SONY

HDR PRODUCTION CONVERTER UNIT

HDRC-4000

OPERATION MANUAL English

1st Edition (Revised 4)

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Overview

The HDRC-4000 HDR Production Converter Unit converts HDR video signals using the OETF standard. OETF supports several standards, including Sony's original S-Log3 curve, SMPTE ST 2084 (PQ) and ITU-R BT. 2100 (HLG), and supports mutual conversion between standards.
The unit also features the AIR MATCHING (Artistic Intent Render Matching) function, which allows you to convert to any format, using HDR signal OETF mutual conversion, so that the "look" is correct on a display that supports that particular OETF standard format. Also, you can convert between SDR and HDR while maintaining an identical appearance using the Display Referred conversion function. (However, when converting from HDR to SDR, SDR output levels that exceed 109% are clipped at 109%, causing an overexposure.)
In addition to HDR OETF conversion, it also supports simultaneous mutual conversion between HDR/SDR, 4K/HD, and 2020/709 color space for conversion of various signal formats.
This unit also supports external reference sync signals, and can be operated as a video signal frame synchronizer.

Features

Various video signal format conversion support

Supports simultaneous conversion of various signal formats.
- HDR←→HDR: OETF signal standard conversion
- HDR←→SDR: Dynamic range conversion
- 4K←→HD: Resolution conversion
- BT.2020←→BT.709: Color space conversion

In addition, the SDI signal input/outputs also support the following signal formats.
- 12G-SDI / 6G-SDI / 3G-SDI Level-A / 3G-SDI Level-B / HD-SDI
- 2SI/SQD/No division

AIR MATCHING (Artistic Intent Render Matching) function

This function performs OETF conversion of HDR signals that maintains the image reproduction (visual appearance) on the display.
When AIR MATCHING is ON, the conversion is performed such that the image on a display connected to the input side has the same visual appearance as the image on a display connected to the output side. The OETF settings of these displays are set as the input/output OETF.
When AIR MATCHING is OFF, conversion is performed faithfully for the OETFs (Opto-Electronic Transfer Function) configured for input/output. Whether the image reproduction on the displays is the same or not is not taken into account.

Display Referred conversion

This function performs conversion of SDR signals to HDR signals, HDR signals to SDR signals, and HDR signals to HDR signals that maintains the image reproduction (visual appearance) on the display. The black level, gamma, inverse gamma conversion, highlight creation, HDR De-Knee and other picture quality adjustment settings are fixed (OFF or 0.0).

Simultaneous output of 4K and HD signals

Simultaneously outputs 4K and HD signals as output video derived from a single input signal.
The 4K output and HD output signal conversion settings can be configured independently.

Dual system signal processing

Equipped with a dual system (channel A, channel B) signal processing function.
A 4K signal or HD signal can be freely selected for each input setting.

Video input/output

Inputs

Channel A
- 4K: Single-Link 12G-SDI, Quad-Link 3G-SDI/Single-Link 6G-SDI, Dual-Link 3G-SDI, Quad-Link 1.5G-SDI or HD × 4ch: 3G/HD-SDI
- HD: 3G/HD-SDI

Channel B [1)]
- 4K: Single-Link 12G-SDI, Quad-Link 3G-SDI/Single-Link 6G-SDI, Dual-Link 3G-SDI, Quad-Link 1.5G-SDI or HD × 4ch: 3G/HD-SDI
- HD: 3G/HD-SDI

1) You can also select the channel A input signal as the channel B input.

Outputs

Channel A
- 4K × dual system: Single-Link 12G-SDI, Quad-Link 3G-SDI/ Single-Link 6G-SDI, Dual-Link 3G-SDI, Quad-Link 1.5G-SDI or HD × dual system × 4-ch: 3G/HD-SDI
- HD × single system: 3G/HD-SDI
- HD monitor × single system: HD-SDI

Channel B
- 4K × dual system: Single-Link 12G-SDI, Quad-Link 3G-SDI/ Single-Link 6G-SDI, Dual-Link 3G-SDI, Quad-Link 1.5G-SDI or HD × dual system × 4-ch: 3G/HD-SDI
- HD × single system: 3G/HD-SDI
- HD monitor × single system: HD-SDI

External reference sync signal

The output signal can be synchronized to an external reference sync signal (HD tri-level sync or SD sync). The following sync signals are supported.
NTSC, PAL, 1080/59.94i, 1080/50i, 1080/23.98PsF, 1080/24PsF
The unit is also equipped with a frame synchronizer function allowing it to operate as a frame synchronizer.
If an external reference sync signal is not input, the output can be synchronized to the channel A input signal. Operation without an external reference sync signal, and input only on channel B is not guaranteed.

Supported signal formats

4K: 2160/59.94P, 50P, 29.97P, 29.97PsF, 25P, 25PsF, 24P, 24PsF, 23.98P, 23.98PsF
HD: 1080/59.94P, 59.94i, 50P, 50i, 29.97PsF, 25PsF, 24PsF, 23.98PsF
(Input only) 720/59.94P, 50P

12G/6G-SDI input/output support

12G/6G-SDI Single-Link signals are supported for 4K signal input/output.

3G/HD-SDI Multi-Link and 12G/6G-SDI Single-Link conversion are supported using this function.

Low-latency output

All signal processing is performed within a single frame, and the output video is delayed by one frame.
When the frame synchronizer function is on, the output is delayed by two frames.
(When 4K is output as SQD signals, there is a further one frame delay.)

Minimum delay setting

When the system frequency is 59.94/50 and the input/output signal setting is 4K (2SI), enabling minimum delay mode causes a delay in 4K output of only a few lines (in HD signal terms). When the system frequency is 29.97/25/24/23.98 and an SQD signal is set for 4K input/output signal, the 4K output delay is one frame or higher (same as minimum delay mode not being enabled).

HD×4 input mode

You can use 4K INPUT connectors as four HD inputs.
This is supported only when the input format is 1080/59.94P, 50P, 59.94i, 50i, 29.97PsF, 25PsF, 24PsF, or 23.98PsF on four channels, and all four inputs must be in the same format. The OETF setting of the outputs cannot be set individually.
For HD×4 input, prioritize use of the CH-1 input and CH-3 input. If there is no input on CH-1, CH-2 to CH-4 cannot be used. If there is no input on CH-3, CH-4 cannot be used.
One of the four systems among the 4K INPUT 1 to 4 connectors can be selected for output on the HD OUT connector.

Through mode setting

In through mode, SDI signals input on the 4K input connectors (BNC × 4) are output on the 4K output connectors (BNC × 4) with a 1-line delay (in HD signal terms). The 4K INPUT 1 connector signal is output as-is on the HD output. However, 720P input is not supported.

16-channel embedded audio support

Audio signals (16-channel) can be embedded in the SDI signals.
The audio signal with a delay matching the video signal is embedded in the output signal.

Remote control

Supports the remote control by Sony system camera products. Format setting, HDR/SDR setting, OETF setting, color space setting, image quality setting, file operation, and menu operation are supported from an RCP-3500/1500 series Remote Control Panel or an MSU-1000 series Master Setup Unit.

Configuration file

The settings of the SETUP menu and ADDITIONAL PAINT menu within the unit can be stored in up to five scene files each for channel A and channel B. The settings in the CONFIGURATION menu, SETUP menu, and ADDITIONAL PAINT menu can also be stored in up to 32 configuration files as an all-settings file.
The exporting and importing of each file can be controlled from an RCP-3500/1500 series Remote Control Panel or an MSU-1000 series Master Setup Unit.
Furthermore, an all-settings file can be recalled from the I/O PORT connector (D-Sub 15-pin).

Preserve and map ANC data

Various conversions are supported while preserving ANC data (Ancillary Data) multiplexed with the SDI signal.
VANC data (Vertical Ancillary Data) is used for mapping data from the input SDI signal to the output SDI signal. There are two modes that determine how the data is mapped (normal mode and field mode).

Operation of camera with HyperGamma function as an HDR-compatible camera

Cameras, such as the HDC1000 series and HDC2000 series, that feature the HyperGamma function can be operated as HDR-compatible cameras by selecting HyperGamma 4 as the gamma table.
When HyperGamma 4 is selected as the gamma table, an image with a wider dynamic range than when using normal gamma is output. When this image is input to the unit and the input OETF is set to HyperGamma4, the image from the camera can be handled as an HDR signal, and it can be converted to an S-Log3 or HLG HDR signal or an SDR signal that uses normal gamma.
However, since standard camera settings typically over-enhance high-luminance contours using the detail function, it is recommended that the detail function Mix Ratio value on the camera be reduced or that the detail function be set to OFF. Even when the detail function on the camera is set to OFF, contours can still be enhanced by enabling the detail function of the unit.
It is recommended that you adjust the iris and other controls so that the white level in the HyperGamma 4 image output is set to 74%.

SR Live Metadata input/output

When generating an SDR signal from an HDR signal, you can embed a group of required settings (HDR SDR Relation Table) in the VANC space of the SDI signal. This allows a receiving device to display the settings or to apply the group of settings to the HDR signal to SDR signal conversion settings automatically.

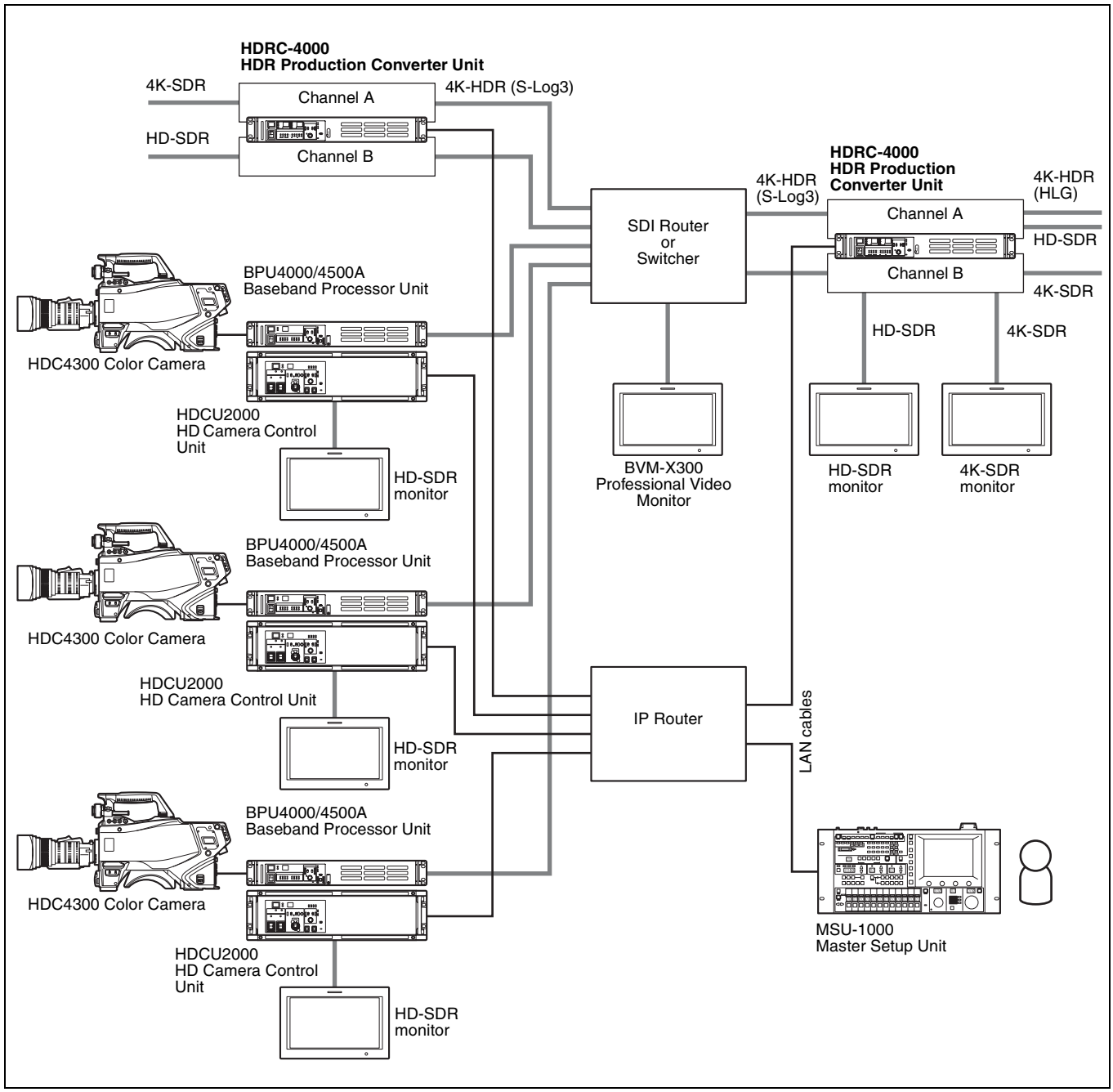
HDR Look function

HDR Look is a video characteristic that determines how the video signal captured by the camera is represented on the display. It can be set to Live, Mild, or Natural.

Look conversion function

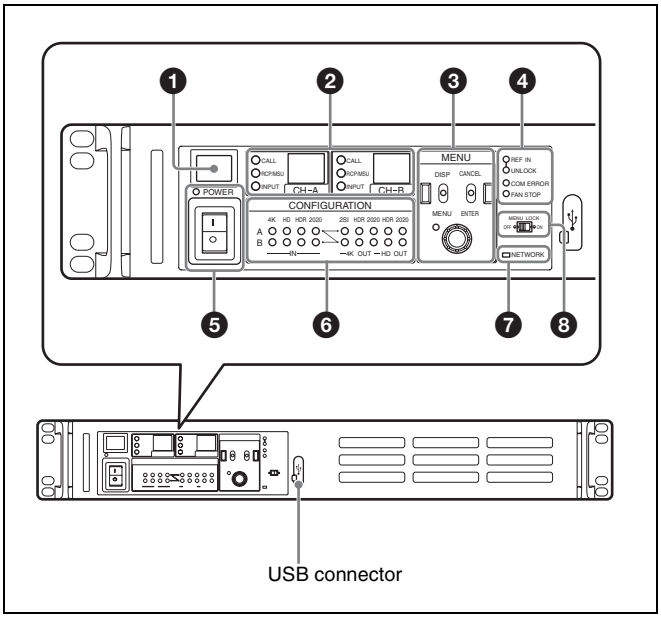
When converting from HDR to HDR, the basic characteristics of the video (HDR Look and HDR Black Compression) can be converted at the input and output.

System Configuration



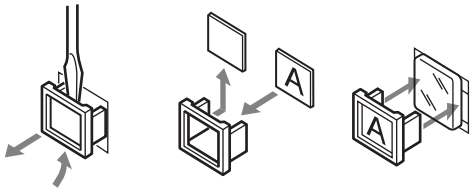
Name and Function of Parts

Front Panel



❶ Number plate

A supplied number plate can be attached (see following diagram).



❷ Channel status indicator

Displays the status of channel A/B.

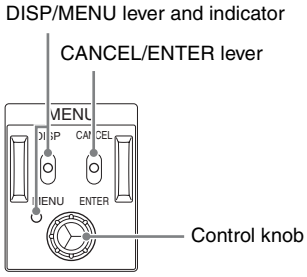
CALL lamp: Lights up when the CALL button is pressed on an external control device (MSU-1000 Master Setup Unit or RCP-3500/1500 series Remote Control Panel).

RCP/MSU lamp: Lights up when communication is established with an external control device (MSU-1000 Master Setup Unit or RCP-3500/1500 series Remote Control Panel).

INPUT lamp: Lights up when HD input is selected for the channel and a video signal is input on an HD input connector. Also lights up when 4K input or HD×4 input is selected for the channel and a video signal is input on a 4K input connector. The lamp flashes if the input video signal is incomplete or is not received correctly, regardless of whether the input setting is 4K, HD, or HD×4. The lamp is not lit in all other cases.

Remote control number indicator: Displays the remote control number set for the channel. Not lit if the remote control number is 0. The remote control number can be set to 0 to 96.

❸ MENU control block



DISP/MENU lever and indicator: Used to display the status and menu. The indicator lights up when the menu is displayed.

CANCEL/ENTER lever: Used to cancel/enter settings when the menu is displayed. The CANCEL lever is used to cancel the selected item or to move up one level in the menu hierarchy. The ENTER lever is used to select an item or execute an item. For details about usage, see *"Menu Settings" (page 19)*.

Control knob (rotary encoder): Used to move the cursor within a page and to change the setting of the selected item when the menu is displayed.
Pushing the control knob has the same function as setting the CANCEL/ENTER lever to ENTER.

❹ Status display indicators

REF IN (green): Indicates the input of reference sync signal.

UNLOCK (red): When lit and a reference sync signal is connected, this indicates that the unit is not locked to the reference sync signal.
When lit and a reference sync signal is not connected, this indicates that the unit is not locked to the 4K or HD channel A input signal, whichever is selected in the menu.

COM ERROR (red): Lights up for a fixed time when an error occurs during communication with an external control device (MSU-1000 Master Setup Unit or RCP-3500/1500 series Remote Control Panel) connected to channel A or B.

FAN STOP (red): Indicates the internal fan has stopped.

❺ POWER switch and indicator

Turns the system power supply on/off to the unit and an external device (such as RCP-3500/1500 series Remote Control Panel) connected to the REMOTE connector. Switch to "**I**" to turn the power on, and switch to "○" to turn the power off.
The indicator lights up when power is turned on.

❻ CONFIGURATION indicator

Displays the internal configuration status of the unit. The channel A setting is displayed at the top, and the channel B setting at the bottom. When set to through mode, the LEDs of the corresponding channels are all turned off.

IN setting

4K: Lights up when the input setting is 4K or HD×4.

HD: Lights up when the input setting is HD or HD×4.

HDR: Lights up when the input OETF setting is HDR.

2020: Lights up when the input color space setting is BT.2020.

When channel A is used as the channel B input, the IN lamps (4K, HD, HDR, 2020) for channel B are all off.

4K OUT setting

2SI: Lights up when the 4K output format is 2SI.

HDR: Lights up when the 4K output or HD×4 output OETF setting is HDR.

2020: Lights up when the 4K output or HD×4 output color space setting is BT.2020.

HD OUT setting

HDR: Lights up when the HD output OETF setting is HDR.

2020: Lights up when the HD output color space setting is BT.2020.

❼ NETWORK indicator

Displays the network system connection status.

On: Indicates that an external control device (MSU-1000 Master Setup Unit or RCP-3500/1500 series Remote Control Panel) is connected when the CNS MODE setting in <CNS SETTING> is set to BRIDGE or MCS.

Flashing: Indicates that an external control device (MSU-1000 Master Setup Unit or RCP-3500/1500 series Remote Control Panel) is not connected successfully when the CNS MODE setting in <CNS SETTING> is set to BRIDGE or MCS.

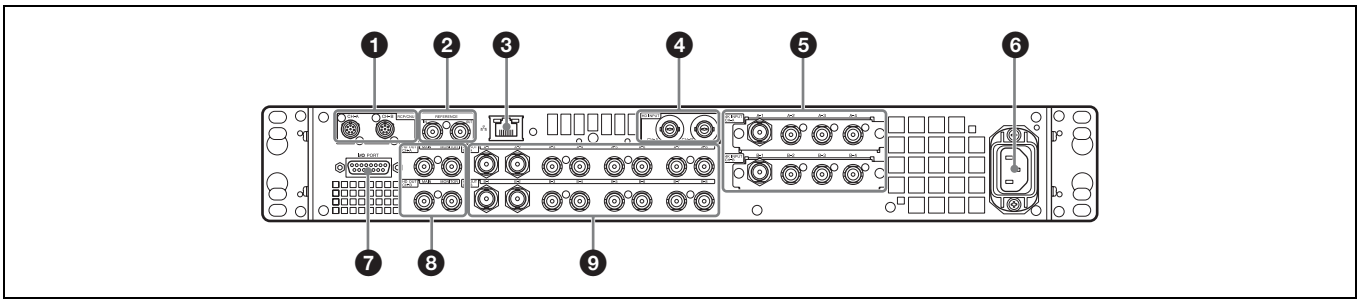
Off: Indicates that the LAN cable is not connected or network system connection parameters have not been set when the CNS MODE setting in <CNS SETTING> is set to BRIDGE or MCS.
The indicator is always off when CNS MODE is set to LEGACY.

For details, see "<CNS SETTINGS>" (page 51).

❽ Menu lock switch

Disables operation of the menu control block on the front panel.

