License” (page 69).

Note

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

❷ Headphones jack

Stereo audio of the currently selected input signal is output.

Output audio can be changed under “Audio Preset” (page 35) in the “User Preset Setting” menu.

❸ CH SELECT button

Press to check the currently selected channel or select other channels. For details, refer to “Selecting a Channel” (page 21) and “Ch. Setting” (page 25) in the “User Preset Setting” menu.

❹ 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: Peak Lumi. Config. 2x/LP

F11 button: Peak Lumi. Config. 2x

F12 button: Peak Lumi. Config. 4x

10 presets can be set for the function button. For details, refer to “F Key Setting menu” (page 59). You can assign the various functions under “Monitor” (page 59) 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	F9 button	Use to select a character or move the cursor. For details, refer to "How to Enter Characters" (page 23).
	F10 button	
	F11 button	
	F12 button	

5 Rotary encoder

APERTURE knob

Adjust the sharpness. Turn the knob clockwise for a clearer image and turn it counterclockwise for a softer image. Adjustments can be made when the MANUAL button indicator under the knob is lit or when the adjustment menu is displayed.

CHROMA knob

Adjust the color intensity. Turn the knob clockwise to darken the color and turn it counterclockwise to lighten the color. Adjustments can be made when the MANUAL button indicator under the knob is lit or when the adjustment menu is displayed.

BRIGHTNESS knob

Adjust the brightness. Turn the knob clockwise to brighten the color and turn it counterclockwise to darken the color. Adjustments can be made when the MANUAL button indicator under the knob is lit or when the adjustment menu is displayed.

CONTRAST knob

Adjust the contrast. Turn the knob clockwise to increase the contrast and turn it counterclockwise to decrease the contrast. Adjustments can be made when the MANUAL button indicator under the knob is lit or when the adjustment menu is displayed.

In addition, set "Position" in "Line Select" of "WFM/VS/CGS" under the "Monitoring Tool" menu (page 44).

MANUAL buttons

To adjust a setting manually with the knob, press the corresponding button. Each time you press the button, the indicator of the button lights up or goes out. While the indicator of the button is lit, each adjustment can be done using the knob above the button.

6 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.

7 STATUS indicator

Displays the unit status. Lights up in red during sleep mode and lights up in blue during HDR display.

Flashes slowly in yellow while the screen saver is on, and flashes quickly in yellow to indicate the screen saver is starting up. When displaying HDR content, flashes slowly in blue while the screen saver is on, and flashes quickly in blue to indicate the screen saver is starting up.

For details on the HDR (High Dynamic Range) display, see "On High Brightness Display" (page 5).

8 CAUTION indicator

Lights up in amber when the ABL (Automatic Brightness Limiter) is activated. Flashes in amber when the brightness is decreased due to temperature abnormality.

Flashes slowly in amber if LAN1/LAN2 set to Enable is in Link down when the IP input is displayed.

9 (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 70) 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
Flashes in amber (every two seconds) ²⁾	–	The IP input LAN1/LAN2 is in Link down.
Lights up in amber	–	ABL is working.

- 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 5).

- 2) Displayed if LAN1/LAN2 is set to Enable when the IP input is displayed.

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	Adjust the contrast.
BRIGHT knob	Adjust the brightness.
CHROMA knob	Adjust the color intensity.
PHASE knob	Available only in the color temperature adjustment menu. Not available in other cases.

Button	Operations
CONTRAST MANUAL button	Press to manually adjust the contrast.
BRIGHT MANUAL button	Press to manually adjust the brightness.

Button	Operations
CHROMA MANUAL button	Press to manually adjust the color intensity.
PHASE MANUAL button	Available only in the color temperature adjustment menu. Not available in other cases.

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 59) 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, Native Scan, R Off, G Off, B Off, Character Off, Interlace, Chroma Up, Pixel Zoom, Marker, Aspect Marker, Area Marker1, Area Marker2, Center Marker, Aspect Marker-Line, Asp. Blank.-Half, Asp. Blank.-Black, Side by Side, ALM, Time Code, Aperture

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		IP
	YCbCr	RGB	XYZ	YCbCr	RGB	XYZ	YCbCr	RGB	YCbCr
CHROMA	○	○	×	○	○	×	○	○	○
BRIGHTNESS	○	○	○	○	○	○	○	○	○
CONTRAST	○	○	○	○	○	○	○	○	○
APERTURE	○	○	×	○	○	×	○	○	○
RGB Range	×	○	×	×	○	×	×	○	×
YCC Range	○	×	×	○	×	×	○	×	○
EOTF	○	○	×	○	○	×	○	○	○
Color Space	○	○	×	○	○	×	○	○	○
Transfer Matrix	○	×	×	○	×	×	○	×	○
Color Temp.	○	○	○	○	○	○	○	○	○
User Color Temp. (manual adjustment)	○	○	○	○	○	○	○	○	○
User LUT	○	○	×	○	○	×	○	○	○
User LUT Range	○	○	×	○	○	×	○	○	○
Marker	○	○	○	○	○	○	○	○	○
Volume	○	○	○	○	○	○	○	○	○
Audio Muting	○	○	○	○	○	○	○	○	○
WFM ¹⁾	○	○	×	○	○	×	○	○	○
Vector Scope ¹⁾	○	○	×	○	○	×	○	○	○
CGS ¹⁾	○	○	×	○	○	×	○	○	○
ALM ¹⁾	○	○	○	○	○	○	○	○	○
False Color ¹⁾	○	○	×	○	○	×	○	○	○
Camera Focus	○	○	×	○	○	×	○	○	○
Grid Display	○	○	○	○	○	○	○	○	○
Internal Signal	○	○	×	○	○	×	○	○	○
Int. Signal Pattern	○	○	×	○	○	×	○	○	○
Pixel Zoom ²⁾	○	○	×	○	○	×	○	○	○
Time Code	○	○	○	○	○	○	×	×	○
Closed Caption	×	×	×	○ ⁶⁾	×	×	×	×	○ ⁷⁾
IMD ⁸⁾	○	○	○	○	○	○	○	○	○
Mono	○	○	○	○	○	○	○	○	○
Blue Only	○	○	○	○	○	○	○	○	○
R Off	○	○	○	○	○	○	○	○	○
G Off	○	○	○	○	○	○	○	○	○
B Off	○	○	○	○	○	○	○	○	○
Chroma Up	○	○	×	○	○	×	○	○	○
Native Scan	○	○	○	○	○	○	○	○	○
Under Scan	○	○	×	○	○	×	○	○	○
Tally ³⁾	○	○	○	○	○	○	○	○	○
Conversion ⁴⁾	○	○	×	○	○	×	○	○	○
Screen Saver	○	○	○	○	○	○	○	○	○
Enhanced Out. ⁵⁾	○	○	×	○	○	×	×	×	○
Quad View	×	×	×	○	○	×	○	○	○
Side by Side	○	○	×	○	○	×	○	○	○
Interlace	×	×	×	○	○	×	○	○	○
1080I/PsF	×	×	×	○	○	×	×	×	○
Relative Cont. 1/2, Relative Cont. 1/3, Relative Cont. 1/4, Relative Cont. 1/8	○	○	×	○	○	×	○	○	○
Gamut Marker	○	○	×	○	○	×	○	○	○
Peak Lumi. 4x, Peak Lumi. 2x, Peak Lumi. 2x/LP	○	○	×	○	○	×	○	○	○

Item	Input signal								
	4K SDI			2K SDI			HDMI		IP
	YCbCr	RGB	XYZ	YCbCr	RGB	XYZ	YCbCr	RGB	YCbCr
Fast Resp. Med ⁹⁾ , Fast Resp. High ⁹⁾	○	○	○	○	○	○	○	○	○

○ : 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. It is a separate function from the Tally function of the IMD.
- 4) This function is available by enabling the optional "BVML-H10" license (sold separately).
- 5) This function is available by enabling one of the optional "BVML-H10", "BVML-S10" or "BVML-T10" licenses (sold separately).
- 6) Available only when the signal of the HD-SDI Single Link is input.
- 7) For available signal formats, refer to the "IP (Image Format)" (page 132).
- 8) The Tally function of the IMD can be set only with the TSL protocol. It cannot be set with Parallel Remote.
- 9) This function is available by enabling the optional "BVML-F10" 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⁾
BRIGHTNESS	×	○ 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⁾
User LUT Range	×	○ ²⁾	×	○ ²⁾
Marker	×	×	×	×
Gamut Marker	○	×	○	×
Volume	○ ³⁾	×	○ ³⁾	×
Audio Muting	○ ³⁾	×	○ ³⁾	×
WFM	×	○ ⁵⁾	×	○
Vector Scope	×	○ ⁵⁾	×	○
CGS	×	○ ⁵⁾	×	○
ALM	×	×	×	×
False Color	×	○ ⁸⁾	×	○
Camera Focus	×	○ ⁷⁾	×	○ ⁷⁾
Grid Display	○ ¹⁰⁾	×	○ ¹⁰⁾	×
Internal Signal	×	×	×	×
Int. Signal Pattern	×	×	×	×
Pixel Zoom	×	×	×	×
Time Code	○ ⁴⁾	×	○ ⁴⁾	×
Closed Caption	×	○ ⁷⁾	×	○ ⁷⁾
IMD	×	○	×	○
Mono	○	×	○	×

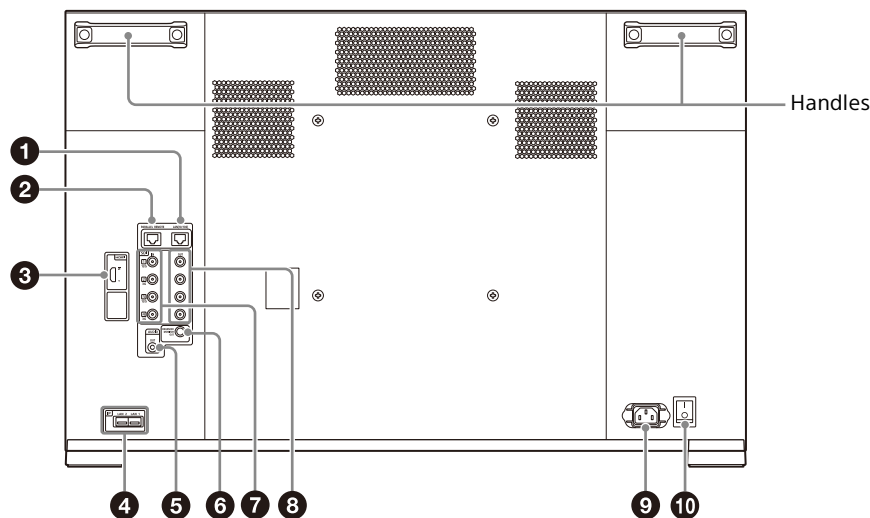
Item	Function			
	Quad View ¹⁾		Side by Side	
	Common setting for four views	Individual setting for each view	Common setting for two views	Individual setting for each view
Blue Only	○	×	○	×
R Off	○	×	○	×
G Off	○	×	○	×
B Off	○	×	○	×
Chroma Up	○	×	○	×
1080I/PsF	○	×	○	×
Interlace	×	×	×	×
Native Scan	×	×	×	×
Under Scan	×	×	×	×
Tally	○	×	○	×
Conversion ⁶⁾	×	○	×	○
Screen Saver	○	×	○	×
Enhanced Out. ⁹⁾	×	○	×	○
Peak Lumi. 4x, Peak Lumi. 2x, Peak Lumi. 2x/LP	○	×	○	×
Fast Resp. Med ¹¹⁾ , Fast Resp. High ¹¹⁾	○	×	○	×
Relative Cont. 1/2, Relative Cont. 1/3, Relative Cont. 1/4, Relative Cont. 1/8	×	×	×	×

○ : Adjustable/can 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 "BVML-H10" license (sold separately) .
- 7) For Screen A only.
- 8) For Screen A and Screen B only.
- 9) This function is available by enabling one of the optional "BVML-H10", "BVML-S10" or "BVML-T10" licenses (sold separately).
- 10) Not displayed on the Scope selection screen.
- 11) This function is available by enabling the optional "BVML-F10" license (sold separately).

Rear Panel



1 LAN (10/100) connector

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

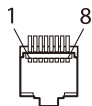
Note

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.

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

Forms a parallel control switch and controls this unit externally. Certain functions can be assigned to each pin. For details, see the "Parallel Remote" (page 65).

Pin assignment



The factory default settings are as follows.

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

Pin number	Functions
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).

3 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.

4 LAN 1/LAN 2 connectors (SFP28)

Input the IP stream. For details, refer to "IP stream Connections" (page 17).

Notes

- When using IP input, the SFP28 transceiver module such as Sony OTM-25GSR/OTM-25GLR is required.
- If the lock lever of the SFP transceiver module is not released and the SFP transceiver module is attempted to be removed, the lock part may remain hooked to the hole in the module cage and the module cannot be removed. Remove the SFP transceiver module with the lock fully unlocked.

⑤ 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 35) in the "User Preset Setting" menu.

⑥ ENHANCED MONITOR OUT connector

This function is available by enabling one of the optional "BVML-H10", "BVML-S10" or "BVML-T10" licenses (sold separately) (page 118).

⑦ SDI IN (SDI input) connectors (BNC)

Input connectors for serial digital signals.

For details, see "Connecting the SDI Signals" (page 16).

Notes

- 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.
- The cables with the following characteristics and lengths are recommended for this unit.
12G-SDI/6G-SDI: L-5.5CUHD cable manufactured by Canare Electric Co., Ltd. or equivalent, 70 m (229.7 ft) or shorter
3G-SDI: 5CFB cable manufactured by Fujikura Ltd. or equivalent, 70 m (229.7 ft) or shorter
HD-SDI: 5CFB cable manufactured by Fujikura Ltd. or equivalent, 100 m (328.1 ft) or shorter

⑧ 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.
- When "Input Select" (page 25) in the "Ch. Setting" menu is set to "4K/2K IP Input1", "2K IP

Input2", "4K/2K IP Input3" or "2K IP Input4" in the selected display channel, the SDI signal is not output from the SDI OUT connector of the corresponding Input No.

- 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.

⑨ AC IN socket

Connect the supplied AC power cord.

⑩ 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 70) of "System Setting" in the "System" menu.

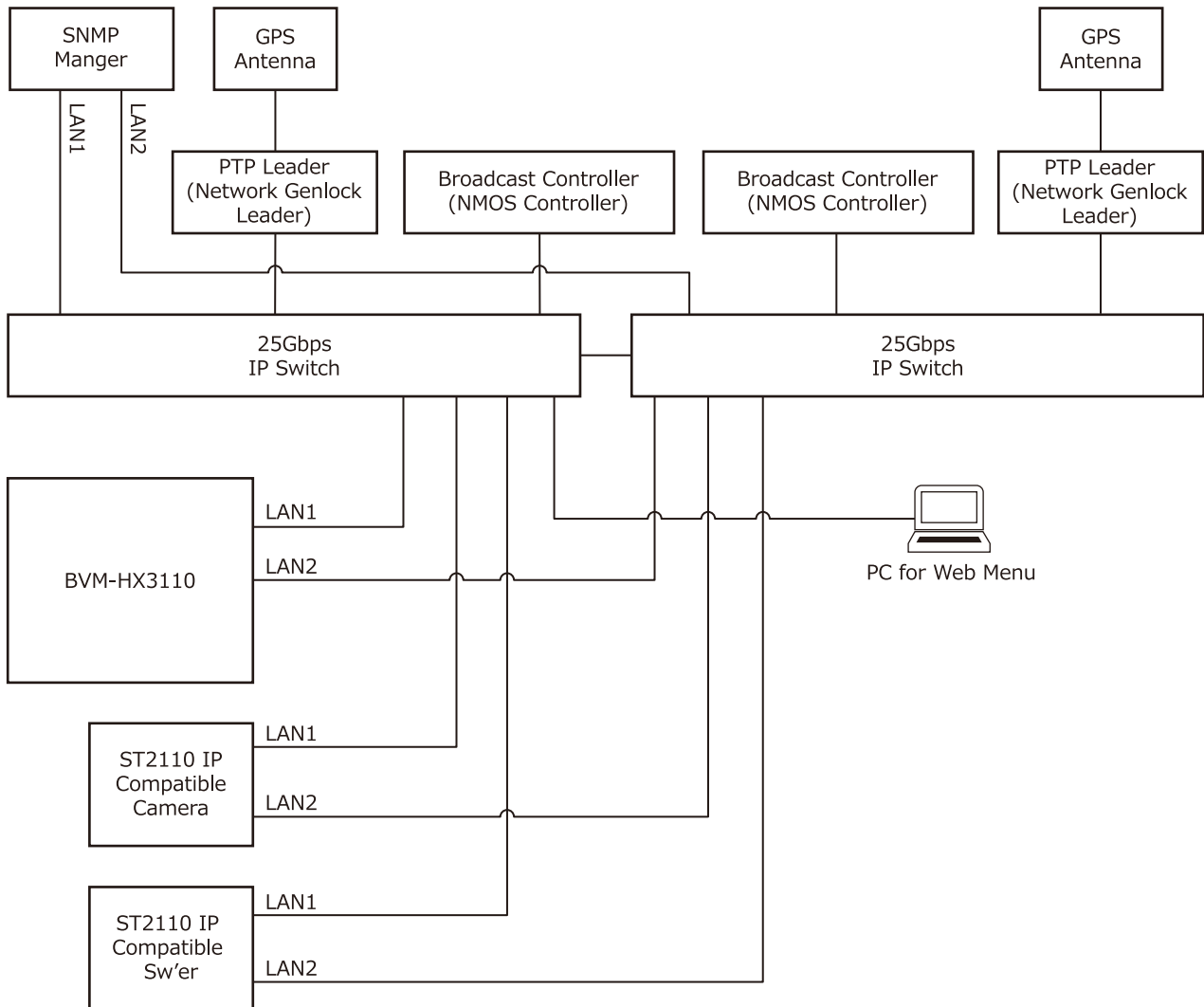
Connecting the SDI Signals

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	

IP stream Connections

The following are examples of an IP system connection with PTP redundancy using a GPS antenna and redundancy including controllers. Input a PTP synchronized IP stream to this unit.



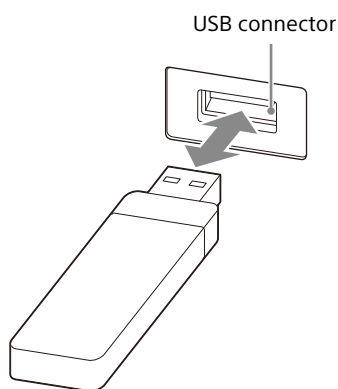
Handling a USB memory stick

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

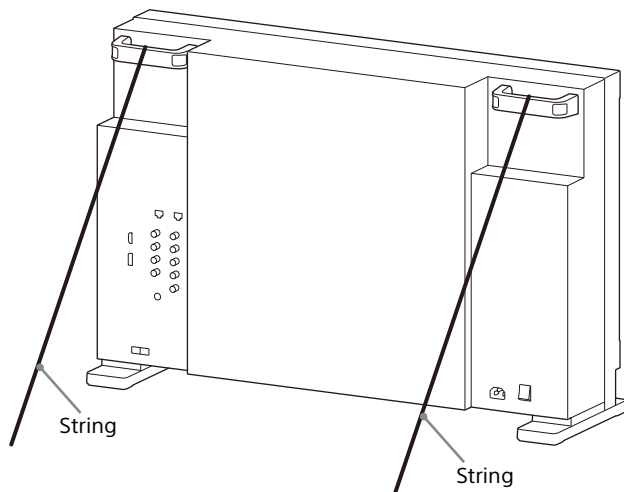
- If you use a USB memory stick near static electricity or a magnetic field
- We recommend backing up important data.
- Do not touch the connector of the USB memory stick with anything, including your finger or metallic objects.
- Do not strike, bend, or drop the USB memory stick.
- Do not disassemble 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.

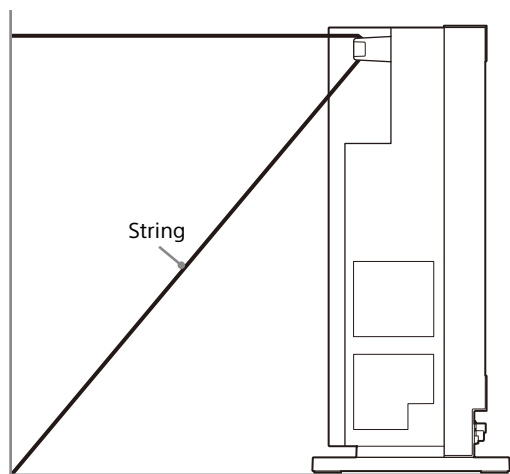
Preventing Falling of the Monitor

Securing the Monitor with Strings

- 1 Tie a piece of stout string (commercially available) to the left and right handles of the monitor.

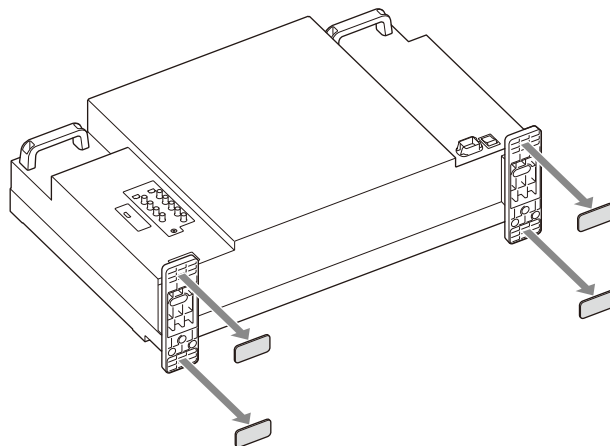


- 2 Secure the ends of the string to the floor or wall.

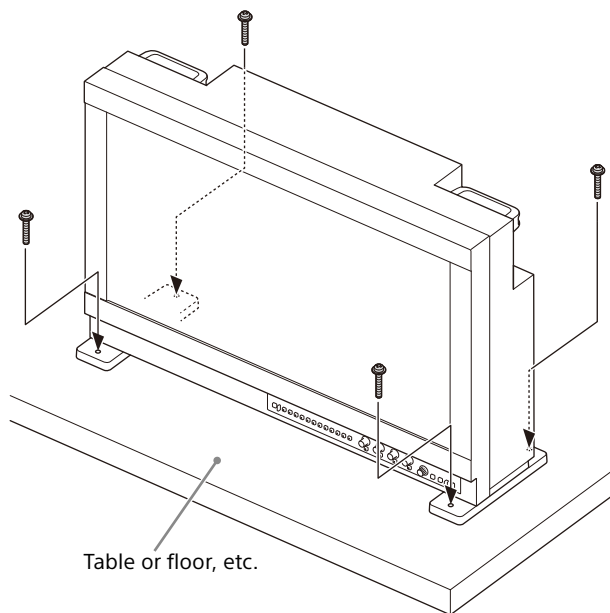


Securing the Monitor with Screws

- 1 Place the monitor onto soft cloth with the screen facing down.
- 2 Remove the 4 cushions from the stands.



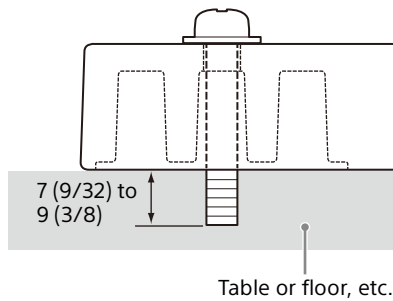
- 3 Secure the left and right stands on the monitor to the table or floor, etc., with the supplied M4 screws.



Note

Prepare female screws that fit the supplied M4 screws and install them on the table or floor, etc. For the screw installation positions, refer to "Dimensions" (page 136).

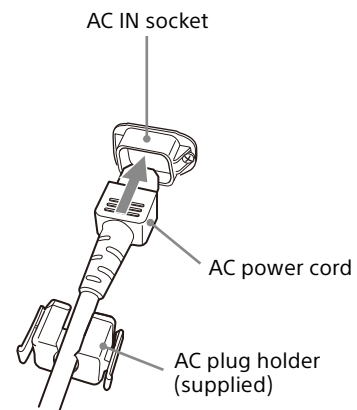
*** Length of M4 screws (bottom)**



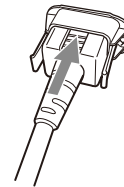
Unit: mm (inches)

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.

Current channel

Ch.	Name	InputSelect	VPID/HDMI Auto	EOTF	Color Space	Color Temp.
01	AAA	4K SDI Input 1,2,3&4	Off	S-Log3(Live HDR)	ITU-R BT.2020	D65
02	BBB	4K SDI Input 1	On	ITU-R BT.2100(HLG)	ITU-R BT.2020	D65
03	CCC	2K SDI Input 1&2	Off	2.4	ITU-R BT.709	D65
04	DDD	2K SDI Input 1	Off	2.6	DCHP3	User1
05	EEE	HDMI	On	SMPTE ST 2084	ITU-R BT.2020	D65

Turn the SELECT/ENTER control to select a channel, then press the SELECT/ENTER control to switch channels.

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

- Select the channel from “Ch. Setting” (page 25) in the “User Preset Setting” menu.
- Select the channel by assigning a specific channel to the function button (page 59).

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 25) 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.

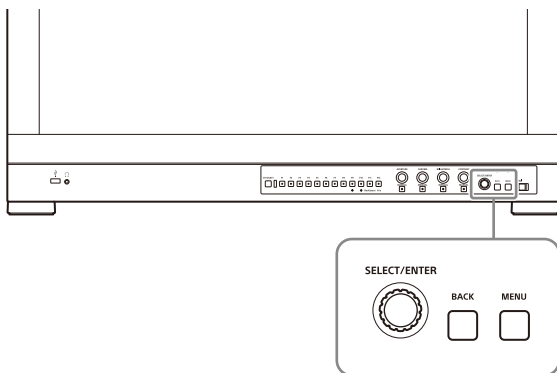
For details, refer to “User Data” (page 67) in the “Administrator” menu.

About the Menu Screen

Using the Menu

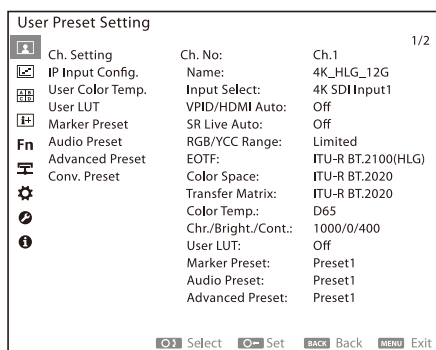
Various adjustments and settings, such as picture quality adjustment, input signals setting, and default setting change, are made on the menu screen of the unit.

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



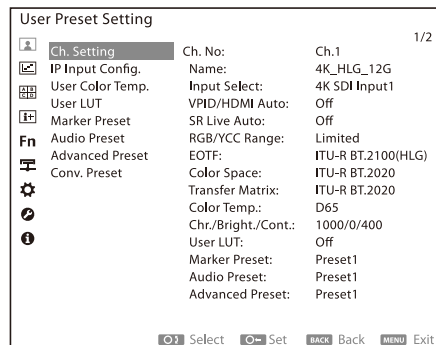
- 1 Press the MENU button.

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



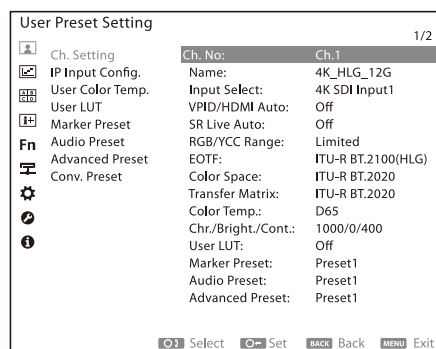
- 2 Turn the SELECT/ENTER control to select a menu, then press the SELECT/ENTER control.

