SONY

HDR PRODUCTION CONVERTER UNIT

HDRC-4000

OPERATION MANUAL English

1st Edition

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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.
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 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 2SI/SQD, 3G-SDI Level-A/3G-SDI Level-B, and HD-SDI (HD only) signal formats.

Simultaneous output of 4K and HD signals

Simultaneously outputs 4K and HD signals as output video derived from a single input signal.
The 4K and HD 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 system: 3G-SDI × 4ch
- HD × single system: 3G/HD-SDI

Channel B [1)]
- 4K × single system: 3G-SDI × 4ch
- HD × single system: 3G/HD-SDI

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

Outputs

Channel A
- 4K × dual system: 3G-SDI × 4ch
- HD × single system: 3G/HD-SDI
- HD monitor × single system: HD-SDI

Channel B
- 4K × dual system: 3G-SDI × 4ch
- HD × single system: 3G/HD-SDI
- HD monitor × single system: HD-SDI

External reference signal

The output signal can be synchronized to an external reference signal (HD tri-level sync or SD sync).
The unit is also equipped with a frame synchronizer function allowing it to operate as a frame synchronizer.
If an external reference signal is not input, the output can be synchronized to the channel A input signal. Operation without an external reference signal, and input only on channel B is not guaranteed.

Supported signal formats

4K: 59.94P, 50P (3840×2160)
HD: 59.94P, 50P, 59.94i, 50i (1920×1080)

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 for the whole signal).

Minimum delay setting

When set to minimum delay mode, signals that are output without resolution conversion (4K/HD) can be output with a delay of only a few lines (in HD signal terms) (for example, 4K 2SI HDR signal OETF conversion).
However, for 4K input and/or output SQD signals, the signal output will have a delay of one frame or higher (same as minimum delay mode not being set).

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). Input/output on the HD signal side is disabled.

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.

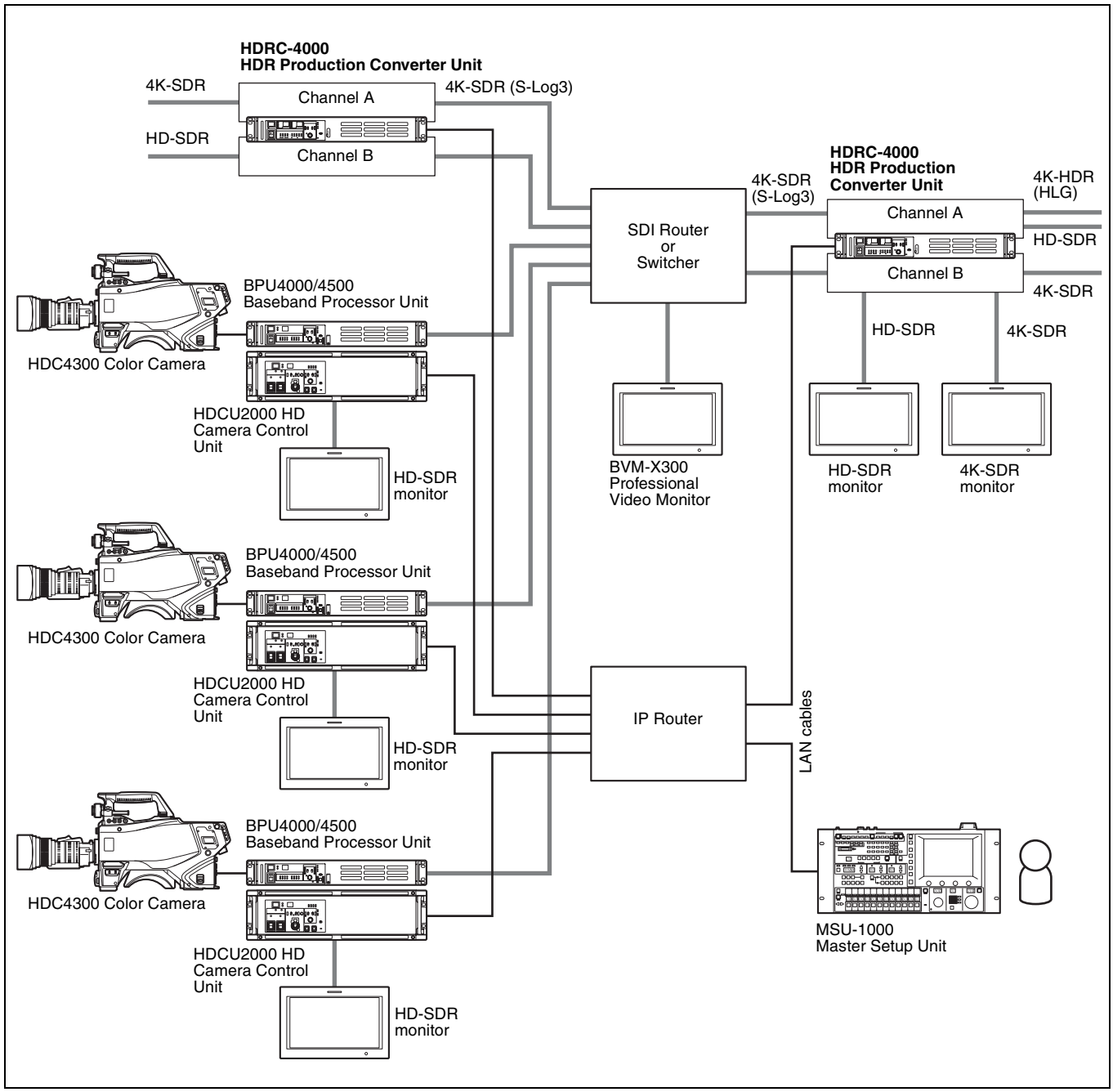
Remote control

Supports the remote control by Sony system camera products.
The menu can be operated from an RCP-1500 series Remote Control Panel or an MSU-1000 series Master Setup Unit.

Configuration file

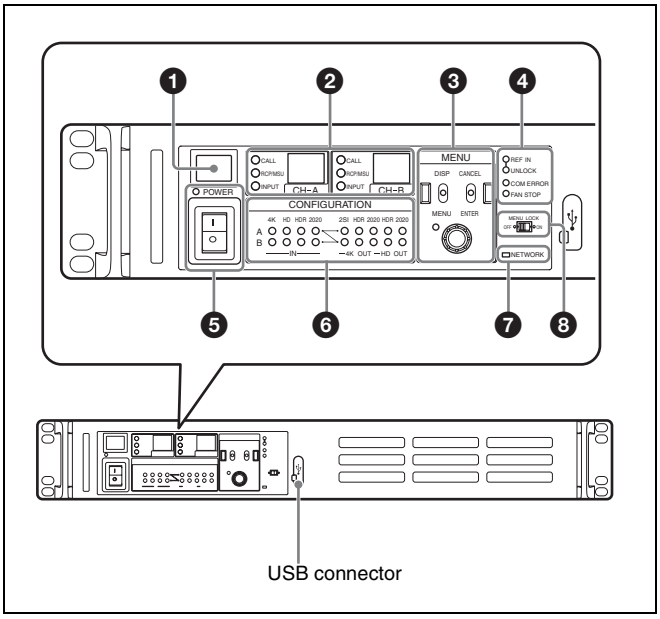
The various device settings can be stored in any of up to 62 configuration files.
File readout control is also supported from an external GPIO (D-SUB connector).

System Configuration



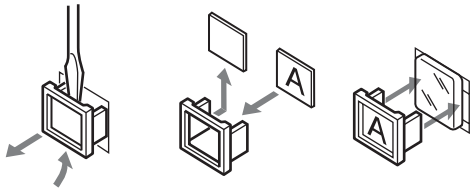
Name and Function of Parts

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.