Rear Panel



❶ RCP/CNU CH-A, CH-B connectors (round type, 8-pin)

Connect to an external control device (such as a MSU-1000 Master Setup Unit or RCP-3500/1500 series Remote Control Panel) or command network unit (such as a CNU-700) using a CCA-5 connection cable. Remote control signals are transmitted and received via this connector. It also supplies power when connected to an RCP-3500/1500 series Remote Control Panel.

❷ REFERENCE IN/OUT (reference sync signal) connectors

- **IN connector (BNC type) (left)**

Input an external HD tri-level sync signal or SD reference sync signal (black burst signal).
The type of reference sync signal is detected automatically and can be checked in the setup menu.

- **OUT connector (BNC type) (right)**

Outputs the reference sync signal input on the IN connector as-is (loop through).

❸ (LAN) connector (RJ-45 8-pin)

Connects to a LAN. Connect to a LAN hub (10BASE-T/100Base-TX) using a LAN cable (shielded type, category 5 or higher).

CAUTION

- For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to this port. Follow the instructions for this port.
- When you connect the LAN cable of the unit to peripheral device, use a shielded-type cable to prevent malfunction due to radiation noise.

❹ HD INPUT CH-A, CH-B connectors

Supports 3G/HD-SDI signal inputs (HD).

❺ 4K INPUT CH-A, CH-B connectors

Supports 12G/6G-SDI Single-Link or 3G/HD-SDI Multi-Link signal input (4K input).
3G/HD-SDI signals can also be input on four lines (HD input).
For details about assignments to each signal output connector in the Single-Link interface and Multi-Link interface, see *"Relationship between Connection Type and BNC Connector Assignment" (page 12)*.

❻ ∿ AC IN (AC power supply) connector

Connect to the AC power supply using the specified power supply cord. The power supply cord can be attached to the unit using the optional plug holder.

❼ I/O PORT connector (D-Sub 15-pin)

Connect to an external control device. Can be used to recall an all-settings file or for switching the output of the CH-B MONITOR connector.

❽ HD OUT CH-A, CH-B connectors

3G/HD-SDI signals (HD) are output from the MAIN connectors.
HD output HD-SDI signals with superimposed setup menu or status are output from the MONITOR connectors.
The monitor output of channel B or channel A can be output from the CH-B MONITOR connector. The monitor output channel can be selected using the menu of the unit or using the I/O PORT connector.

❾ 4K OUT CH-A, CH-B connectors

Outputs dual system 12G/6G-SDI Single-Link signals or 3G/HD-SDI Multi-Link signals for each channel (4K output).
3G/HD-SDI signals can also be output on two 4-channel systems (HD output).
For details about assignments to each signal output connector in the Single-Link interface and Multi-Link interface, see *"Relationship between Connection Type and BNC Connector Assignment" (page 12)*.

Connection and Setup

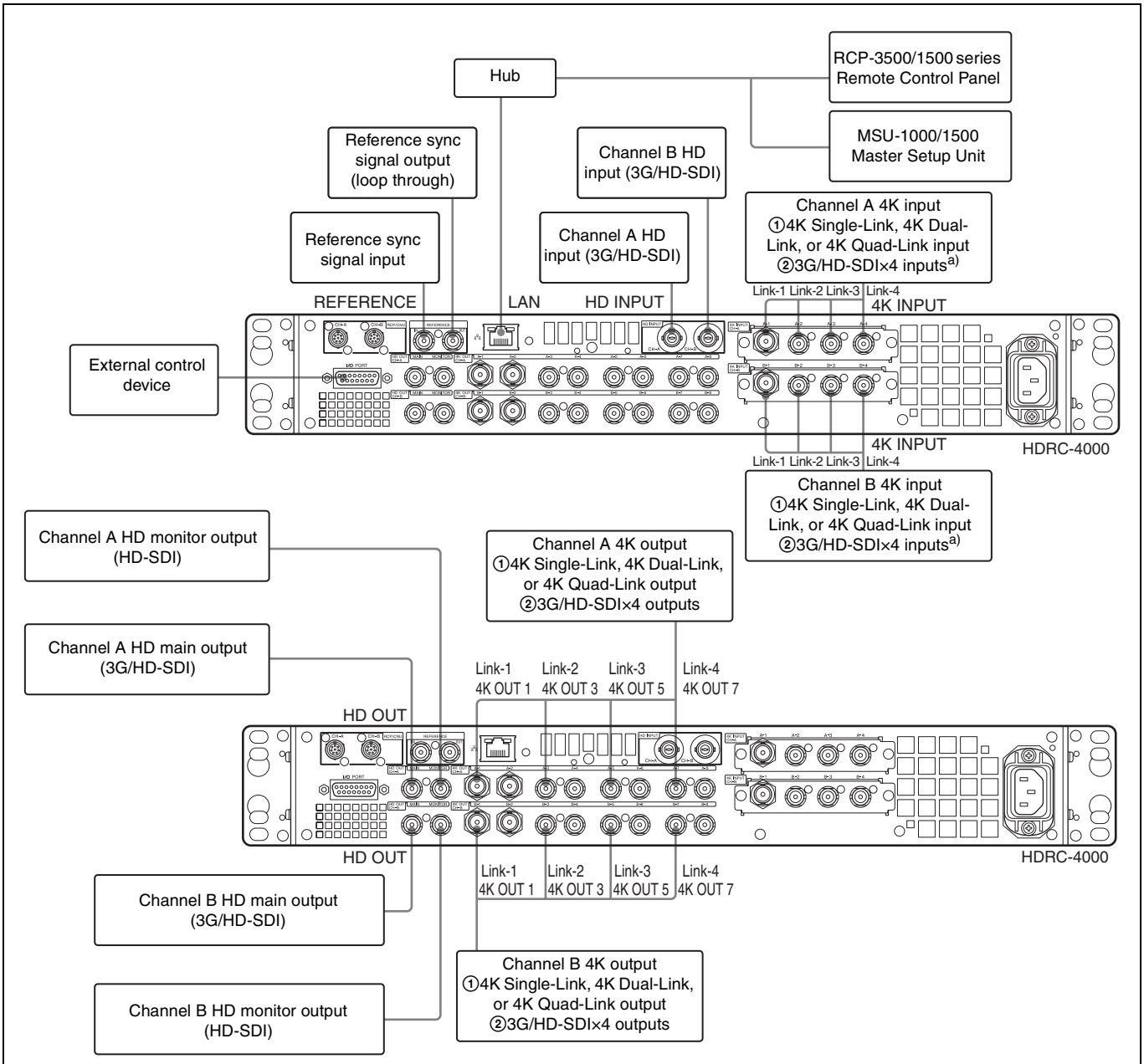
System Connection

The unit accepts 4K signal or HD signal input connected using BNC cables, and simultaneously outputs 4K signals and HD signals converted to various formats.
Dual system signals can be processed at the same time, with each system converted to independent signal formats.

Output signals are output in phase lock with the input reference sync signal, or in phase lock with the channel A input signal if there is no external reference sync signal.[1)]

1) There is no genlock function for locking to the channel B input. Always use an external reference sync signal or input a signal on channel A that is used as a reference sync signal.

Connection example



a) For HD×4 input, input signals with priority on CH1 and CH3. If there is no input on CH1, CH2 to CH4 cannot be used. If there is no input on CH3, CH4 cannot be used.

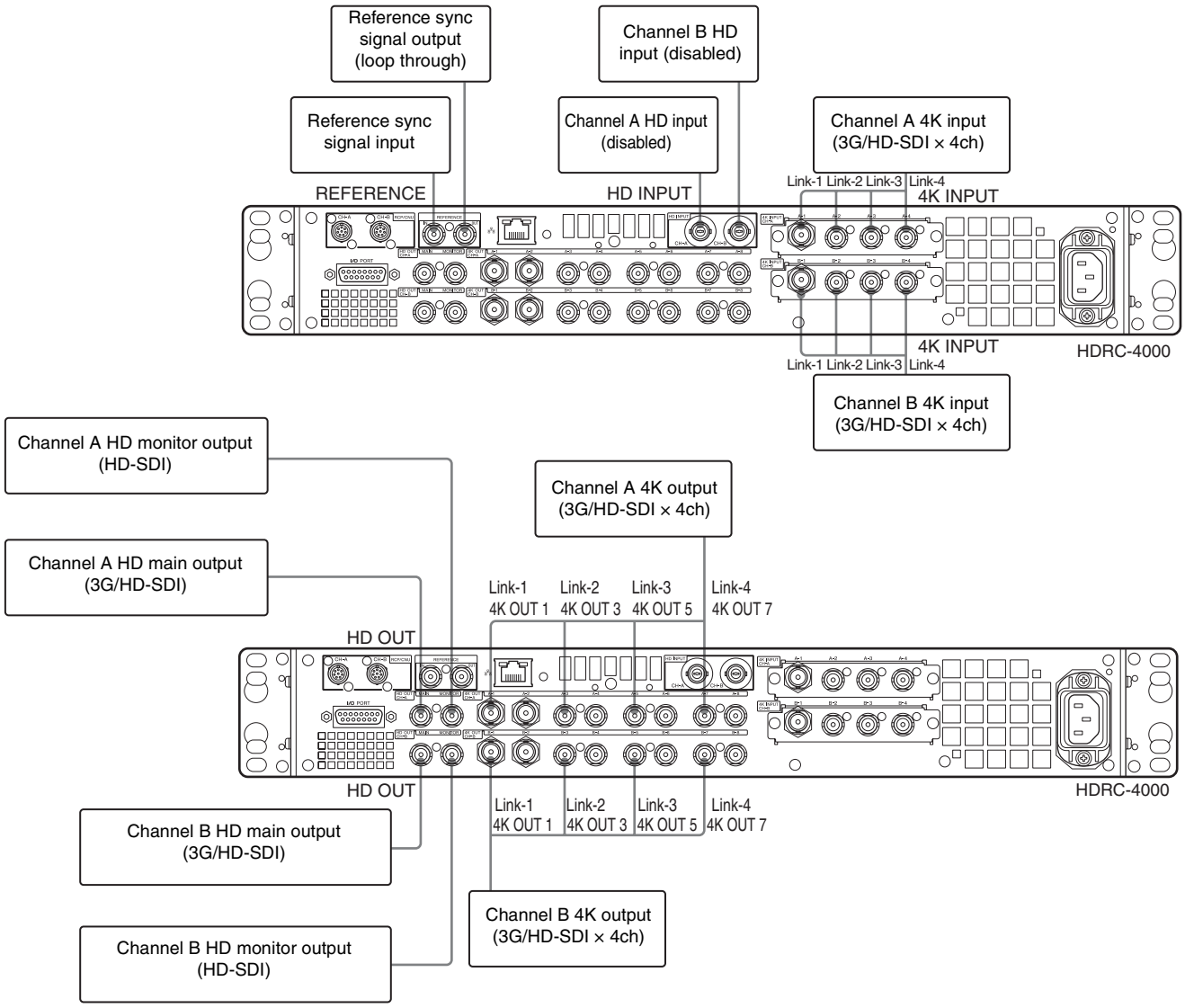
Settings

Setting	Menu/Page	Item		Set value
System format settings	CONFIGURATION/ <SYSTEM> (C01)	SYSTEM FORMAT	RESOLUTION	3840×2160 (fixed)
			FREQUENCY	Set 1.000 or 1.001
			FRAME RATE	Set the video frame frequency
Channel A operation mode settings	CONFIGURATION/ <CHANNEL A SETTINGS> (C03)	AIR MATCHING		Channel A AIR MATCHING function on/ off setting (ON for normal operation)
		THROUGH MODE [a]		Pass through 4K signal from input to output function on/off setting
Channel A input/output video format settings	CONFIGURATION/ <CHANNEL A SETTINGS> (C03)	INPUT	(4K / HD / HDx4IN)	Selects channel A input signal
			(HD-SDI / 3G(Lv-B) / 3G(Lv-A) / 6G-SDI / 12G-SDI)	Displays the input signal auto sensing result
			(AUTO / 2SI / SQD)	Selects 4K input signal format (“---” is displayed for HD input or 12G/6G-SDI input)
			OETF [b] [c]	Selects OETF for the monitor to display the input signal
			COLOR	Selects input signal color space
		OUTPUT 4K	(HD-SDI / 3G(Lv-B) / 3G(Lv-A) / 6G-SDI / 12G-SDI)	Selects channel A 4K output connector signal format
			(2SI / SQD)	Selects channel A 4K output connector signal format (“---” is displayed for HD output or 12G/6G-SDI output)
			OETF [b] [c]	Selects OETF for the monitor to display the output signal
			COLOR	Selects output signal color space
		OUTPUT HD	(3G(Lv-A) / 3G(Lv-B) / HD-SDI)	Selects channel A HD main output connector signal format
			HD IN A-1 / HD IN A-2 / HD IN A-3 / HD IN A-4	Selects the input signal to output on the HD output connector when HDx4IN is selected.
			OETF [b] [c]	Selects OETF for the monitor to display the output signal
			COLOR	Selects output signal color space
Channel B operation mode settings	CONFIGURATION/ <CHANNEL B SETTINGS> (C04)	AIR MATCHING		Channel B AIR MATCHING function on/ off setting (ON for normal operation)
		THROUGH MODE [a]		Pass through 4K signal from input to output function on/off setting

Setting	Menu/Page	Item		Set value
Channel B input/output video format settings	CONFIGURATION/ <CHANNEL B SETTINGS> (C04)	INPUT	(4K / HD / HDx4IN / CH.A) [d]	Selects channel B input signal [c]
			(HD-SDI / 3G(Lv-B) / 3G(Lv-A) / 6G-SDI / 12G-SDI)	Displays the input signal auto sensing result
			(AUTO / 2SI / SQD)	Selects 4K input signal format (“---” is displayed for HD input or 12G/6G-SDI input)
			OETF [b] [c]	Selects OETF for the monitor to display the input signal
			COLOR	Selects input signal color space
		OUTPUT 4K	(HD-SDI / 3G(Lv-B) / 3G(Lv-A) / 6G-SDI / 12G-SDI)	Selects channel B 4K output connector signal format
			(2SI / SQD)	Selects channel B 4K output connector signal format (“---” is displayed for HD output or 12G/6G-SDI output)
			OETF [b] [c]	Selects OETF for the monitor to display the output signal
			COLOR	Selects output signal color space
		OUTPUT HD	(3G(Lv-A) / 3G(Lv-B) / HD-SDI)	Selects channel B HD main output connector signal format
			HD IN B-1 / HD IN B-2 / HD IN B-3 / HD IN B-4	Selects the input signal to output on the HD output connector when HDx4IN is selected.
			OETF [b] [c]	Selects OETF for the monitor to display the output signal
			COLOR	Selects output signal color space

a) Even when THROUGH MODE is set to ON, always connect a video signal locked to the reference sync signal.
b) On the unit, select the OETF settings to match the OETF of the monitors displaying the input signal and output signal.
c) Also performs HDR/SDR output signal switching.
d) Select CH.A to output the input signal on channel A from channel B.

Input/output connectors in through mode



In through mode, the signal input on the 4K input of each channel is output on the 4K output.

In through mode, the signal input on the 4K input 1 of each channel is output on the HD output.

Relationship between Connection Type and BNC Connector Assignment

The names of the input/output interfaces in Table 1 correspond to BNC connector assignments in Tables 2 and 3. Check the input/output interface for the format you want to use in Table 1, then check the signal assignments to BNC connectors in Tables 2 and 3.

Table 1: Relationship between 4K operation mode/signal format and input/output interface

System format		4K input/output interface	
Frequency	**Frame rate**		
1.001	59.94	12G-SDI	Single-Link
		3G-SDI	Quad-Link
	29.97	6G-SDI	Single-Link
		3G-SDI	Dual-Link
		HD-SDI	Quad-Link
	23.98	6G-SDI	Single-Link
		3G-SDI	Dual-Link
		HD-SDI	Quad-Link
1.000	50	12G-SDI	Single-Link
		3G-SDI	Quad-Link
	25	6G-SDI	Single-Link
		3G-SDI	Dual-Link
		HD-SDI	Quad-Link
	24	6G-SDI	Single-Link
		3G-SDI	Dual-Link
		HD-SDI	Quad-Link

Table 2: Relationship between 4K input interface and BNC connector assignment

Input interface	4K INPUT CH-A				4K INPUT CH-B			
	A-1	**A-2**	**A-3**	**A-4**	**B-1**	**B-2**	**B-3**	**B-4**
Single-Link	Link-1				Link-1			
Dual-Link	Link-1	Link-2			Link-1	Link-2		
Quad-Link	Link-1	Link-2	Link-3	Link-4	Link-1	Link-2	Link-3	Link-4
HD×4 [a)]	CH-1	CH-2	CH-3	CH-4	CH-1	CH-2	CH-3	CH-4

a) For HD×4 input, prioritize input signals on CH-1 and CH-3. If there is no input on CH-1, CH-2 cannot be used. Likewise, if there is no input on CH-3, CH-4 cannot be used.

Table 3: Relationship between 4K output interface and BNC connector assignment

Output interface	4K OUT CH-A				4K OUT CH-B			
	A-1,2	**A-3,4**	**A-5,6**	**A-7,8**	**B-1,2**	**B-3,4**	**B-5,6**	**B-7,8**
Single-Link	Link-1				Link-1			
Dual-Link	Link-1	Link-2	Link-1	Link-2	Link-1	Link-2	Link-1	Link-2
Quad-Link	Link-1	Link-2	Link-3	Link-4	Link-1	Link-2	Link-3	Link-4
HD×4	CH-1	CH-2	CH-3	CH-4	CH-1	CH-2	CH-3	CH-4

Supported Formats and Input/Output Interface

4K input/output connectors

4K input/output formats

System format		4K input/output		
Frequency	**Frame rate**	**Input/output format**	**Input/output interface**	
1.001	59.94	2160/59.94P	12G-SDI	No division
			3G-SDI Level-A/B	2SI
				SQD
	29.97	2160/29.97P	6G-SDI	No division
			3G-SDI Level-B	2SI
		2160/29.97PsF	3G-SDI Level-B	SQD
			HD-SDI	SQD
	23.98	2160/23.98P	6G-SDI	No division
			3G-SDI Level-B	2SI
		2160/23.98PsF	3G-SDI Level-B	SQD
			HD-SDI	SQD
1.000	50	2160/50P	12G-SDI	No division
			3G-SDI Level-A/B	2SI
				SQD
	25	2160/25P	6G-SDI	No division
			3G-SDI Level-B	2SI
		2160/25PsF	3G-SDI Level-B	SQD
			HD-SDI	SQD
	24	2160/24P	6G-SDI	No division
			3G-SDI Level-B	2SI
		2160/24PsF	3G-SDI Level-B	SQD
			HD-SDI	SQD

HD×4 input/output format

System format		HD input/output	
Frequency	**Frame rate**	**Input/output format**	**Input/output interface**
1.001	59.94	1080/59.94P	3G-SDI Level-A/B
		1080/59.94i	HD-SDI
	29.97	1080/29.97PsF	HD-SDI
	23.98	1080/23.98PsF	HD-SDI
1.000	50	1080/50P	3G-SDI Level-A/B
		1080/50i	HD-SDI
	25	1080/25PsF	HD-SDI
	24	1080/24PsF	HD-SDI

HD input/output connectors

HD input formats

System format		HD input	
Frequency	**Frame rate**	**Input format**	**Input interface**
1.001	59.94	1080/59.94P	3G-SDI Level-A/B
		1080/59.94i	HD-SDI
		1080/29.97PsF	HD-SDI
		720/59.94P	HD-SDI
	29.97	1080/29.97PsF	HD-SDI
	23.98	1080/23.98PsF	HD-SDI
1.000	50	1080/50P	3G-SDI Level-A/B
		1080/50i	HD-SDI
		1080/25PsF	HD-SDI
		720/50P	HD-SDI
	25	1080/25PsF	HD-SDI
	24	1080/24PsF	HD-SDI

HD output formats

System format		HD output		HD monitor output	
Frequency	**Frame rate**	**Output format**	**Output interface**	**Output format**	**Output interface**
1.001	59.94	1080/59.94P	3G-SDI Level-A/B	1080/59.94i	HD-SDI
		1080/59.94i	HD-SDI		
	29.97	1080/29.97PsF	HD-SDI	1080/29.97PsF	HD-SDI
	23.98	1080/23.98PsF	HD-SDI	1080/23.98PsF	HD-SDI
1.000	50	1080/50P	3G-SDI Level-A/B	1080/50i	HD-SDI
		1080/50i	HD-SDI		
	25	1080/25PsF	HD-SDI	1080/25PsF	HD-SDI
	24	1080/24PsF	HD-SDI	1080/24PsF	HD-SDI

* Frame rate conversion is not supported.

