SONY

CAMERA CONTROL UNIT

HDCU4300

NETWORKED MEDIA INTERFACE BOARD

HKCU-IP43F

12G-SDI EXTENSION KIT

HKCU-4002

OPERATION MANUAL English

1st Edition (Revised 2)

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Overview

The HDCU4300 Camera Control Unit connects to a HDC4300 Color Camera or HDC-P43 Multi Purpose Camera[1)] with an optical fiber cable, and carries out the processing of video signals from the camera and provides an interface with external equipment.
Connecting a camera facilitates 4K video shooting or HD high frame rate video shooting. HD normal speed video and SD normal speed video can even be simultaneously output when 4K video shooting and HD high frame rate video shooting.
The unit can output video signals and audio signals as IP signals by installing an HKCU-IP43F Networked Media Interface Board.[2)]
12G-SDI output or 6G-SDI output is also supported by installing an HKCU-4002 12G-SDI Extension Kit in the unit.

1) To connect to the HDC-P43, an HKCU-SM100 CCU Extension Adaptor and a single-mode fiber cable are required.
2) An SFP+ module is required to use IP output.

This unit may be combined with an MSU-1000 series Master Setup Unit (optional) or an RCP-1000 series Remote Control Panel (optional) to form a camera control system. This enables you to configure a system capable of controlling multiple video cameras.

Notes

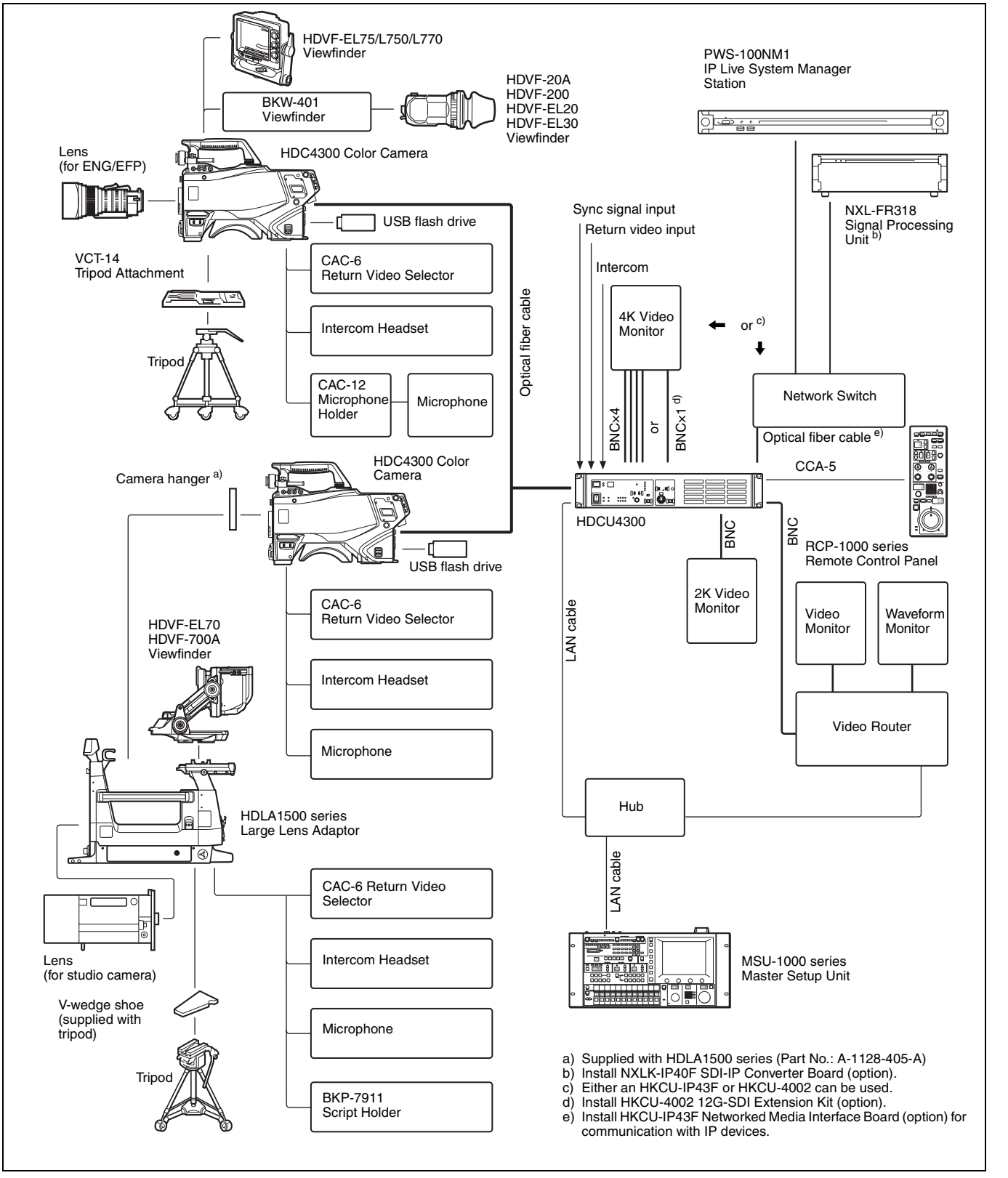
- Before operating the system, check that the software and ROM versions of each of this unit, HDC4300, HDC-P43, MSU-1000 series, and RCP-1000 series are supported.
- An HKCU-IP43F Networked Media Interface Board and an HKCU-4002 12G-SDI Extension Kit cannot be installed at the same time.