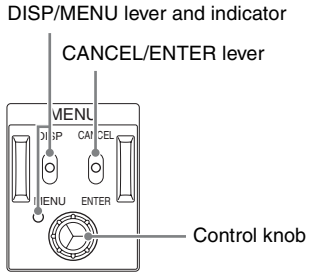
CALL lamp: Lights up when the CALL button is pressed on an external control device (MSU-1000 Master Setup Unit or RCP-1500 series Remote Control Panel).

RCP/MSU lamp: Lights up when communication is established with an external control device (MSU-1000 Master Setup Unit or RCP-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 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 or HD. 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.

Control knob (rotary encoder): Used to switch pages when the status screen is displayed. 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-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-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.

HD: Lights up when the input setting is HD.

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 OETF setting is HDR.

2020: Lights up when the 4K output 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-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-1500 series Remote Control Panel) is not connected successfully when the CNS MODE setting in <CNS SETTING> is set to BRIDGE or MCS.

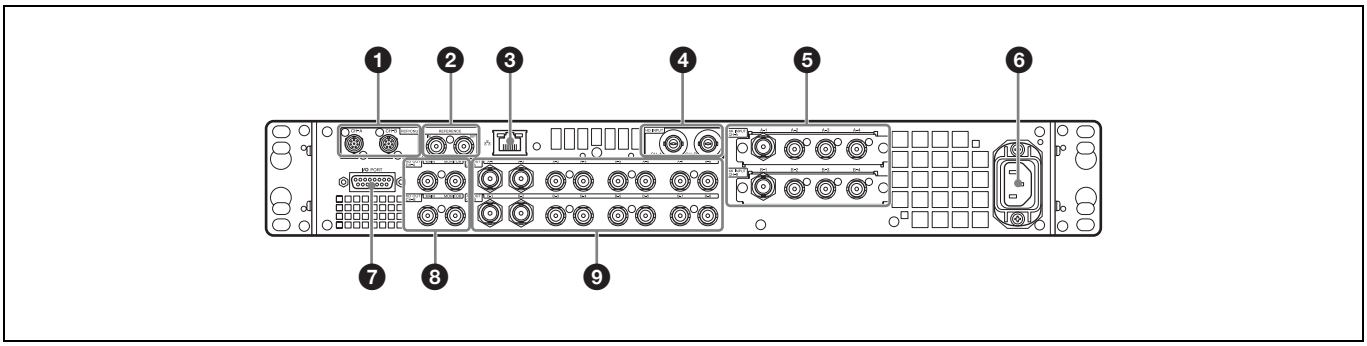
Off: Indicates that the LAN cable is not connected or network system connection parameters have not been set when the CNS MODE setting in <CNS SETTING> is set to BRIDGE or MCS.
The indicator is always off when CNS MODE is set to LEGACY.

For details, see "<CNS SETTINGS>" (page 21).

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 (MSU-1000 Master Setup Unit or RCP-1500 series Remote Control Panel) 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-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 signal is detected automatically and can be checked in the setup menu.

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

Outputs the signal input on the IN connector as-is (loop through) when a reference sync signal is input on the IN connector or the unit is turned off. Otherwise, this connector outputs an SD composite sync signal or an HD tri-level signal from the internal sync signal generator (HD tri-level signal set by factory default).

❸ 品 (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 3G-SDI (Multi-Link) signal inputs (4K).
For details about assignments to each signal output connector in the 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.

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.

❾ 4K OUT CH-A, CH-B connectors

Outputs dual system 3G-SDI Multi-Link signals for each channel (4K).
For details about assignments to each signal output connector in the Multi-Link interface, see *"Relationship between Connection Type and BNC Connector Assignment" (page 12)*.

Connection and Setup

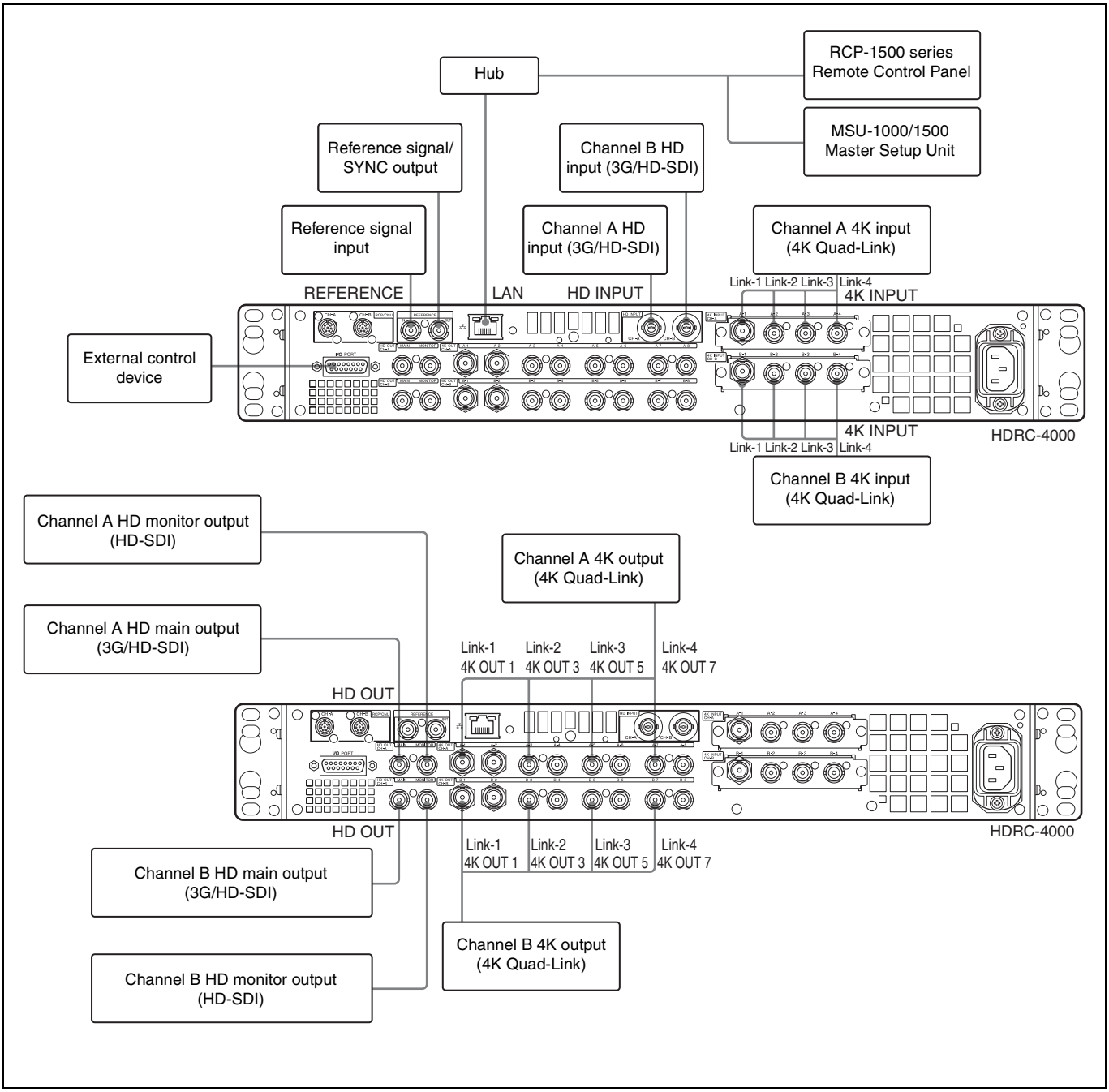
System Connection

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 signal, or in phase lock with the channel A input signal if there is no reference signal.[1)]