Preserving and Mapping ANC Data

The unit supports various conversions while preserving ANC data (Ancillary Data) multiplexed with the SDI signal.

Note

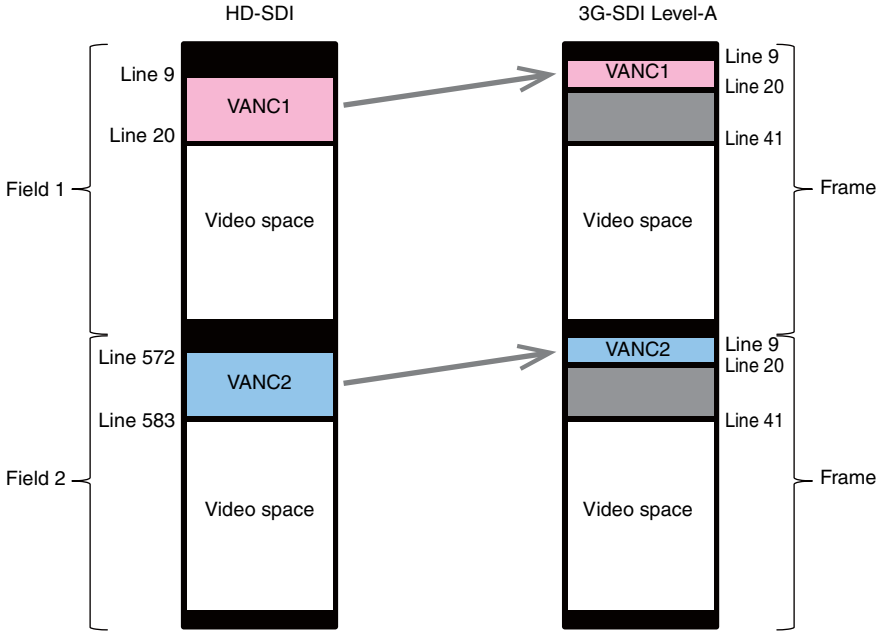
The line numbers on which VANC data can be mapped is limited. For details, see *"Restrictions" (page 16)*.

VANC data mapping

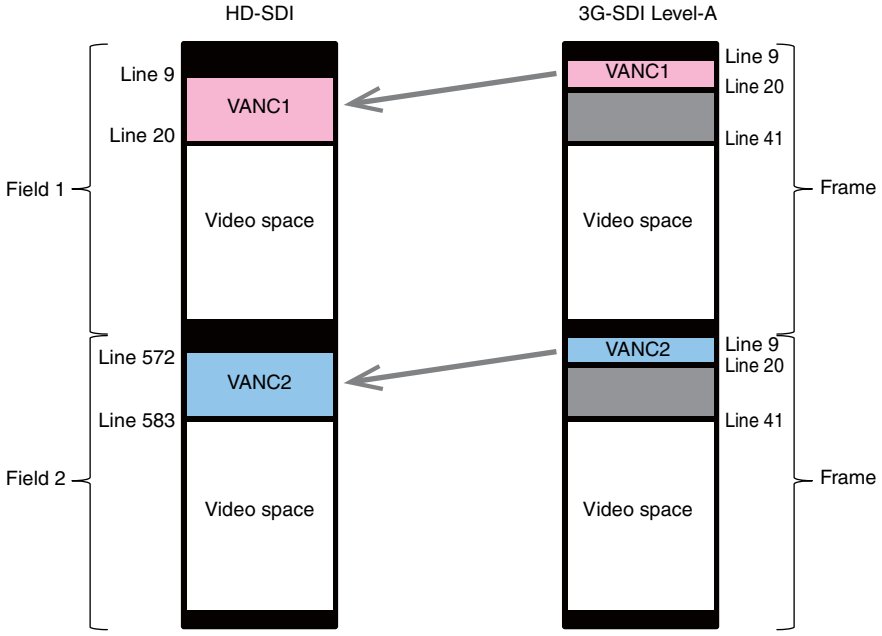
There are two modes that determine how VANC data is mapped from the input SDI signal to the output SDI signal (normal mode and field mode).
When different data is included in field 1 and field 2 in the VANC data space of an HD-SDI/3G-SDI Level-B signal (referred to as HD-SDI), such as material transmission ancillary data (ARIB TR-B22), field mode is used. In other cases, normal mode is used.

Normal mode

In this mode, when converting between HD-SDI and 3G-SDI Level-A/6G-SDI/12G-SDI (referred to as 3G-SDI Level-A), the VANC data for 3G-SDI Level-A always uses the same space, regardless of whether the HD-SDI field is field 1 or field 2. When converting from HD-SDI to 3G-SDI Level-A, VANC is mapped as shown in the following figure.

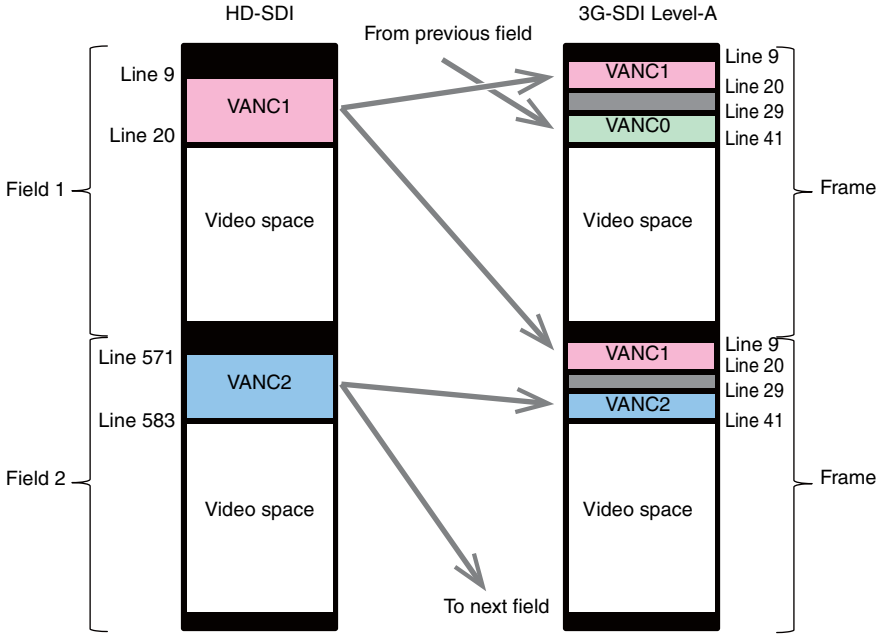


When converting from 3G-SDI Level-A to HD-SDI, VANC is mapped as shown in the following figure.

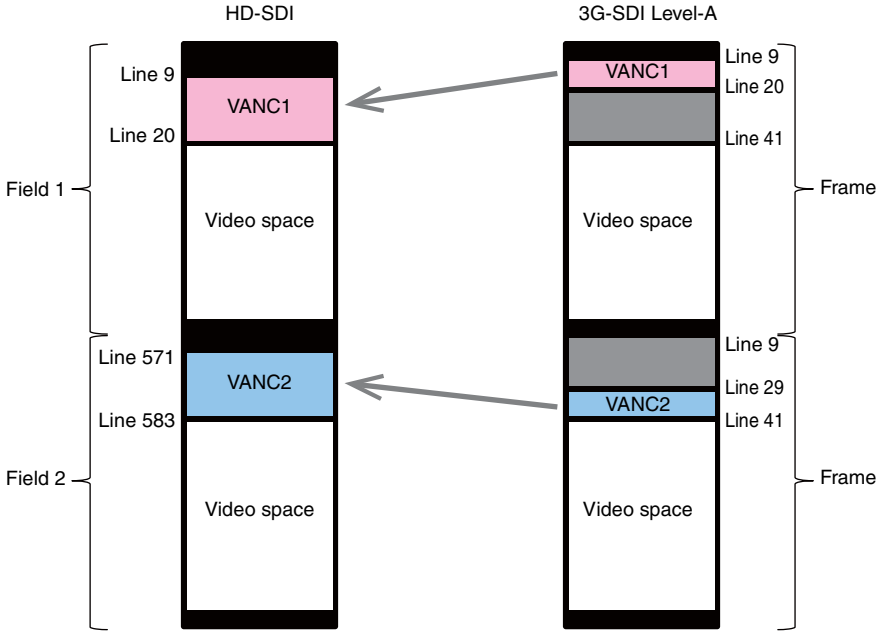


Field mode

In this mode, when converting between HD-SDI and 3G-SDI Level-A, the space used for VANC data for 3G-SDI Level-A changes depending on whether the HD-SDI field is field 1 or field 2.
When converting from HD-SDI to 3G-SDI Level-A, VANC is mapped as shown in the following figure.



When converting from 3G-SDI Level-A to HD-SDI, VANC is mapped as shown in the following figure.



Restrictions

To preserve VANC data, set the delay mode to NORMAL. VANC data may not be preserved correctly when the delay mode is set to MINIMUM.

SR Live Metadata Input/Output

When generating an SDR signal from an HDR signal, you can embed a group of required settings (HDR SDR Relation Table) in the VANC space of the SDI signal. This allows a receiving device to display the settings or to apply the group of settings to the HDR signal to SDR signal conversion settings automatically.

HDR SDR Relation Table

The following items[1] are sent and received as SR Live Metadata.

No.	Item name	Description
1	Table Version	Table version information (V1.00)
2	OETF	OETF format applied to the embedded video signal (SDR PQ, HLG, S-Log3)
3	Transfer Matrix	Transfer matrix applied to the embedded video signal (BT.709, BT.2020)
4	Color Gamut	Color gamut applied to the embedded video signal (BT.709, WIDE-BC)
5	Conversion Mode	Conversion mode setting applied during video conversion (SR AIR OFF, SR AIR ON, DR MAP)[2]
6	HDR Look	Look setting of the HDR video (Live, Mild, Natural)
7	HDR Black Compression	HDR video shadow compression function on/off setting
8	SDR Gain	Gain differential between HDR video and SDR video
9	SDR Master Black	Black level setting of the SDR video [absolute value]
10	HDR Black Offset	Black level offset of the HDR video from the SDR video
11	Gamma Table	Type and number of the gamma curve of the SDR video (STD, HYPER)
12	Gamma Step	Gamma strength of the SDR video (discrete value)
13	Gamma Level	Gamma strength of the SDR video (continuous value) [absolute value]
14	Knee	SDR video highlight compression function on/off setting
15	Knee Point	Level of the knee point of the SDR video highlight compression function [absolute value]
16	Knee Slope	Slope of the line above the knee point of the SDR video highlight compression function [absolute value]
17	Knee Saturation	Knee saturation function on/off setting for SDR video (changes the saturation in the knee area of the highlight compression function)
18	Knee Saturation Level	Strength of the knee saturation function of the SDR video [absolute value]
21	SDR White Clip	White clip function on/off setting for SDR video
22	SDR White Clip Level	Level of the white clip function of the SDR video [absolute value]
23	HDR Knee	HDR Knee function on/off setting for HDR video (HDR highlight compression)
24	HDR Knee Point	Level of the knee point of the HDR Knee function [absolute value]
25	HDR Knee Slope	Slope of the line above the knee point of the HDR Knee function [absolute value]

1) Only HDRC-4000 supported items are shown.
2) SR AIR OFF = Scene Referred conversion, AIR MATCHING is OFF
SR AIR ON = Scene Referred conversion, AIR MATCHING is ON
DR Map = Display Referred conversion

SR Live Metadata output

SR Live Metadata can be embedded in the VANC space (on/off setting).
The data can be embedded in a line between lines 9 and 20.
SR Live Metadata is embedded in line 14 by default. When the output format is 3G-SDI Level B/HD-SDI, SR Live Metadata is also embedded in the 2nd field.

SR Live Metadata input

HDR SDR Relation Table data included in the input signal can be applied to the conversion settings.
The following two modes are supported.

Apply Once: Data is applied only when an import operation is performed.

Apply Continuously: The input metadata is continuously loaded and the data is always applied.

Note

There will be a delay of several frames when applying the data.

HDR Look Function

The HDR Look is a settings that determines the basic Look (visual performance, attractiveness) of the HDR video.
This is a basic setting that determines how the image captured by the camera will be displayed on the display as an HDR image. You can select from the following three settings.

Live: Characteristics based on the traditional Look derived from current SDR images. A powerful image with strong contrast and high color density. Wide dynamic range with substantial image brightness, capturing highlights without overexposure.

Mild: Based on the Live Look but with an overall milder image characteristic.

Natural: HLG original Look. Calm, gentle color density. The actual sensitivity setting is reduced, but with better S/N ratio. (Natural Look can be selected only when the output signal OETF setting is HLG.)

Look Conversion Function

When converting from HDR to HDR, the basic characteristics of the video (HDR Look and HDR Black Compression) can be converted at the input and output.
To use the Look conversion function, AIR MATCHING and ADDITIONAL PAINT must be set to ON.

(When the Look conversion function is ON, the HDR Black Compression item and HDR Look item are set to “---” on the Channel A/B Settings page of the CONFIGURATION menu.)

For example, if you want to convert a Natural Look HLG signal to an S-Log3 signal with black level the same as SDR using Live Look, set the following in the ADDITIONAL PAINT menu.

Input side	OETF: HLG(Var1.2), Look: Natural, HDR Black Compression: OFF
Output side	OETF: S-Log3(Live HDR), Look: Live, HDR Black Compression: ON

Note

The system is assumed to be operated in the following combination of HDR video signal setting (OETF) and display input signal setting (EOTF) for display.
HDR signal (OETF): Display input signal setting (EOTF)
S-Log3: S-Log3 (Live HDR)
HLG: ITU-R BT.2100 (HLG) (Var. System Gamma 1.200)

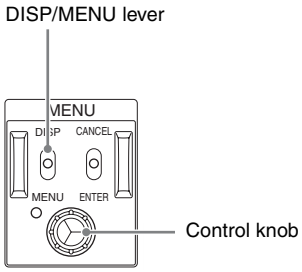
Status Display

The unit and system status can be monitored using text characters superimposed on the HD monitor output signal.

For details about checking and changing settings, see "Menu Settings" (page 19).

Displaying the Status Screen

The menu screen is controlled using the knob and levers in the MENU control block on the front panel.



To display the status screen

Set the DISP/MENU lever to the DISP position once.
The status of each input signal and the setting of each output signal are displayed in a list.

To exit the status screen

In status screen display mode, set the DISP/MENU lever to the DISP position once.

Status Display Screen

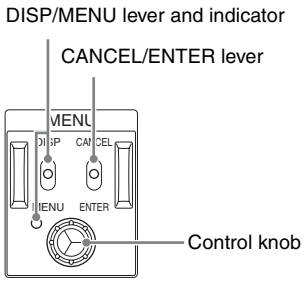
```
REF: REF IN    LOCKED

CHANNEL A: INPUT OK
 AIR  : ON
 MODE : NORMAL     ADD PAINT: OFF
 INPUT: 4K  SQD 3G-A S-Log3  2020
 OUTPUT 4K: 2SI 3G-B HLG     2020
 OUTPUT HD:     1.5G SDR     709

CHANNEL B: INPUT OK
 AIR  : ON
 MODE : FS         ADD PAINT: OFF
 INPUT: HD      1.5G SDR     709
 OUTPUT 4K: 2SI 3G-A HLG     2020
 OUTPUT HD:     3G-B S-Log3  2020
```

Menu Settings

The unit and system status can be monitored and various settings can be checked and modified using the menu displayed in the HD monitor output.

Changing Settings using the Menu

The menu screen is controlled using the knob and levers in the MENU control block on the front panel.
Pushing the control knob and setting the CANCEL/ENTER level to ENTER have the same function.



To display a menu page

Set the DISP/MENU lever to the MENU position.
When displayed for the first time after being powered on, the TOP MENU page is displayed. When the menu is redisplayed, the menu page that was last displayed when the menu was dismissed is displayed again.

To display the TOP MENU screen

In menu display mode, turn the control knob to move the ➡ cursor to TOP in the upper right corner of the menu page, then press the control knob.
The TOP menu showing the menu configuration is displayed.

```
<TOP MENU>

→CONFIGURATION
 SETUP
  1.HDR→HDR
  2.HDR→SDR
  3.SDR→HDR
  4.SDR→SDR
  5.4K→HD
  6.HD→4K
 ADDITIONAL PAINT
 FILE
 NETWORK
 DIAGNOSIS
```

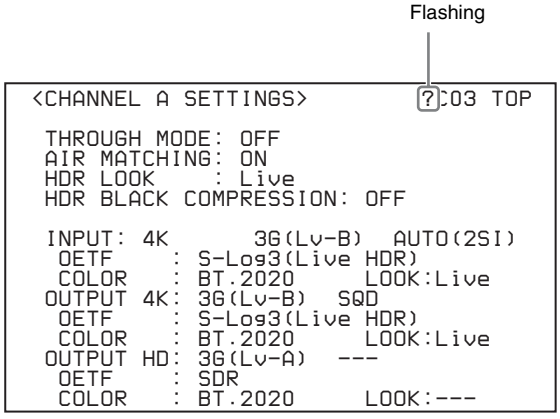
Menu	Description
CONFIGURATION	Use to set basic settings of the unit (excludes image quality settings).
SETUP	Use to set the image quality when converting video on the unit. 1. HDR→HDR Configure settings for converting from HDR to HDR. 2. HDR→SDR Configure settings for converting from HDR to SDR. 3. SDR→HDR Configure settings for converting from SDR to HDR. 4. SDR→SDR Configure settings for converting from SDR to SDR. 5. 4K→HD Configure settings for down-converting from 4K to HD. 6. HD→4K Configure settings for up-converting from HD to 4K.
ADDITIONAL PAINT	Use to set additional image quality settings of the unit. If ADDITIONAL PAINT is OFF, the image quality settings in this menu are disabled (excluding the detail settings).
FILE	Use to set file-related settings (saving, loading, clearing) of the unit.
NETWORK	Use to configure network-related settings.
DIAGNOSIS	Displays the device status.

To select a menu from the TOP MENU

Turn the control knob to move the ➡ cursor to the desired menu and push the knob.
The last accessed page in the selected menu will be displayed.

To change page

1 Check that the ➡ cursor is pointing to the page number then push the control knob.
The ➡ cursor changes to a flashing ? (question mark).



2 Turn the control knob to flip through the pages, and push the knob when the desired page is displayed.
The ? (question mark) changes back to ➡. Items on the page can now be selected.

To set a menu item

If ? (question mark) is displayed to the left of the page number, push the control knob to change to the ➡ cursor. Settings on the displayed page can now be modified.

1 Turn the control knob to move the ➡ cursor to the desired item and push the knob.
The ➡ cursor changes to a flashing ? (question mark).

2 Turn the control knob to change the setting.

To cancel a changed setting
Set the CANCEL/ENTER lever to CANCEL before pushing the control knob to restore the original setting.

To cancel menu changes
Set the DISP/MENU switch to MENU to turn off the menu screen display.
The menu setting operation can be restarted by setting the DISP/MENU switch to MENU again.

3 Push the control knob.
The ? (question mark) changes back to ➡, and the item setting is registered.

4 To change other settings on the same menu page, repeat steps 1 to 3.

To set a menu item with multiple input fields

Some menus have items with multiple input fields.
If you press the control knob when the ➡ cursor is pointing to an item with multiple input fields, the input fields are displayed for setting each input field.
The cursor is moved by turning the control knob.

1 Turn the control knob to move the ➡ cursor to the desired item and push the knob.
The ➡ cursor changes to a flashing ∗ (asterisk). The input fields and ➡ cursor are displayed.

2 Turn the control knob to move the ➡ cursor to the desired input field and push the knob.
The ➡ cursor changes to a flashing ? (question mark).

3 Turn the control knob to change the setting.

To cancel a changed setting in an input field
Set the CANCEL/ENTER lever to CANCEL before pushing the control knob to restore the original setting of the input field. Other changed input fields for the item are not restored to their previous setting.

To cancel menu changes
Set the DISP/MENU switch to MENU to turn off the menu screen display.
The menu setting operation can be restarted by setting the DISP/MENU switch to MENU again.

4 Push the control knob.
The ? (question mark) changes back to ➡, and the input field setting changes.

5 Repeat steps 2 to 4 to change other input fields.

6 Turn the control knob to move the ➡ cursor to END and push the knob.
The ∗ (asterisk) changes back to ➡, and all the changes for the item setting are applied.