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



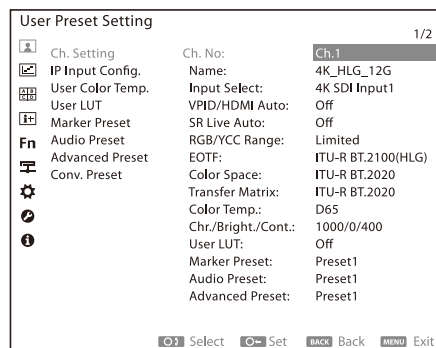
- 3 Turn the SELECT/ENTER control to select the group, then press the SELECT/ENTER control.

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.

Ch. Name										AAA									
1	2	3	4	5	6	7	8	9	0										
A	B	C	D	E	F	G	H	I	J										
K	L	M	N	O	P	Q	R	S	T										
U	V	W	X	Y	Z	-	_	.											
BACK SPACE					SPACE					DONE									
F9 1 F10 2 F11 BackSpace F12 A/a Select Set Back Exit																			

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

Button	Function
F9 button	The selection cursor moves up or down.
F10 button	

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.

User Preset Setting menu (page 25)

- Ch. Setting (page 25)
- IP Input Config. (page 28)
- User Color Temp. (page 30)
- User LUT (page 31)
- Marker Preset (page 32)
- Audio Preset (page 35)
- Advanced Preset (page 35)
- Conv. Preset (page 37)

Monitoring Tool menu (page 42)

- Scopes (page 42)
- WFM/VS/CGS (page 43)
- False Color (page 45)
- Gamut Marker (page 47)
- Camera Focus (page 47)
- Grid Display (page 48)
- Internal Signal (page 49)
- Pixel Zoom (page 49)

Multi View menu (page 51)

- Quad View (page 51)
- Side by Side (page 52)

Metadata/Textdata menu (page 54)

- Time Code (page 54)
- Live Product. Meta. (page 54)
- Closed Caption (page 54)
- IMD (In Monitor Display) (page 55)

Fn F Key Setting menu (page 59)

- Monitor (page 59)
- Controller (page 59)

Remote menu (page 63)

- Monitor Network (page 63)
- Controller Network (page 63)
- IP Network (page 63)
- IP PTP (page 64)
- IP Multicast (page 64)
- Parallel Remote (page 65)

Administrator menu (page 67)

- User Data (page 67)
- Data Copy (page 67)
- Update (page 68)
- License (page 69)
- Date/Time (page 69)
- Password (page 69)

System menu (page 70)

- System Setting (page 70)
- Enhanced Out. (page 71)

Status menu (page 73)

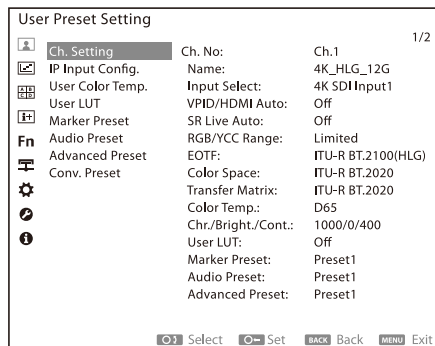
- Signal Status (For Single View: page 73, For Quad View: page 74, For Side by Side: page 75)
- Ch. Status (For Single View: page 73, For Quad View: page 74, For Side by Side: page 75)
- VPID/HDMI Status (For Single View: page 74, For Quad View: page 75, For Side by Side: page 76)
- SR Live Status (For Single View: page 74, For Quad View: page 75, For Side by Side: page 76)
- IP Network Status (For Single View: page 74, For Quad View: page 75, For Side by Side: page 76)
- Unit Status (For Single View: page 74, For Quad View: page 75, For Side by Side: page 76)

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/2K SDI Input1 • 4K/2K SDI Input3 • 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 • 4K/2K IP Input1 • 2K IP Input2 • 4K/2K IP Input3 • 2K IP Input4

Notes

- "4K/2K SDI Input1" and "4K/2K SDI Input3" automatically distinguish between 4K and 2K signals.
- When selecting "4K/2K IP Input1", "2K IP Input2", "4K/2K IP Input3", or "2K IP Input4", make sure to set "IP In. Power Down" (page 71) in the "System" menu to "Off".

Submenu	Setting
VPID/HDMI Auto	• When selecting "4K/2K IP Input1", "2K IP Input2", "4K/2K IP Input3", or "2K IP Input4", make sure to set IP signal configuration with "IP Input Config." (page 28) in advance. • 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/IP stream (ancillary data) 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.
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." The settings are configured according to the HDR SDR Relation Table (items that need to be set to generate SDR signals from HDR signals) included in the SR Live Metadata of the input SDI/IP stream (ancillary data). For items for which SR Live Metadata does not exist or is invalid, the setting value for the corresponding item in the conversion preset data is 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.

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/IP 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 • CRT • 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 Set the system gamma of the HLG for each peak brightness setting of this unit. • System Gamma - Peak Lumi. 4x: Set from 1.000 to 1.500. (Default value: 1.480) - Peak Lumi. 2x: Set from 1.000 to 1.500. (Default value: 1.325) - Peak Lumi. 1x: Set from 1.000 to 1.500. (Default value: 1.200) - Peak Lumi. 1/2: Set from 1.000 to 1.500. (Default value: 1.200) - Peak Lumi. 1/4: Set from 1.000 to 1.500. (Default value: 1.200) For details, refer to "About the peak brightness of this unit" (page 27). 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
	Note If the XYZ signal is input with "Signal Format" set to "Auto" or "444 XYZ 12bit", it will be fixed to the optimum setting for XYZ signal.
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 • SMPTE-C • EBU Notes • Chromaticity points of S-Gamut/S-Gamut3, S-Gamut3.Cine, DCI-P3, and ITU-R BT.2020 cannot be fully included. • If the XYZ signal is input with "Signal Format" set to "Auto" or "444 XYZ 12bit", it will be fixed to the optimum setting for XYZ signal.
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. Note If the XYZ signal is input with "Signal Format" set to "Auto" or "444 XYZ 12bit", it will be fixed to the optimum setting for XYZ signal.

Submenu	Setting
Color Temp.	Select the color temperature to be used for the selected channel. • D65 ¹⁾ • D93 ¹⁾ • D60 ¹⁾ • D50 ¹⁾ • DCI • DCI XYZ • User1 to User10 ^{2) 3)}
Note For XYZ format signals, set to "DCI XYZ".	
1) Even though colors of different display devices, such as 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", "D60", and "D50" settings of this unit have been adjusted by adding an offset for color matching with Sony professional video monitors. (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.)	
Chr./Bright./Cont.	Sets the chroma level, brightness, and contrast for the selected channel. (Default value: 1000/0/400)

Notes

- 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.2100-2 standard.
- The brightness-adjustment specifications of "S-Log3" and "S-Log3(Live HDR)" are the same as those of "SMPTE ST 2084."
- For the XYZ format signals, set the contrast to 192 to change the standard brightness (at SDR 100 % white signal input) to 48 cd/m².

Submenu	Setting
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 31). • 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."
Conv. Preset	This setting is available with the optional "BVML-H10" 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.

About the peak brightness of this unit

The peak brightness of this unit is decided by the setting of "Peak Lumi. Config.", "Interlace", and "Fast Response" of "System Setting".

Set the System Gamma referring to the table below. As for settings of "Peak Lumi. Config.", "Interlace", and "Fast Response", see page 71.

The peak brightness of this unit		Interlace Off, Fast Response Off ¹⁾	Interlace On, Fast Response Off ¹⁾	Interlace Off, Fast Response Medium ¹⁾	Interlace Off, Fast Response High ¹⁾
Peak Lumi. Config.	Off	Peak Lumi. 1x (1000 cd/m ²)	Peak Lumi. 1/2 (500 cd/m ²) ²⁾	Peak Lumi. 1/2 (500 cd/m ²) ²⁾	Peak Lumi. 1/4 (250 cd/m ²) ²⁾
	2x/LP	Peak Lumi. 2x (2000 cd/m ²)	Peak Lumi. 1x (1000 cd/m ²)	Peak Lumi. 1x (1000 cd/m ²)	Peak Lumi. 1/2 (500 cd/m ²) ²⁾
	2x	Peak Lumi. 2x (2000 cd/m ²)	Peak Lumi. 1x (1000 cd/m ²)	Peak Lumi. 1x (1000 cd/m ²)	Peak Lumi. 1/2 (500 cd/m ²) ²⁾
	4x	Peak Lumi. 4x (4000 cd/m ²)	Peak Lumi. 2x (2000 cd/m ²)	Peak Lumi. 2x (2000 cd/m ²)	Peak Lumi. 1x (1000 cd/m ²)

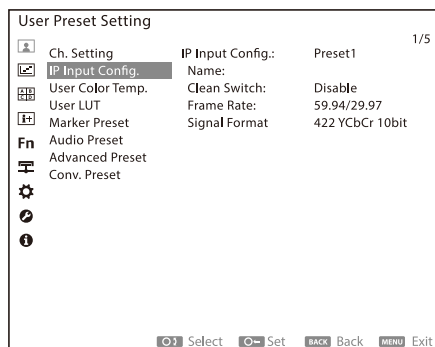
- 1) Fast Response can be set when the optional "BVML-F10" license (sold separately) is enabled.
- 2) About display of "ITU-R BT.2100(HLG)" at Peak Lumi. 1/2 and Peak Lumi. 1/4: The maximum gradation of the input signal is mapped to 1000 cd/m². Gradations below the peak brightness of this unit are displayed in the same manner as monitors at 1000 cd/m², and gradations above the peak brightness are clipped. In addition, as the maximum gradation of the input signal is 1000 cd/m², the default value of the System Gamma is 1.2.

Note

Interlace and Fast Response cannot be enabled at the same time.

IP Input Config.

Configure the IP input. Data are allocated in advance to the IP input configuration presets 1 - 10. See "About IP Input Configuration Preset" (page 40) for details. See also "ST2110 - Video/Audio Tab" (page 100).



Submenu	Setting
IP Input Config.	Select the IP input configuration data to configure. (Default value: Preset1) Data are allocated in advance to the IP input configuration presets 1 - 10.
Name	Set the names of the IP input configuration presets.
Clean Switch	Select whether to enable or disable the Clean Switch function. • Disable • Enable
Frame Rate	Select the frame rate of the input IP stream video data. • 59.94/29.97 • 50/25 • 24 • 23.98
Signal Format	Signal structure (4:2:2 YCbCr 10bit fixed) is displayed.
IP Input1	Displays valid (Valid)/invalid (Invalid) of the IP Input1 input. • Priority: Select the priority order of the IP Input1 input. • Priority1 - 4: Select the priority order. "Priority1" is the first priority. • No Assign: Select when not using IP Input1 input. • Image Format: According to the frame rate of the input IP stream video data, select the image format from the following. The image format of the frame rate set in "Frame Rate" becomes enabled. • 59.94/29.97: 2160/59.94P_12G, 2160/29.97P_6G, 1080/59.94P_3G, 1080/59.94I_1.5G, 1080/29.97PsF_1.5G, 720/59.94P_1.5G • 50/25: 2160/50P_12G, 2160/25P_6G, 1080/50P_3G, 1080/50I_1.5G, 1080/25PsF_1.5G, 720/50P_1.5G • 24: 2160/24P_6G, 1080/24PsF_1.5G • 23.98: 2160/23.98P_6G, 1080/23.98PsF_1.5G
V Compression	Select whether the input IP stream video data is in uncompressed (Uncompressed) format or in compressed (JPEG XS) format. • Uncompressed • JPEG XS
A Interpolation	If there is an excess or shortage in audio data, select whether to complement (Interpolate) the data. • Disable: Does not perform the data interpolation. • Enable: Performs the data interpolation.

Submenu	Setting
Audio CH	Select the number of incoming channels for the audio data. • 2CH • 4CH • 8CH • 16CH
	Note The setting value must match the number of audio channels set on the transmitting device.
IP Input2	Displays valid (Valid)/invalid (Invalid) of the IP Input2 input. • Priority: Select the priority order of the IP Input2 input. • Priority1 - 4: Select the priority order. "Priority1" is the first priority. • No Assign: Select when not using IP Input2 input. • Image Format: According to the frame rate of the input IP stream video data, select the image format from the following. The image format of the frame rate set in "Frame Rate" becomes enabled. • 59.94/29.97: 1080/59.94P_3G, 1080/59.94I_1.5G, 1080/29.97PsF_1.5G, 720/59.94P_1.5G • 50/25: 1080/50P_3G, 1080/50I_1.5G, 1080/25PsF_1.5G, 720/50P_1.5G • 24: 1080/24PsF_1.5G • 23.98: 1080/23.98PsF_1.5G
V Compression	Select whether the input IP stream video data is in uncompressed (Uncompressed) format or in compressed (JPEG XS) format. • Uncompressed • JPEG XS
A Interpolation	If there is an excess or shortage in audio data, select whether to complement (Interpolate) the data. • Disable: Does not perform the data interpolation. • Enable: Performs the data interpolation.
Audio CH	Select the number of incoming channels for the audio data. • 2CH • 4CH • 8CH • 16CH
	Note The setting value must match the number of audio channels set on the transmitting device.

Submenu	Setting
IP Input3	Displays valid (Valid)/invalid (Invalid) of the IP Input3 input. • Priority: Select the priority order of the IP Input3 input. • Priority1 - 4: Select the priority order. "Priority1" is the first priority. • No Assign: Select when not using IP Input3 input. • Image Format: According to the frame rate of the input IP stream video data, select the image format from the following. The image format of the frame rate set in "Frame Rate" becomes enabled. • 59.94/29.97: 2160/59.94P_12G, 2160/29.97P_6G, 1080/59.94P_3G, 1080/59.94I_1.5G, 1080/29.97PsF_1.5G, 720/59.94P_1.5G • 50/25: 2160/50P_12G, 2160/25P_6G, 1080/50P_3G, 1080/50I_1.5G, 1080/25PsF_1.5G, 720/50P_1.5G • 24: 2160/24P_6G, 1080/24PsF_1.5G • 23.98: 2160/23.98P_6G, 1080/23.98PsF_1.5G
V Compression	Select whether the input IP stream video data is in uncompressed (Uncompressed) format or in compressed (JPEG XS) format. • Uncompressed • JPEG XS
A Interpolation	If there is an excess or shortage in audio data, select whether to complement (Interpolate) the data. • Disable: Does not perform the data interpolation. • Enable: Performs the data interpolation.
Audio CH	Select the number of incoming channels for the audio data. • 2CH • 4CH • 8CH • 16CH
	Note The setting value must match the number of audio channels set on the transmitting device.
IP Input4	Displays valid (Valid)/invalid (Invalid) of the IP Input4 input. • Priority: Select the priority order of the IP Input4 input. • Priority1 - 4: Select the priority order. "Priority1" is the first priority. • No Assign: Select when not using IP Input4 input.

Submenu	Setting
	• Image Format: According to the frame rate of the input IP stream video data, select the image format from the following. The image format of the frame rate set in "Frame Rate" becomes enabled. • 59.94/29.97: 1080/59.94P_3G, 1080/59.94I_1.5G, 1080/29.97PsF_1.5G, 720/59.94P_1.5G • 50/25: 1080/50P_3G, 1080/50I_1.5G, 1080/25PsF_1.5G, 720/50P_1.5G • 24: 1080/24PsF_1.5G • 23.98: 1080/23.98PsF_1.5G
V Compression	Select whether the input IP stream video data is in uncompressed (Uncompressed) format or in compressed (JPEG XS) format. • Uncompressed • JPEG XS
A Interpolation	If there is an excess or shortage in audio data, select whether to complement (Interpolate) the data. • Disable: Does not perform the data interpolation. • Enable: Performs the data interpolation.
Audio CH	Select the number of incoming channels for the audio data. • 2CH • 4CH • 8CH • 16CH
Note The setting value must match the number of audio channels set on the transmitting device.	
Copy From	Copy other IP input configuration preset data to the selected IP input configuration preset. You can select from "Preset 1" to "Preset 10".
Cancel	Restores the changed or confirmed settings to the state before change.
Confirm	Saves and applies the changed or confirmed settings.

Notes

- The IP stream bandwidth for available input is 24G/12G by disabling/enabling the Clean Switch regardless of whether the video data is in a compressed or uncompressed format. According to the priority, the bandwidth of the input signal set in each "IP Input" is added. If the total is within the bandwidth for available input, the "IP Input" is judged to be valid (Valid), and if it is outside the bandwidth, the "IP Input" is judged to be invalid (Invalid).

is judged to be invalid (Invalid). If "No Assign" is set to "Priority", the "IP Input" is invalid (Invalid). Example: When "Clean Switch" is set as "Disable" (bandwidth for available input: 24G)

IP Input1	Priority1	2160/50P	12G	Valid
IP Input2	Priority3	1080/50P	3G	Invalid
IP Input3	Priority2	2160/50P	12G	Valid
IP Input4	Priority4	1080/50P	3G	Invalid

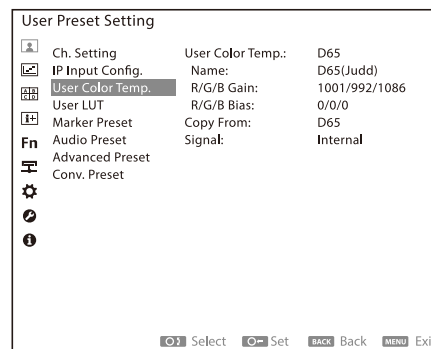
Example: When "Clean Switch" is set as "Enable" (bandwidth for available input: 12G)

IP Input1	No Assign	2160/50P	12G	Invalid
IP Input2	Priority4	1080/50P	3G	Valid
IP Input3	Priority3	2160/25P	6G	Valid
IP Input4	Priority2	1080/50P	3G	Valid

- After setting, when you press the "BACK" button without executing Cancel or Confirm, a message of executing Cancel/Confirm is displayed. Select either one and execute it.
- "JPEG XS" under "V Compression" can be set when the optional "BVML-JD10" license (sold separately) is activated.

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).

Submenu	Setting
R/G/B Bias	Adjusts the color balance (bias) of R (red)/G (green)/B (blue). (Default value: 0)

Note

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 • D50 • DCI • DCI XYZ • User1 to User10
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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.

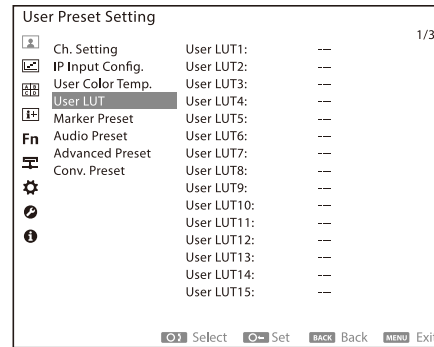
Signal	Select the signal to adjust the color temperature. (Default value: Internal) • Internal: Select to adjust the color temperature by using the internal signal. For XYZ format signals, this unit displays the internal signal equivalent to D65 48 cd/m². • External: Select to adjust the color temperature by using the signals input from an external device.
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Note

For the XYZ format signals, set the contrast to 192 to change the standard brightness (at SDR 100 % white signal input) to 48 cd/m².

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 31).	
Load From USB	Loads 3D LUT files to the monitor. For details, refer to "Loading 3D LUT files to the monitor" (page 31).
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 27) 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

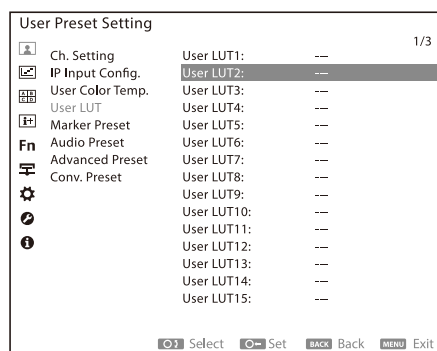
Notes

- 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 40 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 500 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.

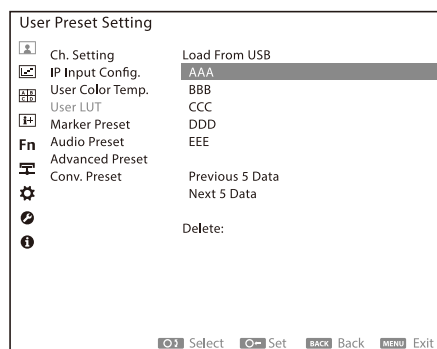


Note

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 F1 to F12.

When loading has completed, the 3D LUT files saved in the USB memory are listed on the screen of the selected LUT data number.



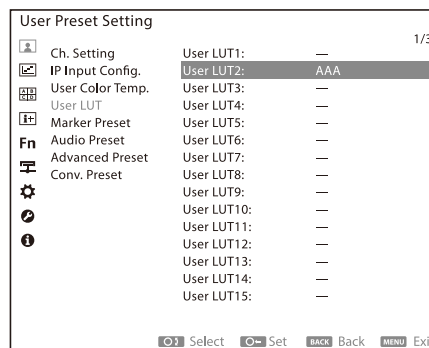
The files are displayed in numerical and alphabetical order. When more than 6 files are saved, selecting the "Previous 5 Data" or "Next 5 Data" displays other files.

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 F1 to F12.

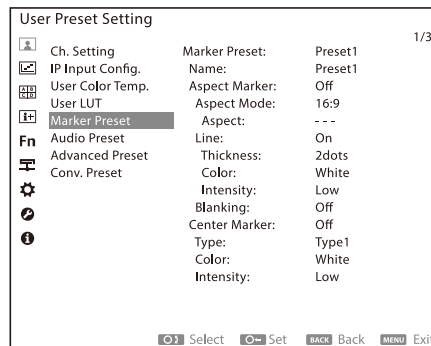
When loading has completed, the 3D LUT file name is displayed next to the selected LUT data number.



Note

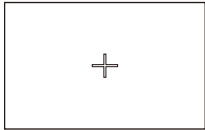
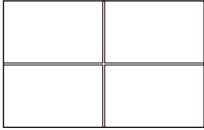
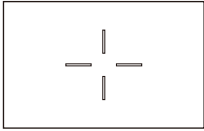
If the 3D LUT file is not compatible with the file format that can be loaded to the monitor, the file name is not displayed next to the selected LUT data number and the loading terminates.

Marker Preset



Submenu	Setting
Marker Preset	Select the marker preset data to be configured.

Submenu	Setting
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.

Submenu	Setting
Center Marker	Sets whether to display the center marker (Off or On). • 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
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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
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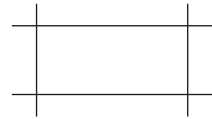
- **Shape:** Sets the shape of area marker 1/2.
- Shape A



- 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.

1.896:1 Video display



80%
Aspect Mode is
set to 1.896:1



80%
Aspect Mode is
set to 4:3

4:3 Video display



80%
Aspect Mode is
set to 1.896:1

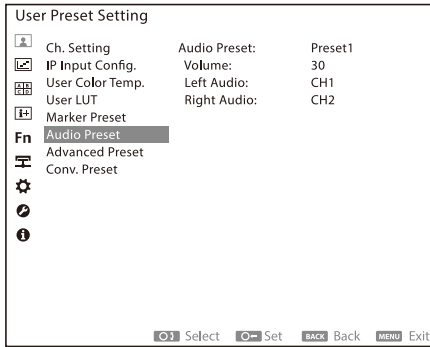


80%
Aspect Mode is
set to 4:3

- **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)

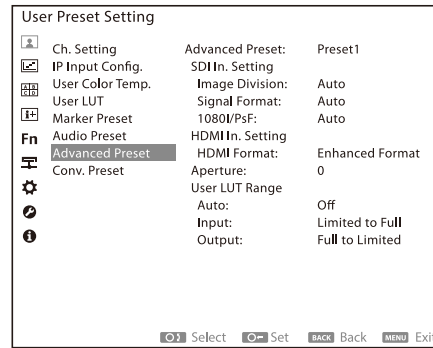
Submenu	Setting
	Note While the screen saver is on, the aspect marker, area marker 1/2, and center marker are not displayed.
Copy From	Copy another marker's preset data to the selected marker preset.

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 an SDI/IP stream (audio data) 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 an SDI/IP stream (audio data) 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."

Notes

- During IP stream input, regardless of the set value, "Image Division" of "SDI In. Setting" is set to the internal fixed value, and the "Signal Format" is fixed at 422 YCbCr 10bit.
- "1080I/PsF" of "SDI In. Setting" is valid also for IP stream input.
- 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
 - 444 XYZ 12bit
- 1080I/PsF:** Sets how to display when 50I, 59.94I, 60I, 25PsF, 29.97PsF, or 30PsF SDI 2K/IP 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.

SDI In. Setting

Submenu	Setting
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.
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 80. • Off: Uses the value set in "Input" or "Output."

Submenu	Setting
	• 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

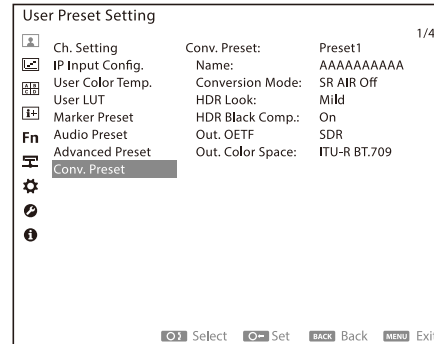
When the OETF specification of LUT signal output is S-Log3, note the following points.

- 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 "BVML-H10" 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 85.
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).

Submenu	Setting
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 82).
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."

Submenu	Setting
	• 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. • 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.

Submenu	Setting
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. • 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."