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

Connection example



Settings

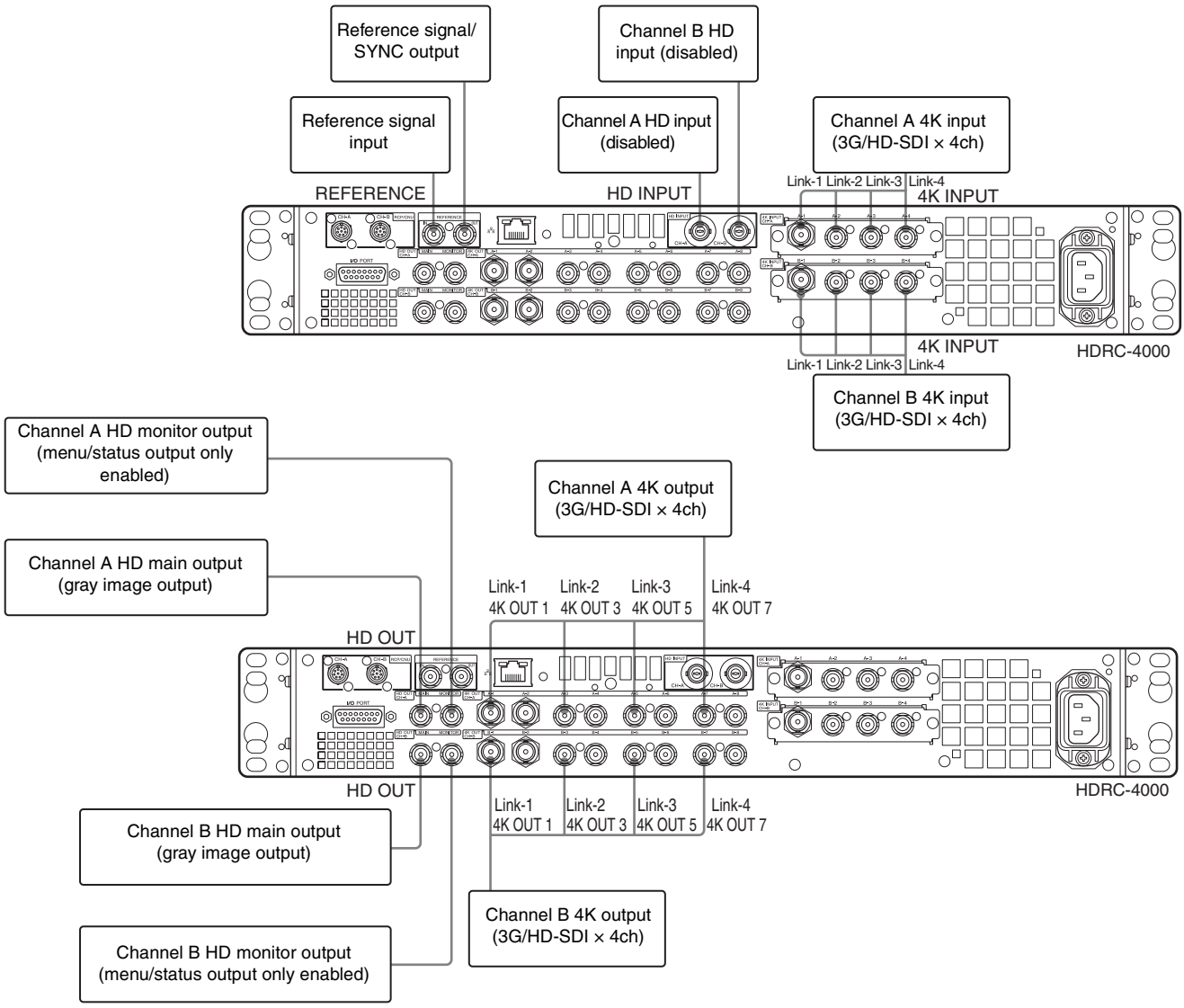
Device	Setting	Menu/Page	Item		Set value
HDRC-4000	System format settings	CONFIGURATION/ <SYSTEM> (C01)	SYSTEM FORMAT	RESOLUTION	3840×2160 (fixed)
				FRAME RATE	Frame frequency
	Channel A operation mode settings	CONFIGURATION/ <CHANNEL A SETTINGS> (C03)	AIR MATCHING		Channel A AIR MATCHING function on/ off setting
			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)	Selects channel A input signal
				(SQD / 2SI), (3G(Lv-A) / 3G(Lv-B))	Selects 4K input signal format
			OUTPUT 4K	(SQD / 2SI), (3G(Lv-A) / 3G(Lv-B))	Selects channel A 4K output signal format
				OETF	Selects 4K output signal OETF [b)]
				COLOR	Selects 4K output signal color space
			OUTPUT HD	(3G(Lv-A) / 3G(Lv-B) / HD-SDI)	Selects channel A HD output signal format
				OETF	Selects HD output signal OETF [b)]
				COLOR	Selects HD output signal color space
	Channel B operation mode settings	CONFIGURATION/ <CHANNEL B SETTINGS> (C04)	AIR MATCHING		Channel B AIR MATCHING function on/ off setting
			THROUGH MODE [a)]		Pass through 4K signal from input to output function on/off setting
	Channel B input/output video format settings	CONFIGURATION/ <CHANNEL B SETTINGS> (C04)	INPUT	(4K / HD / CH.A)	Selects channel B input signal [c)]
				(SQD / 2SI), (3G(Lv-A) / 3G(Lv-B))	Selects 4K input signal format
			OUTPUT 4K	(SQD / 2SI), (3G(Lv-A) / 3G(Lv-B))	Selects channel B 4K output signal format
				OETF	Selects 4K output signal OETF [b)]
				COLOR	Selects 4K output signal color space
			OUTPUT HD	(3G(Lv-A) / 3G(Lv-B) / HD-SDI)	Selects channel B HD output signal format
				OETF	Selects HD output signal OETF [b)]
				COLOR	Selects HD output signal color space

Device	Setting	Menu/Page	Item			Set value
	Conversion parameter settings	SETUP/<HDR/SDR SETUP> [d] (S01)	CHANNEL A			
				HDR→SDR GAIN (SDR→HDR GAIN)		Gain difference between HDR signal and SDR signal of channel A
				MASTER BLACK		Input signal master black level
				HDR BLACK OFFSET		HDR signal master black offset relative to the SDR signal
			CHANNEL B			
				HDR→SDR GAIN (SDR→HDR GAIN)		Gain difference between HDR signal and SDR signal of channel B
				MASTER BLACK		Input signal master black level
				HDR BLACK OFFSET		HDR signal master black offset relative to the SDR signal
		SETUP/<BLACK ADJUSTMENT> [e] (S02)	CHANNEL A			
				INPUT BLACK LEVEL [f]		Input signal master black level of channel A
				HDR→SDR BLACK OFFSET (SDR→HDR BLACK OFFSET)		Converted signal master black offset after HDR/SDR conversion
			CHANNEL B			
				INPUT BLACK LEVEL [f]		Input signal master black level of channel B
				HDR→SDR BLACK OFFSET (SDR→HDR BLACK OFFSET)		Converted signal master black offset after HDR/SDR conversion
			INPUT LEVEL CHECK [f]			OFF
		SETUP/<OUTPUT: DETAIL> (S04)	CHANNEL A			Resolution converted signal detail level of channel A
				DETAIL		ON
					LEVEL	Detail level
					CRISP	Crispening level
			CHANNEL B			Resolution converted signal detail level of channel B
				DETAIL		ON
					LEVEL	Detail level
					CRISP	Crispening level