System Configuration

Note

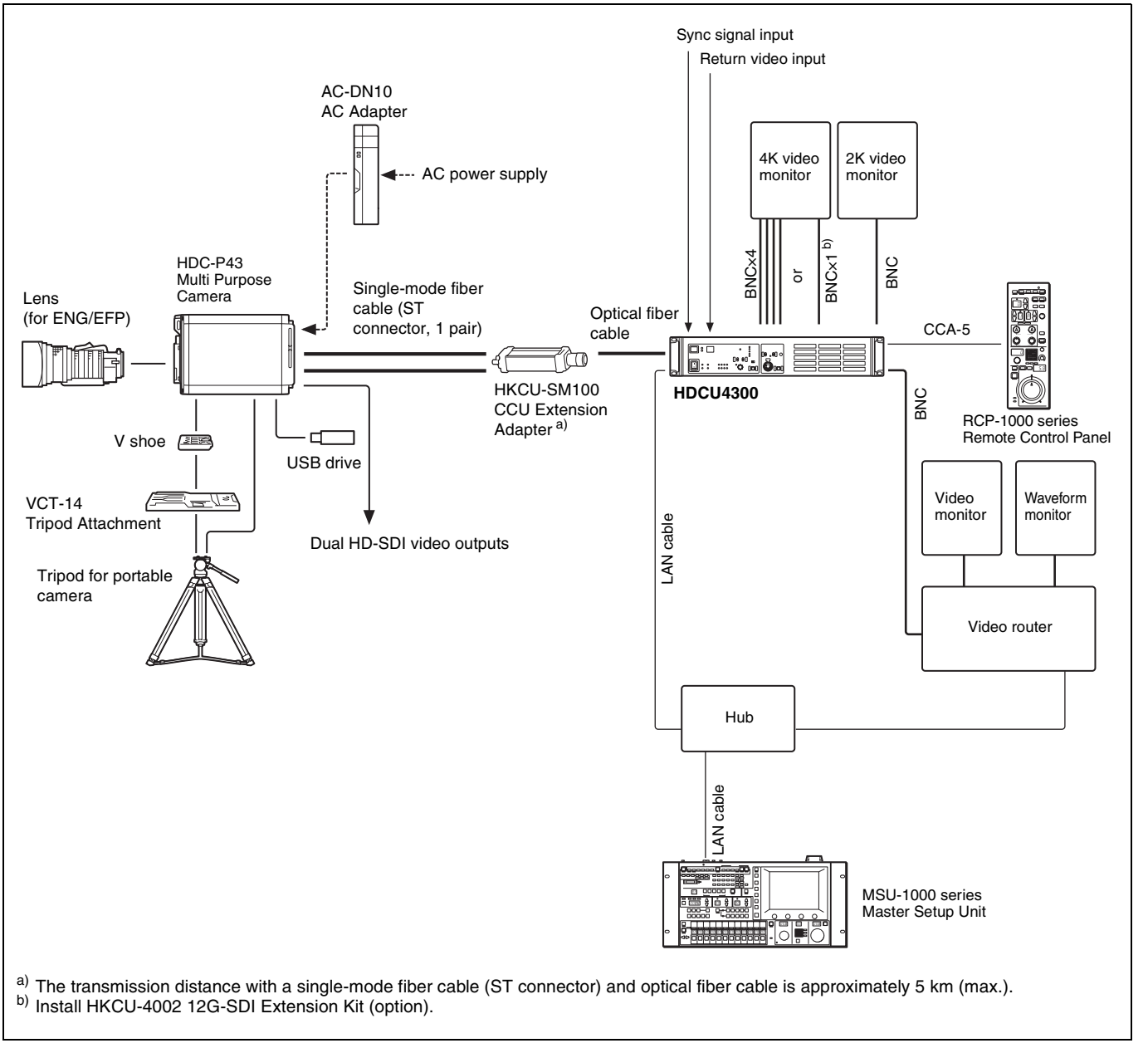
Production of some of the peripherals and related devices shown in the figures may have been discontinued.
For advice on choosing devices, please contact your Sony representative or dealer.