About IP Input Configuration Preset

IP Input Config. Preset	Preset1	Preset2	Preset3	Preset4	Preset5	Preset6	Preset7	Preset8	Preset9	Preset10
Name	QFHD/ 59P	QFHD/ 50p	HD(1080) /59P	HD(1080) /50p	HD(720)/ 59P	HD(720)/ 50p	QFHD/ 23p	QFHD/ 24P	QFHD/ 25p	QFHD/ 29P
Clean Switch	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable
Frame Rate	59.94/ 29.97	50/25	59.94/ 29.97	50/25	59.94/ 29.97	50/25	23.98	24	50/25	59.94/ 29.97
Signal Format	4:2:2 YCbCr 10bit (fixed)	4:2:2 YCbCr 10bit (fixed)	4:2:2 YCbCr 10bit (fixed)	4:2:2 YCbCr 10bit (fixed)	4:2:2 YCbCr 10bit (fixed)	4:2:2 YCbCr 10bit (fixed)	4:2:2 YCbCr 10bit (fixed)	4:2:2 YCbCr 10bit (fixed)	4:2:2 YCbCr 10bit (fixed)	4:2:2 YCbCr 10bit (fixed)
IP Input1	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid
Priority	Priority1	Priority1	Priority1	Priority1	Priority1	Priority1	Priority1	Priority1	Priority1	Priority1
Image Format										
59.94/29.97	2160/ 59.94P_ 12G	2160/ 59.94P_ 12G	1080/ 59.94P_ 3G	1080/ 59.94P_ 3G	720/ 59.94P_ 1.5G	720/ 59.94P_ 1.5G	2160/ 29.97P_ 6G	2160/ 29.97P_ 6G	2160/ 29.97P_ 6G	2160/ 29.97P_ 6G
50/25	2160/ 50P_12G	2160/ 50P_12G	1080/ 50P_3G	1080/ 50P_3G	720/ 50P_1.5G	720/ 50P_1.5G	2160/ 25P_6G	2160/ 25P_6G	2160/ 25P_6G	2160/ 25P_6G
24	2160/ 24P_6G	2160/ 24P_6G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	2160/ 24P_6G	2160/ 24P_6G	2160/ 24P_6G	2160/ 24P_6G
23.98	2160/ 23.98P_ 6G	2160/ 23.98P_ 6G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	2160/ 23.98P_ 6G	2160/ 23.98P_ 6G	2160/ 23.98P_ 6G	2160/ 23.98P_ 6G
V Compression	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed
A Interpolation	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable
Audio CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH
IP Input2	Invalid	Invalid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid
Priority	No Assign	No Assign	Priority3	Priority3	Priority3	Priority3	Priority3	Priority3	Priority3	Priority3
Image Format										
59.94/29.97	1080/ 59.94P_ 3G	1080/ 59.94P_ 3G	1080/ 59.94I_ 1.5G	1080/ 59.94I_ 1.5G	1080/ 59.94I_ 1.5G	1080/ 59.94I_ 1.5G	1080/ 29.97PsF_ 1.5G	1080/ 29.97PsF_ 1.5G	1080/ 29.97PsF_ 1.5G	1080/ 29.97PsF_ 1.5G
50/25	1080/ 50P_3G	1080/ 50P_3G	1080/ 50I_1.5G	1080/ 50I_1.5G	1080/ 50I_1.5G	1080/ 50I_1.5G	1080/ 25PsF_ 1.5G	1080/ 25PsF_ 1.5G	1080/ 25PsF_ 1.5G	1080/ 25PsF_ 1.5G
24	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G
23.98	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G
V Compression	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed
A Interpolation	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable
Audio CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH

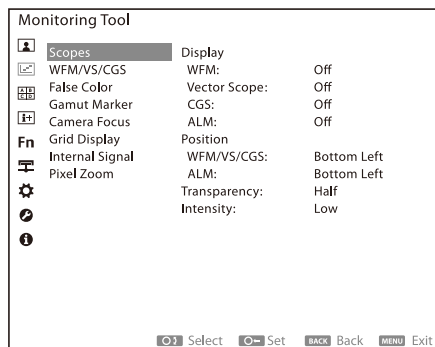
IP Input Config. Preset	Preset1	Preset2	Preset3	Preset4	Preset5	Preset6	Preset7	Preset8	Preset9	Preset10
IP Input3	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid
Priority	Priority2	Priority2	Priority2	Priority2	Priority2	Priority2	Priority2	Priority2	Priority2	Priority2
Image Format										
59.94/29.97	2160/ 59.94P_ 12G	2160/ 59.94P_ 12G	1080/ 59.94P_ 3G	1080/ 59.94P_ 3G	720/ 59.94P_ 1.5G	720/ 59.94P_ 1.5G	2160/ 29.97P_ 6G	2160/ 29.97P_ 6G	2160/ 29.97P_ 6G	2160/ 29.97P_ 6G
50/25	2160/ 50P_12G	2160/ 50P_12G	1080/ 50P_3G	1080/ 50P_3G	720/ 50P_1.5G	720/ 50P_1.5G	2160/ 25P_6G	2160/ 25P_6G	2160/ 25P_6G	2160/ 25P_6G
24	2160/ 24P_6G	2160/ 24P_6G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	2160/ 24P_6G	2160/ 24P_6G	2160/ 24P_6G	2160/ 24P_6G
23.98	2160/ 23.98P_ 6G	2160/ 23.98P_ 6G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	2160/ 23.98P_ 6G	2160/ 23.98P_ 6G	2160/ 23.98P_ 6G	2160/ 23.98P_ 6G
V Compression	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed
A Interpolation	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable
Audio CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH
IP Input4	Invalid	Invalid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid
Priority	No Assign	No Assign	Priority4	Priority4	Priority4	Priority4	Priority4	Priority4	Priority4	Priority4
Image Format										
59.94/29.97	1080/ 59.94P_ 3G	1080/ 59.94P_ 3G	1080/ 59.94I_ 1.5G	1080/ 59.94I_ 1.5G	1080/ 59.94I_ 1.5G	1080/ 59.94I_ 1.5G	1080/ 29.97PsF_ 1.5G	1080/ 29.97PsF_ 1.5G	1080/ 29.97PsF_ 1.5G	1080/ 29.97PsF_ 1.5G
50/25	1080/ 50P_3G	1080/ 50P_3G	1080/ 50I_1.5G	1080/ 50I_1.5G	1080/ 50I_1.5G	1080/ 50I_1.5G	1080/ 25PsF_ 1.5G	1080/ 25PsF_ 1.5G	1080/ 25PsF_ 1.5G	1080/ 25PsF_ 1.5G
24	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G	1080/ 24PsF_ 1.5G
23.98	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G	1080/ 23.98PsF_ 1.5G
V Compression	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed	Uncomp ressed
A Interpolation	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable
Audio CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH	16CH



Monitoring Tool menu

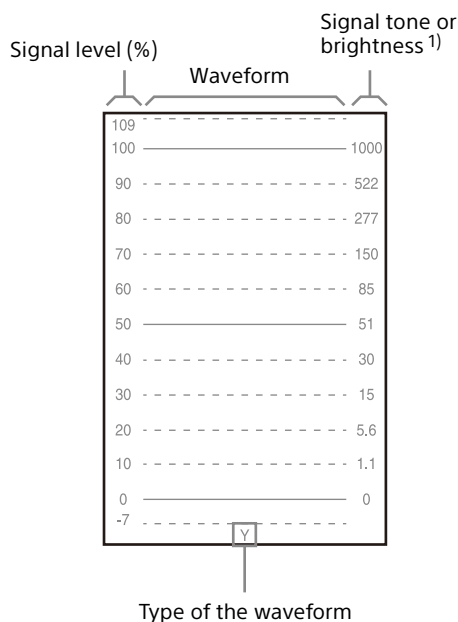
The monitoring function for the input video signal and recording assistance function are configured.

Scopes



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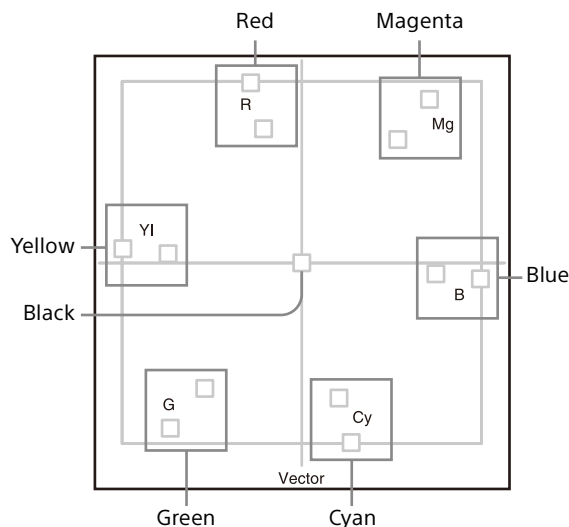
Display	
WFM	Sets whether to display WFM (Wave Form Monitor). Select "On" to display the waveform.



- 1) The signal tone is displayed when EOTF is set to 2.2, 2.4, 2.6, CRT, or 2.4(HDR). The brightness of the input signal is displayed when EOTF is set to SMPTE ST 2084. When it is set to ITU-R BT.2100(HLG), the brightness of the input signal corresponding to the brightness of the monitor is displayed. The brightness is calculated from the default value of the System Gamma (page 26), and the display of the scale does not change even if you change the System Gamma settings. When EOTF is set to S-Log3 or S-Log3(Live HDR), the brightness for input signals defined in SR Live for HDR workflow is displayed.

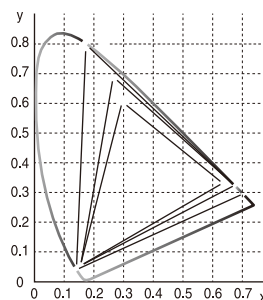
Submenu	Setting
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Vector Scope	Sets whether to display Vector Scope (vector scope). Select "On" to display the color difference components of the video signal as vectors.
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□ : Color target frame (The outer frame indicates 100 %, and the inner frame indicates 75 %.)

CGS	Sets whether to display CGS (Color Gamut Scope). Select "On" to map the video signal to x and y coordinates.
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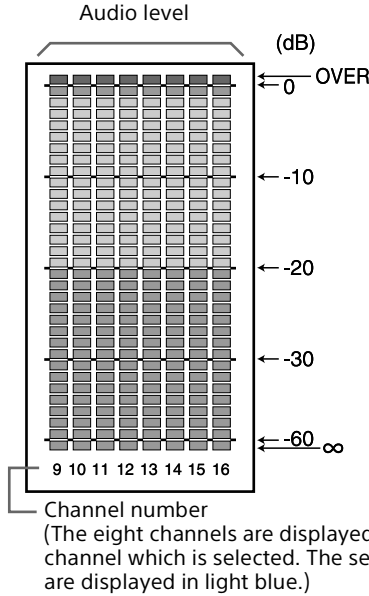


Different triangles based on the color spaces are displayed on the CIE1931 xy chromaticity diagram.

Color space settings

- **ITU-R BT.709/EBU/SMPTE-C:** A triangle indicating the chromaticity range of ITU-R BT.709 is displayed.
- **ITU-R BT.2020:** Triangles (chromaticity range) indicating ITU-R BT.709, DCI-P3, and ITU-R BT.2020 are displayed in ascending order of size.
- **S-Gamut/S-Gamut3:** Triangles (chromaticity range) indicating ITU-R BT.709, DCI-P3, and S-Gamut/S-Gamut3 are displayed in ascending order of size.
- **S-Gamut3.Cine:** Triangles (chromaticity range) indicating ITU-R BT.709, DCI-P3, and S-Gamut3.Cine are displayed in ascending order of size.
- **DCI-P3:** Triangles (chromaticity range) indicating ITU-R BT.709 and DCI-P3 are displayed in ascending order of size.

Submenu	Setting
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.



Notes

- WFM, Vector Scope, CGS, and ALM are displayed only when signals with a resolution greater than or equal to 1280 × 720 are input.
- WFM, VS, CGS, and ALM are not displayed while the screen saver is running.
- When WFM, Vector Scope, and CGS are set to On, each Scope is displayed.
The memory value of WFM, the frame border of Vector Scope, and the triangle of CGS change to the appropriate figure when changing the following menu settings and pressing the control to confirm.
-Ch. Setting: VPID/HDMI Auto, SR Live Auto, RGB/YCC Range, EOTF, Color Space, Transfer Matrix, Conv. Preset
-Advanced Preset: User LUT Range Auto, User LUT Range Input, User LUT Range Output
-Conv. Preset: Conv. Preset, Out. Color Space
-Live Product. Meta.: Apply Timing

Submenu	Setting
Position	
WFM/VS/CGS	Sets where the WFM (Wave Form Monitor), VS (Vector Scope) and CGS (Color Gamut Scope) are 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/CGS and ALM can be set to the same display position. ALM is displayed above or below WFM/VS/CGS.	
Transparency	Sets the background of the WFM (Wave Form Monitor), Vector Scope (vector scope), CGS (Color Gamut 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 Scope (vector scope), CGS (Color Gamut Scope), or the audio level meter screen.
Intensity	Sets the waveform intensity. - Low - Middle - High

WFM/VS/CGS

Monitoring Tool		
Scopes	Line Select:	Off
WFM/VS/CGS	Position:	1
False Color	Color:	White
Gamut Marker	WFM Setting	
Camera Focus	Display Signal:	Luminance
Grid Display	WFM Highlight:	On
Internal Signal	Level:	Low
Pixel Zoom	WFM/VS Setting	
	Over Range:	Off
	Upper limit1:	100%
	Lower limit1:	0%
	Upper limit2:	100%
	Lower limit2:	0%
	Zoom:	Off
	Scale:	20%
[OK] Select [C-] Set [BACK] Back [MENU] Exit		

Submenu	Setting
Line Select	• On: Displays the waveform of the line specified for "Position" as described below in WFM (Wave Form Monitor) , Vector Scope (vector scope) and CGS (Color Gamut Scope). • Off: Displays the normal waveform. When "On" is selected • Position: Set where the line is to be displayed. Turn the CONTRAST knob to set the position. Increasing the value moves the line downwards and decreasing the value moves it upwards. • Color: Select the display color of the line.
Notes • Even when "Line Select" is set to "On", the line is not displayed if "WFM", "Vector Scope" and "CGS" in "Display" of "Scopes" are all set to "Off". • 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.	

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)

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.

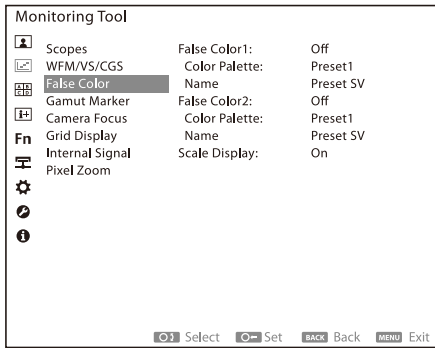
Submenu	Setting
Notes • When "RGB overlay" is selected for "Display Signal" in "WFM Setting," magenta does not appear on the area exceeding the upper/lower limit though it is set in "Over Range." • The "Upper limit1" and "Lower limit1" settings apply to the following. -WFM/VS for Single View -WFM/VS 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 70).	
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 Scope (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.

False Color

Divides the brightness level of the input signal into 12 color palettes and displays them in different colors.

The brightness of the image captured on the camera is displayed in different colors according to the signal level to make elements easier to identify visually and allow for easier iris recognition.

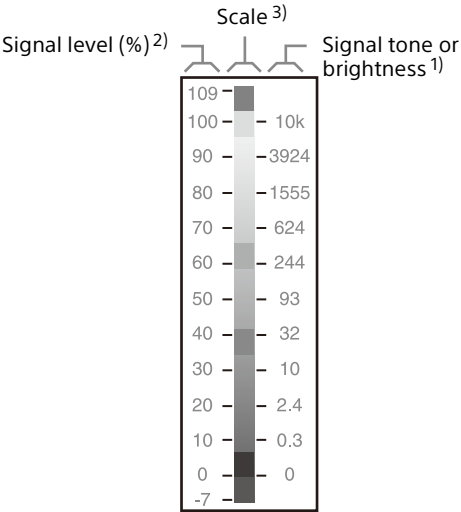
This prevents blown out highlights and blocked out shadows, and preserves the colors needed for grading.



Notes

- False Color is applicable only when a signal with a resolution of 1280×720 or higher is input.
- False Color is temporarily turned off when adjusting Gain/Bias of Internal Signal and User Color Temp.
- ALM is temporarily turned off.
- The Transparency setting for WFM, Vector Scope, and Time Code is temporarily set to Black.
- Mono, Blue Only, RGB Cutoff, and Chroma Up are forcibly turned off.
- When False Color1 of Screen A is set to On, Camera Focus is forcibly turned off. (Even when False Color2 of Screen B is set to On, Camera Focus is not forcibly turned off.)
- False Color is also applied to Time Code and Closed Caption.
- The image adjustment process is applied to images for which False Color was used and the scale part of False Color. However, Chroma is not applied when EOTF is set to 2.2, 2.4, 2.6, CRT or 2.4(HDR).
- When IMD is set to On, the False Color display is temporarily disabled. The false color scale is also not displayed.

Submenu	Setting
False Color1	Turns false color display On/Off. (Default value: Off) This setting is applied to Single View and Screen A in Quad View/Side by Side. On: Displays in false colors. Off: Does not display in false colors.
Color Palette	Selects the color palette to be applied for false color display. (Default value: Preset1) A preset between "Preset1" to "Preset10" can be selected. The setting data are assigned to each preset between "Preset1" to "Preset10". See "Color palette presets" (page 50) for details. The data for each can be changed.
Name	Displays the color palette name.
False Color2	Turns false color display On/Off. (Default value: Off) This setting is applied to Screen B in Quad View/Side by Side. On: Displays in false colors. Off: Does not display in false colors.
Color Palette	Selects the color palette to be applied for false color display. (Default value: Preset1) A preset between "Preset1" to "Preset10" can be selected. The setting data are assigned to each preset between "Preset1" to "Preset10". See "Color palette presets" (page 50) for details. The data for each can be changed.
Name	Displays the color palette name.
Scale Display	Turns the false color scale display On/Off. (Default value: On) On: Displays the scale. Off: Does not display the scale.



Submenu	Setting
1)	When EOTF is set to 2.2, 2.4, 2.6, CRT or 2.4(HDR), the signal gradient is displayed. When EOTF is set to SMPTE ST 2084, the brightness for the input signal is displayed. When it is set to ITU-R BT.2100(HLG), the brightness of the input signal corresponding to the brightness of the monitor is displayed. The brightness is calculated from the default value of the System Gamma (page 26), and the display of the scale does not change even if you change the System Gamma settings. When EOTF is set to S-Log3 or S-Log3(Live HDR), the brightness for input signals defined in SR Live for HDR workflow is displayed.
2)	The scale is fixed at Limited Range (-7% to 109%).
3)	By this scale, the colors specified in Color Palette can be confirmed.

Notes

- While the screen saver is on, the false color scale is not displayed.
- When Scale Display and Grid Display are both set to On, the lines of Grid Display are displayed on the false color scale, but this is not a malfunction.

Col. Palette Preset	Selects the color palette preset. The setting values can be confirmed and changed.
Name	Sets the color palette name.
White	Sets whether to colorize with the White palette. (Default value: Off) • On: Colorizes. • Off: Does not colorize. When "On" is selected • Lower limit: Sets a lower limit for the signal level of the palette. This can be set in the range of -7.3% to 109.5%. The upper limit of the White palette is fixed at 109.5% and cannot be changed.
Red, Yellow, Orange, Pink, Light Pink, Cyan, Green, Light Blue, Blue, Purple	Sets whether to colorize with the selected color palette. (Default value: On) • On: Colorizes. • Off: Does not colorize. When "On" is selected • Upper limit: Sets an upper limit for the signal level of the palette. This can be set in the range of -7.3% to 109.5%. • Lower limit: Sets a lower limit for the signal level of the palette. It can be set in the range of -7.3% to 109.5%.

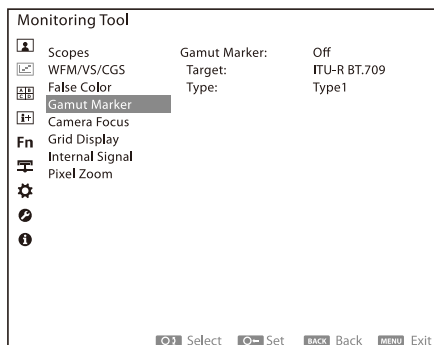
Submenu	Setting
Black	Sets whether to colorize with the Black palette. (Default value: Off) • On: Colorizes. • Off: Does not colorize. When "On" is selected • Upper limit: Sets an upper limit for the signal level of the palette. This can be set in the range of -7.3% to 109.5%. The lower limit of the Black palette is fixed at -7.3% and cannot be changed.
Notes • If a colorizing range is set for multiple colors, the color with the highest upper limit is applied. Depending on the conversion by EOTF or Color Space, even the same color will look slightly different. • When EOTF is set to S-Log3 or S-Log3(Live HDR), the signal level of the scale is displayed in Limited Range (-7% to 109%). Set the upper and lower limits of the signal level for the palettes with reference to "Signal levels of the palettes" (page 46).	
Copy From	Copies the data of other color palette presets to the selected color palette preset.

Signal levels of the palettes

Limited Range signal level [%]	Full Range signal level [%]	Input signal Code Value (10 bit)	S-Log3 brightness [cd/m ²]	S-Log3(Live HDR) brightness [cd/m ²]
-6.8	0.4	4	-	-
0.0	6.3	64	-	-
3.5	9.3	95	0	0
10.0	14.9	152	0.9	0.4
20.0	23.4	239	3.2	1.6
30.0	32.0	327	8.2	5.0
40.0	40.5	414	19	14
50.0	49.1	502	42	40
60.0	57.7	590	93	90
70.0	66.2	677	202	230
80.0	74.8	765	439	580
90.0	83.3	852	946	1350
100.0	91.9	940	2055	3000
109.0	99.6	1019	4121	6000

Gamut Marker

When the color space is set to ITU-R BT.2020, the signal outside the color space of ITU-R BT.709 or DCI-P3 is displayed in a zebra pattern (black or black and white).



Submenu	Setting
Gamut Marker	Set On/Off for the Gamut Marker. (Default value: Off) When "ITU-R BT.2020" is selected in "Color Space", a zebra pattern can be displayed for the signal outside the target color space. • On: Displays the Gamut Marker. • Off: Turns off the Gamut Marker.
Target	Set the target color space. (Default value: ITU-R BT.709) A zebra pattern can be displayed for the signal outside the target color space. ¹⁾ • ITU-R BT.709 • DCI-P3 1) To detect the color space, the "Transmission gamma definition" (page 47) is used based on the selected EOTF.

Notes

- This function is available when "ITU-R BT.2020" is selected in "Color Space".
- This function does not depend on the settings of the image adjustment functions such as contrast, chroma, white balance, etc.
- Noise may be emphasized in the zebra pattern display if the input signal containing noise components exceeds the target color space.

Type

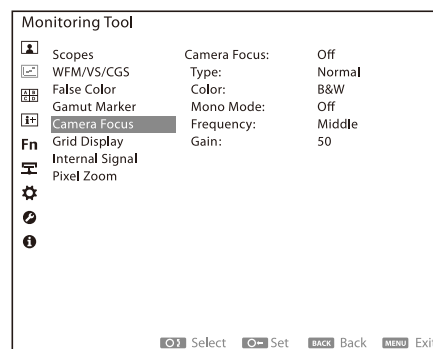
- Select the type of zebra pattern to display. (Default value: Type1)
- **Type1:** Displays the black zebra pattern.
 - **Type2:** Displays the black and white zebra pattern.

Transmission gamma definition

EOTF setting on this unit	Definition of transmission gamma used when detecting color space
2.2, 2.4, 2.6, CRT, 2.4(HDR)	ITU-R BT.2020
S-Log3, S-Log3(Live HDR)	S-Log3
SMPTE ST 2084	SMPTE ST 2084
ITU-R BT.2100(HLG)	ITU-R BT.2100

Camera Focus

This function makes it easier to see where the camera is focusing when the camera focus is being adjusted manually. The outline of the subject in focus is emphasized in the selected color.



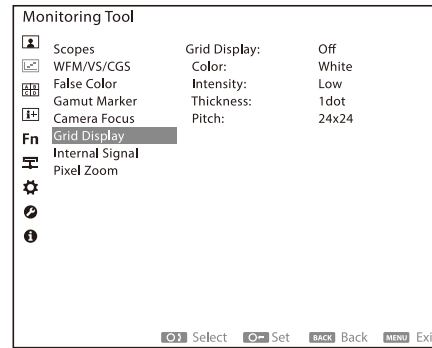
Notes

- Camera Focus is temporarily turned off when adjusting Gain/Bias of Internal Signal and User Color Temp.
- Mono, Blue Only, RGB Cutoff, and Chroma Up are forcibly turned off.
- When Camera Focus is set to On, False Color1 is forcibly turned off. (False Color2 is not forcibly turned off.)

Submenu	Setting
Camera Focus	Turns the camera focus function On/Off. (Default value: Off) • On: Enables the camera focus function. • Off: Disables the camera focus function.
Type	Sets the type of camera focus peaking. (Default value: Normal) • Normal: Normal peaking Emphasizes the brightness component of a specific frequency part of video signals. • Color: Color peaking Colorizes a specific frequency part of video signals.

Submenu	Setting
Color	Selects the color used for color peaking when "Color" is selected for "Type". (Default value: B&W) • Red • Green • Blue • Yellow • B&W
Mono Mode	When "Camera Focus" is set to "On", the image is displayed in black and white. (Default value: Off) • On: Displays the image in black and white. • Off: Displays the image in color.
Frequency	Sets the focus peaking frequency for the camera. (Default value: Middle) • Low • Middle • Middle High • High
Gain	Sets the gain for the focus peaking component on the camera. (Default value: 50) • 0~100(50)

Grid Display



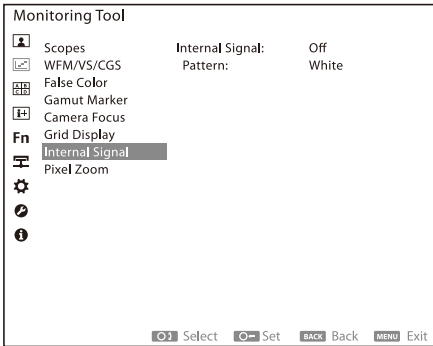
Notes

- The grid is displayed only in the video area. However, if a video is displayed even on one screen when multiple screens are displayed, the grid is displayed on all screens. In this case, the grid is also displayed on the screens of no signal, unsupported signal, or input mismatch.
- When adjusting Gain/Bias of User Color Temp., the display is temporarily disabled.

Submenu	Setting
Grid Display	Sets the grid display On/Off. (Default value: Off) • On: Enables the grid display. • Off: Disables the grid display.
Color	Sets the grid display color. (Default value: White) • White • Red • Green • Blue • Yellow • Cyan • Magenta
Intensity	Sets the brightness of the grid display. (Default value: Low) • High • Low
Thickness	Sets the line thickness of the grid display. (Default value: 1dot) • 1dot • 2dots • 3dots • 4dots • 5dots

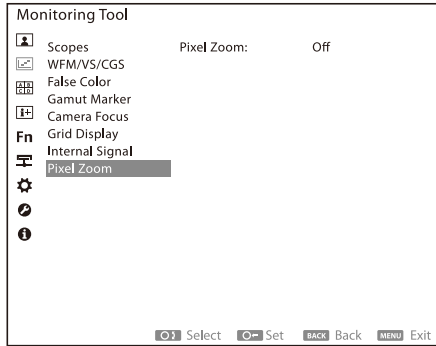
Submenu	Setting
Pitch	Sets the number of grid divisions. (Default value: 24x24) • 128x120 • 98x90 • 64x60 • 48x48 • 32x30 • 24x24 • 16x16 • 12x12 • 8x8 • 6x6 • 4x4 • 3x3

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.

Color palette presets

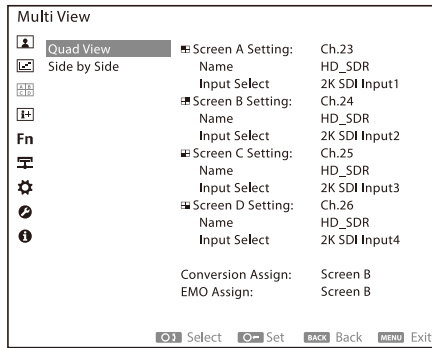
Color Palette Preset	Preset1	Preset2	Preset3	Preset4	Preset5	Preset6	Preset7	Preset8	Preset9	Preset10
Name	Preset SV	Preset AA	Preset RV	Preset RE	Preset L	Preset SV	Preset SV	Preset SV	Preset SV	Preset SV
White	Off	Off	Off	On	Off	Off	Off	Off	Off	Off
Lower limit	109.5	109.5	109.5	100	109.5	109.5	109.5	109.5	109.5	109.5
Red	On	On	On	On	On	On	On	On	On	On
Upper limit	96.1	100	109.5	100	108	96.1	96.1	96.1	96.1	96.1
Lower limit	93.4	99	99	99	100	93.4	93.4	93.4	93.4	93.4
Yellow	On	On	Off	On	On	On	On	On	On	On
Upper limit	93.4	99	109	95	93	93.4	93.4	93.4	93.4	93.4
Lower limit	91.3	97	0	94	84	91.3	91.3	91.3	91.3	91.3
Orange	On	Off	Off	On	On	On	On	On	On	On
Upper limit	90.6	109	109	98	100	90.6	90.6	90.6	90.6	90.6
Lower limit	87.7	0	0	96	94	87.7	87.7	87.7	87.7	87.7
Pink	On	On	Off	On	On	On	On	On	On	On
Upper limit	58.0	56	109	70	59	58.0	58.0	58.0	58.0	58.0
Lower limit	54.3	52	0	61	56	54.3	54.3	54.3	54.3	54.3
Light Pink	On	Off	Off	Off	Off	On	On	On	On	On
Upper limit	50.8	109	109	109	109	50.8	50.8	50.8	50.8	50.8
Lower limit	47.8	0	0	0	0	47.8	47.8	47.8	47.8	47.8
Cyan	On	Off	Off	On	On	On	On	On	On	On
Upper limit	46.5	109	109	93	84	46.5	46.5	46.5	46.5	46.5
Lower limit	43.8	0	0	92	79	43.8	43.8	43.8	43.8	43.8
Green	On	On	On	On	On	On	On	On	On	On
Upper limit	42.2	42	48	48	48	42.2	42.2	42.2	42.2	42.2
Lower limit	38.9	38	41	41	43	38.9	38.9	38.9	38.9	38.9
Light Blue	On	Off	Off	On	On	On	On	On	On	On
Upper limit	34.4	109	109	12	23	34.4	34.4	34.4	34.4	34.4
Lower limit	24.6	0	0	10	13	24.6	24.6	24.6	24.6	24.6
Blue	On	On	Off	On	On	On	On	On	On	On
Upper limit	5.6	4.0	109	5	13	5.6	5.6	5.6	5.6	5.6
Lower limit	3.5	2.5	0	5	1	3.5	3.5	3.5	3.5	3.5
Purple	On	On	On	On	On	On	On	On	On	On
Upper limit	3.5	2.5	4	4	1	3.5	3.5	3.5	3.5	3.5
Lower limit	-7.3	0	0	0	0	-7.3	-7.3	-7.3	-7.3	-7.3
Black	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Upper limit	-7.3	-7	0	0	0	-7.3	-7.3	-7.3	-7.3	-7.3



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/2K SDI Input1 • 4K/2K SDI Input3 • 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 • 4K/2K IP Input1 • 2K IP Input2 • 4K/2K IP Input3 • 2K IP Input4
Conversion Assign	When the Conversion (HDR SDR Conversion) function is enabled, select the display screen to be applied. (Default value: Screen B) • Screen A • Screen B • Screen C • Screen D

Submenu	Setting
EMO Assign	Select the display screen that will display the input image of the SDI signal output from the Enhanced Monitor Out terminal. (Default value: Screen B) • Screen A • Screen B • Screen C • Screen D

Notes

- When “Out. Image(Single)” (page 72) in the “Enhanced Out.” menu is set to “Fixed”, “Quad View” cannot be set to On.
- “Conversion Assign” is available when the optional “BVML-H10” license (sold separately) is enabled.
- “EMO Assign” is available when one of the optional “BVML-H10”, “BVML-S10” or “BVML-T10” licenses (sold separately) is enabled.