Device	Setting	Menu/Page	Item			Set value
		SETUP/<OUTPUT: SDR KNEE> [d] (S05)	CHANNEL A			Sets the SDR output signal knee of channel A
				SDR KNEE		ON/OFF
					POINT	
					SLOPE	
				SDR KNEE SATURATION		ON/OFF
			CHANNEL B			Sets the SDR output signal knee of channel B
				SDR KNEE		ON/OFF
					POINT	
					SLOPE	
				SDR KNEE SATURATION		ON/OFF
		SETUP/<INPUT&OUTPUT: SDR GAMMA> [d] (S06)	CHANNEL A			Sets the SDR output gamma of channel A
				INPUT&OUTPUT SDR GAMMA		
					TABLE	SDR signal gamma table and number
				OUTPUT SDR GAMMA		ON Turns the output SDR signal gamma on
					LEVEL	Adjusts the output SDR signal gamma
					COARSE	Output SDR signal gamma step
			CHANNEL B			Sets the SDR output gamma of channel B
				INPUT&OUTPUT SDR GAMMA		
					TABLE	SDR signal gamma table and number
				OUTPUT SDR GAMMA		ON Turns the output SDR signal gamma on
					LEVEL	Adjusts the output SDR signal gamma
					COARSE	Output SDR signal gamma step

a) Even when THROUGH MODE is set to ON, always connect a reference signal and frequency locking signal.
b) Also performs HDR/SDR output signal switching.
c) You can select the channel A input signal.
d) When a signal from a Sony system camera is input, set the same setting that is configured on the camera.
e) Adjustment using this page is not required if settings on the <HDR/SDR SETUP> (previous) page are configured correctly. Set the master black level on this page if a signal is input from other than a Sony system camera or if the signal master black level is undefined.
f) When INPUT LEVEL CHECK is set to ON, the master black level added to the output signal becomes zero, so you can make an adjustment so that the output signal is 0% for the equivalent of an input signal with the iris fully closed.

Signal flow in through mode



The signal input on the 4K input of each channel is output on the 4K 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 operation mode/signal format and output interface

Operation mode	Frame rate	Input/output format	Input/output interface	
4K	59.94	4K/59.94P	Quad-Link	3G
	50	4K/50P	Quad-Link	3G

Table 2: Relationship between output interface and BNC connector assignment

Operation mode	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
4K	Quad-Link	Link-1	Link-2	Link-3	Link-4	Link-1	Link-2	Link-3	Link-4

Table 3: Relationship between input interface and BNC connector assignment

Operation mode	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
4K	Quad-Link	Link-1	Link-2	Link-3	Link-4	Link-1	Link-2	Link-3	Link-4

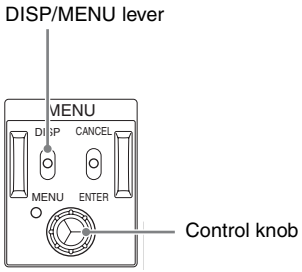
Status Display

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 13).

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

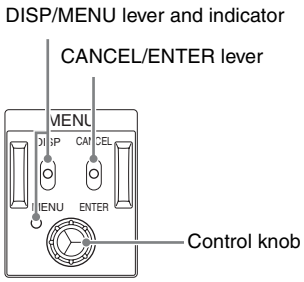
```
REF: REF IN    LOCKED

CHANNEL A: INPUT OK
 AIR  : ON
 MODE : NORMAL    ADVANCED: 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        ADVANCED: 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 first powered on, the TOP MENU page is displayed.

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
  PAINT
  FILE
  DIAGNOSIS
```

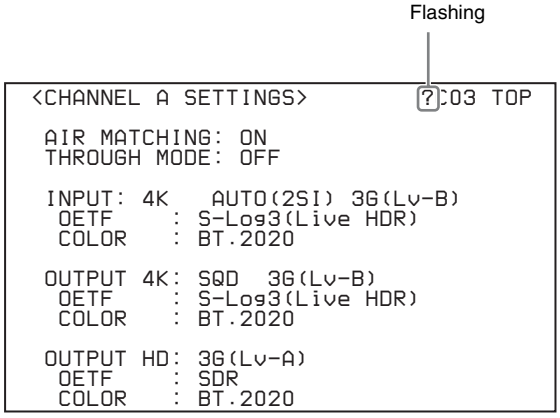
Menu	Description
CONFIGURATION	Use to set basic settings of the unit (excludes image quality settings).
SETUP	Use to set the minimum required image quality settings applied when using the unit.
PAINT	Use to set detailed image quality settings of the unit.
FILE	Use to set file-related settings (saving, loading, clearing) of the unit.
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.

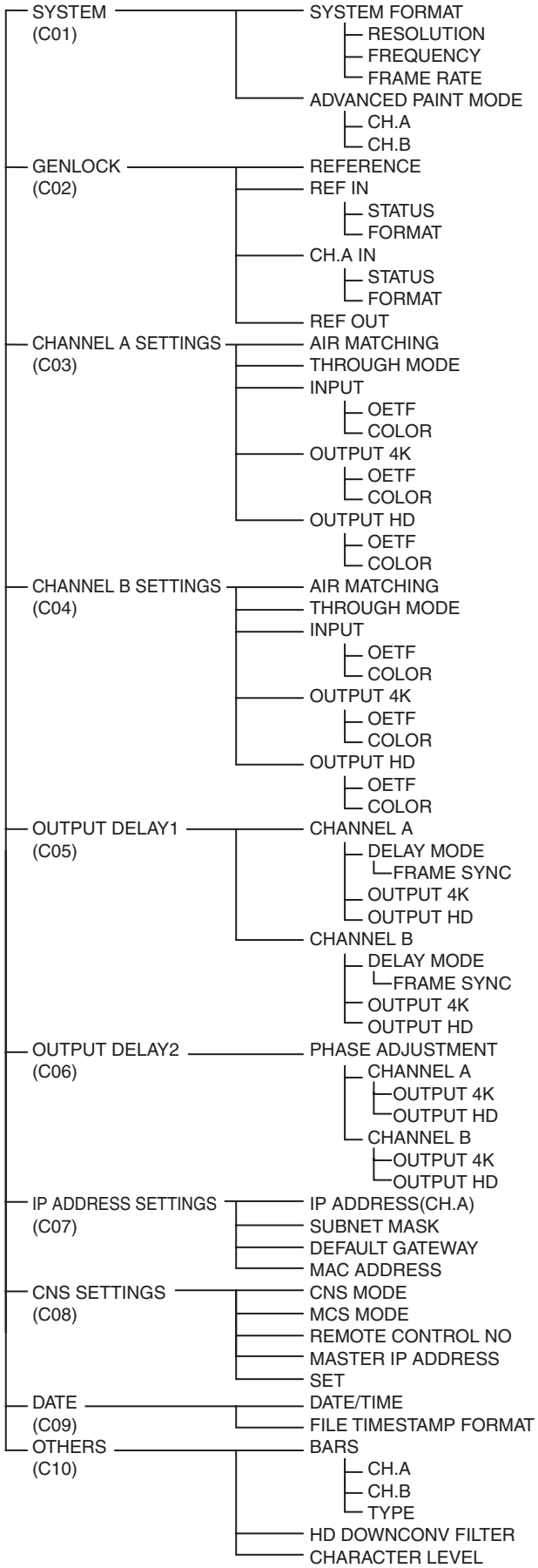
To cancel all settings
Move the ➡ cursor to ESC and push the control knob.
The ∗ (asterisk) changes back to ➡, and all the changes for the item are discarded.