HDC4300 connection example



a) Supplied with HDLA1500 series (Part No.: A-1128-405-A)
b) Install NXLK-IP40F SDI-IP Converter Board (option).
c) Either an HKCU-IP43F or HKCU-4002 can be used.
d) Install HKCU-4002 12G-SDI Extension Kit (option).
e) Install HKCU-IP43F Networked Media Interface Board (option) for communication with IP devices.

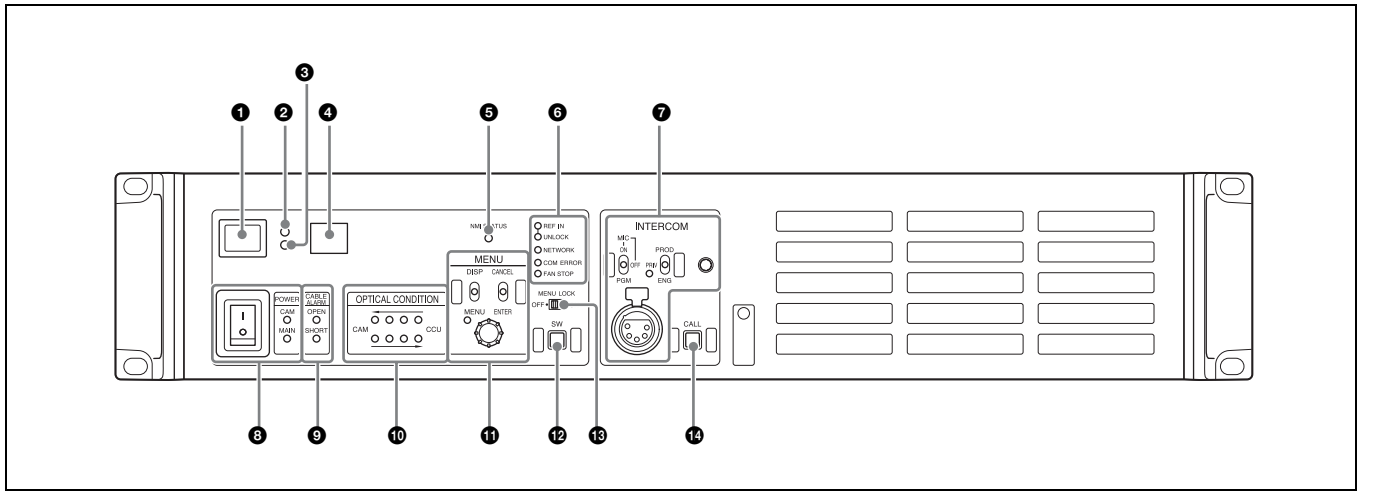
HDC-P43 connection example



a) The transmission distance with a single-mode fiber cable (ST connector) and optical fiber cable is approximately 5 km (max.).
b) Install HKCU-4002 12G-SDI Extension Kit (option).

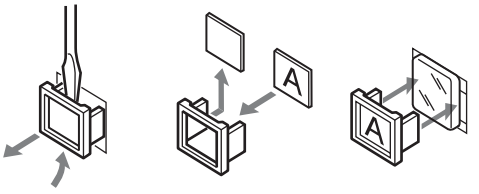
Name and Function of Parts

Front Panel



❶ Red tally indicator

Lights in red when this unit receives a red tally signal. You can attach the supplied number plate here.