To cancel all settings

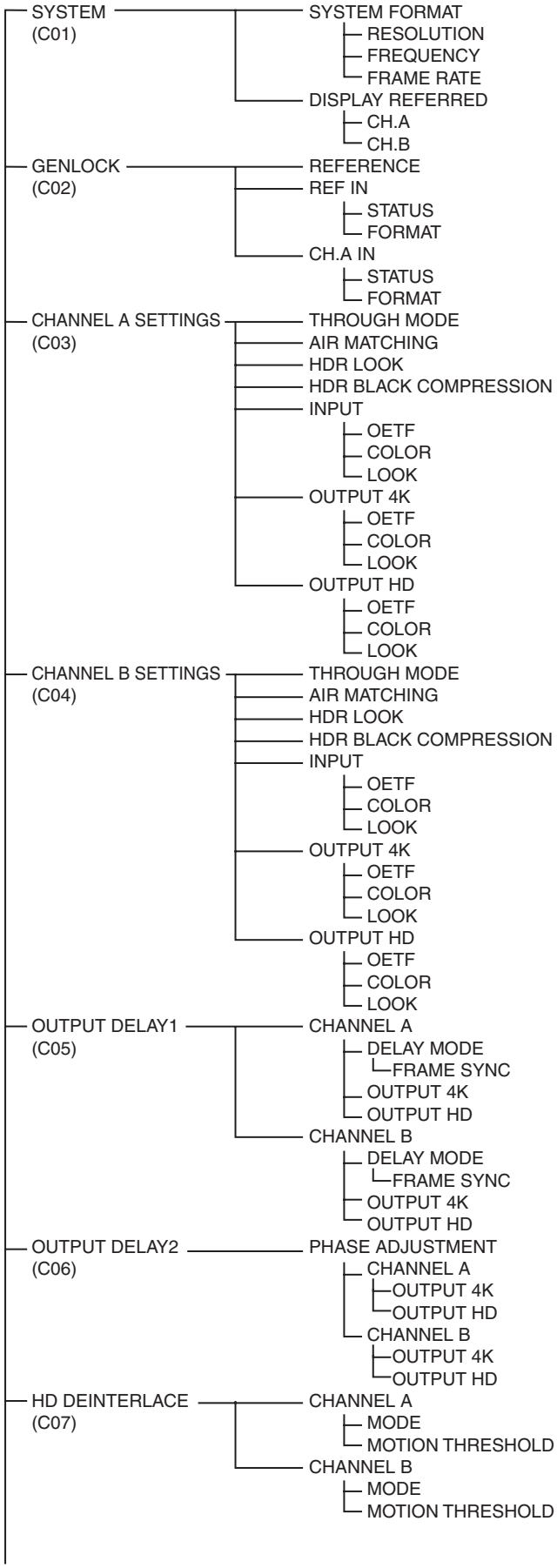
Move the ➡ cursor to ESC and push the control knob. The ∗ (asterisk) changes back to ➡, and all the changes for the item are discarded.

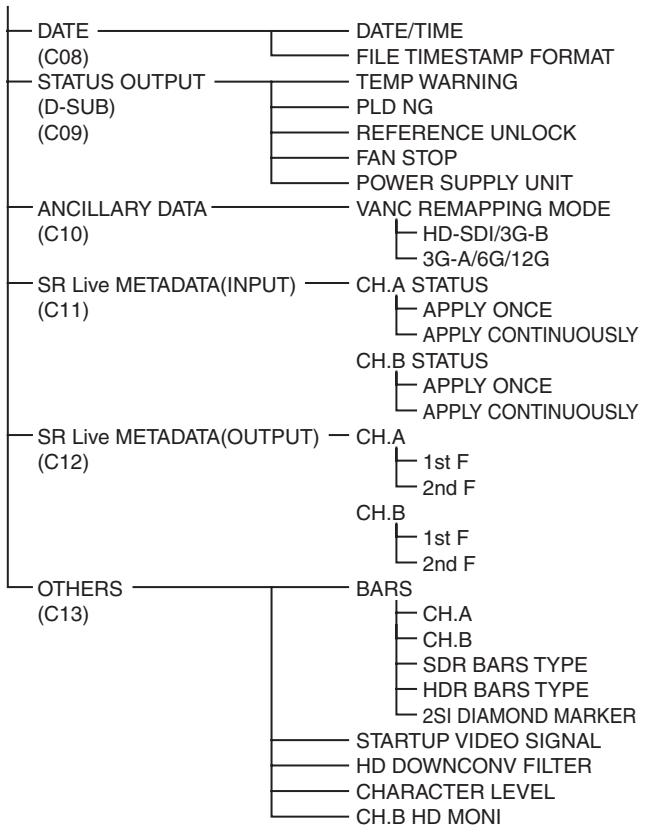
To exit the menu

In menu display mode, set the DISP/MENU lever to MENU.

Menu Tree

CONFIGURATION menu





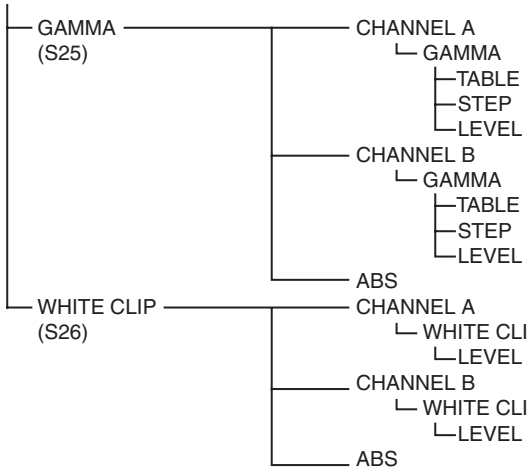
SETUP menu

HDR→HDR

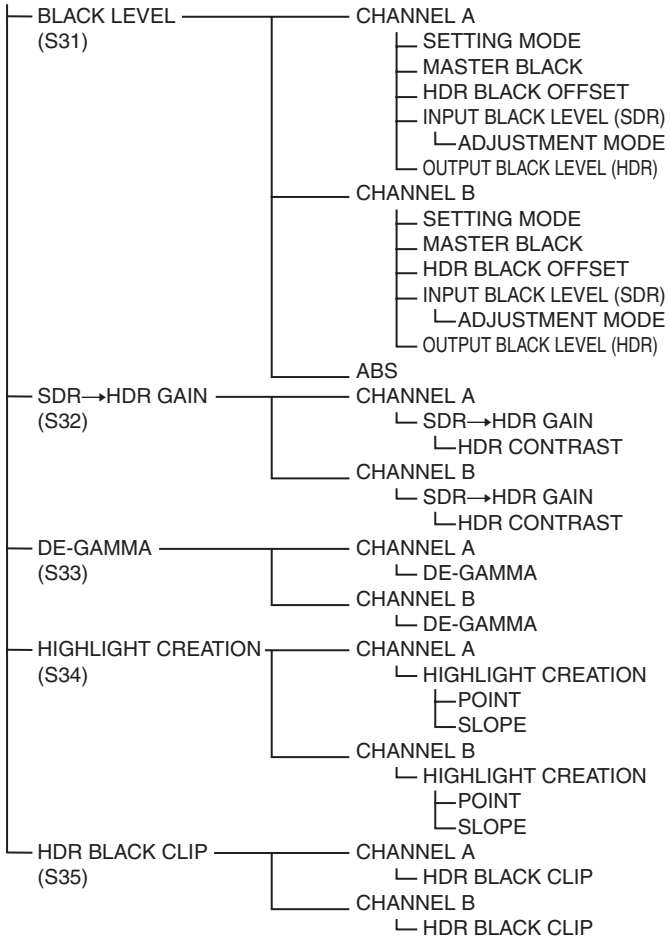
- BLACK LEVEL (S11)
  - CHANNEL A
    - SETTING MODE
    - MASTER BLACK
    - HDR BLACK OFFSET
    - INPUT BLACK LEVEL (HDR)
      - ADJUSTMENT MODE
    - OUTPUT BLACK LEVEL (HDR)
  - CHANNEL B
    - SETTING MODE
    - MASTER BLACK
    - HDR BLACK OFFSET
    - INPUT BLACK LEVEL (HDR)
      - ADJUSTMENT MODE
    - OUTPUT BLACK LEVEL (HDR)
  - ABS
- HDR BLACK CLIP (S12)
  - CHANNEL A
    - HDR BLACK CLIP
  - CHANNEL B
    - HDR BLACK CLIP

HDR→SDR

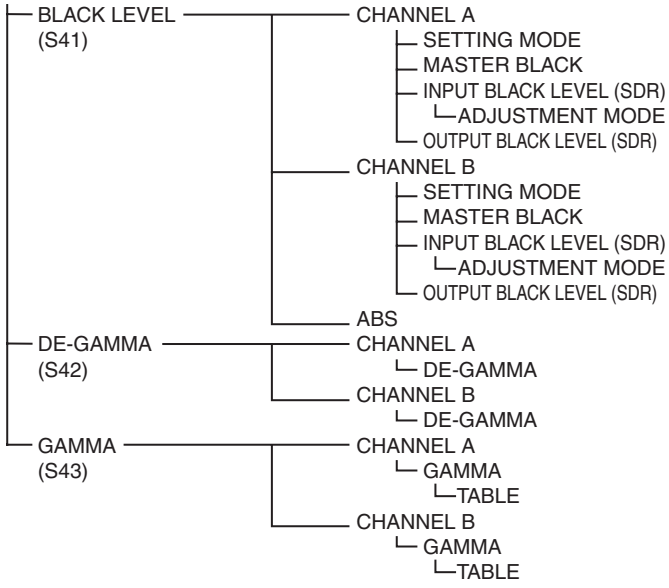
- BLACK LEVEL (S21)
  - CHANNEL A
    - SETTING MODE
    - MASTER BLACK
    - HDR BLACK OFFSET
    - INPUT BLACK LEVEL (HDR)
      - ADJUSTMENT MODE
    - OUTPUT BLACK LEVEL (SDR)
  - CHANNEL B
    - SETTING MODE
    - MASTER BLACK
    - HDR BLACK OFFSET
    - INPUT BLACK LEVEL (HDR)
      - ADJUSTMENT MODE
    - OUTPUT BLACK LEVEL (SDR)
  - ABS
- HDR→SDR GAIN (S22)
  - CHANNEL A
    - HDR→SDR GAIN
      - HDR CONTRAST
  - CHANNEL B
    - HDR→SDR GAIN
      - HDR CONTRAST
- HDR DE-KNEE (S23)
  - CHANNEL A
    - HDR DE-KNEE
      - POINT
      - SLOPE
  - CHANNEL B
    - HDR DE-KNEE
      - POINT
      - SLOPE
- KNEE (S24)
  - CHANNEL A
    - KNEE
      - POINT
      - SLOPE
      - MAX
    - KNEE SATURATION
  - CHANNEL B
    - KNEE
      - POINT
      - SLOPE
      - MAX
    - KNEE SATURATION
  - ABS



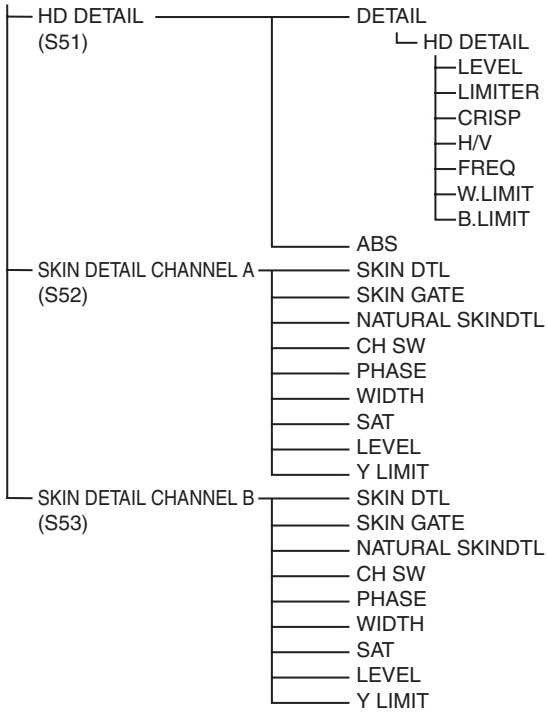
SDR→HDR



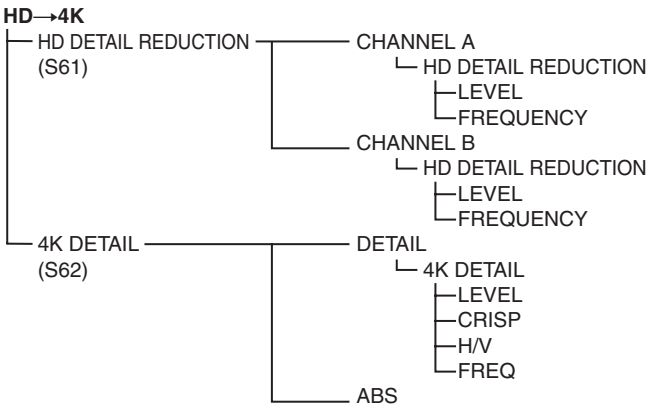
SDR→SDR



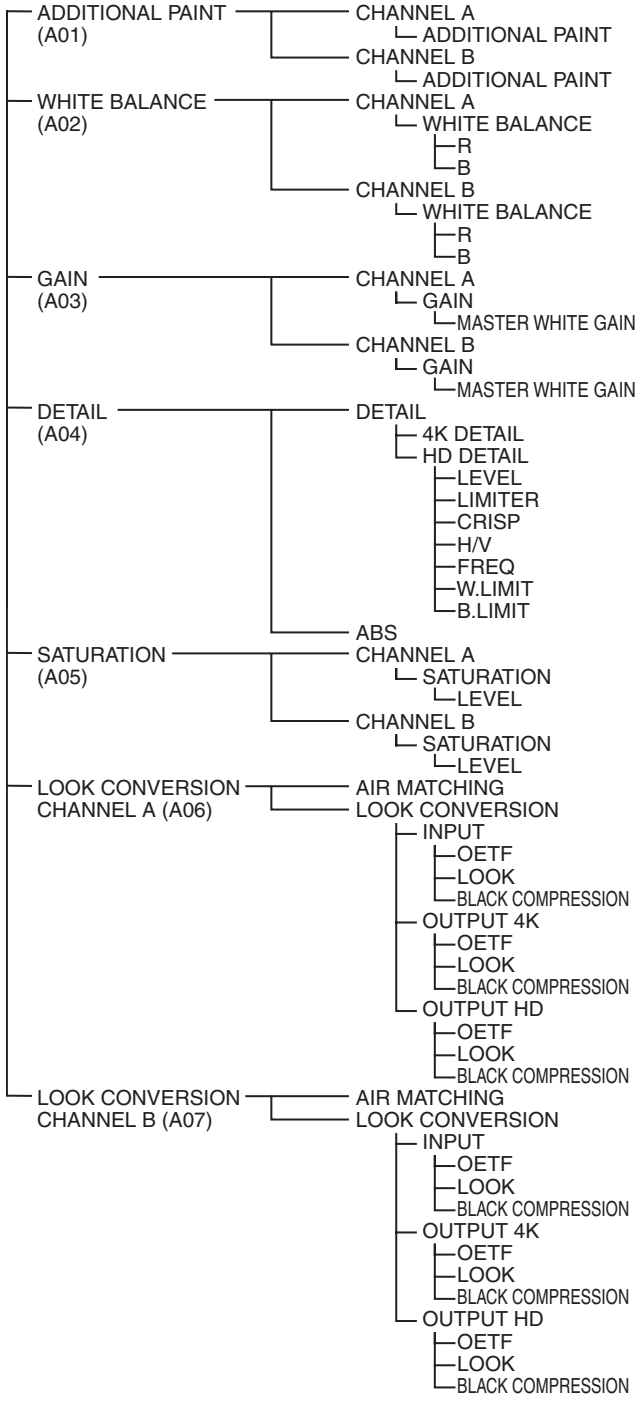
4K→HD



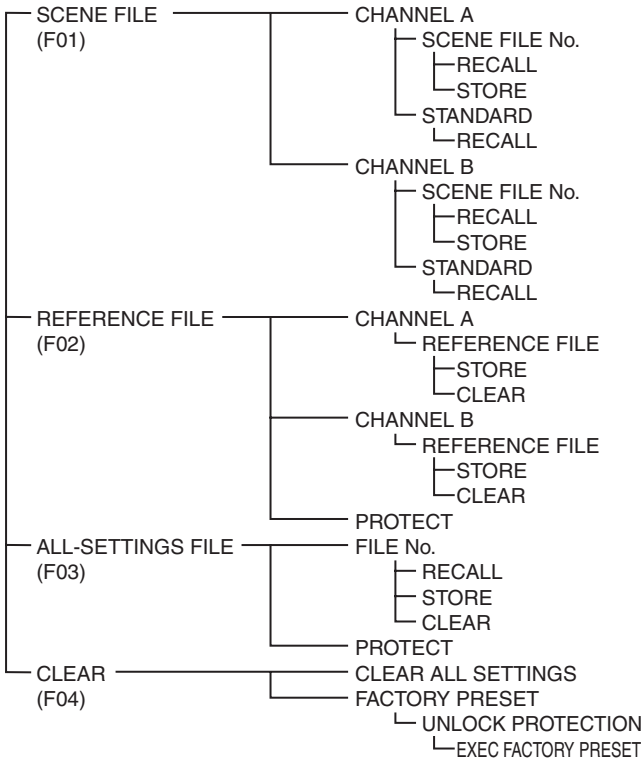
HD→4K



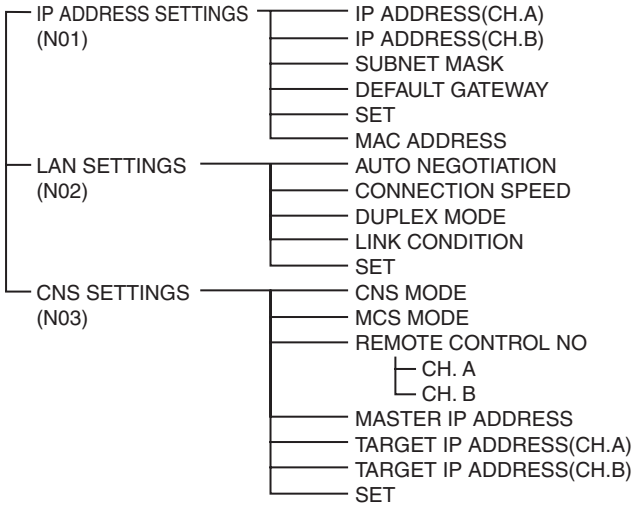
ADDITIONAL PAINT menu



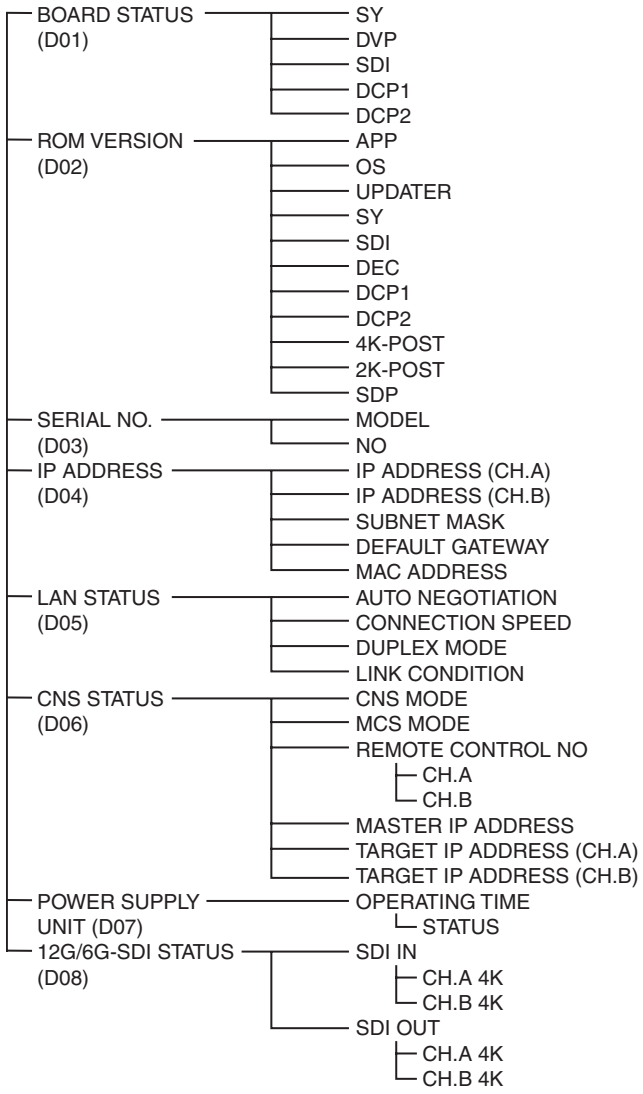
FILE menu



NETWORK menu



DIAGNOSIS menu



Menu List

Legend

The following conventions are used in the menu tables.
Settings <u>ON</u>, <u>OFF</u>, <u>0</u>, etc.: Factory default settings shown underlined.
ENTER to execute: Execute by pushing the control knob or setting the CANCEL/ENTER lever to the ENTER position.