To exit the menu

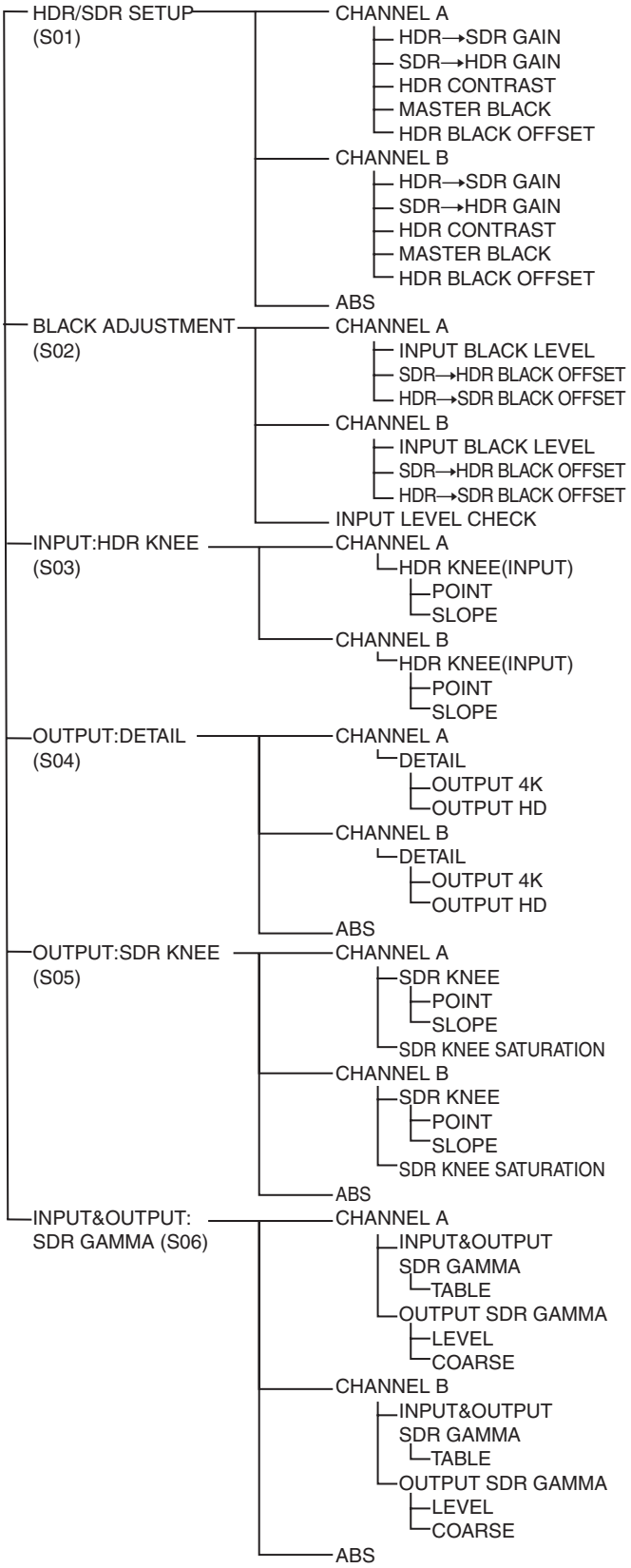
In menu display mode, set the DISP/MENU lever to MENU.

Menu Tree

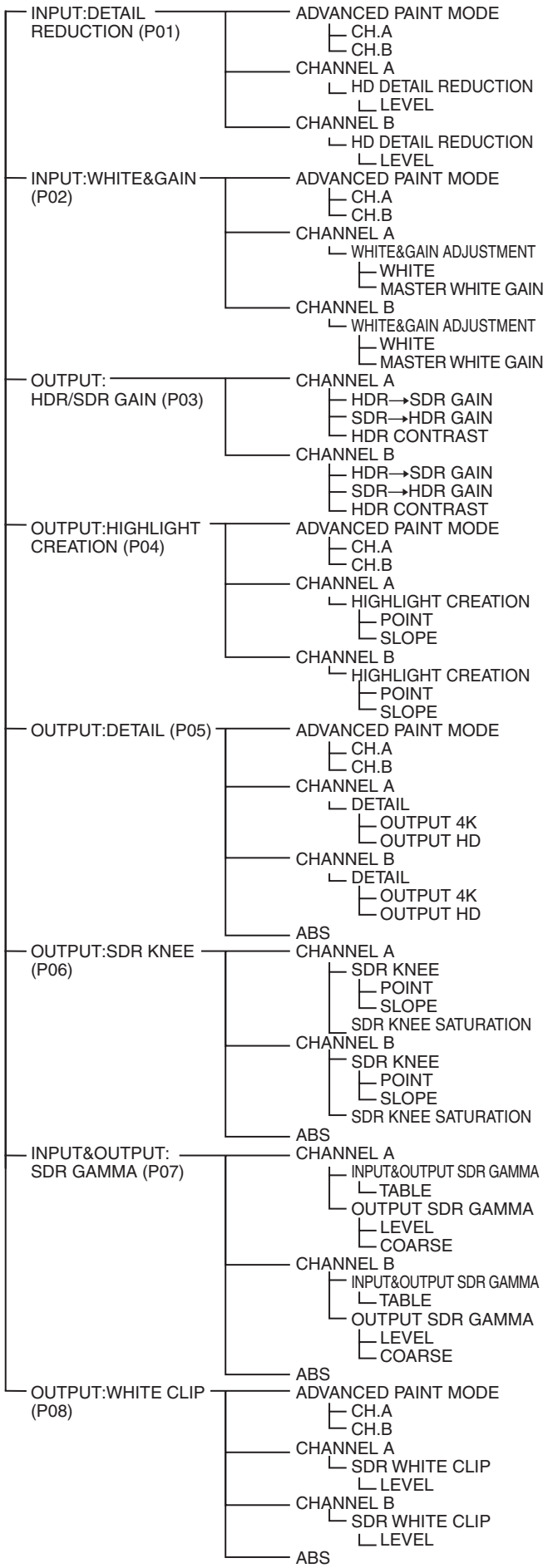
CONFIGURATION menu



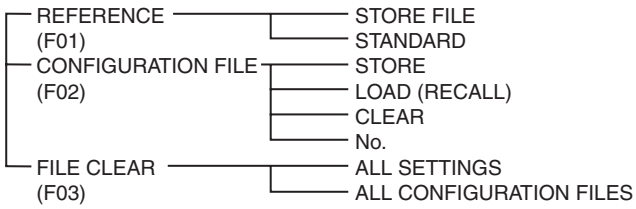
SETUP menu



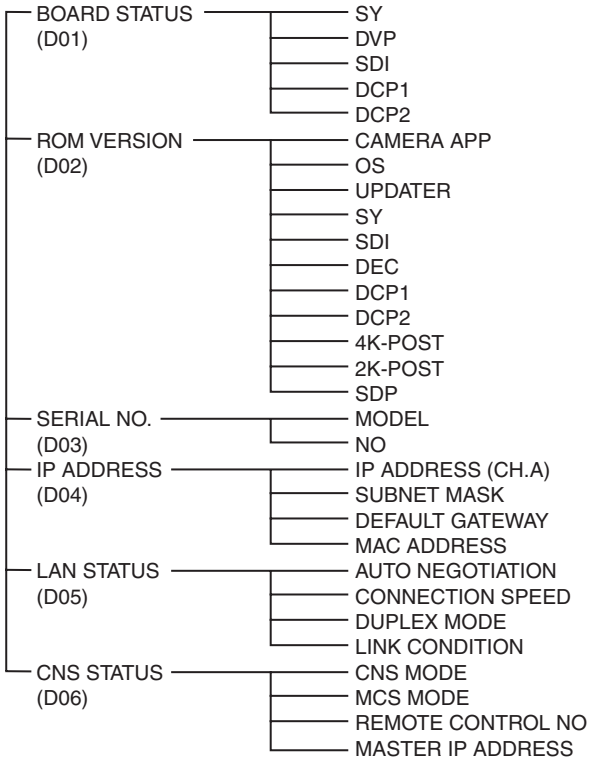
PAINT menu



FILE 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

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	Frame rate setting
	ADVANCED PAINT MODE			Advanced paint mode on/off setting
		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 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 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	
	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	
	REF OUT		SD SYNC, HD SYNC, (THROUGH)	Output sync signal SD composite signal/HD tri-level signal selector setting (through mode when there is an input signal on the reference signal input connector)