❷ Yellow tally indicator

Lights in yellow when this unit receives a yellow tally signal.

❸ Green tally indicator

Lights in green when this unit receives a green tally signal.

❹ CCU number display

Displays the camera number set in the CCU menu.

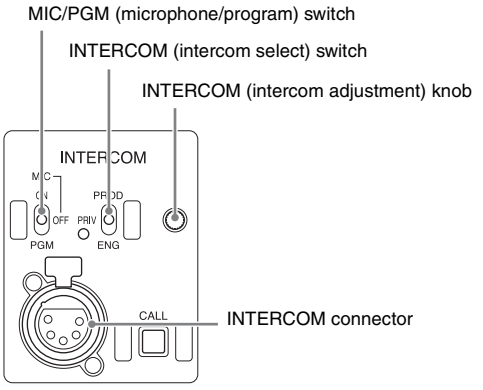
❺ NMI STATUS indicator

Displays the NMI-LAN status.
Green: Normal status
Flashing green: Network synchronization in progress
Off: SFP+ module is not installed.
Disconnected from IP Live System Manager.
Connection with IP Live System Manager in progress
Flashing red: Not locked to network sync signal. Signal reception is unavailable.

❻ Status display indicator

REF IN (green): Indicates presence of reference input signal.
UNLOCK (Red): The input REFERENCE is not locked.
NETWORK: Displays the status when there is a network system connection.
On: When CNS SETTING in the NETWORK SETTING menu is set to either BRIDGE or MCS, this indicates that external control equipment (MSU-1000/1500 Master Setup Unit, RCP-1000 series Remote Control Panel, or other equipment) is connected.
Flashing: When CNS SETTING in the NETWORK SETTING menu is set to either BRIDGE or MCS, this indicates that the unit cannot connect correctly with the external control equipment (MSU-1000/1500 Master Setup Unit, RCP-1000 series Remote Control Panel, or other equipment).
Off: When CNS SETTING in the NETWORK SETTING menu is set to either BRIDGE or MCS, this indicates that a LAN cable is not connected or that the network system connection settings have not been configured.
When CNS SETTING in the NETWORK SETTING menu is set to LEGACY, this remains turned off.
COM ERROR (Red): Communication with the camera or external control equipment (such as the RCP-1000 series Remote Control Panel) is not possible.
FAN STOP (Red): The fan is stopped.

❼ INTERCOM audio input/output and control block



- **MIC/PGM (microphone/program) switch**

ON: Turns the headset microphone on.
OFF: Turns the headset microphone off.
PGM: Selects program audio output. In this mode, the INTERCOM knob adjusts the headset program audio level.

- **INTERCOM (intercom select) switch**

Selects the intercom signal input/output connection source for the INTERCOM connector on the front panel.
PROD: Connects the producer line.
PRIV: Blocks the connection to the producer line or engineer line, allowing private intercom talk between the CCU and the camera.
ENG: Connects the engineer line.

- **PRIV (private) indicator**

Lights when the intercom is in private mode.

- **INTERCOM (intercom adjustment) knob**

Adjusts the receiver audio level of the intercom.

- **INTERCOM connector (XLR 5-pin)**

Connects the intercom headset.

To use a headset with a plug other than an XLR 5-pin plug, consult a Sony service or sales representative.

❽ MAIN POWER switch and indicator

Turns the entire camera system on and off, including this unit, the video camera, and the RCP-1000 series Remote Control Panel connected to the REMOTE connector of this unit.
Switch to "**I**" to turn the power on, and switch to "○" to turn the power off. The MAIN indicator lights when the power switch of the unit is turned on. The CAM indicator lights when power is supplied to the video camera.

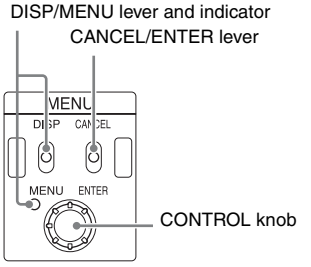
❾ CABLE ALARM indicators

SHORT (red): Lights in red when the power supply cord of an optical fiber cable is shorted to the outer sheath, or two power supply cords are shorted. Power is not input to the camera when this indicator lights.
OPEN (red): Lights in red when a camera is not connected to the CAMERA connector on the rear panel of this unit via an optical fiber cable.