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.
- XYZ format signals are not supported.
- 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.

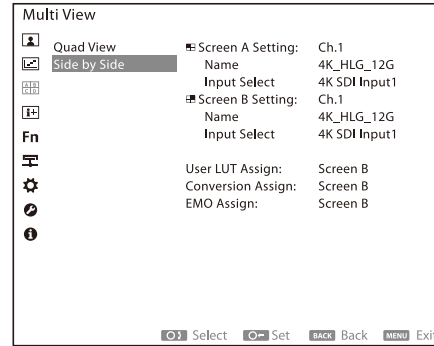
If the screen cannot be displayed, it turns black and the “Invalid Input Combination” message is displayed.

- The time code is displayed for only an SDI/IP stream (ancillary data) that is input to Screen A.
- The audio signal input to Screen A is output from the 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.”
- When the input signal of each screen is HDMI, it cannot be output to Enhanced Monitor Out.
- “Conversion Assign” is available when the paid optional “BVML-H10” license (sold separately) is enabled. “EMO Assign” is available when one of the paid optional “BVML-H10”, “BVML-S10” or “BVML-T10” licenses (sold separately) is enabled.

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	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/2K SDI Input1 • 4K/2K SDI Input3 • 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 • 4K/2K IP Input1 • 2K IP Input2 • 4K/2K IP Input3 • 2K IP Input4
Screen B Setting	

Submenu	Setting
User LUT Assign	When the User LUT data is applied to a setting channel, select the screen with the data applied. (Default value: Screen B) • Screen A&B: When the channels set for Screen A and Screen B are the same, User LUT is applied to Screen A and Screen B. Example in which the channels set for Screen A and Screen B are the same: Screen A: Ch.1 4K SDI Input1 Screen B: Ch.1 4K SDI Input1 When the channels set for Screen A and Screen B are different and the input signal set for either channel is 4K SDI, 4K IP stream or HDMI (4K equivalent), User LUT is applied preferentially for Screen B. Example in which the channels set for Screen A and Screen B are different: Screen A: Ch.1 4K SDI Input1 Screen B: Ch.2 HDMI • Screen A: User LUT is applied only to Screen A. • Screen B: User LUT is applied only to Screen B. When the setting channels of Screen A and Screen B are the same and the input signal setting of the setting channel is HDMI (4K equivalent), User LUT is fixed to "Screen A&B" regardless of the setting value.
	Note If the channels set for Screen A and Screen B are different and the input signal set for both channels is 2K SDI, 2K IP stream or HDMI (2K equivalent), "User LUT Assign" cannot be selected. Screen A and Screen B are displayed with the User LUT setting of each set channel applied.
Conversion Assign	When the Conversion (HDR SDR Conversion) function is enabled, select the display screen to be applied. (Default value: Screen B) • Screen A • Screen B
EMO Assign	Select the display screen that will be the input image of the SDI signal output from the Enhanced Monitor Out terminal. (Default value: Screen B) • Screen A • Screen B

Notes

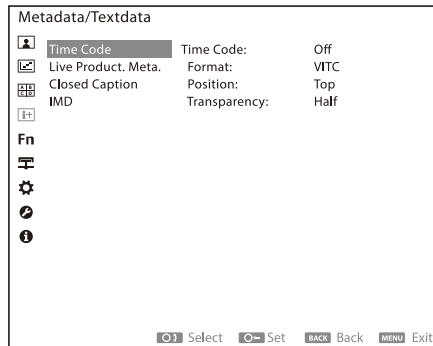
- When "Out. Image(Single)" (page 72) in the "Enhanced Out." menu is set to "Fixed", "Side by Side" cannot be set to On.
- XYZ format signals are not supported.
- Only one channel can be displayed at a time for each input terminal. For example, if you set the same SDI input connector 1 for "Ch.1" and "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.
- Even if the input terminals are different, 4K SDI or 4K IP streams cannot be simultaneously displayed when either of the input signals is 4K SDI or 4K IP. For example, setting "4K SDI Input1" for "Ch.1" and "4K SDI Input3" for "Ch.2" does not allow simultaneous display. The SDI or IP streams for two systems can be displayed when both input systems are a combination of 2K SDI or 2K IP streams.
- The time code is displayed for only an SDI/IP stream (ancillary data) that is input to Screen A.
- The audio signal input to Screen A is output from the 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."
- When the input signal of each screen is HDMI, it cannot be output to Enhanced Monitor Out.
- "Conversion Assign" is available when the paid optional "BVML-H10" license (sold separately) is enabled.
- "EMO Assign" is available when one of the paid optional "BVML-H10", "BVML-S10" or "BVML-T10" licenses (sold separately) is enabled.



Metadata/Textdata 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.

Notes

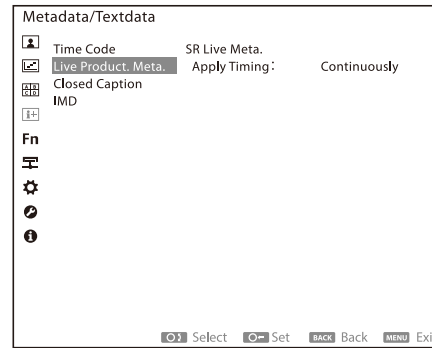
- The time code is displayed when SDI/IP stream (ancillary data) input is selected.
- While the screen saver is on, the time code is not displayed.

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
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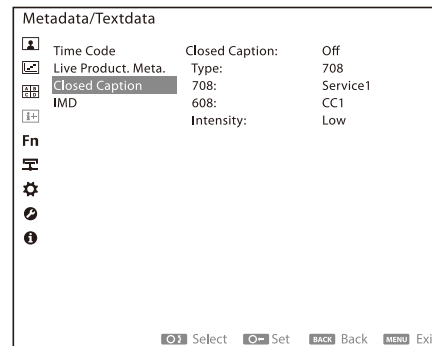
Transparency	Sets the background transparency of the time code display. • Black: The background becomes black. • Half: The background becomes translucent.
--------------	--

Live Product. Meta.



Submenu	Setting
SR Live Meta.	Apply the SR Live Metadata (HDR SDR Relation Table) of the input SDI/IP stream (ancillary data) to the setting values for "EOTF", "Color Space", "Transfer Matrix", and the item group required for the conversion of the "Conv. Preset" from the HDR signal to the SDR signal.
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.

Closed Caption



Notes

- If the input signal is SDI, this function works only when it is HD-SDI Single Link. If the input signal is an IP stream (ancillary data), refer to the "IP (Image Format)" (page 132).
- In Side by Side and Quad View, Closed Caption is available only for Screen A.
- The same processing as the displayed image is applied to Closed Caption. (False Color, Camera

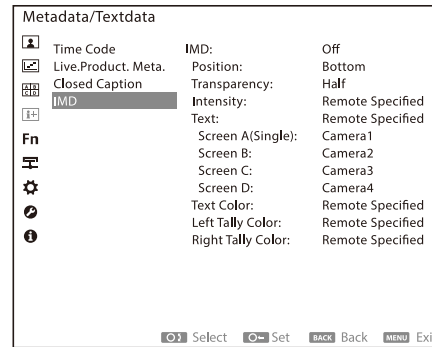
Focus, image adjustment processes, HDR-SDR conversion, User LUT, etc.)

- When adjusting Gain/Bias of Internal Signal and User Color Temp., the display is temporarily disabled.
- The contents displayed on the screen by Closed Caption are reflected in the Scope waveform.
- Closed Caption is not superimposed on the ANC data of Enhanced Monitor Out, but is output as a video signal when displayed on the monitor screen.

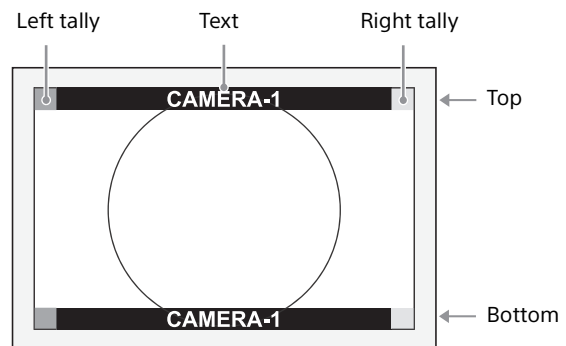
Submenu	Setting
Closed Caption	Sets the closed caption function On/Off. (Default value: Off) • On: Enables the closed caption function. • Off: Disables the closed caption function.
Note While the screen saver is on, the closed caption is not displayed.	
Type	Sets the display type for the closed caption. (Default value: 708) • 708: Select to display 708¹⁾. • 608 (708): Select to display 608 (708)²⁾. 1) 708 is a closed caption signal compliant with the EIA/CEA-708 standard. 2) 608 (708) is a closed caption signal compliant with the EIA/CEA-608 standard transmitted by the EIA/CEA-708 standard.
708	Sets the captions to be displayed in 708. (Default value: Service1) • Service1 • Service2 • Service3 • Service4 • Service5 • Service6
608	Sets the captions to be displayed in 608 (708). (Default value: CC1) • CC1 • CC2 • CC3 • CC4 • Text1 • Text2 • Text3 • Text4
Intensity	Sets the brightness of characters. (Default value: Low) • Low • High

IMD (In Monitor Display)

This unit complies with "TSL UMD Protocol-V5.00" provided by Television Systems Ltd. Use the port 8900.



The IMD is displayed in the available screen area.



Notes

- The UNI code that can be displayed on this unit is only UTF-16BE.
- When displaying the IMD on this unit, set "SCREEN" and "INDEX" in the TSL protocol settings as follows.

Unit display		TSL protocol	
		SCREEN	INDEX
Single View		0x0000	0x0000
Side by Side	Screen A		0x0001
	Screen B		0x0002
Quad View	Screen A		0x0001
	Screen B		0x0002
	Screen C		0x0003
	Screen D		0x0004

- When using the TSL protocol with this unit, set "VER" to "0x00".

- This unit can receive up to 5 DMSG data in the TSL protocol, but it will be discarded if more data is sent to this unit. If multiple DMSG data of the same "INDEX" are sent at the same time, the later data will be valid.
- This unit interprets the Brightness Value defined in Bit6-7 of "CONTROL" of the TSL protocol as follows.
0: No text/tally brightness
1: Low text/tally brightness
2: Mid text/tally brightness
3: High text/tally brightness
- This unit interprets the data below "CONTROL" as Display Data, not Control Data, even if Bit15 of "CONTROL" of the TSL protocol is 1.
- The characters that can be displayed on this unit are alphabets, numbers, symbols, hiragana characters, and katakana characters. However, some symbols cannot be displayed. For details, see "IMD compatible character list" (page 58).
- The maximum number of characters that can be displayed on this unit is 16 characters for alphanumeric characters, symbols, hiragana characters and katakana characters.
- All commands received while the unit starts up or while IMD is set to Off are cleared.
- The settings specified in the command are cleared when the power is turned off.
- The IMD is temporarily hidden during main menu display/Function key display/Format display/CH selection menu display. However, the IMD can be displayed at the same time as the main menu display in Single View.
- When displaying the Tally in Parallel Remote, the IMD is temporarily hidden.
- The IMD is not displayed on the screen displaying the Scope in Side By Side or Quad View.

Submenu	Setting
IMD	Sets the IMD function On/Off. (Default value: Off) • On: Enables the IMD function. • Off: Disables the IMD function.

Note

When set to "Off", the port is closed.

Submenu	Setting
Position	Sets the display position of the IMD. (Default value: Bottom) • Top • Bottom

Note

Since the IMD position has the priority, the Time Code/Scope is displayed in the opposite position to the IMD regardless of its setting.

Transparency	Sets the background for the IMD. (Default value: Half) • Black: The background becomes black. The displayed image is hidden behind the background. • Half: The background becomes translucent. The displayed image is translucently displayed behind the IMD.
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Note

When Mono, Blue Only, RGB Cutoff, or Chroma Up is set to On while Half is selected, the IMD is temporarily displayed with the Black setting.

Intensity	Sets the brightness of the IMD. When "Remote Specified" is selected, the setting specified in the TSL command is applied. When a setting other than "Remote Specified" is selected, the set brightness is applied. (Default value: Remote Specified) • Remote Specified • High • Middle • Low
-----------	--

Note

When the command cannot be received while Remote Specified is selected, High is applied.

Submenu	Setting
Text	Sets the characters to be displayed on the IMD. (Default value: Remote Specified) • Remote Specified: The characters specified in the TSL command are displayed. • Manual: The set characters are displayed. The characters can be changed. When "Manual" is selected • Screen A(Single): Camera1 • Screen B: Camera2 • Screen C: Camera3 • Screen D: Camera4 Notes • The maximum number of characters that can be displayed in "Remote Specified" is 16, and the maximum number of characters that can be displayed in "Manual" is 15. • For the characters that can be displayed when Remote Specified is selected, see "IMD compatible character list" (page 58). • Only the characters in "How to Enter Characters" (page 23) can be set when Manual is selected.
Text Color	Sets the color of characters displayed on the IMD. When "Remote Specified" is selected, the setting specified in the TSL command is applied. When a setting other than "Remote Specified" is selected, the set color is applied. (Default value: Remote Specified) • Remote Specified • White • Red • Green • Blue • Yellow • Cyan • Magenta • Amber Note When the command cannot be received while Remote Specified is selected, White is applied.

Submenu	Setting
Left Tally Color	Sets the color of the left tally displayed on the IMD. When "Remote Specified" is selected, the setting specified in the TSL command is applied. When a setting other than "Remote Specified" is selected, the set color is applied to the tally. (Default value: Remote Specified) • Remote Specified • White • Red • Green • Blue • Yellow • Cyan • Magenta • Amber Note This menu only specifies the color. To display Left Tally, it is necessary to send the TSL command.
Right Tally Color	Sets the color of the right tally displayed on the IMD. When "Remote Specified" is selected, the setting specified in the TSL command is applied. When a setting other than "Remote Specified" is selected, the set color is applied to the tally. (Default value: Remote Specified) • Remote Specified • White • Red • Green • Blue • Yellow • Cyan • Magenta • Amber Note This menu only specifies the color. To display Right Tally, it is necessary to send the TSL command.

IMD compatible character list

Unicode character list

The characters in gray are not supported. For "\", follow the code in the list.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0x002x		!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
0x003x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
0x004x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0x005x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
0x006x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
0x007x	p	q	r	s	t	u	v	w	x	y	z	{		}	~	␣
0x00Cx	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
0x00Dx	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
0x00Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
0x00Fx	ð	ñ	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ	
0x200x																
0x201x	-	-	-	-	—	—		=	‘	’	,	‘	“	”	”	“
0x2018x	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	↓	Ⓖ	Ⓗ	%	ℳ	℥	•	•	•	•
0x2019x	←	↑	→	↓	↔	↕	↖	↗	↘	↙	↠	↡	↢	↣	↤	↥
0x300x		,	。	”	Ⓢ	々	〇	く	く	》	《	》	「	」	『	』
0x301x	【	】	〒	=	[	]	【	】	〔	〕	《	》	「	」	『	』
0x304x	・	あ	あ	い	い	う	う	え	え	お	お	か	が	き	ぎ	く
0x305x	ぐ	け	げ	こ	こ	さ	ざ	し	じ	す	ず	せ	ぜ	そ	ぞ	た
0x306x	だ	ち	ぢ	つ	つ	づ	て	で	と	ど	な	に	ぬ	ね	の	は
0x307x	ば	ば	ひ	び	び	ふ	ぶ	ぶ	へ	べ	べ	ほ	ぼ	ぼ	ま	み
0x308x	む	め	も	や	や	ゆ	ゆ	よ	よ	ら	り	る	れ	ろ	わ	わ
0x309x	ゐ	ゑ	を	ん	う	か	け	・	・	・	・	・	・	・	・	・
0x30Ax	=	ア	ア	イ	イ	ウ	ウ	エ	エ	オ	オ	カ	ガ	キ	ギ	ク
0x30Bx	グ	ケ	ゲ	コ	ゴ	サ	ザ	シ	ジ	ス	ズ	セ	ゼ	ソ	ゾ	タ
0x30Cx	ダ	チ	ヂ	ッ	ツ	ヅ	テ	デ	ト	ド	ナ	ニ	ヌ	ネ	ノ	ハ
0x30Dx	バ	バ	ヒ	ビ	ピ	フ	ブ	プ	ヘ	ベ	ペ	ホ	ボ	ポ	マ	ミ
0x30Ex	ム	メ	モ	ヤ	ヤ	ユ	ユ	ヨ	ヨ	ラ	リ	ル	レ	ロ	ワ	ワ
0x30Fx	キ	エ	ヲ	ン	ヴ	カ	ケ	ヅ	ヅ	ヅ	ヅ	・	ー	、	、	、
0xFF0x	・	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
0xFF1x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
0xFF2x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0xFF3x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
0xFF4x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
0xFF5x	p	q	r	s	t	u	v	w	x	y	z	{		}	~	␣
0xFF6x	))	。	「	」	、	・	ヲ	ア	イ	ウ	エ	オ	ヤ	ユ	ヨ	ッ
0xFF7x	ー	ア	イ	ウ	エ	オ	カ	キ	ク	ケ	コ	サ	シ	ス	セ	ソ
0xFF8x	タ	チ	ツ	テ	ト	ナ	ニ	ヌ	ネ	ノ	ハ	ヒ	フ	ヘ	ホ	マ
0xFF9x	ミ	ム	メ	モ	ヤ	ユ	ヨ	ラ	リ	ル	レ	ロ	ワ	ン	、	、
0xFFEx	¢	£	—	—	—	¥	₩	・		←	↑	→	↓	■	○	・
0xFFFx	・	・	・	・	・	・	・	・	・	・	・	・	・	・	#N/A	#N/A

ASCII code character list

The characters in gray are not supported. For "\", follow the code in the list.

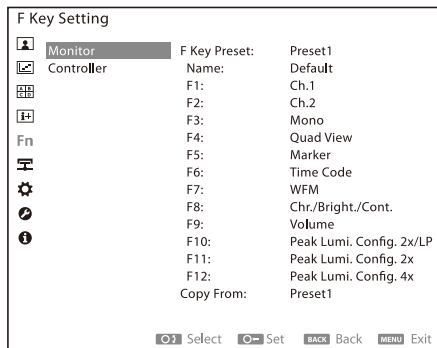
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0x2x		!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
0x3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
0x4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0x5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
0x6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
0x7x	p	q	r	s	t	u	v	w	x	y	z	{		}	~	␣

Fn F Key Setting menu

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

Monitor

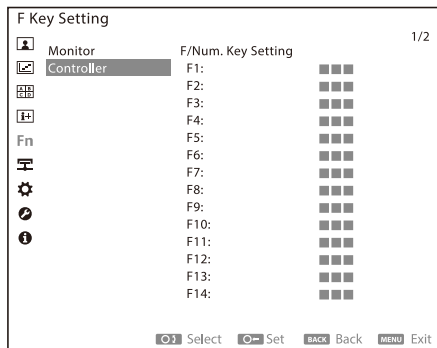
Configure the functions of the function buttons on the front panel of the monitor. This configuration menu can also be displayed by pressing and holding the function button.



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	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 60).
Numeric1 to Numeric9	

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	Preset2	Fast_Response	HDR-SDR_Conv.	Display_Func.	Markers	Preset7 to Preset10
F1	Ch.1	Ch.1	Ch.1	Ch.1	Ch.1	Ch.1	Ch.1
F2	Ch.2	Ch.2	Ch.2	Ch.2	Ch.2	Ch.2	Ch.2
F3	Mono	Ch.3	Quad View	WFM	Mono	Ch.3	Mono
F4	Quad View	Ch.4	Marker	Vector Scope	Blue Only	Ch.4	Quad View
F5	Marker	Mono	Time Code	Pixel Zoom	R Off	Marker	Marker
F6	Time Code	Quad View	WFM	Quad View	G Off	Area Marker 1	Time Code
F7	WFM	Blue Only	Chr./Bright./ Cont.	Side by Side	B Off	Area Marker 2	WFM
F8	Chr./Bright./ Cont.	Internal Signal	Volume	Chr./Bright./ Cont.	Native Scan	Center Marker	Chr./Bright./ Cont.
F9	Volume	Int. Signal Pattern	Peak Lumi. 2x	Volume	Under Scan	Aspect Marker	Volume
F10	Peak Lumi. 2x/ LP	Marker	Peak Lumi. 4x	Audio Muting	Pixel Zoom	Aspect Marker- Line	Peak Lumi. 2x/ LP
F11	Peak Lumi. 2x	Time Code	Fast Resp. Med	Conversion	Marker	Asp. Blank.-Half	Peak Lumi. 2x
F12	Peak Lumi. 4x	WFM	Fast Resp. High	SR Live apply	Chr./Bright./ Cont.	Asp. Blank.- Black	Peak Lumi. 4x

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.

Chroma Up

Press the button to display with the chroma component increased by +12 dB.

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.

Character Off

You can hide the menu during image adjustment. Press again to return to the original display.

Interlace

Press the button to display by interlacing.

Gamut Marker

Press the button to display the Gamut Marker.

Ch.1 to Ch.30

Press to switch to the assigned channel.

Note

In Quad View and Side by Side, 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 and Side by Side
- When the screen saver is on

Time Code

Press the button to display the time code. You can set the time code under "Time Code" (page 54).

Relative Cont. 1/2

Press to set the contrast (including the contrast setting value by manual setting) to 1/2 during the HDR display.

Relative Cont. 1/3

Press to set the contrast (including the contrast setting value by manual setting) to 1/3 during the HDR display.

Relative Cont. 1/4

Press to set the contrast (including the contrast setting value by manual setting) to 1/4 during the HDR display.

Relative Cont. 1/8

Press to set the contrast (including the contrast setting value by manual setting) to 1/8 during the HDR display.

Quad View

Press the button to display four inputs on the screen.

WFM

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

Vector Scope

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

CGS (Color Gamut Scope)

Press the button to display the Color Gamut Scope.

ALM (Audio Level Meter)

Press the button to display the audio level meter.

Pixel Zoom

Press the button to use the pixel zoom.

Peak Lumi. 2x/LP

When in HDR, press the button to display with a small area peak brightness equivalent to 2000 [cd/m²] and a flat field upper limit brightness equivalent to 500 [cd/m²].

Peak Lumi. 2x

When in HDR, press the button to display with a small area peak brightness equivalent to 2000 [cd/m²] and a flat field upper limit brightness equivalent to 1000 [cd/m²].

Peak Lumi. 4x

When in HDR, press the button to display with a small area peak brightness equivalent to 4000 [cd/m²] and a flat field upper limit brightness equivalent to 1000 [cd/m²].

Fast Resp. Med

Press the button to display with a fast video response. The brightness of the HDR display becomes 1/2.

Fast Resp. High

Press the button to display with the fastest video response. The brightness of the HDR display becomes 1/4.

Under Scan

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

Note

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."

False Color1

Press the button to display False Color1.

False Color2

Press the button to display False Color2.

False Color Scale

Press the button to turn off the display of the false color scale.

Camera Focus

Press the button to use camera focus.

Focus Gain

Press the button to display the Gain adjustment menu for camera focus.

Closed Caption

Press the button to display captions. The caption settings can be changed under "Closed Caption" (page 54).

IMD (In Monitor Display)

You can use the external remote function to display the source name and tally information on the monitor screen. The settings can be changed under "IMD (In Monitor Display)" (page 55).

Grid Display

Press the button to display the grid and check the entire image. The grid settings can be made "Grid Display" (page 48).

Note

Some functions are not available in Quad View and Side by Side. 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. (Default value: LAN) • 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. (Default value: 1) • 1 - 99
Group ID	Sets the group ID of this unit. (Default value: 1) • 1 - 99
IP Address	Sets the IP address. (Default value: 192.168.000.001) • 000.000.000.000 - 255.255.255.255
Subnet Mask	Sets the subnet mask. (Default value: 255.255.255.000) • 000.000.000.000 - 255.255.255.255
Default Gateway	Sets the default gateway On or Off. (Default value: Off) • Address: Sets the default gateway. (Default value: 000.000.000.000) • 000.000.000.000 - 255.255.255.255
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. • 000.000.000.000 - 255.255.255.255
Subnet Mask	Sets the subnet mask. • 000.000.000.000 - 255.255.255.255
Default Gateway	Sets the default gateway On or Off. • Address: Sets the default gateway. • 000.000.000.000 - 255.255.255.255
Cancel	Selects to cancel the setting.
Confirm	Selects to save the setting.

IP Network

Configure the IP network.

See also “Network Tab” (page 99).

Submenu	Setting
DHCP	Select On or Off of DHCP. When DHCP is Off, the IP address, subnet mask, and default gateway settings for LAN1 and LAN2 are enabled. (Default value: Off) - On - Off
FEC Type	Set the FEC mode. Configure this function according to the setting of the network switch to be connected. (Default value: RS-FEC) - Off - RS-FEC - FC-FEC
Hitless Failover	Select whether to enable or disable IP stream redundancy. (Default value: Enable) - Disable - Enable
LAN1	Enables the LAN1. Enable (fixed)
IP Address	Set the IP address. (Default value: 192.168.010.010) 000.000.000.000 - 255.255.255.255
Subnet Mask	Set the subnet mask. (Default value: 255.255.255.000) 000.000.000.000 - 255.255.255.255
Default Gateway	Set the default gateway. (Default value: 192.168.010.254) 000.000.000.000 - 255.255.255.255
LAN2	Select whether to enable or disable the LAN2. (Default value: Enable) - Disable - Enable
IP Address	Set the IP address. (Default value: 192.168.110.010) 000.000.000.000 - 255.255.255.255
Subnet Mask	Set the subnet mask. (Default value: 255.255.255.000) 000.000.000.000 - 255.255.255.255
Default Gateway	Set the default gateway. (Default value: 192.168.010.254) 000.000.000.000 - 255.255.255.255
Cancel	Restores the changed or confirmed settings to the state before change.
Confirm	Saves and applies the changed or confirmed settings.

IP PTP

Configure PTP of the IP network.
See also “ST2110 - PTP Tab” (page 103).