Page name Page No.	Item	Set value	Meaning
<CHANNEL A SETTINGS> C03	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.
	THROUGH MODE	**OFF**, 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.
	INPUT	**4K**, HD	Input signal settings HD: Use HD input 4K: Use 4K input
		SQD, 2SI, **AUTO**	4K input signal transport format setting SQD: Square Division (quadrants) 2SI: 2-Sample Interleave AUTO: Detects SQD or 2SI automatically
		3G(Lv-B), 3G(Lv-A), HD-SDI	Input signal format (display only)
	OETF	SDR, **S-Log3(Live HDR)**, HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR)	Input signal OETF setting. When AIR MATCHING is ON, select the setting of the monitor connected to the input side.
	COLOR	BT.709, **BT.2020**	Input signal color space setting
	OUTPUT 4K	**SQD**, 2SI	4K output signal transport format setting SQD: Square Division (quadrants) 2SI: 2-Sample Interleave
		3G(Lv-B), 3G(Lv-A)	4K output signal format setting
	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
	OUTPUT HD	**3G(Lv-B)**, 3G(Lv-A), HD-SDI	HD output signal format setting
	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, select the setting of the monitor connected to the output side.
	COLOR	**BT.709**, BT.2020	HD output signal color space setting

Page name Page No.	Item	Set value	Meaning
<CHANNEL B SETTINGS> C04	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.
	THROUGH MODE	**OFF**, 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.
	INPUT	**4K**, HD, CH.A	Input signal settings HD: Use HD input 4K: Use 4K input CH.A: Use channel A input signal as the channel B input
		SQD, 2SI, **AUTO**	4K input signal transport format setting SQD: Square Division (quadrants) 2SI: 2-Sample Interleave AUTO: Detects SQD or 2SI automatically
		3G(Lv-B), 3G(Lv-A), HD-SDI	Input signal format (display only)
	OETF	SDR, **S-Log3(Live HDR)**, HLG(Var1.2), PQ(ST2084), RGB(SG1.2), *S-Log3(HDR)	Input signal OETF setting. When AIR MATCHING is ON, select the setting of the monitor connected to the input side.
	COLOR	BT.709, **BT.2020**	Input signal color space setting
	OUTPUT 4K	**SQD**, 2SI	4K output signal transport format setting SQD: Square Division 2SI: 2-Sample Interleave
		3G(Lv-B), 3G(Lv-A)	4K output signal format setting
	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
	OUTPUT HD	**3G(Lv-B)**, 3G(Lv-A), HD-SDI	HD output signal format setting
	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, select the setting of the monitor connected to the output side.
	COLOR	**BT.709**, BT.2020	HD output signal color space setting

Page name Page No.	Item		Set value	Meaning
<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 5LINE, 1 to 3FRAME	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 5LINE, 1 to 3FRAME	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 5LINE, 1 to 3FRAME	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 5LINE, 1 to 3FRAME	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)
<IP ADDRESS SETTINGS> C07	IP ADDRESS(CH.A)		**0.0.0.0** to 255.255.255.255	IP address setting of the unit
	SUBNET MASK		**0.0.0.0** to 255.255.255.255	Subnet mask setting
	DEFAULT GATEWAY		**0.0.0.0** to 255.255.255.255	Gateway IP address setting
	MAC ADDRESS		00:00:00:00:00:00 to FF:FF:FF:FF:FF:FF	MAC address of the unit (display only)

Page name Page No.	Item		Set value	Meaning
<CNS SETTINGS> C08	CNS MODE		**LEGACY**, BRIGDE, MCS	Communications mode settings
	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	
	MASTER IP ADDRESS		**0.0.0.0** to 255.255.255.255	IP address setting of the master device (enabled in MCS mode only)
	SET		ENTER to execute	
<DATE> C09	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
<OTHERS> C10	BARS	CH.A	OFF, **ON**	Color bar output on/off setting
		CH.B	OFF, **ON**	
		TYPE	**BAR 16:9(100%)**, BAR 16:9(75%), SDI CHECK FIELD, Y-RAMP, Y/C-RAMP	Color bar type
	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

SETUP menu

Page name Page No.	Item		Set value	Meaning
<HDR/SDR SETUP> S01	CHANNEL A			
		HDR→SDR GAIN	–15.0dB to **0.0dB**	Gain when converting from HDR to SDR (when input is HDR)
		SDR→HDR GAIN	**0.0dB** to 15.0dB	Gain when converting from SDR to HDR (when input is SDR)
		HDR CONTRAST		Display only
		MASTER BLACK	–99 to 99, **0**	SDR signal black level
		HDR BLACK OFFSET	–99 to 99, **0**	HDR black level offset relative to SDR signal
	CHANNEL B			
		HDR→SDR GAIN	–15.0dB to **0.0dB**	Gain when converting from HDR to SDR (when input is HDR)
		SDR→HDR GAIN	**0.0dB** to 15.0dB	Gain when converting from SDR to HDR (when input is SDR)
		HDR CONTRAST		Display only
		MASTER BLACK	–99 to 99, **0**	SDR signal black level
		HDR BLACK OFFSET	–99 to 99, **0**	HDR black level offset relative to SDR signal
	ABS		ENTER to execute	Highlighted display: ABS (absolute indication) mode

Page name Page No.	Item	Set value	Meaning
<BLACK ADJUSTMENT> S02 If BLACK setting is configured on the S01 page, the BLACK adjustment on this page is not required.	CHANNEL A		
	INPUT BLACK LEVEL	–99 to 99, **4**	Input signal black level
	SDR→HDR BLACK OFFSET	–99 to 99, **0**	HDR signal black level offset relative to SDR signal (when input is SDR)
	HDR→SDR BLACK OFFSET	–99 to 99, **0**	SDR signal black level offset relative to HDR signal (when input is HDR)
	CHANNEL B		
	INPUT BLACK LEVEL	–99 to 99, **4**	Input signal black level
	SDR→HDR BLACK OFFSET	–99 to 99, **0**	HDR signal black level offset relative to SDR signal (when input is SDR)
	HDR→SDR BLACK OFFSET	–99 to 99, **0**	SDR signal black level offset relative to HDR signal (when input is HDR)
	INPUT LEVEL CHECK	**OFF**, ON	Input signal black level check mode. When ON, a linear signal is output so that you can adjust INPUT BLACK LEVEL to obtain 0% black. Set to OFF when adjustment is completed. Reset to OFF when power is turned on again.
<INPUT:HDR KNEE> S03	CHANNEL A		
	HDR KNEE(INPUT)	APPLIED, NOT APPLIED	Sets whether to apply HDR knee (high luminance compression for HDR) to the input video signal. Fixed to (NOT APPLIED) when the input is SDR.
	POINT	–99 to 99, **0**	Knee point setting of the HDR knee to apply to the input video signal
	SLOPE	–99 to 99, **0**	Slope setting of the HDR knee to apply to the input video signal
	CHANNEL B		
	HDR KNEE(INPUT)	APPLIED, NOT APPLIED	Sets whether to apply HDR knee (high luminance compression for HDR) to the input video signal. Fixed to (NOT APPLIED) when the input is SDR.
	POINT	–99 to 99, **0**	Knee point setting of the HDR knee to apply to the input video signal
	SLOPE	–99 to 99, **0**	Slope setting of the HDR knee to apply to the input video signal