CONFIGURATION menu

Use to set basic settings of the unit (excludes image quality settings).

Page name Page No.	Item		Set value	Meaning
<SYSTEM> C01	SYSTEM FORMAT			System format settings
		RESOLUTION	3840×2160	Resolution setting (display only)
		FREQUENCY	**<u>1.001</u>**, 1.000	Base frequency setting
		FRAME RATE	**<u>59.94</u>**, 50, 29.97, 25, 24, 23.98	Frame rate setting
	DISPLAY REFERRED			Display Referred conversion mode on/off setting Display Referred conversion: Conversion that maintains the image visual appearance on a display. When set to ON, image quality adjustments (excluding conversion gain, Knee, Knee Saturation, SDR White Clip) are fixed.
		CH.A	**<u>OFF</u>**, ON	
		CH.B	**<u>OFF</u>**, ON	
<GENLOCK> C02	REFERENCE		REF IN, CH.A IN, INTERNAL	Reference sync signal in use (display only) REF IN: Using sync signal input on reference sync signal input connector CH.A IN: Using video signal input on channel A INTERNAL: Using internally-generated sync signal
	REF IN			Settings and status of reference sync signal input on reference sync signal input connector (display only)
		STATUS	OK, NO SIGNAL, NG(FORMAT UNMATCHED), NG	OK: Operating normally NO SIGNAL: No signal is input NG(FORMAT UNMATCHED): Format of the input signal does not match the format of the unit NG: An invalid signal is input due to other reasons
		FORMAT	UNKNOWN, NTSC, PAL, 1080/59.94i, 1080/50i, 1080/24PsF	Format of reference sync signal input on reference sync signal input connector (display only)
	CH.A IN			Settings and status of reference sync signal input on channel A (display only)
		STATUS	OK, NO SIGNAL, NG(FORMAT UNMATCHED), NG	OK: Operating normally NO SIGNAL: No signal is input NG(FORMAT UNMATCHED): Format of the input signal does not match the format of the unit NG: An invalid signal is input due to other reasons
		FORMAT	UNKNOWN, NTSC, PAL, 1080/59.94i, 1080/50i, 1080/24PsF	Format of reference sync signal extracted from video signal input on channel A (display only)
<CHANNEL A SETTINGS> C03	THROUGH MODE		**<u>OFF</u>**, ON	Through mode on/off setting. When ON, the input signal on the 4K input connectors of channel A are output as-is on the 4K output connectors. Also, the 4K input connector 1 signal is output on the HD output connector.
	AIR MATCHING		OFF, **<u>ON</u>**	AIR MATCHING function on/off setting. Conversion so that roughly the same “look” is obtained on a monitor displaying the input HDR signal and a monitor displaying the output HDR signal.

Page name Page No.	Item	Set value	Meaning
<CHANNEL A SETTINGS> C03	HDR LOOK	**Live**, Mild, Natural	Video characteristic that determines how the video signal captured by the camera is represented in HDR on the display. Enabled only when AIR MATCHING is set to ON. This sets the same setting as the HDR Look function of the camera. When the Look conversion function is enabled, the Look conversion setting takes priority and this setting is disabled ("---"). For a description of Live, Mild, and Natural, see *"HDR Look Function" (page 17)*.
	HDR BLACK COMPRESSION	**OFF**, ON	HDR Black Compression function (reduces the black level so that the blacks in the HDR video match the blacks in the SDR video) on/off setting. When ON, this sets the same setting as the HDR Black Compression function of the camera. When the Look conversion function is enabled, the Look conversion setting takes priority and this setting is disabled ("---").
	INPUT	**4K**, HD, HDx4IN	Input signal settings HD: Use HD input 4K: Use 4K input HDx4IN: Use four HD signal inputs
		HD-SDI, 3G(Lv-B), 3G(Lv-A), 6G-SDI, 12G-SDI	Input signal format (display only)
		SQD, 2SI, **AUTO**	4K input signal transport format setting ("---" is displayed for HD input or 12G/6G-SDI input) SQD: Square Division (quadrants) 2SI: 2-Sample Interleave AUTO: Detects SQD or 2SI automatically
	OETF	SDR, **S-Log3(Live HDR)**, HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR), HyperGamma4	Input signal OETF setting. When AIR MATCHING is ON, select the setting of the monitor connected to the input side. Fixed to SDR when DISPLAY REFERRED on the <SYSTEM> page is ON
	COLOR	BT.709, **BT.2020**	Input signal color space setting
	LOOK	Live, Mild, Natural	Input signal Look setting (display only)
	OUTPUT 4K	HD-SDI, **3G(Lv-B)**, 3G(Lv-A), 6G-SDI, 12G-SDI	4K output signal format setting
		SQD, 2SI	4K output signal transport format setting ("---" is displayed for HD output or 12G/6G-SDI output) SQD: Square Division (quadrants) 2SI: 2-Sample Interleave
	OETF	SDR, **S-Log3(Live HDR)**, HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR)	4K output signal OETF setting. When AIR MATCHING is ON, select the setting of the monitor connected to the output side.
	COLOR	BT.709, **BT.2020**	4K output signal color space setting
	LOOK	Live, Mild, Natural	4K output signal Look setting (display only)
	OUTPUT HD	**3G(Lv-B)**, 3G(Lv-A), HD-SDI	HD output signal format setting
		HD IN A-1, HD IN A-2, HD IN A-3, HD IN A-4	When using HD×4 inputs, select the signal for output on the HD output connector
	OETF	**SDR**, S-Log3(Live HDR), HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR)	HD output signal OETF setting. When AIR MATCHING is ON, enter the setting of the monitor connected to the output side.
	COLOR	**BT.709**, BT.2020	HD output signal color space setting
	LOOK	Live, Mild, Natural	HD output signal Look setting (display only)

Page name Page No.	Item	Set value	Meaning
<CHANNEL B SETTINGS> C04	THROUGH MODE	**OFF**, ON	Through mode on/off setting. When ON, the input signal on the 4K input connectors of channel B are output as-is on the 4K output connectors. Also, the 4K input connector 1 signal is output on the HD output connector.
	AIR MATCHING	OFF, **ON**	AIR MATCHING function on/off setting. Conversion so that roughly the same “look” is obtained on a monitor displaying the input HDR signal and a monitor displaying the output HDR signal.
	HDR LOOK	**Live**, Mild, Natural	Video characteristic that determines how the video signal captured by the camera is represented in HDR on the display. Enabled only when AIR MATCHING is set to ON. This sets the same setting as the HDR Look function of the camera. When the Look conversion function is enabled, the Look conversion setting takes priority and this setting is disabled (“---”). For a description of Live, Mild, and Natural, see *“HDR Look Function” (page 17)*.
	HDR BLACK COMPRESSION	**OFF**, ON	HDR Black Compression function (reduces the black level so that the blacks in the HDR video match the blacks in the SDR video) on/off setting. When ON, this sets the same setting as the HDR Black Compression function of the camera. When the Look conversion function is enabled, the Look conversion setting takes priority and this setting is disabled (“---”).
	INPUT	**4K**, HD, HDx4IN, CH.A	Input signal settings HD: Use HD input 4K: Use 4K input HDx4IN: Use four HD signal inputs CH.A: Use channel A input signal as the channel B input
		HD-SDI, 3G(Lv-B), 3G(Lv-A), 6G-SDI, 12G-SDI	Input signal format (display only)
		SQD, 2SI, **AUTO**	4K input signal transport format setting (“---” is displayed for HD input or 12G/6G-SDI input) SQD: Square Division (quadrants) 2SI: 2-Sample Interleave AUTO: Detects SQD or 2SI automatically
	OETF	SDR, **S-Log3(Live HDR)**, HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR), HyperGamma4	Input signal OETF setting. When AIR MATCHING is ON, select the setting of the monitor connected to the input side. Fixed to SDR when DISPLAY REFERRED on the <SYSTEM> page is ON
	COLOR	BT.709, **BT.2020**	Input signal color space setting
	LOOK	Live, Mild, Natural	Input signal Look setting (display only)
	OUTPUT 4K	HD-SDI, **3G(Lv-B)**, 3G(Lv-A), 6G-SDI, 12G-SDI	4K output signal format setting
		SQD, 2SI	4K output signal transport format setting (“---” is displayed for HD output or 12G/6G-SDI output) SQD: Square Division 2SI: 2-Sample Interleave
	OETF	SDR, **S-Log3(Live HDR)**, HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR)	4K output signal OETF setting. When AIR MATCHING is ON, select the setting of the monitor connected to the output side.
	COLOR	BT.709, **BT.2020**	4K output signal color space setting
	LOOK	Live, Mild, Natural	4K output signal Look setting (display only)

Page name Page No.	Item		Set value	Meaning
<CHANNEL B SETTINGS> C04	OUTPUT HD		**3G(Lv-B)**, 3G(Lv-A), HD-SDI	HD output signal format setting
			HD IN B-1, HD IN B-2, HD IN B-3, HD IN B-4	When using HD×4 inputs, select the signal for output on the HD output connector
		OETF	**SDR**, S-Log3(Live HDR), HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR)	HD output signal OETF setting. When AIR MATCHING is ON, enter the setting of the monitor connected to the output side.
		COLOR	**BT.709**, BT.2020	HD output signal color space setting
		LOOK	Live, Mild, Natural	HD output signal Look setting (display only)
<OUTPUT DELAY1> C05	CHANNEL A			
		DELAY MODE	**NORMAL**, MINIMUM	Delay mode setting NORMAL: Normal delay mode (delay of one or more frames) MINIMUM: Minimum delay mode
		FRAME SYNC	**OFF**, ON	Frame synchronizer on/off setting
		OUTPUT 4K	1 to 5/(frame rate)s, 1LINE, 2LINE, 3LINE	Output signal delay relative to reference sync signal (display only)
			INTERNAL, REF IN, CH.A IN	Reference sync signal for output video signal (display only)
		OUTPUT HD	1 to 5/(frame rate)s, 1LINE, 2LINE, 3LINE	Output signal delay relative to reference sync signal (display only)
			INTERNAL, REF IN, CH.A IN	Reference sync signal for output video signal (display only)
	CHANNEL B			
		DELAY MODE	**NORMAL**, MINIMUM	Delay mode setting NORMAL: Normal delay mode (delay of one or more frames) MINIMUM: Minimum delay mode
		FRAME SYNC	**OFF**, ON	Frame synchronizer on/off setting
		OUTPUT 4K	1 to 5/(frame rate)s, 1LINE, 2LINE, 3LINE	Output signal delay relative to reference sync signal (display only)
			INTERNAL, REF IN, CH.B IN	Reference sync signal for output video signal (display only)
		OUTPUT HD	1 to 5/(frame rate)s, 1LINE, 2LINE, 3LINE	Output signal delay relative to reference sync signal (display only)
			INTERNAL, REF IN, CH.B IN	Reference sync signal for output video signal (display only)
<OUTPUT DELAY2> C06	PHASE ADJUSTMENT			Output phase adjustment setting (disabled when the output video signal delay is less than one frame)
		CHANNEL A		
		OUTPUT 4K	V: –31 to 31, **0**	Output phase adjustment in vertical direction (Unit: lines)
			H: –1700 to 1700, **0**	Output phase adjustment in horizontal direction (Unit: pixels)
		OUTPUT HD	V: –31 to 31, **0**	Output phase adjustment in vertical direction (Unit: lines)
			H: –1700 to 1700, **0**	Output phase adjustment in horizontal direction (Unit: pixels)
		CHANNEL B		
		OUTPUT 4K	V: –31 to 31, **0**	Output phase adjustment in vertical direction (Unit: lines)
			H: –1700 to 1700, **0**	Output phase adjustment in horizontal direction (Unit: pixels)
		OUTPUT HD	V: –31 to 31, **0**	Output phase adjustment in vertical direction (Unit: lines)
			H: –1700 to 1700, **0**	Output phase adjustment in horizontal direction (Unit: pixels)

Page name Page No.	Item		Set value	Meaning
<HD DEINTERLACE> C07	CHANNEL A			
		MODE	**MOTION DETECTION**, FIELD COMBINATION(Weave), FIELD EXTENSION(Bob), PsF CONVERSION	Deinterlacing mode setting (converting from interlaced to progressive). (Enabled when the system format frame rate is 59.94 or 50) MOTION DETECTION: Detect motion, and apply FIELD EXTENSION(Bob) for areas with motion and FIELD COMBINATION(Weave) for areas without motion. FIELD COMBINATION(Weave): Create a single progressive frame using two continuous interlaced fields. FIELD EXTENSION(Bob): Create a single progressive frame using a single interlaced field and interpolating the missing line. PsF CONVERSION: Use for PsF input when converting to double frame rate. (Example: 29.97PsF input, 59.94P output)
		MOTION THRESHOLD	LOW, **MID**, HIGH	Set the motion detection threshold when MODE is set to MOTION DETECTION. (---) is displayed when MODE is not set to MOTION DETECTION.
	CHANNEL B			
		MODE	**MOTION DETECTION**, FIELD COMBINATION(Weave), FIELD EXTENSION(Bob), PsF CONVERSION	Deinterlacing mode setting (converting from interlaced to progressive). (Enabled when the system format frame rate is 59.94 or 50) MOTION DETECTION: Detect motion, and apply FIELD EXTENSION(Bob) for areas with motion and FIELD COMBINATION(Weave) for areas without motion. FIELD COMBINATION(Weave): Create a single progressive frame using two continuous interlaced fields. FIELD EXTENSION(Bob): Create a single progressive frame using a single interlaced field and interpolating the missing line. PsF CONVERSION: Use for PsF input when converting to double frame rate. (Example: 29.97PsF input, 59.94P output)
		MOTION THRESHOLD	LOW, **MID**, HIGH	Set the motion detection threshold when MODE is set to MOTION DETECTION. (---) is displayed when MODE is not set to MOTION DETECTION.
<DATE> C08	DATE/TIME		2013.**.** to 20**.**.**	Date and time settings
			00:00 to 23:59	
	FILE TIMESTAMP FORMAT		1 Y/Mn/D, 2 Mn/D, 3 D/M/Y, 4 D/M, **5 M/D/Y**, 6 M/D	Y: Year, Mn: Month (numeric), M: Month (English abbreviation), D: Day
<STATUS OUTPUT (D-SUB)> C09				Set whether to output various status from pin 15 of the IO port A Logic OR (logical sum) to check for any of the following items set to ON is output from pin 15.
	TEMP WARNING		OFF, **ON**	Temperature is too high
	PLD NG		OFF, **ON**	Access to PLD failed
	REFERENCE UNLOCK		OFF, **ON**	Not locked to external reference sync signal
	FAN STOP		OFF, **ON**	Fan stopped
	POWER SUPPLY UNIT		OFF, **ON**	Exceeded the recommended operating time of the power supply unit

Page name Page No.	Item		Set value	Meaning
<ANCILLARY DATA> C10	VANC REMAPPING MODE		**NORMAL**, FIELD	VANC data mapping setting. NORMAL: Normal mode. Does not distinguish between field 1 VANC data and field 2 VANC data of HD-SDI/3G-SDI Level-B signal. FIELD: Field mode. Field 1 VANC data and field 2 VANC data of HD-SDI/3G-SDI Level-B signal are handled separately. For details, see *"Preserving and Mapping ANC Data" (page 14)*.
		HD-SDI/3G-B		Line number of the VANC space in HD-SDI/ 3G-SDI Level-B signals (display only)
		3G-A/6G/12G		Line number of the VANC space in 3G-SDI Level-A/6G-SDI/12G-SDI signals (display only)
<SR Live METADATA(INPUT)> C11	CH.A STATUS		NOT DETECTED, DETECTED	Displays whether SR Live Metadata was detected in the channel A input.
		APPLY ONCE		Applies the received SR Live Metadata to the settings once only. Highlighted during execution.
		APPLY CONTINUOUSLY		Applies the received SR Live Metadata to the settings continuously. Highlighted during execution.
	CH.B STATUS		NOT DETECTED, DETECTED	Displays whether SR Live Metadata was detected in the channel B input.
		APPLY ONCE		Applies the received SR Live Metadata to the settings once only. Highlighted during execution.
		APPLY CONTINUOUSLY		Applies the received SR Live Metadata to the settings continuously. Highlighted during execution.
<SR Live METADATA(OUTPUT)> C12	CH.A		**OFF**, ON	Sets whether SR Live Metadata is embedded in the channel A output.
		1st F	LINE9 to LINE20, **LINE14**	Line number of SR Live Metadata embedded in the 1st field or frame.
		2nd F	LINE572 to LINE583	Line number of SR Live Metadata embedded in the 2nd field (enabled only if 2nd field exists, display only).
	CH.B		**OFF**, ON	Sets whether SR Live Metadata is embedded in the channel B output.
		1st F	LINE9 to LINE20, **LINE14**	Line number of SR Live Metadata embedded in the 1st field or frame.
		2nd F	LINE572 to LINE583	Line number of SR Live Metadata embedded in the 2nd field (enabled only if 2nd field exists, display only).

Page name Page No.	Item		Set value	Meaning
<OTHERS> C13	BARS	CH.A	OFF, **ON**	Color bar output on/off setting
		CH.B	OFF, **ON**	
		SDR BARS TYPE	**SDR-LOOK BAR(100%)**, SDR-LOOK BAR(75%), SMPTE 16:9(BLACK), SMPTE 16:9(–I/Q), BAR 4:3(100%), BAR 4:3(75%), SMPTE 4:3(BLACK), SMPTE 4:3(–I/Q), MF-ARIB(75%), MF-ARIB(100%), MF-ARIB(+I), MF-SMPTE(–I,Q), MF-SMPTE(75%,Q), MF-SMPTE(100%,Q), MF-SMPTE(+I,Q), HD-CUSTOM, SDI CHECK FIELD, Y-RAMP, Y/C-RAMP, HD-CUSTOM2	SDR output color bars type SDR-LOOK BAR(100%): 100% level color bars for SDR SDR-LOOK BAR(75%): 75% level color bars for SDR
		HDR BARS TYPE	**SDR-LOOK BAR(100%)**, SDR-LOOK BAR(75%), HDR BAR, SDI CHECK FIELD, Y-RAMP, Y/C-RAMP	HDR output color bars type SDR-LOOK BAR(100%): Same appearance as 100% level color bars for SDR when viewed on an HDR-compatible display SDR-LOOK BAR(75%): Same appearance as 75% level color bars for SDR when viewed on an HDR-compatible display HDR BAR: Color bars for HDR
		2SI DIAMOND MARKER	**OFF**, ON	Display function on/off setting to display a diamond mark at the lower right when the color bar is 4K 2SI output If the SDI cable is connected correctly, a perfect diamond mark will be displayed.
	STARTUP VIDEO SIGNAL		**BARS**, GRAY	Sets the default display if there is no input video signal at startup. BARS: Color bars display GRAY: Gray screen display
	HD DOWNCONV FILTER		**1** to 4, 1(V:0.3), 1(V:0.6)	4K video signal to HD signal down-converter filter type
	CHARACTER LEVEL		1 to **5**	Menu character contrast level
	CH.B HD MONI		**CH.B HD**, CH.A HD, D-SUB	Channel B HD monitor output (HD-SDI) selection CH.B HD: Output HD signal of channel B CH.A HD: Output HD signal of channel A D-SUB: Select the channel of the HD signal to output according to the input on the I/O PORT connector (D-Sub 15-pin)

SETUP menu

HDR→HDR

Configure settings for converting from HDR to HDR.