Remote

Monitor Network	LAN1:	Enable
Controller Network	Domain Number:	127
IP Network	LAN2:	Disable
IP PTP	Domain Number:	127
IP Multicast		
Parallel Remote	Cancel	
	Confirm	

1/9

Select Set BACK Back MENU Exit

Note

You cannot set LAN1 to Disable and LAN2 to Enable at the same time.

Submenu	Setting
LAN1	Select whether to enable or disable PTP operation. (Default value: Enable) - Disable - Enable
Domain Number	Set the domain number of PTP. (Default value: 127) 0 - 127
LAN2	Select whether to enable or disable PTP operation. (Default value: Disable) - Disable - Enable
Domain Number	Set the domain number of PTP. (Default value: 127) 0 - 127
Cancel	Restores the changed or confirmed settings to the state before change.
Confirm	Saves and applies the changed or confirmed settings.

IP Multicast

Configure the multicast address of the IP network.
See also “ST2110 - Multicast Tab” (page 105).

Remote

Monitor Network	LAN1 In.1	1/9
Controller Network	V Multicast Addr.:	xxx.xxx.xxx.xxx
IP Network	V Port No.:	30000
IP PTP	V IP Address:	xxx.xxx.xxx.xxx
IP Multicast	A Multicast Addr.:	xxx.xxx.xxx.xxx
Parallel Remote	A Port No.:	30000
	A IP Address:	xxx.xxx.xxx.xxx
	M Multicast Addr.:	xxx.xxx.xxx.xxx
	M Port No.:	30000
	M IP Address:	xxx.xxx.xxx.xxx

Select Set BACK Back MENU Exit

Notes

- After setting each item, select either Confirm or Cancel. After setting, when you press the "BACK" button without executing Cancel or Confirm, a message for executing Cancel/Confirm is displayed. Select either one and execute it.
- As for the settings from the broadcast controller and the manual settings of "IP Multicast", the ones configured last are enabled.

Submenu	Setting
LAN1 In.1	
V Multicast Addr.	Set the multicast address of the video data. (Default value: 000.000.000.000) • 000.000.000.000 • 224.000.002.000 - 239.255.255.255
V Port No.	Set the video data port number. (Default value: 30000) • 100 - 65535
V Source Addr.	Set the IP address of the video data source. (Default value: 000.000.000.000) • 000.000.000.000 - 255.255.255.255
A Multicast Addr.	Set the multicast address of the audio data. (Default value: 000.000.000.000) • 000.000.000.000 • 224.000.002.000 - 239.255.255.255
A Port No.	Set the audio data port number. (Default value: 30000) • 100 - 65535
A Source Addr.	Set the IP address of the audio data source. (Default value: 000.000.000.000) • 000.000.000.000 - 255.255.255.255
M Multicast Addr.	Set the multicast address of the ancillary data (Metadata). (Default value: 000.000.000.000) • 000.000.000.000 • 224.000.002.000 - 239.255.255.255
M Port No.	Set the ancillary data (Metadata) port number. (Default value: 30000) • 100 - 65535
M Source Addr.	Set the IP address of the ancillary data (Metadata) source. (Default value: 000.000.000.000) • 000.000.000.000 - 255.255.255.255
LAN1 In.2	The setting items and the setting values are the same as those for LAN1 In.1.
LAN1 In.3	The setting items and the setting values are the same as those for LAN1 In.1.
LAN1 In.4	The setting items and the setting values are the same as those for LAN1 In.1.

Submenu	Setting
LAN2 In.1	The setting items and the setting values are the same as those for LAN1 In.1.
LAN2 In.2	The setting items and the setting values are the same as those for LAN1 In.1.
LAN2 In.3	The setting items and the setting values are the same as those for LAN1 In.1.
LAN2 In.4	The setting items and the setting values are the same as those for LAN1 In.1.
Cancel	Restores the changed or confirmed settings to the state before change.
Confirm	Saves and applies the changed or confirmed settings.
Power On Setting	Select whether to use the multicast address setting value configured last or a preset value when powered on. (Default value: Last Memory) • Last Memory • Preset
Save To Preset	Save the multicast setting value to the preset. • Cancel: Saving is canceled and no saving is done. • Confirm: Executes saving to the preset.
Load From Preset	Read the preset data and apply it to the multicast setting value. • Cancel: Reading is canceled and no reading is done. • Confirm: Read the preset data and apply it to the multicast setting value.

Parallel Remote

Remote			
	Monitor Network	1Pin:	Ch.1
	Controller Network	2Pin:	Ch.2
	IP Network	3Pin:	Ch.3
	IP PTP	4Pin:	Mono
	IP Multicast	6Pin:	Marker
Fn	Parallel Remote	7Pin:	Tally Green
		8Pin:	Tally Red
Select Set BACK Back MENU Exit			

Submenu	Setting
1Pin, 2Pin, 3Pin, 4Pin, 6Pin, 7Pin, 8Pin	The functions can be assigned to each pin on the PARALLEL REMOTE connector. The following functions can be assigned to each pin. Mono, Blue Only, Native Scan, Audio Muting, R Off, G Off, B Off, Chroma Up, Internal Signal, Character Off, Interlace, Gamut Marker, Ch.1 to Ch.30, Marker, Aspect Marker, Area Marker1, Area Marker2, Center Marker, Aspect Marker-Line, Asp. Blank.-Half, Asp. Blank.-Black, Time Code, Relative Cont. 1/2, Relative Cont. 1/3, Relative Cont. 1/4, Relative Cont. 1/8, Quad View, WFM, Vector Scope, CGS, Audio Level Meter, Pixel Zoom, Peak Lumi. 2x/LP, Peak Lumi. 2x, Peak Lumi. 4x, Under Scan, Side by Side, Conversion, False Color1, False Color2, False Color Scale, Camera Focus, Closed Caption, IMD, Tally Green, Tally Red, Grid Display, Fast Resp. Med¹⁾, Fast Resp. High¹⁾ For details on the function assignment (default) for each pin, see page 14. 1) Fast Response can be set when the optional "BVML-F10" license (sold separately) is enabled.

Notes

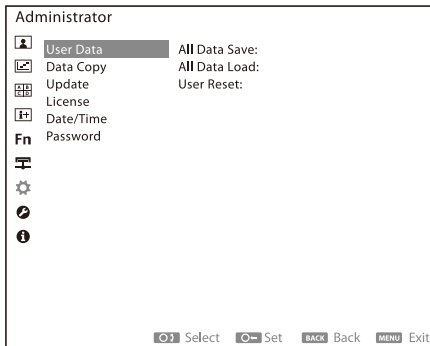
- While the screen saver is on, the Marker, Tally Green and Tally Red are not displayed.
- Each function is applied when the pin is pressed, and each function is canceled when the pin is released, but Ch. does not return to the original Ch. even when the pin is released.
- When the pin is pressed or released, the function settings set with the menu or function keys are changed. On the other hand, the function settings can be changed with the menu or function keys regardless of the pin status.
- The setting is changed at the timing when the pin is pressed or released. At startup, the pins already pressed are applied in order from the pin with the high number.
- When multiple Ch. are assigned to pins, and multiple pins are pressed, the Ch. setting will be the last Ch. pressed. When the pin pressed last is released, the Ch. setting with the lowest pin number is applied.
- When multiple Asp. Blank.-Half/-Black are assigned to pins and multiple pins are pressed, the setting of Asp. Blank pressed last will be applied. When the pin pressed last is released, the setting with the lowest pin number is applied.

- When the pins assigned Tally Green and Tally Red are pressed at the same time, a yellow Tally is displayed.

⚙ 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 69) 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.

Submenu	Setting
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

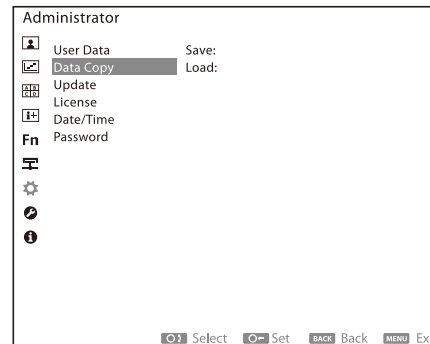
The following settings are not reset even when User Reset is performed.

- 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 31) in the "User Preset Setting" menu.

Data Copy

This function allows you to save this unit's settings to a USB memory or load monitor settings to this unit from a USB memory. It is also possible to back up settings or copy the settings on BVM-HX3110.



The following folder on the USB memory is used to save or load files.

MSSONY/MONITOR/DATA/BVM-HXxx10

Notes

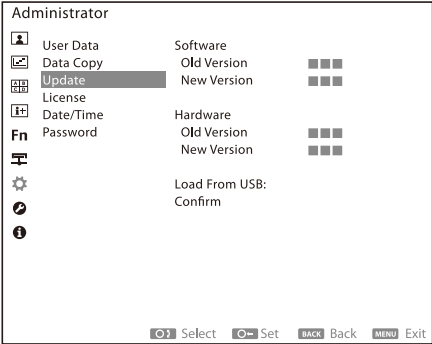
- The USB memory is only FAT32 format compatible.
- Files that can be loaded are only files with the extension .udat saved by the Save function of this unit.
- The name of the file to be loaded should be 20 alphanumeric characters (one-byte characters) or less (including "-" and "_", and excluding the extension).
- Up to 14 characters of the file name are displayed in the menu of the monitor.

- Do not save more than 100 files on a USB memory.

Submenu	Setting
Save	Saves the current settings to a USB memory. Save To USB • Name: Sets the file name for the file being saved. • Cancel: Cancels saving. • Confirm: Saves the settings.
Load	Loads the settings saved on a USB memory. Load From USB • XXXXXXXXXXXXXXXX (first 14 characters of the file name) • Load This Data: Loads the selected settings. • Cancel: Cancels loading. • Confirm: Loads settings. • XXXXXXXXXXXXXXXX (first 14 characters of the file name) • XXXXXXXXXXXXXXXX (first 14 characters of the file name) • XXXXXXXXXXXXXXXX (first 14 characters of the file name) • XXXXXXXXXXXXXXXX (first 14 characters of the file name) • Previous 5 Data: Displays the other files. • Next 5 Data: Displays the other files.
Note Save/Load cannot be performed for the following data due to the setting values unique to this unit. • User Color Temp. • User LUT • Monitor Network • Password • Data backed up by All Data Save	

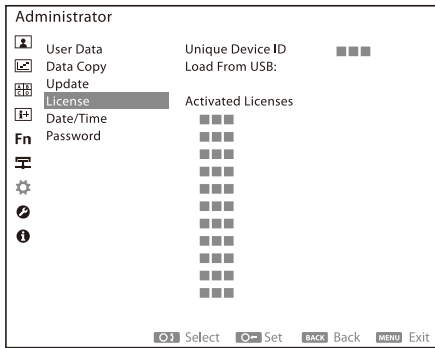
Update

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. To update the firmware for the IP interface, use the Web menu. See “System - Maintenance Tab” (page 96) for details.



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.”
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 F1 to F12 as the update progresses. When the update is complete, all the function buttons light up. An update takes about 110 minutes. • The unit restarts automatically after the update is complete.	

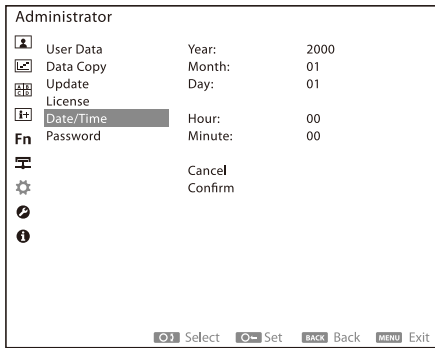
License



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.

Date/Time

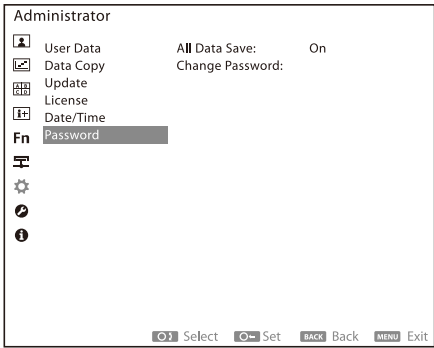
You can set or change the date and time.



Submenu	Setting
Year	Set the year.
Month	Set the month.
Day	Set the day.
Hour	Set the hour (24-hour display).
Minute	Set the minute.
Cancel	Finishes setting without applying the changed or confirmed settings.

Submenu	Setting
Confirm	Applies the changed or confirmed settings. The amount of seconds is set to 0 seconds.

Password



Submenu	Setting
All Data Save	Select whether a password will be needed to perform an All Data Save.
Change Password	Changes the password.

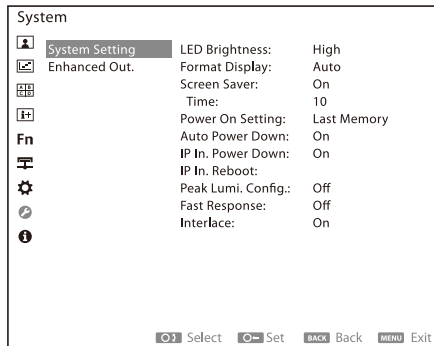
Note

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.

Note

When IMD is set to On, "Auto" displays the format information for only about two seconds.

Submenu	Setting
Screen Saver	Turns the screen saver On/Off. (Default value: On) • On: When the time set in "Time" elapses while a static image is displayed, the screen brightness will be automatically decreased to reduce burn-in caused by continuing to display a fixed pattern. To return to the original brightness, input an image signal or press any button on the front panel. The STATUS indicator flashes every 2 seconds while the screen saver is on. Before the screen saver starts, the STATUS indicator flashes every second to notify that the screen saver will start. • Off: Turns the screen saver off.

Note

While the screen saver is on, the following are not displayed.

- WFM (wave form monitor)
- VS (vector scope)
- CGS (color gamut scope)
- ALM (audio level meter)
- Marker
- Time Code
- Closed Caption
- IMD (In Monitor Display)
- False Color Scale
- Grid Display
- Tally
- Gamut Marker

Time	Sets the amount of wait time after a static image is detected until the screen saver starts. (Unit: minutes/ Default value: 10) • 2 • 10 • 30
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.

Submenu	Setting
IP In. Power Down	Set the power supply for the IP IF block. (Default value: On) • Off: Power is supplied for the IP IF block. • On: Power is not supplied for the IP IF block. Set this if you do not use IP input.
IP In. Reboot	Restart the IP IF block. • Cancel: Cancels restarting. • Confirm: Performs restarting.
Peak Lumi. Config.	Set the peak brightness of the monitor. (Default value: Off) This setting is applied to the HDR display. • Off: The small area peak brightness becomes 1000 cd/m². The flat field upper limit brightness also becomes 1000 cd/m². • 2x/LP: The small area peak brightness becomes 2000 cd/m². The flat field upper limit brightness becomes 500 cd/m². The flat field brightness is limited so as to reduce the panel temperature rise and the cooling fan noise. • 2x: The small area peak brightness becomes 2000 cd/m². The flat field upper limit brightness becomes 1000 cd/m². • 4x: The small area peak brightness becomes 4000 cd/m². The flat field upper limit brightness becomes 1000 cd/m².
Fast Response	This function can be set when the optional "BVML-F10" license (sold separately) is enabled. Set the fast video response function. (Default value: Off) • Off: Sets the fast video response function to off. • Medium: Fast video response display is possible. The brightness of the HDR display becomes 1/2. • High: The fastest video response display is possible. The brightness of the HDR display becomes 1/4.

Submenu	Setting
Interlace	The interlace signal can be displayed as an interlaced image by inserting a black line without passing through the I/P conversion process. An image more faithful to the original signal method with a texture like that of a CRT is obtained. (Default value: On) • On: Displays by interlacing. • Off: Displays progressive conversion signals by I/P conversion processing.

Note

In the interlaced display, the brightness of the HDR display is reduced to half. When in a setting other than HDR display, its brightness is set to the same level with the normal display by raising the gain.

Enhanced Out.

This setting is available by enabling one of the optional "BVML-H10", "BVML-S10", "BVML-T10" licenses (sold separately) (Only the default setting is valid for "BVML-T10"). This function enables the output of SDI signals, synchronized with input SDI/IP streams, from the ENHANCED MONITOR OUT terminal.

System		
System Setting	Out. Image(Single):	Displayed
Enhanced Out.	Fix. EMO Ch.:	Ch.1
	Fix. LUT Assign:	EMO
	Fix. EMO Conv.:	Off
Input to Output		
2160/48-60P:	2160/48-60P_12G	
2160/24-30P(PsF):	2160/24-30P_6G	
1080/48-60P:	1080/48-60P_3G-A	
1080/50-60I	1080/50-60L_1.5G	
1080/24-30PsF	1080/24-30Ps_1.5G	
1080/24-30P	1080/24-30P_1.5G	
720/24-60P	720/24-60P_1.5G	
Signal Format	422 YCbCr 10bit	
RGB/YCC Range:	Limited	

Note

If you select "Displayed" under "Out. Image(Single)", the output signal from the EMO terminal may also be disturbed due to momentary distortions on the display screen from the switching of functions. Select "Fixed" if the effect on the output signal from the EMO terminal becomes an issue.

Submenu	Setting
Out. Image(Single)	Select which input signal to output from the Enhanced Monitor Out (EMO) terminal. (Default value: Displayed) • Displayed: Outputs the input signal of the displayed screen. • Fixed: Outputs the input signal set to the channel that is selected separately from the input signal of the displayed screen. When "Fixed" is selected, "Quad View" (page 51) and "Side by Side" (page 52) cannot be set to On.
Fix. EMO Ch.	Select the setting channel of the input signal when "Fixed" is selected. (Default value: Ch.1) • Ch.1 - Ch.30

Notes

- When the input signal of the setting channel of "Fix. EMO Ch." is HDMI, it cannot be output to Enhanced Monitor Out.
- If the input terminal settings of the displayed screen and each setting channel of "Fix. EMO Ch." are overlapped, display and EMO output cannot be performed at the same time. For example, if the input terminal 1 of the same SDI is set to "Ch.1" and "Ch.2", display and EMO output cannot be performed at the same time. To simultaneously display and output the same input signal to EMO in different channel settings, input the video of input terminal 1 to another terminal, and set that input terminal to "Ch.2". If a combination of channels that cannot be simultaneously displayed or output to EMO is configured, EMO output will take precedence. In this case, the displayed screen will be black, and the message "Invalid EMO Combination" will be displayed.
- Even if the input terminals are different, 4K SDI or 4K IP streams cannot be simultaneously displayed or output to EMO when either of the input signals is 4K SDI or 4K IP. For example, even if "4K SDI Input1" is set to "Ch.1" and "4K SDI Input3" is set to "Ch.2", they cannot be simultaneously displayed or output to EMO. The EMO output is prioritized, and the displayed screen will be black. The SDI or IP streams for two systems can be displayed simultaneously and output to EMO when both input systems are a combination of 2K SDI or 2K IP streams.

Submenu	Setting
	• When the setting channel of "Fix. EMO Ch." is changed, if it becomes a combination of channels that cannot be simultaneously displayed and output to EMO, EMO output will take precedence. The channel of the displayed screen is internally changed to the same setting channel of the EMO output, and the screen display continues.

Fix. LUT Assign

When the User LUT data is applied to a setting channel, select the destination to apply it to. (Default value: EMO)

- **Displayed & EMO:** When the settings channel of the displayed screen and the settings channel of EMO are the same, User LUT is applied to the displayed screen and EMO.

Example where the settings channel of the displayed screen and the settings channel of EMO are the same:

Displayed: Ch.1 4K SDI Input1
EMO: Ch.1 4K SDI Input1

When the channel set for the displayed screen and the channel set for EMO are different and the input signal set for either channel is 4K SDI, 4K IP stream or HDMI (4K equivalent), User LUT is applied preferentially for EMO.

Example where the settings channel of the displayed screen and the settings channel of EMO are different:

Displayed: Ch.1 HDMI
EMO: Ch.2 4K SDI Input1

- **Displayed:** User LUT is applied only to the displayed screen.
- **EMO:** User LUT is applied only to EMO.

Note

If the channel set for the displayed screen and the channel set for EMO are different and the input signal set for both channels is 2K SDI, 2K IP stream or HDMI (2K equivalent), "Fix. LUT Assign" cannot be selected. The User LUT setting for each set channel is applied to the displayed screen and EMO.

Fix. EMO Conv.

When "Fixed" is selected, select whether to apply Conversion (HDR SDR conversion) to the EMO output. (Default value: Off)

- **On:** Conversion is applied.
- **Off:** Conversion is not applied.

Note

"Fix. EMO Conv." is available when the optional "BVML-H10" license (sold separately) is enabled.

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 ¹⁾	Select a signal format output when the signal system input is "2160/48-60P." (Default value: 2160/48-60P_12G) 2160/48-60P_12G 1080/48-60P_3G-A 1080/50-60I_1.5G
2160/24-30P(PsF) ¹⁾	Select a signal format output when the signal system input is "2160/24-30P(PsF)." (Default value: 2160/24-30P_6G) 2160/24-30P_6G 1080/24-30P_1.5G
1080/48-60P ¹⁾	Select a signal format output when the signal system input is "1080/48-60P." (Default value: 1080/48-60P_3G-A) 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 ¹⁾	Select a Video Range for signal output. (Default value: Limited) - Limited - Full

Note

When an S-Log3 signal is output, the internal fixed value is applied regardless of the setting value.

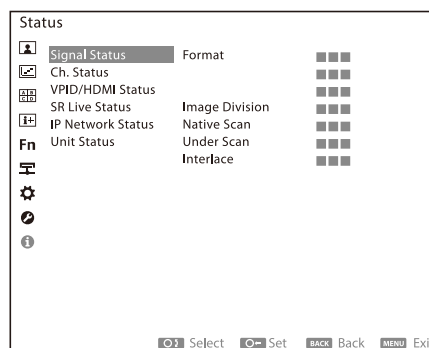
1) Cannot be selected when "BVML-T10" is enabled.

i Status menu

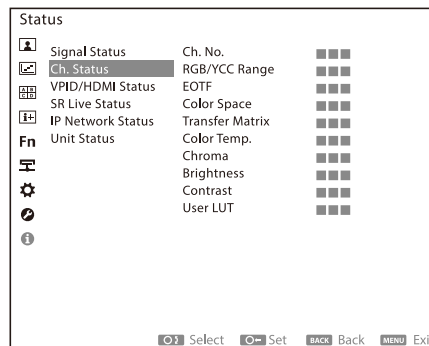
The status menu displays the current status of the unit. The items displayed vary depending on the input signal type and display mode. For "VPID/HDMI Status (for the SDI/IP stream input)", the PID information of the Single-Link SDI equivalent to the IP stream (video data) is displayed during IP input. For "IP Network Status" and "Unit Status", some items are not displayed unless you turn off "IP In. Power Down" (page 71).

For Single View

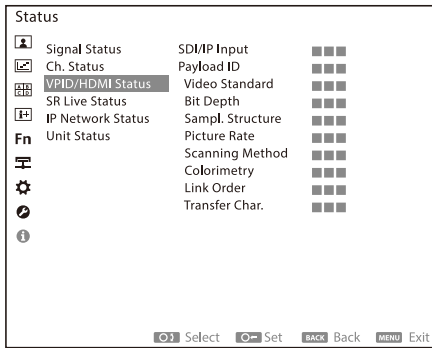
Signal Status



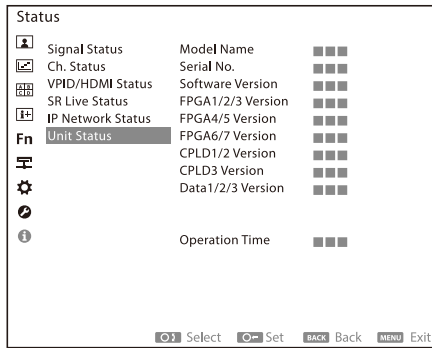
Ch. Status



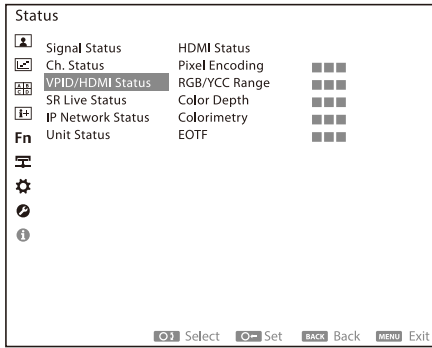
VPID/HDMI Status (for the SDI/IP stream input)



Unit Status

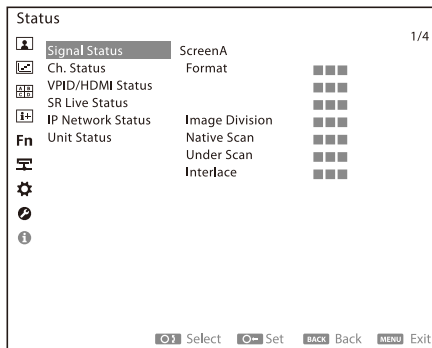


VPID/HDMI Status (for the HDMI signal input)

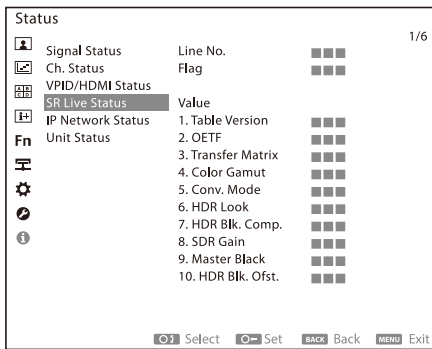


For Quad View

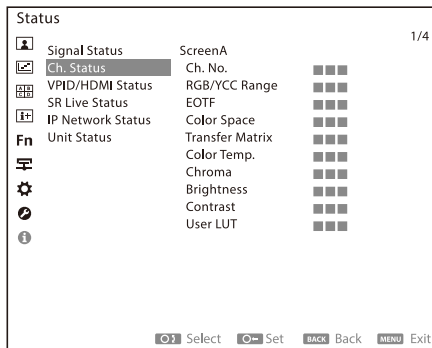
Signal Status



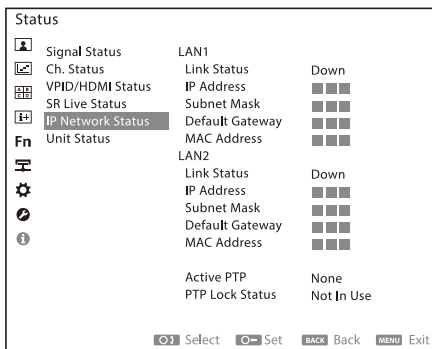
SR Live Status



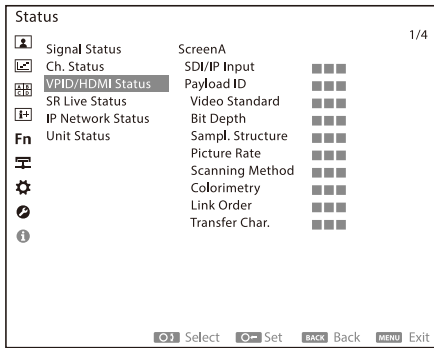
Ch. Status



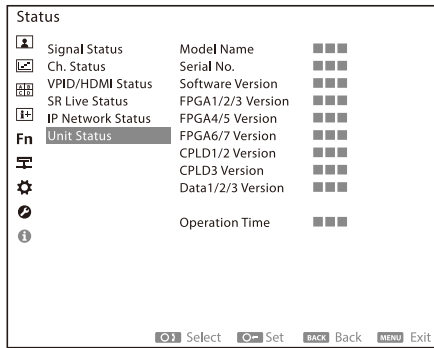
IP Network Status



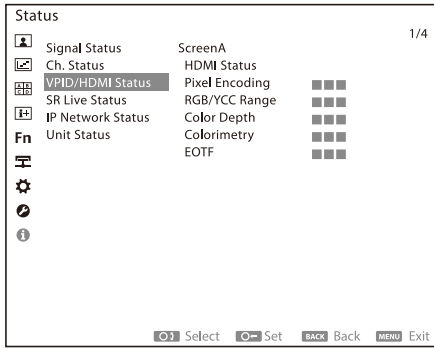
VPID/HDMI Status (for the SDI/IP stream input)