Page name Page No.	Item		Set value	Meaning
<OUTPUT:DETAIL> S04 a) Crispening: This function prevents the enhancement of noise adding extra detail to small picture edge transitions by the detail function. Select the threshold level for which detail signals should not be added.	CHANNEL A			
	DETAIL		OFF, **ON**	Detail (contour emphasis) function on/off setting
		OUTPUT 4K	LEVEL: –99 to 99, **0**	4K output detail level adjustment (when input is HD)
			CRISP: –99 to 99, **0**	4K output detail crispening [a)] level adjustment (when input is HD)
		OUTPUT HD	LEVEL: –99 to 99, **0**	HD output detail level adjustment (when input is 4K)
			CRISP: –99 to 99, **0**	HD output detail crispening [a)] level adjustment (when input is 4K)
	CHANNEL B			
	DETAIL		OFF, **ON**	Detail (contour emphasis) function on/off setting
		OUTPUT 4K	LEVEL: –99 to 99, **0**	4K output detail level adjustment (when input is HD)
			CRISP: –99 to 99, **0**	4K output detail crispening [a)] level adjustment (when input is HD)
		OUTPUT HD	LEVEL: –99 to 99, **0**	HD output detail level adjustment (when input is 4K)
			CRISP: –99 to 99, **0**	HD output detail crispening [a)] level adjustment (when input is 4K)
	ABS		ENTER to execute	Highlighted display: ABS (absolute indication) mode

Page name Page No.	Item			Set value	Meaning
<OUTPUT:SDR KNEE> S05	CHANNEL A				
		SDR KNEE		**OFF**, ON	Knee (high luminance compression) function on/off setting for when converting from HDR to SDR ((OFF) when input is SDR)
			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	
		SDR 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				
		SDR KNEE		**OFF**, ON	Knee (high luminance compression) function on/off setting for when converting from HDR to SDR ((OFF) when input is SDR)
			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	
		SDR 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
<INPUT&OUTPUT:SDR GAMMA> S06	CHANNEL A				
		INPUT&OUTPUT SDR GAMMA			
			TABLE	**STANDARD**, HYPER	Type of gamma curve when the input or output is SDR
				1 to 7, **5** **1** to 4	(STANDARD) (HYPER)
		OUTPUT SDR GAMMA		OFF, **ON**	Gamma function on/off setting for SDR output
			LEVEL	R: –99 to 99, **0**	Gamma strength (analog)
				G: –99 to 99, **0**	
				B: –99 to 99, **0**	
				M: –99 to 99, **0**	
			COARSE	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)
	CHANNEL B				
		INPUT&OUTPUT SDR GAMMA			
			TABLE	**STANDARD**, HYPER	Type of gamma curve when the input or output is SDR
				1 to 7, **5** **1** to 4	(STANDARD) (HYPER)
		OUTPUT SDR GAMMA		OFF, **ON**	Gamma function on/off setting for SDR output
			LEVEL	R: –99 to 99, **0**	Gamma strength (analog)
				G: –99 to 99, **0**	
				B: –99 to 99, **0**	
				M: –99 to 99, **0**	
			COARSE	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)
	ABS			ENTER to execute	Highlighted display: ABS (absolute indication) mode

PAINT menu

Page name Page No.	Item			Set value	Meaning
<INPUT:DETAIL REDUCTION> P01	ADVANCED PAINT MODE				Advanced paint mode on/off setting
		CH.A		**OFF**, ON	
		CH.B		**OFF**, ON	
	CHANNEL A				
		HD DETAIL REDUCTION		**OFF**, ON	Detail (contour emphasis) reduction function on/off setting for HD input
			LEVEL	–99 to 99, **0**	Detail reduction function level for HD input
	CHANNEL B				
		HD DETAIL REDUCTION		**OFF**, ON	Detail (contour emphasis) reduction function on/off setting for HD input
			LEVEL	–99 to 99, **0**	Detail reduction function level for HD input

Page name Page No.	Item			Set value	Meaning
<INPUT:WHITE&GAIN> P02	ADVANCED PAINT MODE				Advanced paint mode on/off setting
		CH.A		**OFF**, ON	
		CH.B		**OFF**, ON	
	CHANNEL A				
		WHITE&GAIN ADJUSTMENT		ENABLE, **DISABLE**	White balance adjustment and gain function enable/disable
			WHITE	R: –99 to 99, **0**	White balance adjustment (R gain)
				B: –99 to 99, **0**	White balance adjustment (B gain)
			MASTER WHITE GAIN	–6.0dB to 12.0dB, **0.0dB**	Gain
	CHANNEL B				
		WHITE&GAIN ADJUSTMENT		ENABLE, **DISABLE**	White balance adjustment and gain function enable/disable
			WHITE	R: –99 to 99, **0**	White balance adjustment (R gain)
				B: –99 to 99, **0**	White balance adjustment (B gain)
			MASTER WHITE GAIN	–6.0dB to 12.0dB, **0.0dB**	Gain
<OUTPUT:HDR/SDR GAIN> P03	CHANNEL A				
		HDR→SDR GAIN		–15.0dB to **0.0dB**	Gain when converting from HDR to SDR (when input is HDR)
		SDR→HDR GAIN		**0.0dB** to 15.0dB	Gain when converting from SDR to HDR (when input is SDR)
		HDR CONTRAST			Display only
	CHANNEL B				
		HDR→SDR GAIN		–15.0dB to **0.0dB**	Gain when converting from HDR to SDR (when input is HDR)
		SDR→HDR GAIN		**0.0dB** to 15.0dB	Gain when converting from SDR to HDR (when input is SDR)
		HDR CONTRAST			Display only
<OUTPUT:HIGHLIGHT CREATION> P04	ADVANCED PAINT MODE				Advanced paint mode on/off setting
		CH.A		**OFF**, ON	
		CH.B		**OFF**, ON	
	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 when converting from SDR to HDR)
			POINT	70% to 100%, **97%**	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
			POINT	70% to 100%, **97%**	Break point of highlight creation curve
			SLOPE	–99 to 99, **0**	Slope of highlight creation curve