Page name Page No.	Item			Set value	Meaning
<BLACK LEVEL> S11	CHANNEL A				
		SETTING MODE		**SONY SYSTEM CAMERA**, OTHERS	Select whether the source of the input video signal is a Sony made system camera or not
		MASTER BLACK		–99.9 to 99.9, **0.0**	Set the master black value of the input video signal source (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		HDR BLACK OFFSET		–30.0 to 30.0, **0.0**	Set the HDR black offset value of the input video signal source (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		INPUT BLACK LEVEL (HDR)		–99.9 to 99.9, **3.0**	Input signal black level (Displayed only when SETTING MODE is set to OTHERS)
			ADJUSTMENT MODE	ENTER to execute	Input signal black level adjustment mode To adjust the black level of the input signal, set ADJUSTMENT MODE to ON, adjust INPUT BLACK LEVEL so that the black level of the output signal is 0 IRE, then set ADJUSTMENT MODE to OFF (Displayed only when SETTING MODE is set to OTHERS)
		OUTPUT BLACK LEVEL (HDR)		–99.9 to 99.9, **3.0**	Output signal black level (Displayed only when SETTING MODE is set to OTHERS)
	CHANNEL B				
		SETTING MODE		**SONY SYSTEM CAMERA**, OTHERS	Select whether the source of the input video signal is a Sony made system camera or not
		MASTER BLACK		–99.9 to 99.9, **0.0**	Set the master black value of the input video signal source (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		HDR BLACK OFFSET		–30.0 to 30.0, **0.0**	Set the HDR black offset value of the input video signal source (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		INPUT BLACK LEVEL (HDR)		–99.9 to 99.9, **3.0**	Input signal black level (Displayed only when SETTING MODE is set to OTHERS)
			ADJUSTMENT MODE	ENTER to execute	Input signal black level adjustment mode To adjust the black level of the input signal, set ADJUSTMENT MODE to ON, adjust INPUT BLACK LEVEL so that the black level of the output signal is 0 IRE, then set ADJUSTMENT MODE to OFF (Displayed only when SETTING MODE is set to OTHERS)
		OUTPUT BLACK LEVEL (HDR)		–99.9 to 99.9, **3.0**	Output signal black level (Displayed only when SETTING MODE is set to OTHERS)
	ABS			ENTER to execute	Highlighted display: ABS (absolute indication) mode

Page name Page No.	Item	Set value	Meaning
<HDR BLACK CLIP> S12	CHANNEL A		
	HDR BLACK CLIP	**OFF**, ON	HDR Black Clip (clipping of HDR output below 0 IRE) on/off setting. However, when the output OETF is set to S-Log3(Live HDR) or S-Log3(HDR), HDR BLACK CLIP is always set to OFF.
	CHANNEL B		
	HDR BLACK CLIP	**OFF**, ON	HDR Black Clip (clipping of HDR output below 0 IRE) on/off setting. However, when the output OETF is set to S-Log3(Live HDR) or S-Log3(HDR), HDR BLACK CLIP is always set to OFF.

HDR→SDR

Configure settings for converting from HDR to SDR.

Page name / Page No.	Item			Set value	Meaning
<BLACK LEVEL> S21	CHANNEL A				
		SETTING MODE		**SONY SYSTEM CAMERA**, OTHERS	Select whether the source of the input video signal is a Sony made system camera or not
		MASTER BLACK		–99.9 to 99.9, **0.0**	Set the master black value of the input video signal source (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		HDR BLACK OFFSET		–30.0 to 30.0, **0.0**	Set the HDR black offset value of the input video signal source (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		INPUT BLACK LEVEL (HDR)		–99.9 to 99.9, **3.0**	Input signal black level (Displayed only when SETTING MODE is set to OTHERS)
			ADJUSTMENT MODE	ENTER to execute	Input signal black level adjustment mode To adjust the black level of the input signal, set ADJUSTMENT MODE to ON, adjust INPUT BLACK LEVEL so that the black level of the output signal is 0 IRE, then set ADJUSTMENT MODE to OFF (Displayed only when SETTING MODE is set to OTHERS)
		OUTPUT BLACK LEVEL (SDR)		–99.9 to 99.9, **3.0**	Output signal black level (Displayed only when SETTING MODE is set to OTHERS)
	CHANNEL B				
		SETTING MODE		**SONY SYSTEM CAMERA**, OTHERS	Select whether the source of the input video signal is a Sony made system camera or not
		MASTER BLACK		–99.9 to 99.9, **0.0**	Set the master black value of the input video signal source (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		HDR BLACK OFFSET		–30.0 to 30.0, **0.0**	Set the HDR black offset value of the input video signal source (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		INPUT BLACK LEVEL (HDR)		–99.9 to 99.9, **3.0**	Input signal black level (Displayed only when SETTING MODE is set to OTHERS)
			ADJUSTMENT MODE	ENTER to execute	Input signal black level adjustment mode To adjust the black level of the input signal, set ADJUSTMENT MODE to ON, adjust INPUT BLACK LEVEL so that the black level of the output signal is 0 IRE, then set ADJUSTMENT MODE to OFF (Displayed only when SETTING MODE is set to OTHERS)
		OUTPUT BLACK LEVEL (SDR)		–99.9 to 99.9, **3.0**	Output signal black level (Displayed only when SETTING MODE is set to OTHERS)
	ABS			ENTER to execute	Highlighted display: ABS (absolute indication) mode

Page name Page No.	Item	Set value	Meaning
<HDR→SDR GAIN> S22	CHANNEL A		
	HDR→SDR GAIN	0.0dB to –15.0dB, **–6.0dB**	HDR-to-SDR conversion gain
	HDR CONTRAST		Displays the SDR percentage corresponding to HDR 100% after conversion using HDR→SDR GAIN (display only)
	CHANNEL B		
	HDR→SDR GAIN	0.0dB to –15.0dB, **–6.0dB**	HDR-to-SDR conversion gain
	HDR CONTRAST		Displays the SDR percentage corresponding to HDR 100% after conversion using HDR→SDR GAIN (display only)
<HDR DE-KNEE> S23	CHANNEL A		
	HDR DE-KNEE	**OFF**, ON	HDR inverse knee conversion function (cancels effect of HDR knee applied on camera side) on/off setting
	POINT	–99 to 99, **0**	Knee point of HDR inverse knee function Set the same value as the camera applying the HDR knee
	SLOPE	–99 to 99, **0**	Slope of HDR inverse knee function Set the same value as the camera applying the HDR knee
	CHANNEL B		
	HDR DE-KNEE	**OFF**, ON	HDR inverse knee conversion function (cancels effect of HDR knee applied on camera side) on/off setting
	POINT	–99 to 99, **0**	Knee point of HDR inverse knee function Set the same value as the camera applying the HDR knee
	SLOPE	–99 to 99, **0**	Slope of HDR inverse knee function Set the same value as the camera applying the HDR knee

Page name Page No.	Item		Set value	Meaning
<KNEE> S24	CHANNEL A			
		KNEE	OFF, **ON**	HDR-to-SDR conversion knee (high luminance compression for HDR) function on/off setting
		POINT:	R: –99 to 99, **0**	Knee point setting of knee function
			G: –99 to 99, **0**	
			B: –99 to 99, **0**	
			M: –99 to 99, **0**	
		SLOPE:	R: –99 to 99, **0**	Slope setting of knee function
			G: –99 to 99, **0**	
			B: –99 to 99, **0**	
			M: –99 to 99, **0**	
		MAX	**OFF**, ON	Clipping function at knee point (point at which high video level signals are rounded to video level of knee point) on/off setting
		KNEE SATURATION	**OFF**, ON	Knee saturation (saturation adjustment of high luminance compression areas) function on/off setting
			–99 to 99, **0**	Strength of knee saturation function
	CHANNEL B			
		KNEE	OFF, **ON**	HDR-to-SDR conversion knee (high luminance compression for HDR) function on/off setting
		POINT:	R: –99 to 99, **0**	Knee point setting of knee function
			G: –99 to 99, **0**	
			B: –99 to 99, **0**	
			M: –99 to 99, **0**	
		SLOPE:	R: –99 to 99, **0**	Slope setting of knee function
			G: –99 to 99, **0**	
			B: –99 to 99, **0**	
			M: –99 to 99, **0**	
		MAX	**OFF**, ON	Clipping function at knee point (point at which high video level signals are rounded to video level of knee point) on/off setting
		KNEE SATURATION	**OFF**, ON	Knee saturation (saturation adjustment of high luminance compression areas) function on/off setting
			–99 to 99, **0**	Strength of knee saturation function
	ABS		ENTER to execute	Highlighted display: ABS (absolute indication) mode

Page name Page No.	Item			Set value	Meaning
<GAMMA> S25	CHANNEL A				
		GAMMA		OFF, **ON**	HDR-to-SDR conversion gamma on/off setting
			TABLE	**STANDARD**, HYPER	Type of gamma curve
				1 to 7, **5**	(STANDARD)
				1 to 4	(HYPER)
			STEP	0.90, 0.85, 0.80, 0.75, 0.70, 0.65, 0.60, 0.55, 0.50, **0.45**, 0.40, 0.35	Gamma strength (step)
			LEVEL		
			R	–99 to 99, **0**	Gamma strength (analog)
			G	–99 to 99, **0**	
			B	–99 to 99, **0**	
			M	–99 to 99, **0**	
	CHANNEL B				
		GAMMA		OFF, **ON**	HDR-to-SDR conversion gamma on/off setting
			TABLE	**STANDARD**, HYPER	Type of gamma curve
				1 to 7, **5**	(STANDARD)
				1 to 4	(HYPER)
			STEP	0.90, 0.85, 0.80, 0.75, 0.70, 0.65, 0.60, 0.55, 0.50, **0.45**, 0.40, 0.35	Gamma strength (step)
			LEVEL		
			R	–99 to 99, **0**	Gamma strength (analog)
			G	–99 to 99, **0**	
			B	–99 to 99, **0**	
			M	–99 to 99, **0**	
	ABS			ENTER to execute	Highlighted display: ABS (absolute indication) mode
<WHITE CLIP> S26	CHANNEL A				
		WHITE CLIP		OFF, **ON**	HDR-to-SDR conversion white clip function on/off setting
			LEVEL	–99 to 99, **0**	White clip video level
	CHANNEL B				
		WHITE CLIP		OFF, **ON**	HDR-to-SDR conversion white clip function on/off setting
			LEVEL	–99 to 99, **0**	White clip video level
	ABS			ENTER to execute	Highlighted display: ABS (absolute indication) mode

SDR→HDR

Configure settings for converting from SDR to HDR.

Page name / Page No.	Item		Set value	Meaning
<BLACK LEVEL> S31	CHANNEL A			
		SETTING MODE	**SONY SYSTEM CAMERA**, OTHERS	Select whether the source of the input video signal is a Sony made system camera or not
		MASTER BLACK	–99.9 to 99.9, **0.0**	Set the master black value of the input video signal source Fixed to absolute value of 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		HDR BLACK OFFSET	–30.0 to 30.0, **0.0**	Difference in black level between input SDR signal and output HDR signal Fixed to 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		INPUT BLACK LEVEL (SDR)	–99.9 to 99.9, **3.0**	Input signal black level Fixed to 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to OTHERS)
		ADJUSTMENT MODE	ENTER to execute	Input signal black level adjustment mode To adjust the black level of the input signal, set ADJUSTMENT MODE to ON, adjust INPUT BLACK LEVEL so that the black level of the output signal is 0 IRE, then set ADJUSTMENT MODE to OFF (Displayed only when SETTING MODE is set to OTHERS)
		OUTPUT BLACK LEVEL (HDR)	–99.9 to 99.9, **3.0**	Output signal black level Fixed to 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to OTHERS)

Page name Page No.	Item			Set value	Meaning
<BLACK LEVEL> S31	CHANNEL B				
		SETTING MODE		**SONY SYSTEM CAMERA**, OTHERS	Select whether the source of the input video signal is a Sony made system camera or not
		MASTER BLACK		–99.9 to 99.9, **0.0**	Set the master black value of the input video signal source Fixed to absolute value of 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		HDR BLACK OFFSET		–30.0 to 30.0, **0.0**	Difference in black level between input SDR signal and output HDR signal Fixed to 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		INPUT BLACK LEVEL (SDR)		–99.9 to 99.9, **3.0**	Input signal black level Fixed to 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to OTHERS)
			ADJUSTMENT MODE	ENTER to execute	Input signal black level adjustment mode To adjust the black level of the input signal, set ADJUSTMENT MODE to ON, adjust INPUT BLACK LEVEL so that the black level of the output signal is 0 IRE, then set ADJUSTMENT MODE to OFF (Displayed only when SETTING MODE is set to OTHERS)
		OUTPUT BLACK LEVEL (HDR)		–99.9 to 99.9, **3.0**	Output signal black level Fixed to 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to OTHERS)
	ABS			ENTER to execute	Highlighted display: ABS (absolute indication) mode
<SDR→HDR GAIN> S32	CHANNEL A				
		SDR→HDR GAIN		0.0dB to 15.0dB, **6.0dB**	SDR-to-HDR conversion gain
			HDR CONTRAST		Displays the HDR percentage corresponding to SDR 100% after conversion using SDR→HDR GAIN Displays the number of nits corresponding to SDR 100% after conversion when DISPLAY REFERRED on the <SYSTEM> page is ON (display only)
	CHANNEL B				
		SDR→HDR GAIN		0.0dB to 15.0dB, **6.0dB**	SDR-to-HDR conversion gain
			HDR CONTRAST		Displays the HDR percentage corresponding to SDR 100% after conversion using SDR→HDR GAIN Displays the number of nits corresponding to SDR 100% after conversion when DISPLAY REFERRED on the <SYSTEM> page is ON (display only)

Page name Page No.	Item		Set value	Meaning
<DE-GAMMA> S33	CHANNEL A			
		DE-GAMMA	**STANDARD**, HYPER	Type of inverse gamma curve (Disabled when DISPLAY REFERRED on the <SYSTEM> page is ON)
			1 to 7, **5**	(When set to STANDARD. Disabled when DISPLAY REFERRED on the <SYSTEM> page is ON)
			1 to 4	(When set to HYPER. Disabled when DISPLAY REFERRED on the <SYSTEM> page is ON)
	CHANNEL B			
		DE-GAMMA	**STANDARD**, HYPER	Type of inverse gamma curve (Disabled when DISPLAY REFERRED on the <SYSTEM> page is ON)
			1 to 7, **5**	(When set to STANDARD. Disabled when DISPLAY REFERRED on the <SYSTEM> page is ON)
			1 to 4	(When set to HYPER. Disabled when DISPLAY REFERRED on the <SYSTEM> page is ON)
<HIGHLIGHT CREATION> S34	CHANNEL A			
		HIGHLIGHT CREATION	**OFF**, ON	Highlight creation function on/off setting (luminance extension function that makes high-luminance areas brighter according to a polygonal line characteristic during conversion) (Fixed to OFF when DISPLAY REFERRED on the <SYSTEM> page is ON)
		POINT	70.0% to 100.0%, **97.0%**	Break point of highlight creation curve
		SLOPE	–99 to 99, **0**	Slope of highlight creation curve
	CHANNEL B			
		HIGHLIGHT CREATION	**OFF**, ON	Highlight creation function on/off setting (Fixed to OFF when DISPLAY REFERRED on the <SYSTEM> page is ON)
		POINT	70.0% to 100.0%, **97.0%**	Break point of highlight creation curve
		SLOPE	–99 to 99, **0**	Slope of highlight creation curve
<HDR BLACK CLIP> S35	CHANNEL A			
		HDR BLACK CLIP	**OFF**, ON	HDR Black Clip (clipping of HDR output below 0 IRE) on/off setting. However, when the output OETF is set to S-Log3(Live HDR) or S-Log3(HDR), HDR BLACK CLIP is always set to OFF.
	CHANNEL B			
		HDR BLACK CLIP	**OFF**, ON	HDR Black Clip (clipping of HDR output below 0 IRE) on/off setting. However, when the output OETF is set to S-Log3(Live HDR) or S-Log3(HDR), HDR BLACK CLIP is always set to OFF.

SDR→SDR

Configure settings for converting from SDR to SDR.

Page name / Page No.	Item		Set value	Meaning
<BLACK LEVEL> S41	CHANNEL A			
		SETTING MODE	**SONY SYSTEM CAMERA**, OTHERS	Select whether the source of the input video signal is a Sony made system camera or not
		MASTER BLACK	–99.9 to 99.9, **0.0**	Set the master black value of the input video signal source Fixed to absolute value of 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		INPUT BLACK LEVEL (SDR)	–99.9 to 99.9, **3.0**	Input signal black level Fixed to 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to OTHERS)
		ADJUSTMENT MODE	ENTER to execute	Input signal black level adjustment mode To adjust the black level of the input signal, set ADJUSTMENT MODE to ON, adjust INPUT BLACK LEVEL so that the black level of the output signal is 0 IRE, then set ADJUSTMENT MODE to OFF (Displayed only when SETTING MODE is set to OTHERS)
		OUTPUT BLACK LEVEL (SDR)	–99.9 to 99.9, **3.0**	Output signal black level Fixed to 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to OTHERS, display only)
	CHANNEL B			
		SETTING MODE	**SONY SYSTEM CAMERA**, OTHERS	Select whether the source of the input video signal is a Sony made system camera or not
		MASTER BLACK	–99.9 to 99.9, **0.0**	Set the master black value of the input video signal source Fixed to absolute value of 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to SONY SYSTEM CAMERA)
		INPUT BLACK LEVEL (SDR)	–99.9 to 99.9, **3.0**	Input signal black level Fixed to 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to OTHERS)
		ADJUSTMENT MODE	ENTER to execute	Input signal black level adjustment mode To adjust the black level of the input signal, set ADJUSTMENT MODE to ON, adjust INPUT BLACK LEVEL so that the black level of the output signal is 0 IRE, then set ADJUSTMENT MODE to OFF (Displayed only when SETTING MODE is set to OTHERS)
		OUTPUT BLACK LEVEL (SDR)	–99.9 to 99.9, **3.0**	Output signal black level Fixed to 0.0 when DISPLAY REFERRED on the <SYSTEM> page is ON (Displayed only when SETTING MODE is set to OTHERS, display only)
	ABS		ENTER to execute	Highlighted display: ABS (absolute indication) mode

Page name Page No.	Item	Set value	Meaning
<DE-GAMMA> S42	CHANNEL A		
	DE-GAMMA	**STANDARD**, HYPER	Type of inverse gamma curve Disabled when DISPLAY REFERRED on the <SYSTEM> page is ON. “(DISPLAY REFERRED)” is displayed.
		1 to 7, **5**	(STANDARD)
		1 to 4	(HYPER)
	CHANNEL B		
	DE-GAMMA	**STANDARD**, HYPER	Type of inverse gamma curve Disabled when DISPLAY REFERRED on the <SYSTEM> page is ON. “(DISPLAY REFERRED)” is displayed.
		1 to 7, **5**	(STANDARD)
		1 to 4	(HYPER)
<GAMMA> S43	CHANNEL A		
	GAMMA	OFF, **ON**	SDR-to-SDR conversion gamma on/off setting Fixed to ON when DISPLAY REFERRED on the <SYSTEM> page is ON
	TABLE	STANDARD, HYPER	Type of gamma curve (same value as DE-GAMMA, display only) Displays “(DISPLAY REFERRED)” when DISPLAY REFERRED on the <SYSTEM> page is ON
		1 to 7	(STANDARD. Display only)
		1 to 4	(HYPER. Display only)
	CHANNEL B		
	GAMMA	OFF, **ON**	SDR-to-SDR conversion gamma on/off setting Fixed to ON when DISPLAY REFERRED on the <SYSTEM> page is ON
	TABLE	STANDARD, HYPER	Type of gamma curve (same value as DE-GAMMA, display only) Displays “(DISPLAY REFERRED)” when DISPLAY REFERRED on the <SYSTEM> page is ON
		1 to 7	(STANDARD. Display only)
		1 to 4	(HYPER. Display only)

4K→HD

Configure settings for down-converting from 4K to HD.