Unit Status

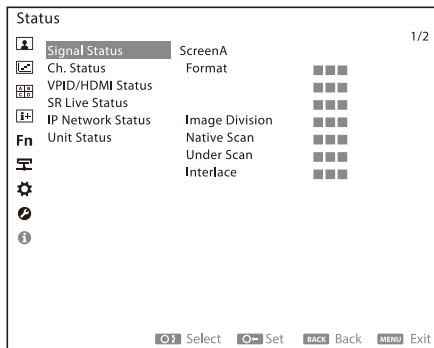


VPID/HDMI Status (for the HDMI signal input)

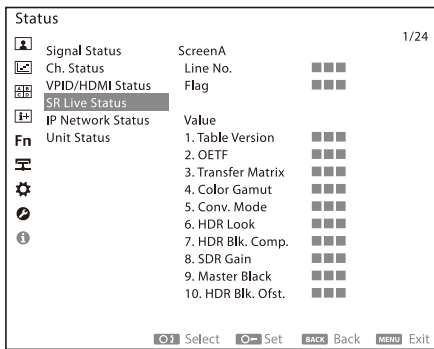


For Side by Side

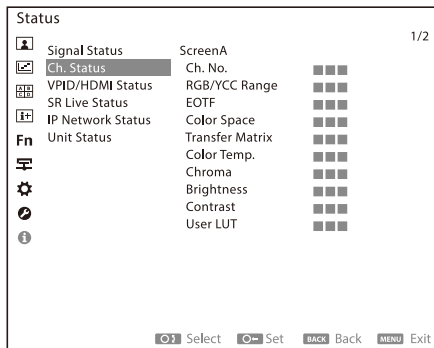
Signal Status



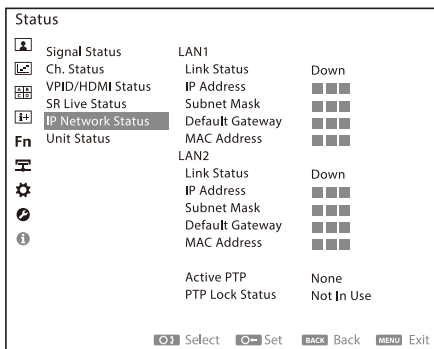
SR Live Status



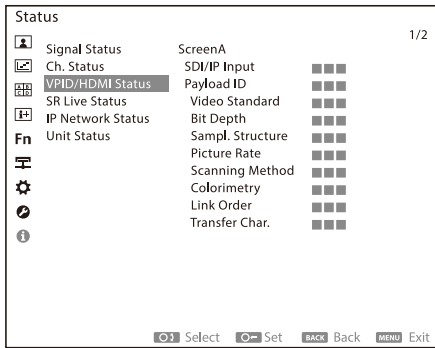
Ch. Status



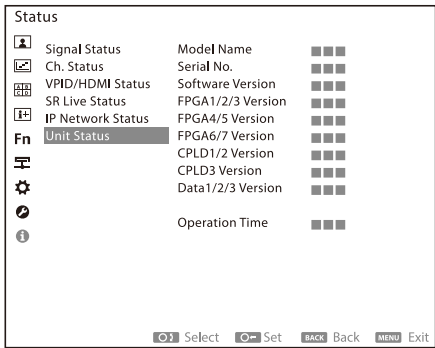
IP Network Status



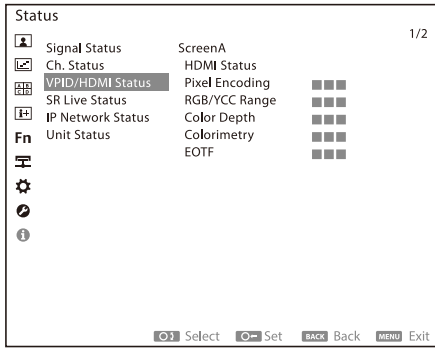
VPID/HDMI Status (for the SDI/IP stream input)



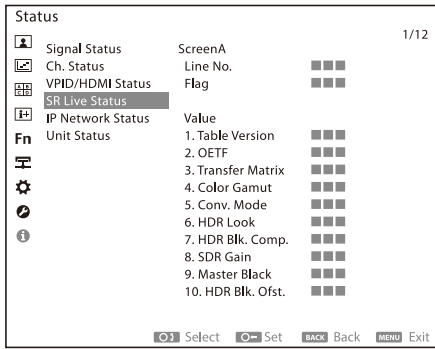
Unit Status



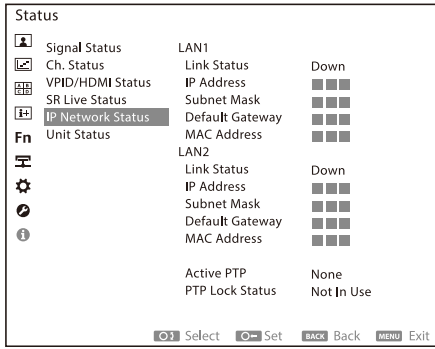
VPID/HDMI Status (for the HDMI signal input)



SR Live Status



IP Network 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 by enabling one of the optional "BVML-H10", "BVML-S10" or "BVML-T10" licenses (sold separately).

The supported LUT types and input/output Video Range are shown below.

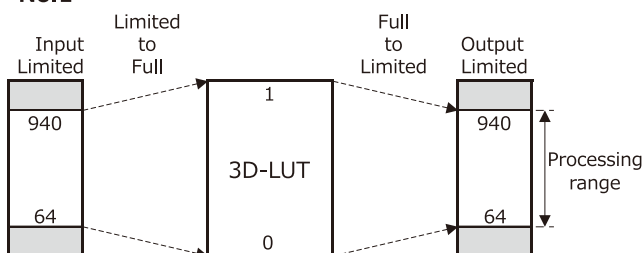
The LUT diagrams are referenced from "HDR Production: Choosing Format Conversion Look-Up Tables" published by BBC Research & Development.

<https://www.bbc.co.uk/rd/blog/2020-06-lut-format-conversion-hdr-video-production>

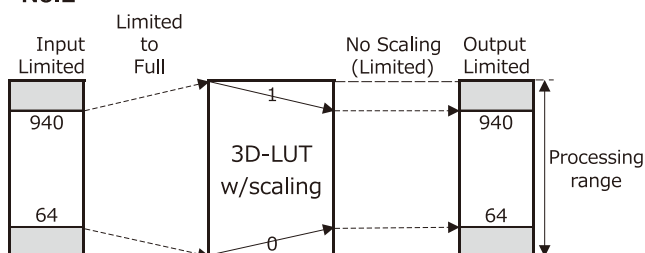
Supported LUT types and input/output Video Range

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 for which the output Video Range is converted.

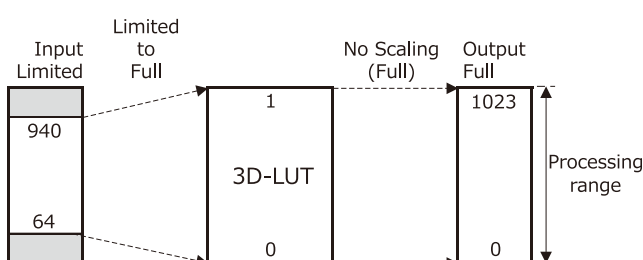
No.1



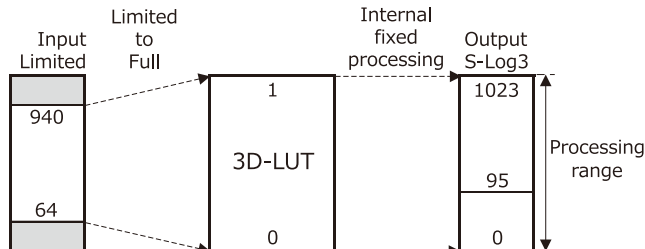
No.2



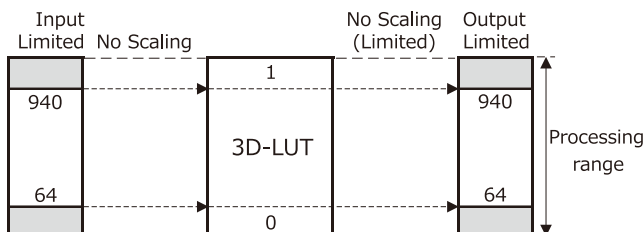
No.3



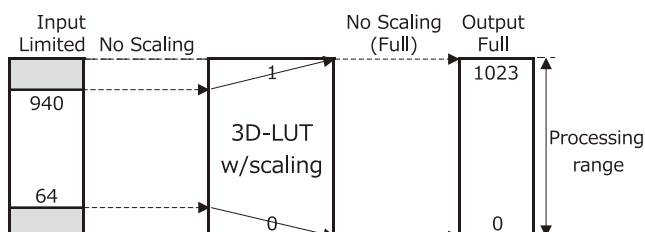
No.4



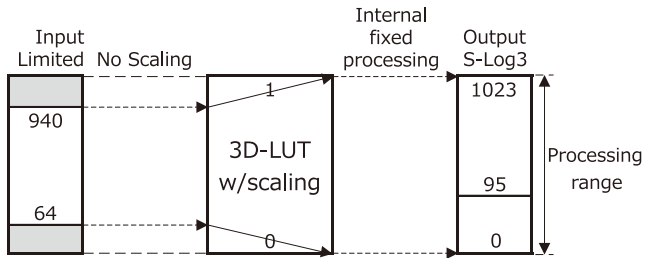
No.5



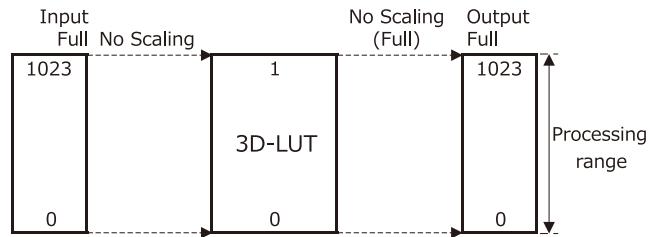
No.6



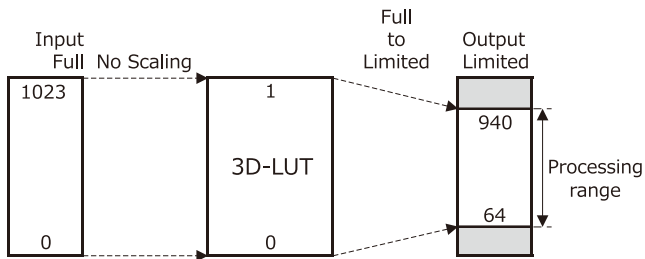
No.7



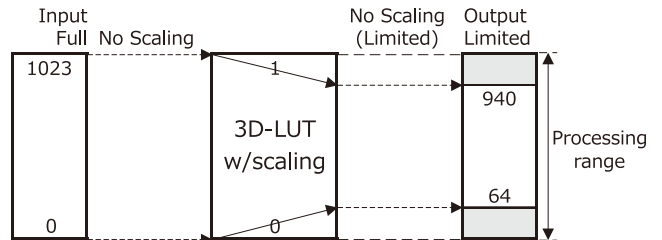
No.8



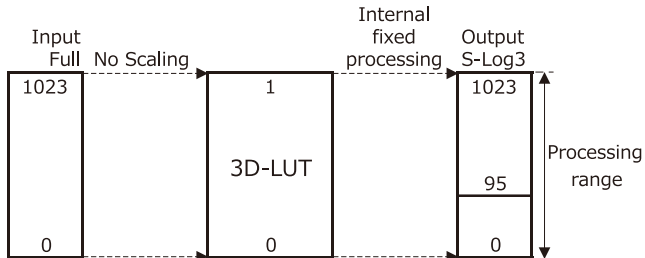
No.9



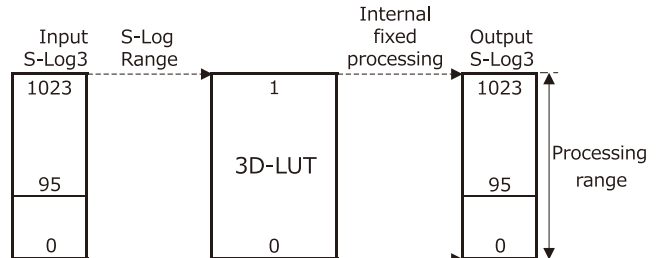
No.10



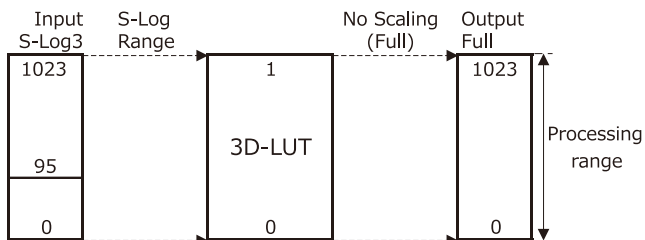
No.11



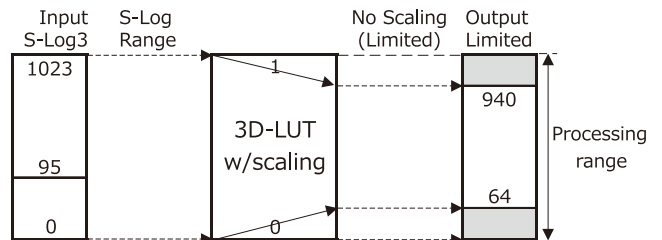
No.12



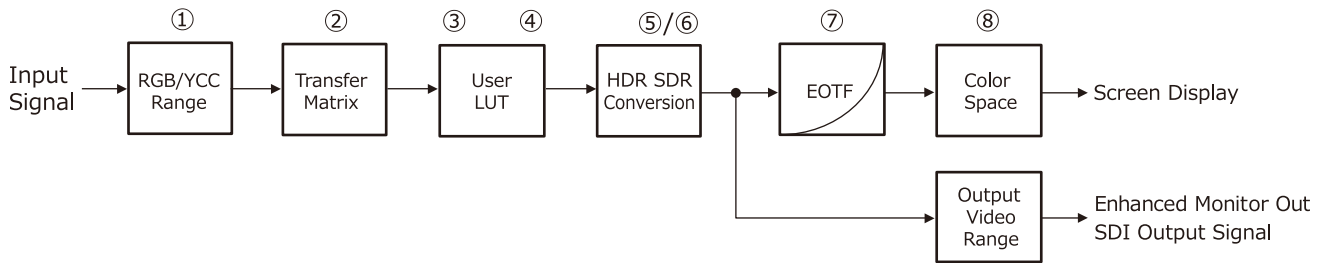
No.13



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 31).
- 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.
- 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 "BVML-H10" 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.

- ② "Transfer Matrix": When inputting YCbCr, set the matrix for YCbCr to RGB conversion.
- ③ "Input": "S-Log Range" (① "RGB/YCC Range" is set to the internal fixed value)
- ⑦ "EOTF": "S-Log3(Live HDR)" or "S-Log3" (④ "Output" is set to the internal fixed value)
- 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(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 S-Log3 (Full Range) input signals

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

- ② "Transfer Matrix": Set the YCbCr to RGB transfer matrix for YCbCr input
- ③ "Input": "S-Log Range" (① "RGB/YCC Range" is set to the internal fixed value)
- ④ "Output": "No Scaling(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.

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(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.

HDR-SDR Conversion

This function is available with the optional "BVML-H10" 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

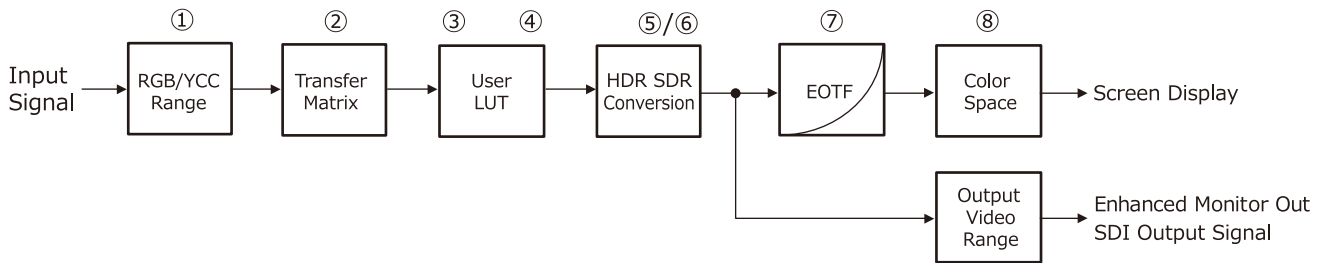
Converts HDR signals to SDR signals while maintaining the same image representation (appearance) on the monitor (However, signals with an SDR output level exceeding 109% will be clipped to 109%, causing highlight clipping, etc.). The image quality adjustment settings other than "Knee," "HDR SDR Gain," "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.
- 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 85.
- 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 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 54.

- 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. Also, 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 “BVML-H10” 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 37).

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 (HDR SDR Relation Table) that need to be set to generate an SDR signal from an HDR signal on the VANC area of SDI signals or by mapping them on the ancillary data of an IP stream, the setting values are displayed and automatically applied to the HDR to SDR conversion settings. See page 122 for the supported signal formats for receiving SR Live Metadata.

Notes

- 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 supported
20	Knee Radius	Not supported
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
24	HDR Knee Point	Knee point level of HDR Knee function for HDR video

No.	Item	Description
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 by enabling one of the optional "BVML-H10", "BVML-S10" or "BVML-T10" licenses (sold separately). The video signal displayed on the screen is synchronized with the input SDI/IP stream and output as an SDI signal from the ENHANCED MONITOR OUT connector. 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. ¹⁾ It also allows the output of User LUT-applied signals and HDR-SDR converted signals. See page 132 for the correspondence table between input SDI/IP stream video data signal formats and output SDI signal formats.

1) "BVML-T10" is not supported.

Notes

- HDMI input signals cannot be output.
- The signal structure is fixed at 4:2:2 YCbCr 10bit.
- The superimposed output (transmission) of Embedded Audio data and Time Code data of Ancillary Data (auxiliary data) is supported, but the superimposed output (transmission) of Closed Caption and SR Live Metadata is not supported.
- Embedded Audio supports 48 kHz sampling Audio signals. When the input signal is 4096×2160/60P, 4096×2160/30P, 2048×1080/60P, 2048×1080/30P or 2048×1080/30PsF (including frame rate 1/1.001), it corresponds to 1-8CH, and when the input signal is other than these, it corresponds to 1-16CH.

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 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.
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	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

- 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.

OETF information

User LUT function	HDR-SDR Conversion function	Output SDI Interface	Transfer Characteristics Processing	
OFF	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	Unspecified ¹⁾
			2.4	SDR-TV
			CRT	Unspecified ¹⁾
			2.6	Unspecified ¹⁾
			2.4(HDR)	Unspecified ¹⁾
			S-Log3	Unspecified ¹⁾
			SMPTE ST 2084(PQ)	PQ
			ITU-R BT.2100(HLG)	HLG
ON	OFF	12G/6G/3G-SDI HD-SDI 1080-line	S-Log3(Live HDR)	Unspecified ¹⁾
			HD-SDI 720-line	Not applicable
	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]
			2.4	SDR-TV
			HD-SDI 720-line	Not applicable

- 1) When VPID Auto for BVM-HX310 and VPID/HDMI Auto for BVM-HX3110 and PVM-X3200/X2400/X1800 that received the signal from this output is set to On (enabled), and the Payload ID of Unspecified is received, the EOTF in the "EOTF" menu set manually is applied.

Color gamut information

User LUT function	HDR-SDR Conversion function	Output SDI Interface	Colorimetry processing
OFF	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 UHD TV (ITU-R BT.2020)
			S-Gamut/S-Gamut3 Unknown ²⁾
			S-Gamut3.Cine Unknown ²⁾
			DCI-P3 Unknown ²⁾
			SMPTE-C Unknown ²⁾
ON	OFF	12G/6G/3G-SDI	EBU Unknown ²⁾
			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 UHD TV (ITU-R BT.2020)
			S-Gamut/S-Gamut3 Unknown ²⁾
			S-Gamut3.Cine Unknown ²⁾
			DCI-P3 Unknown ²⁾
OFF	ON	12G/6G/3G-SDI	SMPTE-C Unknown ²⁾
			EBU Unknown ²⁾
			HD-SDI 1080-line Not applicable
			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 UHD TV (ITU-R BT.2020)
ON	ON	12G/6G/3G-SDI	HD-SDI 1080-line Replaced to the setting value of "Out. Color Space" in "Conv. Preset."
			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 UHD TV (ITU-R BT.2020)
			HD-SDI 720-line Not applicable
			Not applicable
			Not applicable
			Not applicable

- 2) When VPID Auto for BVM-HX310 and VPID/HDMI Auto for BVM-HX3110 and PVM-X3200/X2400/X1800 that received the signal from this output is set to On (enabled), and the Payload ID of Unknown is received, ITU-R BT.709 is applied.

Bit depth information

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.

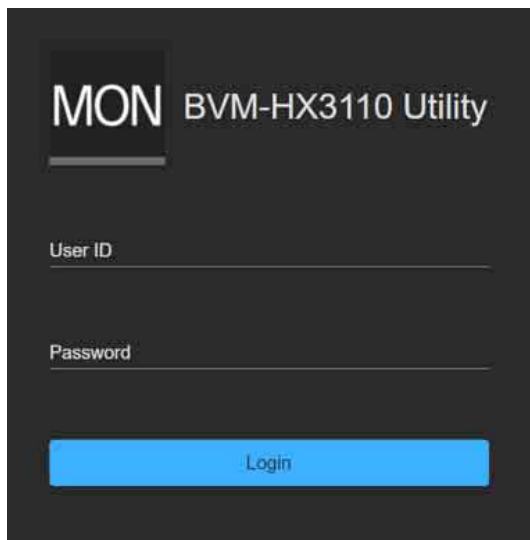
Web Menu

With the Web menu, you can perform settings, operations, and confirmation of setting information related to the IP interface of the machine. To display the Web menu, use a web browser of your computer.

How to Display the Web Menu

- 1 Connect your computer to the same network as this unit.
- 2 Set the TCP/IP setting of the LAN terminal of your computer to the same segment as this unit.
- 3 Launch the Web browser on your computer.
Recommended Web browser: Chrome
Chrome browser and Chrome are trademarks of Google LLC.
- 4 Enter "https://(the IP address of this unit)" in the address bar, and then press the Enter key.

The login screen of the Web menu of this unit is displayed.



- 5 Enter your user ID and password.

The factory default accounts are as follows.

Account Type	User ID	Password
Administrator	admin	nmidev123
Operator	operator	nmidev123

When you log in for the first time, you will be asked to change your password. You can also optionally change your username. For details on changing passwords and usernames, see "System - Account Tab" (page 97).

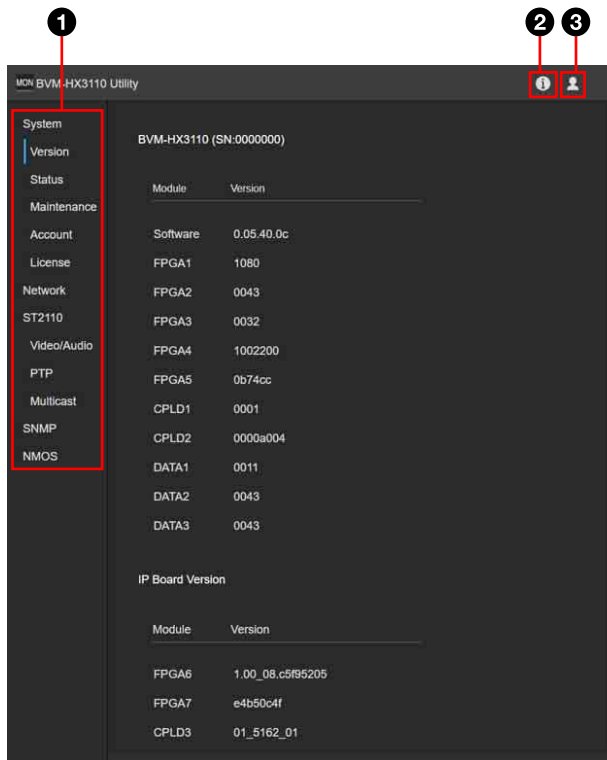
After a successful login, the Web menu for this unit is displayed.

Note

On this unit, if multiple authentication fails, access from that computer will be denied for a while as a security measure.

Screen Structure of the Web Menu

When you launch the Web menu, the following screen is displayed.



1 Tab

You can configure each item. For details on each tab, see page 95 onward.

2 ⓘ (information) button

Displays information about this unit. The following menus are displayed.

About App: Displays information about the Web menu.

License Information: Displays the OSS (Open Source Software) license information regarding the IP interface used by this unit. For other OSS licenses, refer to "NOTICES AND LICENCES FOR SOFTWARE USED IN THIS PRODUCT" (page 137).

3 👤 (user account) button

The following menu is displayed.

Logout: Logs out from the Web menu.

System - Version Tab

Displays versions of software, FPGA, etc.

System

Version

Status

Maintenance

Account

License

Network

ST2110

Video/Audio

PTP

Multicast

SNMP

NMOS

BVM-HX3110 (SN:0000000)

Module	Version
Software	0.05.40.0c
FPGA1	1080
FPGA2	0043
FPGA3	0032
FPGA4	1002200
FPGA5	0b74cc
CPLD1	0001
CPLD2	0000a004
DATA1	0011
DATA2	0043
DATA3	0043

IP Board Version

Module	Version
FPGA6	1.00_08.c5f95205
FPGA7	e4b50c4f
CPLD3	01_5162_01

System - Status Tab

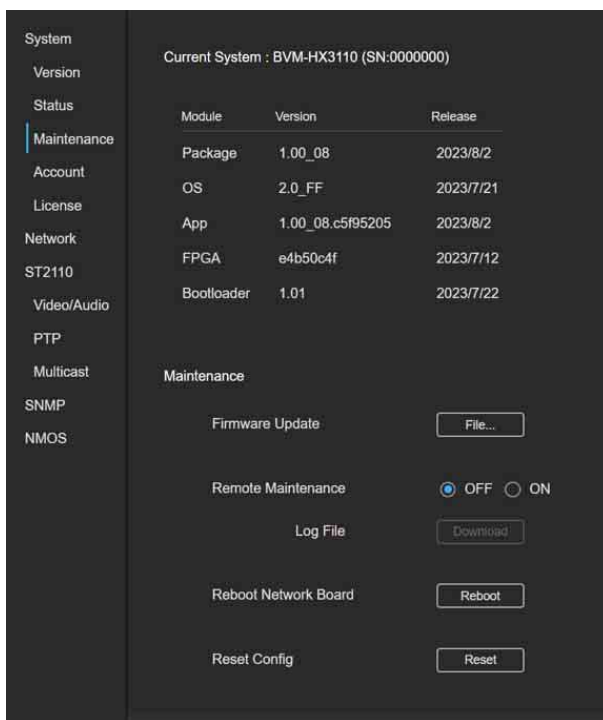
Displays the error and warning information for this unit. For details, refer to “How to Read the Error Codes” (page 111) and “Error Code List” (page 112).

Error/Warning List

No Error/No Warning

System - Maintenance Tab

Configure the maintenance settings.



Module	Version	Release
Package	1.00_08	2023/8/2
OS	2.0_FF	2023/7/21
App	1.00_08.c5f95205	2023/8/2
FPGA	e4b50c4f	2023/7/12
Bootloader	1.01	2023/7/22

Maintenance

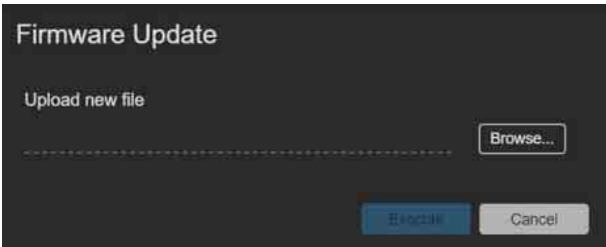
Firmware Update File...