Page name Page No.	Item			Set value	Meaning
<OUTPUT:DETAIL> P05 a) Crispening: This function prevents the enhancement of noise adding extra detail to small picture edge transitions by the detail function. Select the threshold level for which detail signals should not be added.	ADVANCED PAINT MODE				Advanced paint mode on/off setting
		CH.A		**OFF**, ON	
		CH.B		**OFF**, ON	
	CHANNEL A				
		DETAIL		OFF, **ON**	Detail (contour emphasis) function on/off setting
			OUTPUT 4K	OFF, ON	4K output detail function on/off setting (display only)
				LEVEL: –99 to 99, **0**	4K output detail level adjustment (when input is HD)
				CRISP: –99 to 99, **0**	4K output detail crispening a) level adjustment (when input is HD)
			OUTPUT HD	OFF, ON	HD output detail function on/off setting (display only)
				LEVEL: –99 to 99, **0**	HD output detail level adjustment (when input is 4K)
				CRISP: –99 to 99, **0**	HD output detail crispening a) level adjustment (when input is 4K)
	CHANNEL B				
		DETAIL		OFF, **ON**	Detail (contour emphasis) function on/off setting
			OUTPUT 4K	OFF, ON	4K output detail function on/off setting (display only)
				LEVEL: –99 to 99, **0**	4K output detail level adjustment (when input is HD)
				CRISP: –99 to 99, **0**	4K output detail crispening a) level adjustment (when input is HD)
			OUTPUT HD	OFF, ON	HD output detail function on/off setting (display only)
				LEVEL: –99 to 99, **0**	HD output detail level adjustment (when input is 4K)
				CRISP: –99 to 99, **0**	HD output detail crispening a) level adjustment (when input is 4K)
	ABS			ENTER to execute	Highlighted display: ABS (absolute indication) mode

Page name Page No.	Item			Set value	Meaning
<OUTPUT:SDR KNEE> P06	CHANNEL A				
		SDR KNEE		**OFF**, ON	Knee (high luminance compression) function on/off setting for when converting from HDR to SDR ((OFF) when input is SDR)
			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	
		SDR KNEE SATURATION		**OFF**, ON	Knee saturation (saturation adjustment of high luminance compression areas) function on/off setting
				LEVEL: –99 to 99, **0**	Strength of knee saturation function
	CHANNEL B				
		SDR KNEE		**OFF**, ON	Knee (high luminance compression) function on/off setting for when converting from HDR to SDR ((OFF) when input is SDR)
			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	
		SDR KNEE SATURATION		**OFF**, ON	Knee saturation (saturation adjustment of high luminance compression areas) function on/off setting
				LEVEL: –99 to 99, **0**	Strength of knee saturation function
	ABS				Highlighted display: ABS (absolute indication) mode

Page name Page No.	Item	Set value	Meaning
<INPUT&OUTPUT:SDR GAMMA> P07	CHANNEL A		
	INPUT & OUTPUT SDR GAMMA		
	TABLE	**STANDARD**, HYPER	Type of gamma curve when the input or output is SDR
		1 to 7, **5** **1** to 4	(STANDARD) (HYPER)
	OUTPUT SDR GAMMA	OFF, **ON**	Gamma function on/off setting for SDR output
	LEVEL	R: –99 to 99, **0**	Gamma strength (analog)
		G: –99 to 99, **0**	
		B: –99 to 99, **0**	
		M: –99 to 99, **0**	
	COARSE	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)
	CHANNEL B		
	INPUT & OUTPUT SDR GAMMA		
	TABLE	**STANDARD**, HYPER	Type of gamma curve when the input or output is SDR
		1 to 7, **5** **1** to 4	(STANDARD) (HYPER)
	OUTPUT SDR GAMMA	OFF, **ON**	Gamma function on/off setting for SDR output
	LEVEL	R: –99 to 99, **0**	Gamma strength (analog)
		G: –99 to 99, **0**	
		B: –99 to 99, **0**	
		M: –99 to 99, **0**	
	COARSE	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)
	ABS	ENTER to execute	Highlighted display: ABS (absolute indication) mode
<OUTPUT:WHITE CLIP> P08	ADVANCED PAINT MODE		Advanced paint mode on/off setting
	CH.A	**OFF**, ON	
	CH.B	**OFF**, ON	
	CHANNEL A		
	SDR WHITE CLIP	OFF, **ON**	White clip function on/off setting when converting from HDR to SDR (enabled only when advanced paint mode is on)
	LEVEL	–99 to 99, **0**	White clip video level
	CHANNEL B		
	SDR WHITE CLIP	OFF, **ON**	White clip function on/off setting when converting from HDR to SDR (enabled only when advanced paint mode is on)
	LEVEL	–99 to 99, **0**	White clip video level
	ABS	ENTER to execute	Highlighted display: ABS (absolute indication) mode

FILE menu

Page name Page No.	Item	Set value	Meaning
<REFERENCE> F01	STORE FILE	Select CH.A or CH.B to execute	Store the current status of reference file items to the reference file in internal memory.
	STANDARD	Select CH.A or CH.B to execute	Load the reference file stored in internal memory.

Page name Page No.	Item	Set value	Meaning
<CONFIGURATION FILE> F02	STORE		Save all HDRC-4000 settings to the internal file (configuration file) specified by the “No.” item.
	LOAD (RECALL)		Load and apply all HDRC-4000 settings from the internal file (configuration file) specified by the “No.” item.
	CLEAR		Clear the internal file (configuration file) specified by the “No.” item.
	No.	1 to 62	Number of the configuration file to use
<FILE CLEAR> F03	ALL SETTINGS	ENTER to execute	Reset all HDRC-4000 settings to factory default settings.
	ALL CONFIGURATION FILES	ENTER to execute	Clear all configuration files.

DIAGNOSIS menu

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	
<ROM VERSION> D02	CAMERA APP	Version and date of main software	Software version information
	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 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	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	Auto negotiation setting
	CONNECTION SPEED	10M, 100M	Connection speed
	DUPLEX MODE	HALF, FULL	Duplex mode setting
	LINK CONDITION	DOWN, UP	LAN connection status
<CNS STATUS> D06	CNS MODE	LEGACY, BRIDGE, MCS	Communications mode setting
	MCS MODE		
	REMOTE CONTROL NO		
	CH.A	0 to 96	
	MASTER IP ADDRESS	0.0.0.0 to 255.255.255.255	

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 the OFF position.

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.

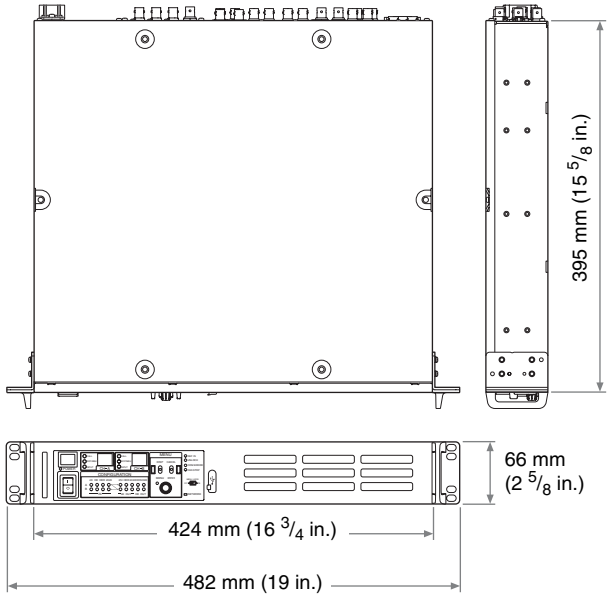
Note

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.

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 (3G/HD SDI INPUT)	BNC type (4+4) 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 (1) 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 (3G/HD SDI OUTPUT)	BNC type (8+8) 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
REFERENCE OUT	BNC type (1) HD: SMPTE ST274, tri-level sync, 0.6 Vp-p, 75 ohms SD: Composite sync, 0.3 Vp-p, 75 ohms HD SYNC/SD SYNC selectable
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-1500 series Remote Control Panel	
MSU-1000/1500 Master Setup Unit	
CNA-1 Camera Control Network Adaptor	
Dimensions	



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.
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HDRC-4000 (SY)
4-694-920-**11** (2)

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