Page name / Page No.	Item	Set value	Meaning
<HD DETAIL> S51	DETAIL	CH. A: OFF, **ON**	Detail (contour emphasis) function on/off setting
		CH. B: OFF, **ON**	((OFF) when input is HD×4)
	HD DETAIL	CH. A: OFF, **ON**	HD output signal detail function on/off setting
		CH. B: OFF, **ON**	((OFF) when the input is HD and ADDITIONAL PAINT is OFF. Also (OFF) when the input is HD×4)
	LEVEL	CH. A: –99 to 99, **0**	Detail level adjustment
		CH. B: –99 to 99, **0**	
	LIMITER	CH. A: –99 to 99, **0**	Detail signal high/low luminance limiter setting
		CH. B: –99 to 99, **0**	
	CRISP	CH. A: –99 to 99, **0**	Detail level crispening level adjustment (signal amplitude equal to or less than the threshold value is regarded as noise and no detail signal is added)
		CH. B: –99 to 99, **0**	
	H/V	CH. A: –99 to 99, **0**	Ratio of horizontal to vertical detail signal strength
		CH. B: –99 to 99, **0**	
	FREQ	CH. A: –99 to 99, **0**	Frequency response of detail processor bandpass filter The larger the value, the response is at higher spatial frequencies, and the detail signal becomes more fine. The lower the value, the response is at lower spatial frequencies, and the detail signal becomes more coarse.
		CH. B: –99 to 99, **0**	
	W.LIMIT	CH. A: –99 to 99, **0**	Detail signal high luminance (white) limiter setting
		CH. B: –99 to 99, **0**	
	B.LIMIT	CH. A: –99 to 99, **0**	Detail signal low luminance (black) limiter setting
		CH. B: –99 to 99, **0**	
	ABS	ENTER to execute	Highlighted display: ABS (absolute indication) mode
<SKIN DETAIL CHANNEL A> S52	SKIN DTL	**OFF**, ON	Turns the skin detail function on/off for channel A (changes the emphasis of contours of regions of specific color). Enabled only for 4K to HD conversion. Disabled if Detail or HD Detail are set to OFF.
	SKIN GATE	**OFF**, 1, 2, 3	Displays zebra in regions where skin detail is applied. (Displayed only for the HD MONI output.)
	NATURAL SKINDTL	**OFF**, ON	Natural skin detail function on/off setting (prevents skin detail display at edges of color changes, such as eyebrows).
	CH SW	**OFF**, ON	Turns skin detail on/off for each channel. Channel 1 is set to ON (fixed).
	PHASE	**0** to 359	Phase angle of the center of the hue for regions where skin detail is applied.
	WIDTH	0 to 90, **29**	Phase angle width of the hue for regions where skin detail is applied.
	SAT	–99 to 99, **–89**	Lower limit of the saturation for regions where skin detail is applied.
	LEVEL	–99 to 99, **0**	Level of contour enhancement for regions where skin detail is applied.
	Y LIMIT	**0** to 99	Lower limit of the luminance for regions where skin detail is applied.

Page name Page No.	Item	Set value	Meaning
<SKIN DETAIL CHANNEL B> S53	SKIN DTL	**OFF**, ON	Turns the skin detail function on/off for channel B (changes the emphasis of contours of regions of specific color). Enabled only for 4K to HD conversion. Disabled if Detail or HD Detail are set to OFF.
	SKIN GATE	**OFF**, 1, 2, 3	Displays zebra in regions where skin detail is applied. (Displayed only for the HD MONI output.)
	NATURAL SKINDTL	**OFF**, ON	Natural skin detail function on/off setting (prevents skin detail display at edges of color changes, such as eyebrows).
	CH SW	**OFF**, ON	Turns skin detail on/off for each channel. Channel 1 is set to ON (fixed).
	PHASE	**0** to 359	Phase angle of the center of the hue for regions where skin detail is applied.
	WIDTH	0 to 90, **29**	Phase angle width of the hue for regions where skin detail is applied.
	SAT	–99 to 99, **–89**	Lower limit of the saturation for regions where skin detail is applied.
	LEVEL	–99 to 99, **0**	Level of contour enhancement for regions where skin detail is applied.
	Y LIMIT	**0** to 99	Lower limit of the luminance for regions where skin detail is applied.

HD→4K

Configure settings for up-converting from HD to 4K.

Page name Page No.	Item	Set value	Meaning
<HD DETAIL REDUCTION> S61	CHANNEL A		
	HD DETAIL REDUCTION	**OFF**, ON	Detail (contour emphasis) reduction function on/off setting
	LEVEL	–50 to 50, **0**	Detail reduction function level
	FREQUENCY	–99 to 99, **0**	Frequency response for detail component reduction
	CHANNEL B		
	HD DETAIL REDUCTION	**OFF**, ON	Detail reduction function on/off setting
	LEVEL	–50 to 50, **0**	Detail reduction function level
	FREQUENCY	–99 to 99, **0**	Frequency response for detail component reduction

Page name / Page No.	Item			Set value	Meaning
<4K DETAIL> S62	DETAIL			CH. A: OFF, **ON**	Detail function on/off setting ((OFF) when input is HD×4)
				CH. B: OFF, **ON**	
		4K DETAIL		CH. A: **OFF**, ON	4K output signal detail function on/off setting ((OFF) when the input is 4K and ADDITIONAL PAINT is OFF. Also (OFF) when the input is HD×4)
				CH. B: **OFF**, ON	
			LEVEL	CH. A: –99 to 99, **0**	Detail level adjustment
				CH. B: –99 to 99, **0**	
			CRISP	CH. A: –99 to 99, **0**	Detail level crispening level adjustment (signal amplitude equal to or less than the threshold value is regarded as noise and no detail signal is added)
				CH. B: –99 to 99, **0**	
			H/V	CH. A: –99 to 99, **0**	Ratio of horizontal to vertical detail signal strength
				CH. B: –99 to 99, **0**	
			FREQ	CH. A: –99 to 99, **0**	Frequency response of detail processor bandpass filter The larger the value, the response is at higher spatial frequencies, and the detail signal becomes more fine. The lower the value, the response is at lower spatial frequencies, and the detail signal becomes more coarse.
				CH. B: –99 to 99, **0**	
	ABS			ENTER to execute	Highlighted display: ABS (absolute indication) mode

ADDITIONAL PAINT menu

Use to set additional image quality settings of the unit. If ADDITIONAL PAINT is OFF, the image quality settings in this menu are disabled (excluding the detail settings).

Page name / Page No.	Item			Set value	Meaning
<ADDITIONAL PAINT> A01	CHANNEL A				
		ADDITIONAL PAINT		**OFF**, ON	Additional paint (additional image quality adjustments) function on/off setting
	CHANNEL B				
		ADDITIONAL PAINT		**OFF**, ON	Additional paint (additional image quality adjustments) function on/off setting
<WHITE BALANCE> A02	CHANNEL A				
		WHITE BALANCE		**OFF**, ON	White balance adjustment function on/off setting ((OFF) when ADDITIONAL PAINT is OFF)
			R	–99.9 to 99.9, **0**	White balance adjustment (R gain)
			B	–99.9 to 99.9, **0**	White balance adjustment (B gain)
	CHANNEL B				
		WHITE BALANCE		**OFF**, ON	White balance adjustment function on/off setting ((OFF) when ADDITIONAL PAINT is OFF)
			R	–99.9 to 99.9, **0**	White balance adjustment (R gain)
			B	–99.9 to 99.9, **0**	White balance adjustment (B gain)
<GAIN> A03	CHANNEL A				
		GAIN		**OFF**, ON	Gain function on/off setting ((OFF) when ADDITIONAL PAINT is OFF)
			MASTER WHITE GAIN	–12.0 dB to 12.0 dB, **0.0 dB**	Gain
	CHANNEL B				
		GAIN		**OFF**, ON	Gain function on/off setting ((OFF) when ADDITIONAL PAINT is OFF)
			MASTER WHITE GAIN	–12.0 dB to 12.0 dB, **0.0 dB**	Gain

Page name Page No.	Item			Set value	Meaning
<DETAIL> A04	DETAIL			CH. A: OFF, **ON**	Detail function on/off setting
				CH. B: OFF, **ON**	((OFF) when input is HD×4)
		4K DETAIL		CH. A: **OFF**, ON	4K output signal detail function on/off setting
				CH. B: **OFF**, ON	((OFF) when the input is 4K and ADDITIONAL PAINT is OFF. Also (OFF) when the input is HD×4)
		HD DETAIL		CH. A: OFF, **ON**	HD output signal detail function on/off setting
				CH. B: OFF, **ON**	((OFF) when the input is HD and ADDITIONAL PAINT is OFF. Also (OFF) when the input is HD×4)
			LEVEL	CH. A 4K: –99 to 99, **0**	Detail level adjustment
				CH. A HD: –99 to 99, **0**	
				CH. B 4K: –99 to 99, **0**	
				CH. B HD: –99 to 99, **0**	
			LIMITER	CH. A HD: –99 to 99, **0**	Detail signal high/low luminance limiter setting
				CH. B HD: –99 to 99, **0**	
			CRISP	CH. A 4K: –99 to 99, **0**	Detail level crispening level adjustment (signal amplitude equal to or less than the threshold value is regarded as noise and no detail signal is added)
				CH. A HD: –99 to 99, **0**	
				CH. B 4K: –99 to 99, **0**	
				CH. B HD: –99 to 99, **0**	
			H/V	CH. A 4K: –99 to 99, **0**	Ratio of horizontal to vertical detail signal strength
				CH. A HD: –99 to 99, **0**	
				CH. B 4K: –99 to 99, **0**	
				CH. B HD: –99 to 99, **0**	
			FREQ	CH. A 4K: –99 to 99, **0**	Frequency response of detail processor bandpass filter The larger the value, the response is at higher spatial frequencies, and the detail signal becomes more fine. The lower the value, the response is at lower spatial frequencies, and the detail signal becomes more coarse.
				CH. A HD: –99 to 99, **0**	
				CH. B 4K: –99 to 99, **0**	
				CH. B HD: –99 to 99, **0**	
			W.LIMIT	CH. A HD: –99 to 99, **0**	Detail signal high luminance (white) limiter setting
				CH. B HD: –99 to 99, **0**	
			B.LIMIT	CH. A HD: –99 to 99, **0**	Detail signal low luminance (black) limiter setting
				CH. B HD: –99 to 99, **0**	
	ABS			ENTER to execute	Highlighted display: ABS (absolute indication) mode
<SATURATION> A05	CHANNEL A				
		SATURATION		**OFF**, ON	Saturation adjustment function on/off setting ((OFF) when ADDITIONAL PAINT is OFF)
			LEVEL	–99 to 99, **0**	Saturation adjustment level –99: Unsaturated, 99: Double saturation, 0: No change
	CHANNEL B				
		SATURATION		**OFF**, ON	Saturation adjustment function on/off setting ((OFF) when ADDITIONAL PAINT is OFF)
			LEVEL	–99 to 99, **0**	Saturation adjustment level –99: Unsaturated, 99: Double saturation, 0: No change

Page name Page No.	Item	Set value	Meaning
<LOOK CONVERSION CHANNEL A> A06	AIR MATCHING	OFF, **ON**	Channel A AIR MATCHING function on/off setting (Same as CHANNEL A SETTINGS page)
	LOOK CONVERSION	**OFF**, ON	Channel A Look conversion function on/off setting Enabled only when ADDITIONAL PAINT is ON and AIR MATCHING is ON. Set to OFF in all other cases.
	INPUT		
	OETF	SDR, **S-Log3(Live HDR)**, HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR), HyperGamma4	Input OETF setting (Same as CHANNEL A SETTINGS page)
	LOOK	**Live**, Mild, Natural	Input Look setting When the Look conversion function is OFF, the current setting is displayed in parentheses. “Natural” can be selected only when the OETF is set to HLG(Var1.2). Disabled (“---”) when OETF is set to SDR.
	BLACK COMPRESSION	**OFF**, ON	Input black compression setting When the Look conversion function is OFF, the current setting is displayed in parentheses. Disabled (OFF) when OETF is set to SDR.
	OUTPUT 4K		
	OETF	SDR, **S-Log3(Live HDR)**, HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR)	4K output OETF setting (Same as CHANNEL A SETTINGS page)
	LOOK	**Live**, Mild, Natural	4K output Look setting When the Look conversion function is OFF, the current setting is displayed in parentheses. “Natural” can be selected only when the OETF is set to HLG(Var1.2). Disabled (“---”) when OETF is set to SDR.
	BLACK COMPRESSION	**OFF**, ON	4K output black compression setting When the Look conversion function is OFF, the current setting is displayed in parentheses. Disabled (OFF) when OETF is set to SDR.
	OUTPUT HD		
	OETF	**SDR**, S-Log3(Live HDR), HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR)	HD output OETF setting (Same as CHANNEL A SETTINGS page)
	LOOK	**Live**, Mild, Natural	HD output Look setting When the Look conversion function is OFF, the current setting is displayed in parentheses. “Natural” can be selected only when the OETF is set to HLG(Var1.2). Disabled (“---”) when OETF is set to SDR.
	BLACK COMPRESSION	**OFF**, ON	HD output black compression setting When the Look conversion function is OFF, the current setting is displayed in parentheses. Disabled (OFF) when OETF is set to SDR.

Page name Page No.	Item	Set value	Meaning
<LOOK CONVERSION CHANNEL B> A07	AIR MATCHING	OFF, **ON**	Channel B AIR MATCHING function on/off setting (Same as CHANNEL B SETTINGS page)
	LOOK CONVERSION	**OFF**, ON	Channel B Look conversion function on/off setting Enabled only when ADDITIONAL PAINT is ON and AIR MATCHING is ON. Set to OFF in all other cases.
	INPUT		
	OETF	SDR, **S-Log3(Live HDR)**, HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR), HyperGamma4	Input OETF setting (Same as CHANNEL B SETTINGS page)
	LOOK	**Live**, Mild, Natural	Input Look setting When the Look conversion function is OFF, the current setting is displayed in parentheses. “Natural” can be selected only when the OETF is set to HLG(Var1.2). Disabled (“---”) when OETF is set to SDR.
	BLACK COMPRESSION	**OFF**, ON	Input black compression setting When the Look conversion function is OFF, the current setting is displayed in parentheses. Disabled (OFF) when OETF is set to SDR.
	OUTPUT 4K		
	OETF	SDR, **S-Log3(Live HDR)**, HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR)	4K output OETF setting (Same as CHANNEL B SETTINGS page)
	LOOK	**Live**, Mild, Natural	4K output Look setting When the Look conversion function is OFF, the current setting is displayed in parentheses. “Natural” can be selected only when the OETF is set to HLG(Var1.2). Disabled (“---”) when OETF is set to SDR.
	BLACK COMPRESSION	**OFF**, ON	4K output black compression setting When the Look conversion function is OFF, the current setting is displayed in parentheses. Disabled (OFF) when OETF is set to SDR.
	OUTPUT HD		
	OETF	**SDR**, S-Log3(Live HDR), HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR)	HD output OETF setting (Same as CHANNEL B SETTINGS page)
	LOOK	**Live**, Mild, Natural	HD output Look setting When the Look conversion function is OFF, the current setting is displayed in parentheses. “Natural” can be selected only when the OETF is set to HLG(Var1.2). Disabled (“---”) when OETF is set to SDR.
	BLACK COMPRESSION	**OFF**, ON	HD output black compression setting When the Look conversion function is OFF, the current setting is displayed in parentheses. Disabled (OFF) when OETF is set to SDR.

FILE menu

Use to set file-related settings (saving, loading, clearing) of the unit.

Page name Page No.	Item	Set value	Meaning
<SCENE FILE> F01	CHANNEL A		
	SCENE FILE No.	1 to 5	Specify the scene file number
	RECALL		Recall the specified scene file
	STORE		Store settings in the specified scene file
	STANDARD		
	RECALL		Restore image quality settings to the settings when reference file was saved (or factory defaults if reference file has not been saved)
	CHANNEL B		
	SCENE FILE No.	1 to 5	Specify the scene file number
	RECALL		Recall the specified scene file
	STORE		Store settings in the specified scene file
	STANDARD		
	RECALL		Restore image quality settings to the settings when reference file was saved (or factory defaults if reference file has not been saved)
<REFERENCE FILE> F02	CHANNEL A		
	REFERENCE FILE		
	STORE		Store the current image quality settings to the reference file.
	CLEAR		Restore the reference file to factory default state
	CHANNEL B		
	REFERENCE FILE		
	STORE		Store the current image quality settings to the reference file.
	CLEAR		Restore the reference file to factory default state
	PROTECT	OFF, **ON**	Reference file and all-settings file protection on/off setting (Set protection to OFF to change reference file)
<ALL-SETTINGS FILE> F03	FILE No.	1 to 32	Specify the all-settings file number
		(File name)	Enter a name for the all-settings file
	RECALL		Recall all settings from the specified all-settings file
	STORE		Store all settings in the specified all-settings file
	CLEAR		Clear all settings in the specified all-settings file
	PROTECT	OFF, **ON**	Reference file and all-settings file protection on/off setting (Set protection to OFF to clear or overwrite a saved all-settings file)
<CLEAR> F04	CLEAR ALL SETTINGS	ENTER to execute	Restore all settings (excluding file and network related settings) to factory defaults (scene files, reference files, all-settings files are not affected)
	FACTORY PRESET		
	UNLOCK PROTECTION		Unlock protection to reset all settings to factory default settings
	EXEC FACTORY PRESET		Reset all settings to factory default settings

NETWORK menu

Use to configure network-related settings.

Page name Page No.	Item	Set value	Meaning
<IP ADDRESS SETTINGS> N01	IP ADDRESS(CH.A)	**0.0.0.0** to 255.255.255.255	IP address setting of unit (Set different IP addresses for channel A and channel B)
	IP ADDRESS(CH.B)	**0.0.0.0** to 255.255.255.255	
	SUBNET MASK	**0.0.0.0** to 255.255.255.255	Subnet mask setting (common to channels A and B)
	DEFAULT GATEWAY	**0.0.0.0** to 255.255.255.255	Gateway IP address setting (common to channels A and B)
	SET	ENTER to execute	Apply the IP address, subnet mask, and default gateway settings in the menu to the unit
	MAC ADDRESS	00:00:00:00:00:00 to FF:FF:FF:FF:FF:FF	MAC address of the unit (display only)
<LAN SETTINGS> N02	AUTO NEGOTIATION	OFF, **ON**	LAN connection auto-negotiation function on/off setting
	CONNECTION SPEED	10M, **100M**	LAN connection speed setting
	DUPLEX MODE	HALF, **FULL**	Switch LAN connection between half and full duplex mode
	LINK CONDITION	UP, DOWN	LAN connection status (display only)
	SET	ENTER to execute	Apply the auto-negotiation, connection speed, and half/full duplex settings to the unit
<CNS SETTINGS> N03	CNS MODE	**LEGACY**, BRIGDE, MCS	Camera network system communications mode setting LEGACY: When connected with a command network unit (such as the CNU-700) or remote control unit (such as the RCP-3500/1500 series) via an 8-pin multi connector (excluding when unit is connected to camera network master device via LAN connection) BRIDGE: When connected 1-to-1 with remote control panel via LAN connection MCS: When connected to camera network master device, for example a master setup unit (such as the MSU-1000), via LAN connection
	MCS MODE	(CLIENT)	(Display only)
	REMOTE CONTROL NO		Number setting of device used for remote control (remote control is disabled when set to 0)
	CH.A	**0** to 96	
	CH.B	**0** to 96	
	MASTER IP ADDRESS	**0.0.0.0** to 255.255.255.255	IP address setting of the master device (enabled in MCS mode only)
	TARGET IP ADDRESS(CH.A)	**0.0.0.0** to 255.255.255.255	IP address setting of remote control panel in bridge connection (enabled in BRIDGE mode only)
	TARGET IP ADDRESS(CH.B)	**0.0.0.0** to 255.255.255.255	
	SET	ENTER to execute	Apply the CNS mode, device number, master IP address, and target IP address settings in the menu to the unit

DIAGNOSIS menu

Displays the device status.