Remote Maintenance ☒ OFF ☐ ON

Log File Download

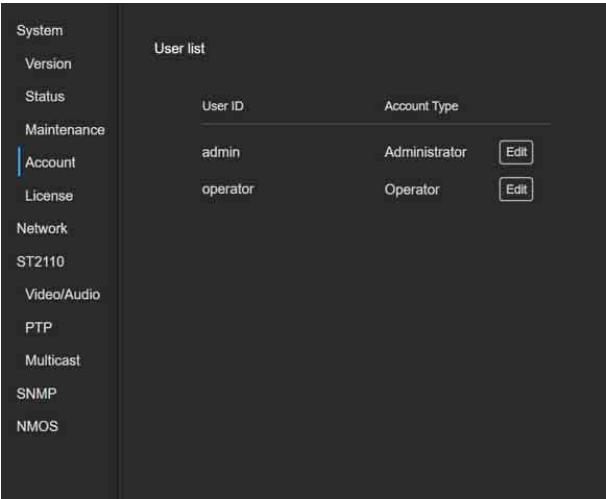
Reboot Network Board Reboot

Reset Config Reset

Item	Description
Firmware Update	When you click the [File...] button, a screen to specify the update file is displayed.  Press the [Browse...] button to specify the update file, and then press the [Execute] button. Use the update file without unzipping it.
Remote Maintenance	Turn [ON] to enable log retrieval.
Log File	When [Remote Maintenance] is set to [ON], you can download the log file.
Reboot Network Board	The IP interface board is restarted.
Reset Config	The IP interface board is restarted, and IP-related settings excluding network settings are reset to the factory settings.

System - Account Tab

Configure the account settings.



Click [Edit] to change the settings.

Note

You can register only one user account per account type.

After setting each item, click [Update].



The factory default accounts are as follows.

Account Type	User ID	Password
Administrator	admin	nmidev123
Operator	operator	nmidev123

The function restrictions on the Web menu of this unit due to the difference in Account Type are as follows.

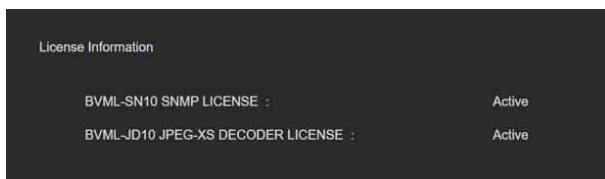
Category		Function	Account Type	
			Administrator (no restrictions)	Operator
System	Status	Displaying error status, board uptime, etc.	○	○
	Version	Displaying versions of software, FPGA, etc.	○	○
	Maintenance	Firmware update	○	×
		Remote maintenance	○	×
		Log download	○	×
		Restarting the IP interface block	○	×
		Resetting the setting values	○	×
	Account	Changing the User IDs and Passwords of all users (Administrator and Operator)	○	×
		Changing only the User ID and Password of the Operator authority	○	○
	License	Displaying the enabled optional license (sold separately)	○	○
Network			○	○
ST2110	Video/Audio	Changing settings of video and audio of the input IP stream	○	○
	PTP	Change PTP settings	○	○
	Stream	Changing settings of the multicast address	○	○
SNMP		Changing parameter settings of SNMP	○	○
NMOS		Changing parameter settings of NMOS	○	○
Header		Performing logout	○	○
		Displaying About App dialog (displaying certificate information)	○	○
		License Information (OSS license information display)	○	○

○ : Adjustable/can be set

× : Not adjustable/cannot be set

System - License Tab

Displays activation status of the optional license (sold separately) on the IP interface. During the trial license period (page 119), the license is displayed as activated.



Network Tab

Displays the network setting values.
The IP network setting values set in “IP Network” (page 63) of the monitor menu are displayed.

System

Version

Status

Maintenance

Account

License

Network

ST2110

Video/Audio

PTP

Multicast

SNMP

NMOS

Network Settings

DHCP

Off

FEC Type

RS-FEC

Hitless Failover

Enable

LAN1

LAN2

Enable/Disable

Enable

Enable

IP Address

192.168.10.10

192.168.110.10

Subnetmask

255.255.255.0

255.255.255.0

Gateway

192.168.10.254

192.168.110.254

Network Status

LAN1

LAN2

MAC Address

88:c9:e8:ac:d9:38

88:c9:e8:ac:d9:39

Link Status

UP

UP

SFP Type

25GBase-SR

25GBase-SR

MTU

1500

1500

Auto Negotiation

Disabled

Disabled

Link Speed

25000

25000

ST2110 - Video/Audio Tab

Configure the settings on video and audio of an IP stream input. You can set the monitor menu “IP Input Config.” (page 28) from the Web menu.

[Apply] button

Applies the Video and Audio settings.

Item	Description	Setting
IP Input Configuration	The preset number set in the monitor menu “IP Input Config.” (page 28) is displayed. (Default value: Preset1)	Preset1 - 10 (display only)
Name	The name set to the preset number is displayed. (Default value: QFHD/59P)	- (display only)
Clean Switch	Select whether to enable or disable the Clean Switch function. (Default value: Disable)	• Enable • Disable
Frame Rate	Select the frame rate of the input IP stream video data. (Default value: 59.94/29.97)	• 59.94/29.97 • 50/25 • 24 • 23.98
Signal Format	Signal structure available on this unit is displayed.	4:2:2 YCbCr 10bit (fixed)
4K/2K IP Input1		
Status	Displays valid (Valid)/invalid (Invalid) of the IP Input1 input. (Default value: Valid)	• Valid • Invalid
Priority	Select the priority order of the IP Input1 input. (Default value: Priority1) • Priority1 - 4: Select the priority order. [Priority1] is the first priority. • No Assign: Select when not using IP Input1 input.	• Priority1 • Priority2 • Priority3 • Priority4 • No Assign

Image Format	According to the frame rate of the input IP stream video data, select the image format. Select the image format according to the frame rate set in [Frame Rate]. (Default value: 3840x2160/59.94P(12G))	When Frame Rate: 59.94/29.97 • 3840x2160/59.94P(12G) • 3840x2160/29.97P(6G) • 1920x1080/59.94P(3G) • 1920x1080/59.94I(1.5G) • 1920x1080/29.97PsF(1.5G) • 1280x720/59.94P(1.5G) When Frame Rate: 50/25 • 3840x2160/50P(12G) • 3840x2160/25P(6G) • 1920x1080/50P(3G) • 1920x1080/50I(1.5G) • 1920x1080/25PsF(1.5G) • 1280x720/50P(1.5G) When Frame Rate: 24 • 3840x2160/24P(6G) • 1920x1080/24PsF(1.5G) When Frame Rate: 23.98 • 3840x2160/24P(6G) • 1920x1080/24PsF(1.5G)
Video Compression	Select whether the input IP stream video data is in uncompressed (Uncompressed) format or in compressed (JPEG XS) format. (Default value: Uncompressed)	• Uncompressed • JPEG XS
Audio Interpolate	If there is an excess or shortage in audio data, select whether to complement (Interpolate) the data. (Default value: Enable)	• Enable • Disable
Audio CH	Select the number of incoming channels for the audio data. (Default value: 16 CH) Note The setting value must match the number of audio channels set on the transmitting device.	• 2 CH • 4 CH • 8 CH • 16 CH
2K IP Input2		
Status	Displays valid (Valid)/invalid (Invalid) of the IP Input2 input. (Default value: Invalid)	• Valid • Invalid
Priority	Select the priority order of the IP Input2 input. (Default value: No Assign) • Priority1 - 4: Select the priority order. [Priority1] is the first priority. • No Assign: Select when not using IP Input2 input.	• Priority1 • Priority2 • Priority3 • Priority4 • No Assign
Image Format	According to the frame rate of the input IP stream video data, select the image format. Select the image format according to the frame rate set in [Frame Rate]. (Default value: 1920x1080/59.94P(3G))	When Frame Rate: 59.94/29.97 • 1920x1080/59.94P(3G) • 1920x1080/59.94I(1.5G) • 1920x1080/29.97PsF(1.5G) • 1280x720/59.94P(1.5G) When Frame Rate: 50/25 • 1920x1080/50P(3G) • 1920x1080/50I(1.5G) • 1920x1080/25PsF(1.5G) • 1280x720/50P(1.5G) When Frame Rate: 24 • 1920x1080/24PsF(1.5G) When Frame Rate: 23.98 • 1920x1080/24PsF(1.5G)
Video Compression	Select whether the input IP stream video data is in uncompressed (Uncompressed) format or in compressed (JPEG XS) format. (Default value: Uncompressed)	• Uncompressed • JPEG XS

Audio Interpolate	If there is an excess or shortage in audio data, select whether to complement (Interpolate) the data. (Default value: Enable)	• Enable • Disable
Audio CH	Select the number of incoming channels for the audio data. Note The setting value must match the number of audio channels set on the transmitting device.	• 2 CH • 4 CH • 8 CH • 16 CH
4K/2K IP Input3		
The setting items and the selectable settings are the same as those for 4K/2K IP Input1.		
2K IP Input4		
The setting items and the selectable settings are the same as those for 2K IP Input2.		

Notes

- The IP stream bandwidth for available input is 24G/12G by disabling/enabling the Clean Switch regardless of whether the video data is in a compressed or uncompressed format. According to the priority, the bandwidth of the input signal set in each "IP Input" is added. If the total is within the bandwidth for available input, the "IP Input" is judged to be valid (Valid), and if it is outside the bandwidth, the "IP Input" is judged to be invalid (Invalid). If [No Assign] is set to [Priority], the "IP Input" is invalid (Invalid).

Example: When [Clean Switch] is set as [Disable] (bandwidth for available input: 24G)

4K/2K IP Input1	Priority1	2160/50P	12G	Valid
2K IP Input2	Priority3	1080/50P	3G	Invalid
4K/2K IP Input3	Priority2	2160/50P	12G	Valid
2K IP Input4	Priority4	1080/50P	3G	Invalid

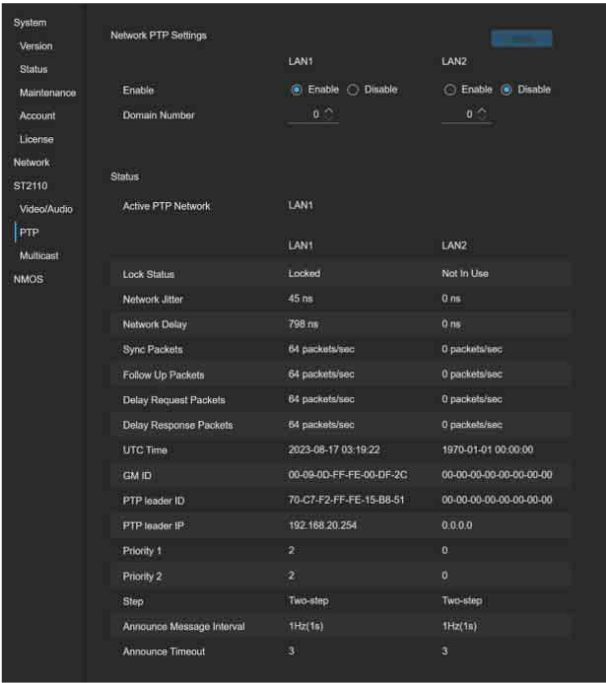
Example: When [Clean Switch] is set as [Enable] (bandwidth for available input: 12G)

4K/2K IP Input1	No Assign	2160/50P	12G	Invalid
2K IP Input2	Priority4	1080/50P	3G	Valid
4K/2K IP Input3	Priority3	2160/25P	6G	Valid
2K IP Input4	Priority2	1080/50P	3G	Valid

- [JPEG XS] under [Video Compression] can be set when the optional "BVML-JD10" license (sold separately) is enabled.

ST2110 - PTP Tab

Configure the PTP settings. You can set the monitor menu “IP PTP” (page 64) from the Web menu. The operating status of the PTP is also displayed.



[Apply] button

Applies the PTP settings.

Network PTP Settings

Configure the PTP settings for the IP network.

Note

LAN1 cannot be set to Disable, and LAN2 cannot be set to Enable.

Item	Description	Setting
LAN1		
Enable	Select whether to enable or disable PTP. (Default value: Enable)	• Enable • Disable
Domain Number	Set the domain number of PTP. (Default value: 127)	• 0 - 127
LAN2		
Enable	Select whether to enable or disable PTP. (Default value: Disable)	• Enable • Disable
Domain Number	Set the domain number of PTP. (Default value: 127)	• 0 - 127

Status

The operating status of the PTP is displayed.

Item	Description
Active PTP Network	Indicates whether PTP being received on the LAN1 or the LAN2 network is being used as the source for the PTP synchronization of a device.
Lock Status	The lock status of the PTP is displayed as follows. Not In Use: PTP is not used. Freerun: No PTP leader exists. Locked: PTP is locked. Locking: PTP is about to be locked.
Network Jitter	Displays the Jitter value of the PTP message between the PTP leader and the device.
Network Delay	Displays the Delay value of the PTP message between the PTP leader and the device.
Sync Packets	Displays the number of Sync packets per second received from the PTP leader.
Follow Up Packets	Displays the number of Follow Up packets per second received from the PTP leader.
Delay Request Packets	Displays the number of Delay Request packets per second that the device is sending.
Delay Response Packets	Displays the number of Delay Response packets per second received from the PTP leader.
UTC Time	The UTC time is displayed.
GM ID	Displays the grandmaster ID (Grand master clock Identity) included in the PTP leader Announce message.
PTP leader ID	Displays the ID of the PTP leader.
PTP leader IP	Display the IP address of the PTP leader.
Priority 1	Priority 1 for the PTP leader is displayed.
Priority 2	Priority 2 for the PTP leader is displayed.
Step	Displays the number of steps (One-step or Two-step) in the Sync and Follow Up messages.
Announce Message Interval	Displays the interval between Announce messages sent by the PTP leader.
Announce Timeout	Displays the number of times before the PTP leader Announce message times out.

ST2110 - Multicast Tab

Configure the Multicast Address settings. You can set the monitor menu “IP Multicast” (page 64) from the Web menu.

System

Version

Status

Maintenance

Account

License

Network

ST2110

Video/Audio

PTP

Multicast

SNMP

NMOS

Multicast Address Settings

Power On Setting

Last Memory

Multicast Preset

Stream	Status	LAN	Multicast address	Port	Source address
Video	Receiving	1	232.0.1.7	30000	192.168.10.51
		2	232.0.1.8	30000	192.168.110.51
4K/2K IP Input1	Receiving	1	232.0.1.9	30000	192.168.10.51
		2	232.0.1.10	30000	192.168.110.51
Meta	Receiving	1	232.0.1.11	30000	192.168.10.51
		2	232.0.1.12	30000	192.168.110.51
Video	Unreceiving	1	132.0.1.1	30000	192.168.10.51
		2	232.0.1.3	30000	192.168.110.51
4K IP Input2	Unreceiving	1	132.0.1.5	30000	192.168.10.51
		2	232.0.1.6	30000	192.168.110.51
Meta	Unreceiving	1	132.0.1.10	30000	192.168.10.51
		2	232.0.1.10	30000	192.168.110.51
Video	Receiving	1	232.0.1.7	30000	192.168.10.51
		2	232.0.1.8	30000	192.168.110.51
4K/2K IP Input3	Receiving	1	232.0.1.9	30000	192.168.10.51
		2	232.0.1.10	30000	192.168.110.51
Meta	Receiving	1	232.0.1.11	30000	192.168.10.51
		2	232.0.1.12	30000	192.168.110.51
Video	Unreceiving	1	132.0.1.1	30000	192.168.10.51
		2	232.0.1.3	30000	192.168.110.51
4K IP Input4	Unreceiving	1	132.0.1.5	30000	192.168.10.51
		2	232.0.1.6	30000	192.168.110.51
Meta	Unreceiving	1	132.0.1.10	30000	192.168.10.51
		2	232.0.1.10	30000	192.168.110.51

Note

As for the settings from the broadcast controller and the manual settings of the Multicast tab, the ones configured last are enabled.

[Apply] button

Applies the multicast address settings.

Item	Description		Setting value	
Power On Setting	Select whether to use the multicast address setting value configured last or a preset value when powered on. (Default value: Last Memory)		- Last Memory - Multicast Preset	
4K/2K IP Input1				
Video	Status	Displays the IP stream (video data) reception status. Receiving: An IP stream (video data) is being received. Available: An IP stream (video data) can be received but is not currently being received. Unavailable: An IP stream (video data) cannot be received.		
	LAN1			
	Multicast address	Set the multicast address of the video data. (Default value: 0.0.0.0)	0.0.0.0 224.0.2.0 - 239.255.255.255	
	Port	Set the video data port number. (Default value: 30000)	100 - 65535	
	Source address	Set the IP address of the video data source. (Default value: 0.0.0.0)	0.0.0.0 - 255.255.255.255	
	LAN2			
	The setting items and the setting values are the same as those for LAN1.			
	Audio	Status	Displays the IP stream (audio data) reception status. Receiving: An IP stream (audio data) is being received. Available: An IP stream (audio data) can be received but is not currently being received. Unavailable: An IP stream (audio data) cannot be received.	
		LAN1		
		Multicast address	Set the multicast address of the audio data. (Default value: 0.0.0.0)	0.0.0.0 224.0.2.0 - 239.255.255.255
Port		Set the audio data port number. (Default value: 30000)	100 - 65535	
Source address		Set the IP address of the audio data source. (Default value: 0.0.0.0)	0.0.0.0 - 255.255.255.255	
LAN2				
The setting items and the setting values are the same as those for LAN1.				
Meta		Status	Displays the IP stream (ancillary data) reception status. Receiving: An IP stream (ancillary data) is being received. Available: An IP stream (ancillary data) can be received but is not currently being received. Unavailable: An IP stream (ancillary data) cannot be received.	
		LAN1		
		Multicast address	Set the multicast address of the ancillary data (metadata). (Default value: 0.0.0.0)	0.0.0.0 224.0.2.0 - 239.255.255.255
	Port	Set the ancillary data (metadata) port number. (Default value: 30000)	100 - 65535	
	Source address	Set the IP address of the ancillary data (metadata) source. (Default value: 0.0.0.0)	0.0.0.0 - 255.255.255.255	
	LAN2			
	The setting items and the setting values are the same as those for LAN1.			
	2K IP Input2			
	The setting items and the setting values are the same as those for 4K/2K IP Input1.			
	4K/2K IP Input3:			
The setting items and the setting values are the same as those for 4K/2K IP Input1.				
2K IP Input4:				
The setting items and the setting values are the same as those for 4K/2K IP Input1.				

SNMP Tab

Configure the SNMP settings.

Note

To use the SNMP function, the optional “BVML-SN10” license (sold separately) must be enabled. If disabled, the SNMP tab is not displayed.

SNMP Agent

Configure the basic settings on SNMP. Click the [Apply] button to apply the settings.

Item	Description	Setting
SNMP Agent	Select whether to enable or disable the SNMP function. (Default value: Disable)	- Enable - Disable
Port	Set the standby port number of this unit as the SNMP Agent. (Default value: 161)	0 - 65535
SysContact	Set the system administrator information. Enter an email address by convention.	Up to 64 ASCII code characters
SysLocation	Set the system location information.	Up to 64 ASCII code characters

Community Setting List

Configure the settings on MIB access from the SNMP manager. Click the [Apply] button to apply the settings.

Item	Description	Setting
Community Setting List	Select whether to enable or disable the SNMP community. (Default value: Disable)	- Enable - Disable
Name	Set the SNMP community name.	Up to 64 ASCII code characters
Network Interface	Displays the corresponding network interface of this unit. (display only)	1st: LAN1&LAN2 2nd: LAN1&LAN2
Version	Set the SNMP version. (Default value: V1 & V2C)	- V1 & V2C - V2C
Mode	Displays the access privilege for MIB information. (display only)	READ ONLY

Trap Settings

Configure the settings on the Trap notification to SNMP Manager. Click the [Apply] button to apply the settings.

Item	Description	Setting
Trap Settings	Select whether to enable or disable the SNMP trap function. (Default value: Disable)	• Enable • Disable
Name	Set the SNMP community name.	Up to 64 ASCII code characters
Network Interface	Displays the corresponding network interface of this unit. (display only)	1st: LAN1 2nd: LAN2
Destination IP Address	Set the address to which the trap is sent. (Default value: 0.0.0.0)	0.0.0.0 - 223.255.255.255
Destination Port	Set the port number of the trap destination. (Default value: 162)	0 - 65535
Version	Set the SNMP version. (Default value: V2C)	• V1 • V2C

Test Trap

Click the [Send] button to immediately issue a test trap for the system validation according to [Trap Settings].

MIB data

Click the [Retrieve] button to display a list of MIB information in a separate tab of your Web browser.

NMOS Tab

Configure the settings on NMOS.

System

Version

Status

Maintenance

Account

License

Network

ST2110

Video/Audio

PTP

Multicast

SNMP

NMOS

NMOS

Apply

☒ Enable ☐ Disable

Network Interface LAN1

IS-04 Node Port 3001

IS-05 Connection Port 3002

Registration & Discovery (IS-04)

Node Label BVM-HX3110

RDS Discovery ☐ Enable ☒ Disable

DNS ☐ DHCP ☒ Manual

IP Address

Service Domain

RDS

Primary IP Address 192.168.90.200

Primary Port 18872

Secondary IP Address 0.0.0.0

Secondary Port 0

Status

DNS IP Address

IS-04 Service Domain

RDS Connection REGISTERED, 192.168.90.200:18872

[Apply] button

Applies the NMOS settings immediately.

NMOS

Item	Description	Setting
Enable/Disable	Select whether to enable or disable the NMOS function. (Default value: Disable)	• Enable • Disable
Network Interface	Configure the monitor's network interface used for communication with the NMOS Controller. (Default value: LAN1)	• LAN1 or LAN2 • LAN1 • LAN2
IS-04 Node Port	Enter the monitor's standby port number for the NMOS Discovery and Registration Specification (IS-04). (Default value: 3001)	1024 - 65535
IS-05 Connection Port	Enter the monitor's standby port number for the NMOS Device Connection Management Specification (IS-05). (Default value: 3002)	1024 - 65535

Registration & Discovery (IS-04)

Configure the settings on Registration Discovery Server (RDS) for device discovery and registration. Click the [Apply] button to apply the settings immediately.

Item	Description	Setting
Node Label	Enter the name of this unit displayed on the RDS to be connected. (Default value: BVM-HX3110)	Up to 64 ASCII code characters
RDS Discovery	Select whether to enable or disable the automatic discovery function of the RDS to be connected. (Default value: Enable)	• Enable • Disable
DNS	Set the source of DNS information required for RDS Discovery. When the DHCP of this unit is disabled, Manual is selected. (Default value: Manual)	• DHCP • Manual
	IP Address	0.0.0.0 - 255.255.255.255
	Service Domain	Up to 64 ASCII code characters
RDS	When [RDS Discovery] is [Disable], set the RDS information to be connected.	
	Primary IP Address	0.0.0.0 - 255.255.255.255
	Primary Port	0 - 65535
	Secondary IP Address	0.0.0.0 - 255.255.255.255
	Secondary Port	0 - 65535

Notes

- Normally, set [Disable] to [RDS Discovery], and set the IP address and port of [RDS].
- Either setting of Primary RDS or Secondary RDS is used.
- When [Enable] is set to [RDS Discovery], the automatic discovery function of either uDNS or mDNS operates depending on the situation. The availability of the RDS Discovery function depends on the system.
uDNS:
The DNS function automatically discovers arbitrary RDS.
When either of the following conditions is met, the automatic discovery by uDNS is established.
 - The DHCP of this unit is enabled, [DNS] is set as [DHCP], DNS information is given from the DHCP server, and RDS information is given from the DNS server.
 - The DNS information is set with [Manual] selected in [DNS], and RDS information is given from the DNS server.

mDNS:

Automatically discovers RDS belonging to the same segment of the network as this unit.

When neither [IP Address] nor [Service Domain] is entered in [DNS], this unit attempts automatic discovery by mDNS.

Status

Displays the status of this unit on NMOS.

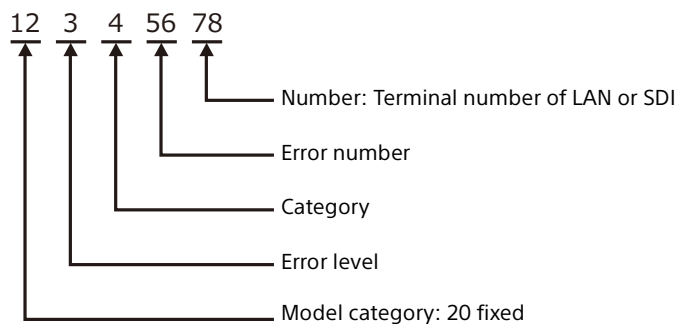
Item	Description	Setting
DNS IP Address	Displays the used DNS server address when RDS Discovery is enabled.	0.0.0.0 - 255.255.255.255
IS-04 Service Domain	Displays the used RDS domain name for discovery when RDS Discovery is enabled.	Up to 64 ASCII code characters
RDS Connection	Displays the connection status with RDS. When the connection is successful, the connected address/port number is also displayed.	• SHUTDOWN • DISCOVERING • DISCOVERY FAILED • REGISTERING • REGISTRATION FAILED • REGISTERED, X.X.X.X:X

How to Read the Error Codes

Notifies errors and warnings. For information on solutions, contact Sony qualified service personnel.

Error Codes

An error code is displayed as an 8-digit number in the following format.



Error level

Item	Description
0	(Reserved)
1	Critical
2	(Reserved)
3	Error
4	(Reserved)
5	Warning
6	(Reserved)
7	Information
8	(Reserved)
9	Debug

Category

Item	Description
0	(Reserved)
1	Network General Settings
2	Network Media Stream
3	Genlock (PTP/RefIn)
4	Baseband IO
5	Hardware
9	Others
6 - 8	(Reserved)

Error Code List

Item	Message	Error level	Indicator (front panel)			Description
			STATUS indicator	CAUTION indicator	Power indicator	
20510101	[Network] Link down (LAN1)	Warning	–	Flashes in amber (every two seconds)	–	LAN 1 is not connected to the network switch. The network switch is powered off.
20510102	[Network] Link down (LAN2)	Warning	–	Flashes in amber (every two seconds)	–	LAN 2 is not connected to the network switch. The network switch is powered off.
20510401	[Network] DHCP timeout (LAN1)	Warning	–			When DHCP was set to On, LAN1 failed to obtain the information required to connect to the network within a certain period of time.
20510402	[Network] DHCP timeout (LAN2)	Warning	–			When DHCP was set to On, LAN2 failed to obtain the information required to connect to the network within a certain period of time.
20320101	[Stream] Packet loss was detected (Interface Name)	Error	–			Packet loss was detected. Interface Name displays the IP Input No. together with the name of each type of data (V/ A/M) of the target video/ audio/ancillary (meta).
20320102	[Stream] Packet loss was detected (Interface Name)	Error	–			
20320103	[Stream] Packet loss was detected (Interface Name)	Error	–			
20320104	[Stream] Packet loss was detected (Interface Name)	Error	–			
20320105	[Stream] Packet loss was detected (Interface Name)	Error	–			
20320106	[Stream] Packet loss was detected (Interface Name)	Error	–			
20320107	[Stream] Packet loss was detected (Interface Name)	Error	–			
20320108	[Stream] Packet loss was detected (Interface Name)	Error	–			
20320109	[Stream] Packet loss was detected (Interface Name)	Error	–			
20320110	[Stream] Packet loss was detected (Interface Name)	Error	–			
20320111	[Stream] Packet loss was detected (Interface Name)	Error	–			
20320112	[Stream] Packet loss was detected (Interface Name)	Error	–			

Item	Message	Error level	Indicator (front panel)			Description
			STATUS indicator	CAUTION indicator	Power indicator	
20520201	[Stream] Invalid sequence number (LAN Primary)(Interface Name)	Warning	-			A discontinuous packet sequence number was detected. Interface Name displays the IP Input No. together with the name of each type of data (V/ A/M) of the target video/ audio/ancillary (meta).
20520202	[Stream] Invalid sequence number (LAN Primary)(Interface Name)	Warning	-			
20520203	[Stream] Invalid sequence number (LAN Primary)(Interface Name)	Warning	-			
20520204	[Stream] Invalid sequence number (LAN Primary)(Interface Name)	Warning	-			
20520205	[Stream] Invalid sequence number (LAN Primary)(Interface Name)	Warning	-			
20520206	[Stream] Invalid sequence number (LAN Primary)(Interface Name)	Warning	-			
20520207	[Stream] Invalid sequence number (LAN Primary)(Interface Name)	Warning	-			
20520208	[Stream] Invalid sequence number (LAN Primary)(Interface Name)	Warning	-			
20520209	[Stream] Invalid sequence number (LAN Primary)(Interface Name)	Warning	-			
20520210	[Stream] Invalid sequence number (LAN Primary)(Interface Name)	Warning	-			
20520211	[Stream] Invalid sequence number (LAN Primary)(Interface Name)	Warning	-			
20520212	[Stream] Invalid sequence number (LAN Primary)(Interface Name)	Warning	-			

Item	Message	Error level	Indicator (front panel)			Description
			STATUS indicator	CAUTION indicator	Power indicator	
20520301	[Stream] Invalid sequence number (LAN Secondary)(Interface Name)	Warning	-			A discontinuous packet sequence number was detected. Interface Name displays the IP Input No. together with the name of each type of data (V/ A/M) of the target video/ audio/ancillary (meta).
20520302	[Stream] Invalid sequence number (LAN Secondary)(Interface Name)	Warning	-			
20520303	[Stream] Invalid sequence number (LAN Secondary)(Interface Name)	Warning	-			
20520304	[Stream] Invalid sequence number (LAN Secondary)(Interface Name)	Warning	-			
20520305	[Stream] Invalid sequence number (LAN Secondary)(Interface Name)	Warning	-			
20520306	[Stream] Invalid sequence number (LAN Secondary)(Interface Name)	Warning	-			
20520307	[Stream] Invalid sequence number (LAN Secondary)(Interface Name)	Warning	-			
20520308	[Stream] Invalid sequence number (LAN Secondary)(Interface Name)	Warning	-			
20520309	[Stream] Invalid sequence number (LAN Secondary)(Interface Name)	Warning	-			
20520310	[Stream] Invalid sequence number (LAN Secondary)(Interface Name)	Warning	-			
20520311	[Stream] Invalid sequence number (LAN Secondary)(Interface Name)	Warning	-			
20520312	[Stream] Invalid sequence number (LAN Secondary)(Interface Name)	Warning	-			
20322101	[Stream] JPEG XS slice packetization mode is NOT supported(Interface Name)	Error	-			Decoding cannot be done because the packetization method of the received JPEG XS media stream is in Slice packetization mode. This unit only supports decoding in Codestream packetization mode as the packetization method.
20322104	[Stream] JPEG XS slice packetization mode is NOT supported(Interface Name)	Error	-			
20322107	[Stream] JPEG XS slice packetization mode is NOT supported(Interface Name)	Error	-			
20322110	[Stream] JPEG XS slice packetization mode is NOT supported(Interface Name)	Error	-			
20322201	[Stream] JPEG XS decode error was detected (Interface Name)	Error	-			The received JPEG XS media stream cannot be decoded. The JPEG XS media stream with an unsupported bitrate was received. There is an error in the JPEG XS header information. Other unexpected media streams were received.
20322204	[Stream] JPEG XS decode error was detected (Interface Name)	Error	-			
20322207	[Stream] JPEG XS decode error was detected (Interface Name)	Error	-			
20322210	[Stream] JPEG XS decode error was detected (Interface Name)	Error	-			
20330201	[Genlock] Unable to lock to PTP leader	Error	-			Unable to lock to PTP on both LAN Primary and LAN Secondary during the redundancy setting.

Item	Message	Error level	Indicator (front panel)			Description
			STATUS indicator	CAUTION indicator	Power indicator	
20530301	[Genlock] PTP leader is NOT detected (LAN Primary)	Warning	-			No PTP Leader in the network.
20530302	[Genlock] PTP leader is NOT detected (LAN Secondary)	Warning	-			
20530401	[Genlock] PTP status remains "Locking" state (LAN1)	Warning	-			The Locking state continued on LAN1.
20530402	[Genlock] PTP status remains "Locking" state (LAN2)	Warning	-			The Locking state continued on LAN2.
20530501	[Genlock] Primary leader and Secondary leader are NOT synchronized	Warning	-			During PTP redundancy, the time difference was detected between the PTP times received by Primary and Secondary.
20331401	[Genlock] PTP reference signal is unstable (Device1)	Error	-			During the operation of the PTP follower, the internal device 1 of this unit detected that the PTP signal received from the PTP Leader was not stable.
20350103	[Hardware] Board error (VIF)	Error	-	-	Flashes in red (every two seconds)	Failure of the power supply on the circuit board
20350107	[Hardware] Board error (NET)	Error	-	-	Flashes in red (every two seconds)	
20350301	[Hardware] Data error (MB)	Error	-	-	Flashes in red (every two seconds)	Abnormality of Flash data on the circuit board
20350401	[Hardware] EEPROM error (NET)	Error	-	-	Flashes in red (every two seconds)	Abnormality of EEPROM data on the circuit board

Item	Message	Error level	Indicator (front panel)			Description
			STATUS indicator	CAUTION indicator	Power indicator	
20351141	[Hardware] FAN error (MB)	Error	–	–	Flashes in red (every two seconds)	Fan failure
20351142	[Hardware] FAN error (LPC)	Error	–	–	Flashes in red (every two seconds)	
20351147	[Hardware] FAN error (NET)	Error	–	–	Flashes in red (every two seconds)	
20351143	[Hardware] FAN error (Backlight1)	Error	–	–	Flashes in red (every two seconds)	
20351144	[Hardware] FAN error (Backlight2)	Error	–	–	Flashes in red (every two seconds)	
20351145	[Hardware] FAN error (inside monitor1)	Error	–	–	Flashes in red (every two seconds)	
20351146	[Hardware] FAN error (inside monitor2)	Error	–	–	Flashes in red (every two seconds)	
20152131	[Hardware] Temp sensor error (LD1)	Critical	–	–	Flashes in red (every second)	Temperature abnormality
20152132	[Hardware] Temp sensor error (LD2)	Critical	–	–	Flashes in red (every second)	
20152151	[Hardware] Temp sensor error (SE-Outside temperature)	Critical	–	–	Flashes in red (every second)	
20152152	[Hardware] Temp sensor error (HP-Outside temperature)	Critical	–	–	Flashes in red (every second)	
20152153	[Hardware] Temp sensor error (SE-Panel)	Critical	–	–	Flashes in red (every second)	
20152154	[Hardware] Temp sensor error (SE-Backlight)	Critical	–	–	Flashes in red (every second)	
20553101	[Hardware] Brightness decrease is working	Warning	–	Flashes in amber (every second)	–	The brightness is decreased due to panel temperature.
20554101	[Hardware] Auto Brightness Limiter is working	Warning	–	Lights in amber	–	ABL is working.

Item	Message	Error level	Indicator (front panel)			Description
			STATUS indicator	CAUTION indicator	Power indicator	
20555101	[Hardware] Screensaver start up	Warning	Flashes in yellow or blue (every second)	–	–	Warns that the screensaver will start.
20555201	[Hardware] Screen saver is working	Warning	Flashes in yellow or blue (every second)	–	–	The screensaver is running.
20556101	[Hardware] Auto Power Down start up	Warning	–			Warns that Auto Power Down will start.

Expanding Monitor Functions with an Optional License

The following functions can be enabled using the optional "BVML-H10", "BVML-S10", "BVML-T10", "BVML-F10", "BVML-JD10" or "BVML-SN10" license.

BVML-H10

- Conversion (HDR-SDR conversion)
- Enhanced Monitor Out (Signal output with Conversion, signal format conversion and User LUT applied is possible)

BVML-S10

- Enhanced Monitor Out (Signal output with signal format conversion and User LUT applied is possible)

BVML-T10

- Enhanced Monitor Out ¹⁾ (Signal output with User LUT applied is possible)

BVML-F10

- Fast Response (Fast video response)

BVML-JD10

- JPEG XS Decode (Decodes JPEG XS IP video signals)

BVML-SN10

- SNMP (Remote monitoring with SNMP protocol)

1) The output format cannot be selected.

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.

MSSONY/MONITOR/LICENSE/BVM_HX3110

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.
- 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.

About the trial license of "BVML-H10/F10/JD10/SN10"

The trial license of "BVML-H10/F10/JD10/SN10" is activated and the function can be tested from when the unit was used until Operation Time passes for about 240H.

Notes

- While the trial license is active, a message notifying that the trial license is being applied is displayed when the unit starts up. If the expiration date of the trial license is approaching, a message notifying of this is displayed when the unit starts up. The trial will be automatically terminated when the trial license expires. To continue using the software, purchase and apply for the full license before it expires.
- When a trial license is activated, even if a lower "BVML-S10" or "BVML-T10" license is activated, the operations of the higher "BVML-H10" license will take priority during the trial period.
- If items that cannot be set for the lower "BVML-S10" and "BVML-T10" licenses are changed during the trial period and a lower license is activated after the trial period, changes may occur in the corresponding settings.

Troubleshooting

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

- **The 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 70) of "System Setting" in the "System" menu.
- **Color is not displayed correctly** → Check whether the "RGB/YCC Range" (page 26), "EOTF" (page 26), "Color Space" (page 26), and "Transfer Matrix" (page 26) 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.

- **The SDI output video or sound from Enhanced Monitor Out is distorted** → There is a possibility that transiently distorted signals may be output when switching input signals or plugging/unplugging input SDI cables, but this is not a malfunction.

Specifications

Picture performance

LCD panel	a-Si TFT Active Matrix
Picture size (diagonal)	775.17 mm (30.5 inches)
Effective picture size (H × V)	685.67 × 361.58 mm (27 × 14 1/4 inches)
Resolution (H × V)	4096 × 2160 pixels
Aspect	17:9
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, D50, DCI
Standard luminance (SDR 100% white signal input)	100 cd/m ² (in a format other than XYZ format) 48 cd/m ² (in XYZ format)
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/Output

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)	0.3 W (In off-mode (When the  (Power) switch is off))
USB input	USB (USB2.0) connector (1)	Operating conditions
Output		Temperature
ENHANCED MONITOR OUT (12G/6G/3G/HD)	output	0 °C to 35 °C (32 °F to 95 °F)
	BNC type (1)	Recommended temperature
	Output impedance: 75 Ω	20 °C to 30 °C (68 °F to 86 °F)
	unbalanced	Humidity
	This function is available by	30% to 85% (no condensation)
	enabling one of the optional	Pressure
	"BVML-H10", "BVML-S10" or	700 hPa to 1060 hPa
	"BVML-T10" licenses (sold	Storage and transport conditions
	separately).	Temperature
SDI (3G/HD) output	BNC type (2)	-20 °C to +60 °C (-4 °F to +140 °F)
	Output impedance: 75 Ω	Humidity
	unbalanced	0% to 90%
SDI (12G/6G/3G/HD) output	BNC type (2)	Pressure
	Output impedance: 75 Ω	700 hPa to 1060 hPa
	unbalanced	Accessories supplied
Audio monitor output connector	Stereo mini jack (1)	AC power cord (1)
Headphones output connector	Stereo mini jack (1)	AC plug holder (1)
		M4 screws (4)
		Before Using This Unit (1)
Input/Output		Design and specifications are subject to change
Network (LAN1/LAN2)	25GBASE-** (depending on the	without notice.
	SFP28 transceiver module):	
	For information on available	
	SFP28 transceiver modules	
	(such as OTM-25GSR/OTM-	
	25GLR), contact Sony qualified	
	service personnel.	
	SFP28 connector (2):	
	Compatible with Sony	
	transceivers OTM-25GSR and	
	OTM-25GLR as well as modules	
	with a power consumption of	
	1.0 W or less.	
	A DAC (Direct Attached Cable)	
	of copper wire type cannot be	
	used.	
General		
Power	AC 100 V to 240 V, 6.6 A to 2.5 A, 50/60 Hz	
Power consumption	Approx. 610 W (Maximum in AC operation)	

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	
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	

Signal System	Signal Structure		Support for SR Live Metadata Reception
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	
2048×1080/30P	4:4:4 (XYZ)	12bit	Not verified
2048×1080/30PsF	4:4:4 (XYZ)	12bit	Not verified
2048×1080/25P	4:4:4 (XYZ)	12bit	Not verified
2048×1080/25PsF	4:4:4 (XYZ)	12bit	Not verified

Signal System	Signal Structure		Support for SR Live Metadata Reception
2048×1080/24P	4:4:4 (XYZ)	12bit	Not verified
2048×1080/24PsF	4:4:4 (XYZ)	12bit	Not verified

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		

Signal System	Signal Structure			Support for SR Live Metadata Reception
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		
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		

Signal System	Signal Structure		Support for SR Live Metadata Reception
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	
2048×1080/30P	4 : 4 : 4 (XYZ)	12bit	Level A/Level B-DL Not verified
2048×1080/30PsF	4 : 4 : 4 (XYZ)	12bit	Level A/Level B-DL Not verified
2048×1080/25P	4 : 4 : 4 (XYZ)	12bit	Level A/Level B-DL Not verified
2048×1080/25PsF	4 : 4 : 4 (XYZ)	12bit	Level A/Level B-DL Not verified
2048×1080/24P	4 : 4 : 4 (XYZ)	12bit	Level A/Level B-DL Not verified
2048×1080/24PsF	4 : 4 : 4 (XYZ)	12bit	Level A/Level B-DL Not verified

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 ○

Signal System	Signal Structure			Support for SR Live Metadata Reception
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	○
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			

Signal System	Signal Structure		Support for SR Live Metadata Reception		
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			
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			
4096×2160/30P	4 : 4 : 4 (XYZ)	12bit	Level A/Level B-DL	Square/2SI	Not verified
4096×2160/30PsF	4 : 4 : 4 (XYZ)	12bit	Level A/Level B-DL	Square	Not verified
4096×2160/25P	4 : 4 : 4 (XYZ)	12bit	Level A/Level B-DL	Square/2SI	Not verified
4096×2160/25PsF	4 : 4 : 4 (XYZ)	12bit	Level A/Level B-DL	Square	Not verified
4096×2160/24P	4 : 4 : 4 (XYZ)	12bit	Level A/Level B-DL	Square/2SI	Not verified
4096×2160/24PsF	4 : 4 : 4 (XYZ)	12bit	Level A/Level B-DL	Square	Not verified

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 1	Square/2SI	○
3840 × 2160/25P	4 : 2 : 2 (YCbCr)	10bit	Mode 1	Square/2SI	○
3840 × 2160/24P ¹⁾	4 : 2 : 2 (YCbCr)	10bit	Mode 1	Square/2SI	○
4096 × 2160/30P ¹⁾	4 : 2 : 2 (YCbCr)	10bit	Mode 1	Square/2SI	Not verified
4096 × 2160/25P	4 : 2 : 2 (YCbCr)	10bit	Mode 1	Square/2SI	Not verified
4096 × 2160/24P ¹⁾	4 : 2 : 2 (YCbCr)	10bit	Mode 1	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 1	Square/2SI	○
3840 × 2160/50P	4 : 2 : 2 (YCbCr)	10bit	Mode 1	Square/2SI	○
3840 × 2160/30P ¹⁾	4 : 4 : 4 (RGB)	10bit	Mode 1	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 1	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 1	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 1	Square/2SI	Not verified
4096 × 2160/50P	4 : 2 : 2 (YCbCr)	10bit	Mode 1	Square/2SI	Not verified
4096 × 2160/48P ¹⁾	4 : 2 : 2 (YCbCr)	10bit	Mode 1	Square/2SI	Not verified
4096 × 2160/30P ¹⁾	4 : 4 : 4 (RGB)	10bit	Mode 1	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 1	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 1	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
4096×2160/30P	4 : 4 : 4 (XYZ)	12bit	Mode 1	Square/2SI	Not verified
4096×2160/25P	4 : 4 : 4 (XYZ)	12bit	Mode 1	Square/2SI	Not verified
4096×2160/24P	4 : 4 : 4 (XYZ)	12bit	Mode 1	Square/2SI	Not verified

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

Signal System	Signal Structure	
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
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

Signal System	Signal Structure
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
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 36). 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).

IP (Image Format)

The video data of the IP stream input of this unit is applicable to the following image formats.
The Closed Caption for the IP input is enabled when the signal format is the one marked with ○.

Frame Rate	Signal System		Signal Structure	Support for SR Live Metadata Reception	Closed Caption
59.94	3840×2160	59.94P	4:2:2 (YCbCr) 10bit	○	×
	1920×1080	59.94P	4:2:2 (YCbCr) 10bit	○	×
	1280×720	59.94P	4:2:2 (YCbCr) 10bit	○	○
50	3840×2160	50P	4:2:2 (YCbCr) 10bit	○	×
	1920×1080	50P	4:2:2 (YCbCr) 10bit	○	×
	1280×720	50P	4:2:2 (YCbCr) 10bit	○	○
29.97	3840×2160	29.97P	4:2:2 (YCbCr) 10bit	○	×
	1920×1080	59.94I	4:2:2 (YCbCr) 10bit	○	○
	1920×1080	29.97PsF	4:2:2 (YCbCr) 10bit	○	○
25	3840×2160	25P	4:2:2 (YCbCr) 10bit	○	×
	1920×1080	50I	4:2:2 (YCbCr) 10bit	○	○
	1920×1080	25PsF	4:2:2 (YCbCr) 10bit	○	○
24	3840×2160	24P	4:2:2 (YCbCr) 10bit	○	×
	1920×1080	24PsF	4:2:2 (YCbCr) 10bit	○	○
23.98	3840×2160	23.98P	4:2:2 (YCbCr) 10bit	○	×
	1920×1080	23.98PsF	4:2:2 (YCbCr) 10bit	○	○

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		Square/2SI	4:2:2 (YCbCr)	10bit	3840 × 2160	50P, 60P ²⁾	①
3G-SDI Quad-Link Level A							
3G-SDI Quad-Link Level B							
12G-SDI Single-Link		Square/2SI	4:2:2 (YCbCr)	10bit	4096 × 2160	48P ²⁾ , 50P, 60P ²⁾	②
3G-SDI Quad-Link Level A							
3G-SDI Quad-Link Level B							
12G-SDI Single-Link		Square/2SI	4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit	3840 × 2160	24P ²⁾ , 25P, 30P ²⁾	③
3G-SDI Quad-Link Level A							
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					
12G-SDI Single-Link		Square/2SI	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							
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							

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

1) V frequency is not converted.

2) Also compatible with 1/1.001 frame rates.

IP Input Stream (Video Data)

Signal Structure		Signal System ¹⁾		Input Signal No
4:2:2 (YCbCr)	10bit	3840×2160	50P, 59.94P	①
4:2:2 (YCbCr)	10bit	3840×2160	24P ²⁾ , 25P, 29.97P	③
4:2:2 (YCbCr)	10bit	1920×1080	50P, 59.94P	⑦
4:2:2 (YCbCr)	10bit	1920×1080	50I, 59.94I	⑨
4:2:2 (YCbCr)	10bit	1920×1080	24PsF ²⁾ , 25PsF, 29.97PsF	⑫
4:2:2 (YCbCr)	10bit	1280×720	50P, 59.94P	⑭

1) V frequency is not converted.

2) Also compatible with 1/1.001 frame rates.

SDI Output Signals (Enhanced Monitor Out)

See the following tables for the optional "BVML-H10", "BVML-S10" or "BVML-T10" licenses (sold separately).

BVML-H10/BVML-S10

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	

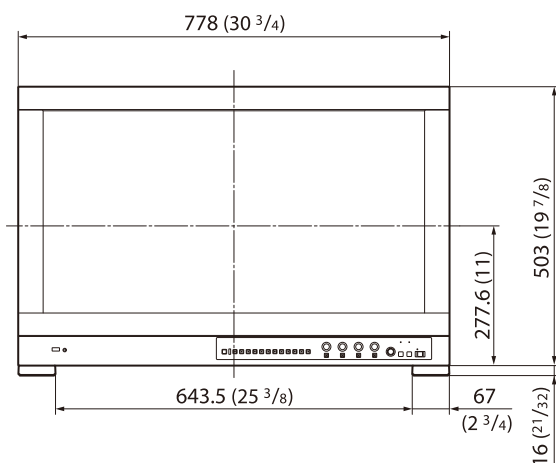
1) Also compatible with 1/1.001 frame rates.

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	1	4096 × 2160	48P ¹⁾ , 50P, 60P ¹⁾	4:2:2 (YCbCr)	10bit	12G-SDI Single-Link	2SI
③	1	3840 × 2160	24P ¹⁾ , 25P, 30P ¹⁾	4:2:2 (YCbCr)	10bit	6G-SDI Single-Link	2SI
④	1	4096 × 2160	24P ¹⁾ , 25P, 30P ¹⁾	4:2:2 (YCbCr)	10bit	6G-SDI Single-Link	2SI
⑤	1	3840 × 2160	24P ¹⁾ , 25P, 30P ¹⁾	4:2:2 (YCbCr)	10bit	6G-SDI Single-Link	2SI
⑥	1	4096 × 2160	24P ¹⁾ , 25P, 30P ¹⁾	4:2:2 (YCbCr)	10bit	6G-SDI Single-Link	2SI
⑦	1	1920 × 1080	50P, 60P ¹⁾	4:2:2 (YCbCr)	10bit	3G-SDI Single-Link Level A	
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	

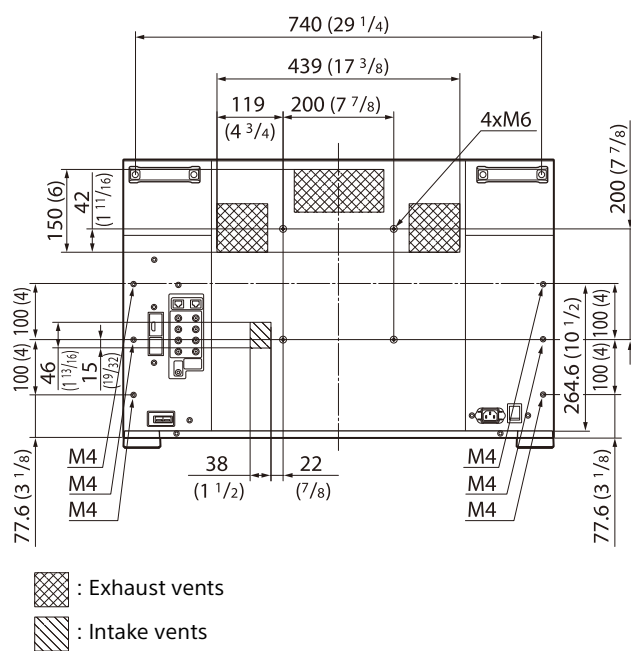
1) Also compatible with 1/1.001 frame rates.

Dimensions

Front

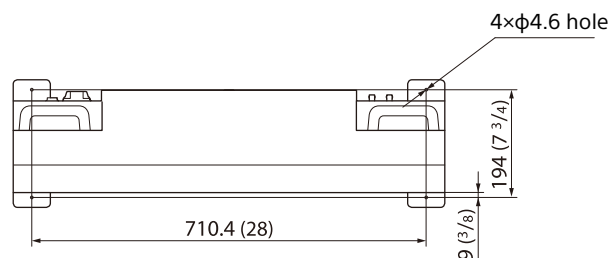


Rear

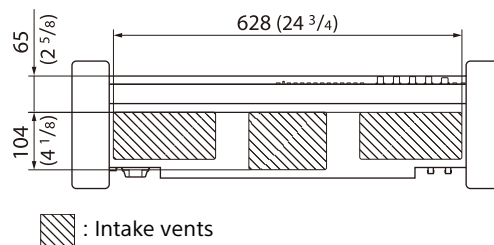


When installing on a vehicle, also use the M4 screw holes to secure the unit.

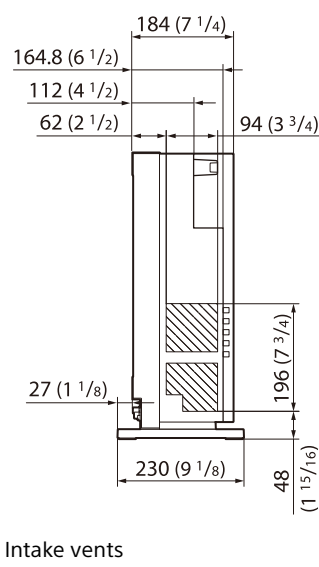
Top



Bottom

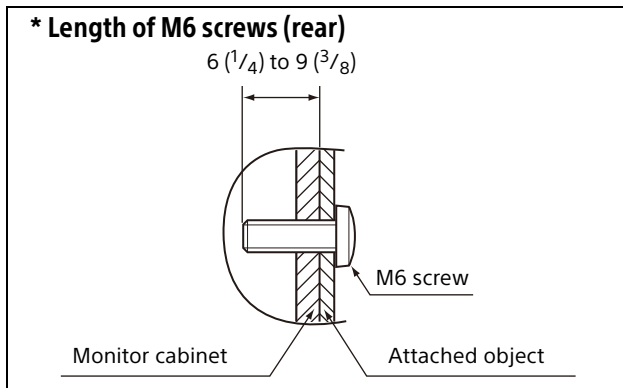
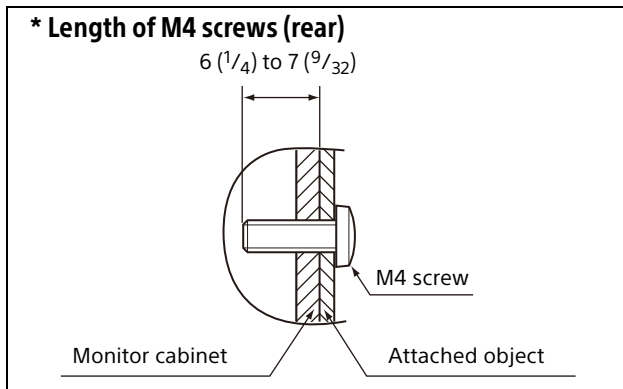


Side



Unit: mm (inches)

Mass: Approx. 29 kg (63 lb 15 oz)



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]

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uSSH (Secure Shell) SDK

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=====

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=====

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curve25519-donna: Curve25519 elliptic curve, public key function

<http://code.google.com/p/curve25519-donna/>

Adam Langley <agl@imperialviolet.org>

Derived from public domain C code by Daniel J. Bernstein <djb@cr.yp.to>

More information about curve25519 can be found here
<http://cr.yp.to/ecdh.html>

djb’s sample implementation of curve25519 is written in a special assembly language called qhasm and uses the floating point registers.

This is, almost, a clean room reimplementation from the curve25519 paper. It uses many of the tricks described therein. Only the crecip function is taken from the sample implementation.

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[Tatu continues]

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- GMP is no longer used, and instead we call BN code from OpenSSL
- Zlib is now external, in a library
- The make-ssh-known-hosts script is no longer included
- TSS has been removed
- MD5 is now external, in the OpenSSL library
- RC4 support has been replaced with ARC4 support from OpenSSL
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```
* @version 3.0 (December 2000)
*
* Optimised ANSI C code for the Rijndael cipher
* (now AES)
*
* @author Vincent Rijmen
* <vincent.rijmen@esat.kuleuven.ac.be>
* @author Antoon Bosselaers
* <antoon.bosselaers@esat.kuleuven.ac.be>
* @author Paulo Barreto
* <paulo.barreto@terra.com.br>
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The ARCFOUR algorithm was publicly disclosed on
 94/09.

<http://groups.google.com/group/sci.crypt/msg/10a300c9d21afca0>

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