Page name Page No.	Item	Set value	Meaning
<BOARD STATUS> D01	SY	OK, NG	Internal board status
	DVP	OK, NG	
	SDI	OK, NG	
	DCP1	OK, NG	
	DCP2	OK, NG	

Page name Page No.	Item	Set value	Meaning
<ROM VERSION> D02	APP	Version and date of main software	Software version information
		Model name	
		Comment	
	OS	OS version, date	
	UPDATER	Version and date of update software	
	SY	V x.xx	ROM version of SY PLD
	SDI	V x.xx	ROM version of SDI PLD
	DEC	V x.xx	ROM version of DEC PLD
	DCP1	V x.xx	ROM version of DCP1 PLD
	DCP2	V x.xx	ROM version of DCP2 PLD
	4K-POST	V x.xx	ROM version of 4K-POST PLD
	2K-POST	V x.xx	ROM version of 2K-POST PLD
	SDP	V x.xx	ROM version of SDP PLD
<SERIAL NO.> D03	MODEL	Model name	
	NO	Serial number	
<IP ADDRESS> D04	IP ADDRESS(CH.A)	0.0.0.0 to 255.255.255.255	IP address of channel A of the unit (display only)
	IP ADDRESS(CH.B)	0.0.0.0 to 255.255.255.255	IP address of channel B of the unit (display only)
	SUBNET MASK	0.0.0.0 to 255.255.255.255	Subnet mask (display only)
	DEFAULT GATEWAY	0.0.0.0 to 255.255.255.255	Default gateway IP address (display only)
	MAC ADDRESS	00:00:00:00:00:00 to FF:FF:FF:FF:FF:FF	MAC address of the unit (display only)
<LAN STATUS> D05	AUTO NEGOTIATION	OFF, ON	LAN connection auto-negotiation setting status of (display only)
	CONNECTION SPEED	10M, 100M	LAN connection speed setting status (display only)
	DUPLEX MODE	HALF, FULL	LAN connection half/full duplex setting status (display only)
	LINK CONDITION	DOWN, UP	LAN connection status (display only)
<CNS STATUS> D06	CNS MODE	LEGACY, BRIDGE, MCS	Camera network system communications mode setting status (display only)
	MCS MODE		(Display only)
	REMOTE CONTROL NO		Number setting status of device used for remote control (display only)
	CH.A	0 to 96	
	CH.B	0 to 96	
	MASTER IP ADDRESS	0.0.0.0 to 255.255.255.255	IP address setting status of the master device (enabled in MCS mode only, display only)
	TARGET IP ADDRESS(CH.A)	0.0.0.0 to 255.255.255.255	IP address setting status of remote control panel in bridge connection (enabled in BRIDGE mode only, display only)
	TARGET IP ADDRESS(CH.B)	0.0.0.0 to 255.255.255.255	
<POWER SUPPLY UNIT> D07	OPERATING TIME		Operating time of the power supply unit (display only)
		STATUS	Flags whether the operating time of the power supply unit has exceeded the recommended operating time (display only) WARNING: The recommended operating time of the power supply unit has been exceeded (44,000 hours) NOTICE: The operating time of the power supply unit has reached 35,000 hours, and is approaching the recommended operating time. OK: All times, excluding those above.

Page name Page No.	Item	Set value	Meaning
<12G/6G-SDI STATUS> D08	SDI IN		Displays the 12G/6G-SDI input status
		CH.A 4K	NO SIGNAL: Input signal is not detected
		CH.B 4K	OK: Detected successfully
			ERROR: Signal detected, but an error exists
			(3G/HD-SDI): Status is not displayed when input is 3G/HD-SDI
	SDI OUT		Displays the 12G/6G-SDI output status
		CH.A 4K	OK: Signal is output successfully
		CH.B 4K	ERROR: Signal is not output successfully
			(3G/HD-SDI): Status is not displayed when output is 3G/HD-SDI

File System

The unit features a file system for managing data.

File Configuration

The file system supports the following three types of files.

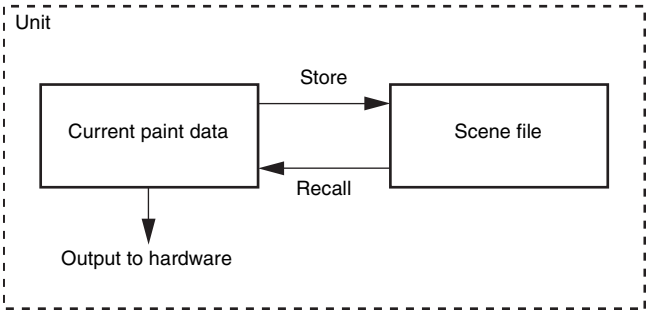
- **Scene files**
  A scene file is used to store temporary paint data corresponding to each scene.
  These files are stored in the unit.
- **All-settings files**
  An all-settings file is used to store all user-set data (excluding network settings, scene files, and reference files).
  These files are stored in the unit.
- **Reference files**
  A reference file is used to store the standard values of user paint data.
  These files are stored in the unit.

Scene Files

Scene files are used to store paint data in the SETUP menu and ADDITIONAL PAINT menu items in the unit.
Five scene files are provided for each of channel A and channel B (10 files in total).
Scene files can also be stored on external media if a master setup unit (MSU) is used. For details, refer to the MSU operation manual.
Data can be stored and recalled using the setup menu or MSU.

Scene file operations

Operation procedures



Storing a scene file

Operation using SCENE FILE page of FILE menu

1. **Select the scene file number of the channel you want to store using SCENE FILE No. on the SCENE FILE page.**
2. **Select STORE to store settings in the specified scene file.**

Operation from MSU

1. **Change the scene file item to the desired value.**
2. **Press the STORE button in the function control block on the operation panel.**
3. **Press the scene file number button in the function control block on the operation panel.**

Recalling a scene file

Operation using SCENE FILE page of FILE menu

1. **Select the scene file number of the channel you want to recall using SCENE FILE No. on the SCENE FILE page.**
2. **Select RECALL to recall the specified scene file.**

Operation from MSU

1. **Press the number button of the scene file you want to recall while the STORE button in the function control block on the operation panel is not lit.**
   The number button is lit and the specified scene file is recalled.

All-Settings Files

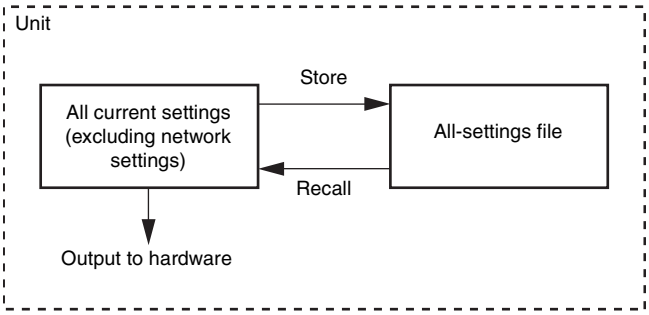
All-settings files store the following user settable items in the unit.

- All items that can be set with the CONFIGURATION menu (excluding time setting)
- All items that can be set with the SETUP menu
- All items that can be set with the ADDITIONAL PAINT menu

Network settings that can be made with the NETWORK menu, and reference files and scene files that can be stored with the FILE menu are excluded.
Up to 32 all-settings files can be stored.
All-setting files can also be stored on external media if a master setup unit (MSU) is used. For details, refer to the MSU operation manual.
Data can be stored and recalled using the setup menu or MSU.
Also, settings can be recalled by inputting a signal on the I/O PORT connector (D-Sub 15-pin) of the unit. For details about the electrical specifications of the I/O PORT connector (D-Sub 15-pin), refer to the installation manual of the unit.

All-settings file operations

Operation procedures



Storing an all-settings file

Operation using ALL-SETTINGS FILE page of FILE menu

1 **Set PROTECT to OFF on the ALL-SETTINGS FILE page.**

2 **Select the number of the all-settings file you want to store in FILE No. Name the selected file number as required.**

3 **Select STORE to store settings in the specified all-settings file.**

Operation from MSU

1 **Press the FILE button in the menu operation block on the operation panel.**

2 **Select [Converter All-Settings] → [Store/Recall] in the menu.**

3 **Select [STORE], then select the number of the all-settings file you want to store.**

Recalling an all-settings file

Operation using ALL-SETTINGS FILE page of FILE menu

1 **Select the number of the all-settings file you want to recall in FILE No. on the ALL-SETTINGS FILE page.**

2 **Select RECALL to recall settings from the specified all-settings file.**

Operation using I/O PORT connector

1 **Apply 5 V to pin 1.**

2 **Specify the number (1 to 32) of setting file you want to recall using pin 2 (LSB) to pin 7 (MSB).**

3 **Apply 0 V to pin 1 for at least one second with the number of the all-settings file specified.**

Operation from MSU

1 **Press the FILE button in the menu operation block on the operation panel.**

2 **Select [Converter All-Settings] → [Store/Recall] in the menu.**

3 **Select the number of the all-settings file you want to recall.**

Clearing an all-settings file

Operation using ALL-SETTINGS FILE page of FILE menu

1 **Set PROTECT to OFF on the ALL-SETTINGS FILE page.**

2 **Select the number of the all-settings file you want to delete in FILE No.**

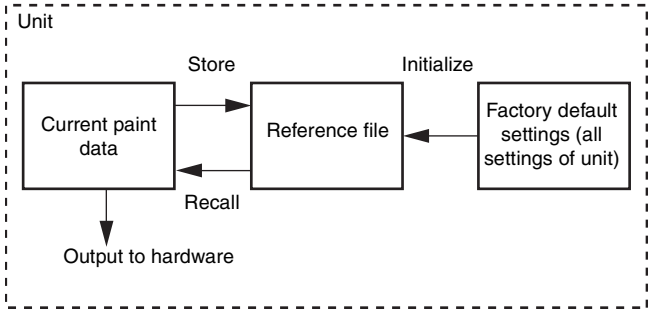
3 **Select CLEAR to delete settings in the specified all-settings file.**

Reference Files

Reference files are used to store user reference values of paint data in the SETUP menu items in the unit.
Differences from the values stored in reference files are displayed as the paint data values in the unit menu or the master setup unit (MSU), excluding some items. Since the reference values to be displayed change, pay close attention when storing a reference file.
A reference file is provided for each of channel A and channel B.
Reference files can also be stored on external media if a master setup unit is used. For details, refer to the MSU operation manual.
Data can be stored and recalled using the setup menu or MSU.

Reference file operations

Operation procedures



Storing a reference file

Operation using REFERENCE FILE page of FILE menu

1 **Set PROTECT to OFF on the REFERENCE FILE page.**

2 **Select STORE for the channel you want to store.**

Operation from MSU

1 **Press the FILE button in the menu operation block on the operation panel.**

2 **Select [Reference] → [Reference Store] in the menu.**
Reference files are stored in the unit, and the display of numeric data is indicated as “0” (excluding some items).

Recalling a reference file

Operation using SCENE FILE page of FILE menu

1 **Select STANDARD → RECALL of the channel you want to recall on the SCENE FILE page.**
The state when the reference file was stored is recalled.

Operation from MSU

1 **Press the STANDARD button in the camera/panel control block on the operation panel.**
The state when the reference file was stored is recalled.

Initializing a reference file

Operation using REFERENCE FILE page of FILE menu

1 **Set PROTECT to OFF on the REFERENCE FILE page.**

2 **Select CLEAR for the channel you want to initialize.**

Initialization

Restoring settings (excluding network settings and files) to initial state

Operation using CLEAR page of FILE menu

1 **Execute CLEAR ALL SETTINGS on the CLEAR page.**

Restoring all settings to factory default state

Operation using CLEAR page of FILE menu

1 **Select UNLOCK PROTECTION on the CLEAR page to cancel protection against initialization.**
When “YES/NO” appears, select “YES.”

2 **Select EXEC FACTORY PRESET.**
When “YES/NO” appears, select “YES.”

Appendix

Precautions

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.

The fan and battery are consumable parts that will need periodic replacement.
When operating at room temperature, a normal replacement cycle will be about 5 years. However, this replacement cycle represents only a general guideline and does not imply that the life expectancy of these parts is guaranteed. For details on parts replacement, contact your dealer.

The life expectancy of the electrolytic capacitor is about 5 years under normal operating temperatures and normal usage (8 hours per day; 25 days per month).
If usage exceeds the above normal usage frequency, the life expectancy may be reduced correspondingly.

Do not push the mesh portion of the front panel with your fingers or sharp objects.

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.

Depending on the operating environment, unauthorized third parties on the network may be able to access the unit. When connecting the unit to the network, be sure to confirm that the network is protected securely.

Operating environment

- Avoid high-temperature rooms and near sources of heat.
- Do not place in locations with strong electric or magnetic field.
- Dry location with good ventilation.
- Avoid locations exposed to sunlight or strong lighting.

Avoid violent impacts

Dropping the unit, or otherwise imparting a violent shock to it, is likely to cause it to malfunction.

Do not cover with cloth

While the unit is in operation, do not cover it with a cloth or other material. This can cause the temperature to rise, leading to a malfunction.

After use

Set the POWER switch to OFF.

Care

If the body or panels of the unit become dirty, wipe them with a dry cloth. For severe dirt, use a soft cloth steeped in a small amount of neutral detergent, then wipe dry. Do not use volatile solvents such as alcohol or thinners, as these may damage the finish.

To prevent electromagnetic interference from portable communications devices

The use of portable telephones and other communications devices near this camera can result in malfunctions and interference with audio and video signals.
It is recommended that the portable communications devices near this camera be powered off.

Error Messages

When an error is detected in the unit, the following messages may be displayed on the HD monitor output.

Note

Display the menu or status screen to view messages.

Error message	Meaning
TEMP WARNING	Internal temperature error.
PLD NG	Internal PLD error.
SDI LOCK WARNING	Internal SDI-PLD error.
INPUT SDI RATE UNMATCH	SDI INPUT error.
FRAME RATE UNMATCH	Input signal and menu setting frame rate mismatch.

I/O PORT (D-Sub, 15-pin) Control Specifications

Recalling an all-settings file

Any one of 32 all-settings files can be recalled according to settings on the D-Sub port.

Procedure

1 Set pin 1 (File Recall) to HIGH (+5 V).

2 Specify the 6-bit number of the all-settings file to recall using pin 2 (File No. bit [0] LSB) to pin 7 (File No. bit [5] MSB).

Notes

- To set a bit to 1, set the corresponding pin to LOW (0 V). To set a bit to 0, set the corresponding pin to HIGH (+5 V).
- The numbers that can be specified are 1 [000001] to 32 [100000] (0 [000000] and 33 [100001] to 63 [111111] are invalid). Numbers within [ ] are specified in bit [5] [4] [3] [2] [1] [0] order.

3 Set pin 1 to LOW (0 V) for at least one second with the 6-bit number of the all-settings file specified.

CH.B HD MONI OUT SEL selection

When CH.B HD MONI is set to D-SUB on the <OTHERS> page of the CONFIGURATION menu, you can select the image that is output from the HD OUT-B MONITOR connector.

Procedure

1 **Display the following item in the menu.**
[CONFIGURATION] → [OTHERS] → [CH.B HD MONI]

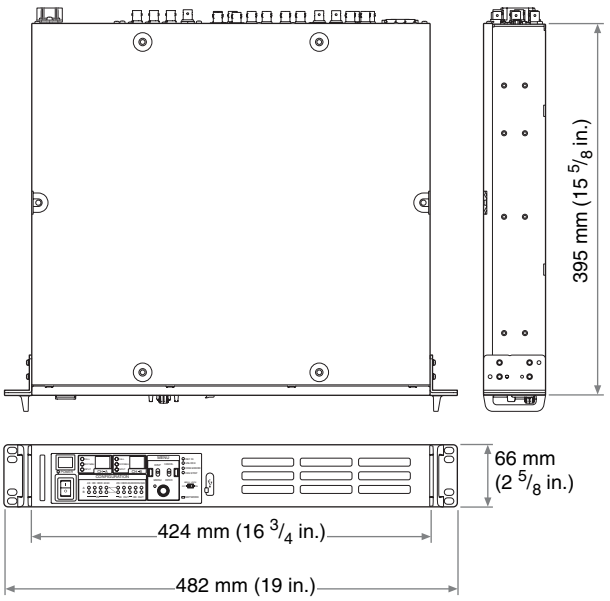
2 **Select [D-SUB].**

3 **Select the image that you want to output using pin 8 (CH.B HD MONI OUT SEL.).**
For Ch.A HD: Set LOW (0 V).
For Ch.B HD: Set HIGH (+5 V).

Specifications

General	
Power requirements	100 V to 240 V AC, 50/60 Hz
Current consumption	1.4 A (max.)
Operating temperature	5 °C to 40 °C (41 °F to 104 °F)
Storage temperature	–20 °C to +60 °C (–4 °F to +140 °F)
Mass	Approx. 6.8 kg (15 lb)
Input/output connectors	
I/O PORT	D-Sub 15-pin connector
REMOTE A, B	8-pin multi-connector (2)
LAN	8-pin (1)
Input connectors	
AC IN	100 V to 240 V AC (1)
4K INPUT-A, 4K INPUT-B (12G/6G/3G/HD-SDI INPUT)	BNC type (4+4) 12G-SDI (Link1 only): SMPTE ST2082, 0.8 Vp-p, 75 ohms, 11.880 Gbps/ 11.868 Gbps 6G-SDI (Link1 only): SMPTE ST2081, 0.8 Vp-p, 75 ohms, 5.940 Gbps/5.934 Gbps 3G-SDI: SMPTE ST424/425 Level-A/B, 0.8 Vp-p, 75 ohms, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps
HD INPUT-A, HD INPUT-B (3G/HD-SDI INPUT)	BNC type (1+1) 3G-SDI: SMPTE ST424/425 Level-A/B, 0.8 Vp-p, 75 ohms, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps
REFERENCE IN	BNC type (2) loop-through output HD: SMPTE ST274, tri-level sync, 0.6 Vp-p, 75 ohms SD: Black burst (NTSC: 0.286 Vp-p, 75 ohms/ PAL: 0.3 Vp-p, 75 ohms)
Output connectors	
4K OUT-A, 4K OUT-B (12G/6G/3G/HD-SDI OUTPUT)	BNC type (8+8) 12G-SDI (Link1 only): SMPTE ST2082, 0.8 Vp-p, 75 ohms, 11.880 Gbps/ 11.868 Gbps 6G-SDI (Link1 only): SMPTE ST2081, 0.8 Vp-p, 75 ohms, 5.940 Gbps/5.934 Gbps 3G-SDI: SMPTE ST424/425 Level-A/B, 0.8 Vp-p, 75 ohms, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps
HD OUT-A MAIN, HD OUT-B MAIN (3G/ HD-SDI OUTPUT)	BNC type (1+1) 3G-SDI: SMPTE ST424/425 Level-A/B, 0.8 Vp-p, 75 ohms, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps 3G-SDI/HD-SDI selectable
HD OUT-A MONITOR, HD OUT-B MONITOR (HD-SDI OUTPUT)	BNC type (1+1) HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps
Supplied accessories	
Number plates (1 set)	
Operation Guide (1)	
Operation Manual (CD-ROM) (1)	

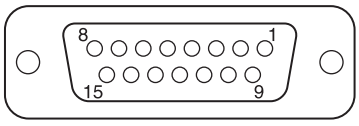
Optional accessories
United States and Canada: Plug holder B (2-990-242-01) Other areas: Plug holder C (3-613-640-01)
United States and Canada: Power cord set (1-551-812-XX) Other areas: Power cord set (1-782-929-XX)
CCA-5-3 (3 m) and CCA-5-10 (10 m) connection cables
Maintenance manual
D-Sub 15-pin plug (male) (1-506-582-11 solder/1-566-355-11 crimp)
Related equipment
RCP-3500/1500 series Remote Control Panel
MSU-1000/1500 Master Setup Unit
CNU-700 Command Network Unit
Dimensions



Pin Assignment

I/O PORT

D-Sub, 15-pin, Female



-External view-

No.	Signal	I/O	Specifications
1	File Recall	IN	GND / (+5 V Pull-up 47 kilohms)
2	File No.bit [0] LSB	IN	GND / (+5 V Pull-up 47 kilohms)
3	File No.bit [1]	IN	GND / (+5 V Pull-up 47 kilohms)
4	File No.bit [2]	IN	GND / (+5 V Pull-up 47 kilohms)
5	File No.bit [3]	IN	GND / (+5 V Pull-up 47 kilohms)
6	File No.bit [4]	IN	GND / (+5 V Pull-up 47 kilohms)
7	File No.bit [5] MSB	IN	GND / (+5 V Pull-up 47 kilohms)
8	CH.B HD MONI OUT SEL.	IN	GND / (+5 V Pull-up 47 kilohms)
9	GND	–	GND
10	Input2	IN	GND / (+5 V Pull-up 47 kilohms)
11	Input3	IN	GND / (+5 V Pull-up 47 kilohms)
12	Assignable1	IN/OUT	OUT: Open-collector IN: GND / (+5 V Pull-up 47 kilohms)
13	Assignable2	IN/OUT	OUT: Open-collector IN: GND / (+5 V Pull-up 47 kilohms)
14	Output1	OUT	Open-collector
15	Warning Output	OUT	Open-collector Close: Active (Warning) Open: Inactive

Design and specifications are subject to change without notice.

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.

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HDRC-4000 (SY)
4-694-920-**15** (1)