❿ Optical signal reception status indicator

Indicates the communication status of the camera and CCU.
When the two lamps on the right (green) are lit: Reception status is excellent.
When the second lamp from the right (green) is lit: Reception status is good.
When the second lamp from the left (yellow) is lit: Reception status is low.
When the lamp on the left (red) is lit: Reception status is at the lowest level.

⓫ MENU control block



- **DISP/MENU lever and indicator**

Selects the status display or setup menu display. In setup menu mode, the indicator turns on.

- **CANCEL/ENTER lever**

In setup menu mode, used to cancel and enter settings.

- **CONTROL knob (rotary encoder)**

In status screen mode, used to change the displayed page. In setup menu mode, used to move the cursor on a page and to change menu settings.
Pushing the control knob has the same function as setting the CANCEL/ENTER level to ENTER.

⓬ Assignable button

You can set a function for this button via the CCU menu.

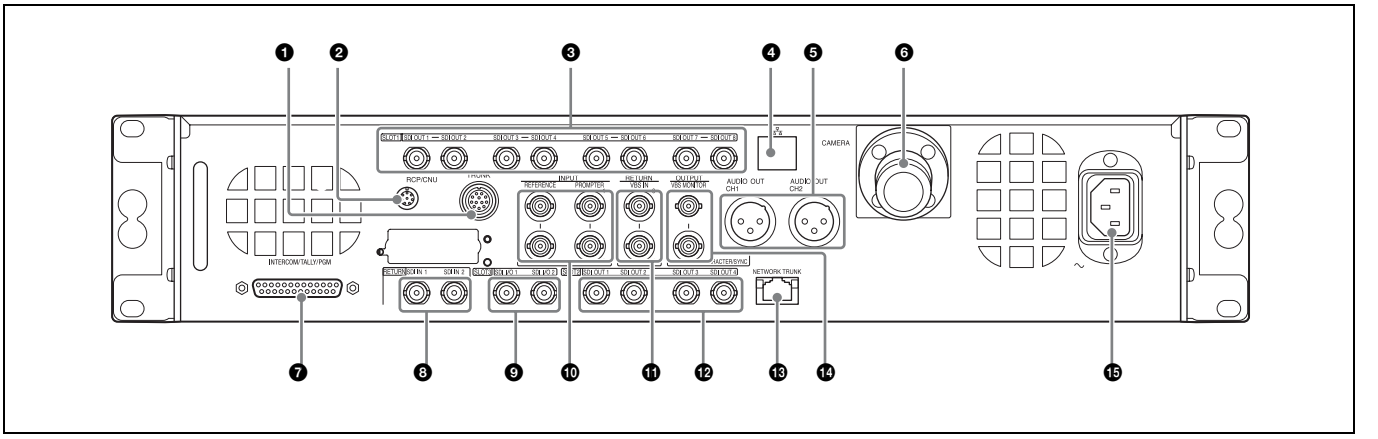
⓭ Menu lock switch

This locks out operation of the front panel menu operation area.

⓮ Call button

When pressed, this outputs a call signal to the camera or external control device (the RCP-1000 series, etc.) that are connected to this unit. Use this when you want to call and speak with the camera operator or external control device operator via intercom. This button lights in red when it is pressed or the call button of other equipment is pressed.

Rear Panel



❶ TRUNK A connector (round 12-pin)

Used to connect to the CCU connector on a video camera via an RS-232C or RS-422A interface. Communication with up to two channels is available.

❷ RCP/CNU connector (round 8-pin)

Used to connect to an MSU-1000 series Master Setup Unit, CNU-700 Camera Command Network Unit, or RCP-1000 series Remote Control Panel via a CCA-5 Connection Cable. Control signals are sent and received via this connector. When using an RCP-1000 series unit, power is also supplied.

❸ 3G/HD SDI OUTPUT (SDI output) connector (SLOT1) (BNC-type)

Used to output video signals from the video camera using Multi-Link format comprising 3G-SDI signals or HD-SDI signals.
For details about assignments to each signal output connector in the Multi-Link interface, see *"Relationship between Connection Type and BNC Connector Assignment" (page 16)*.

❹ (LAN) connector (RJ-45 8-pin)

Used to connect to a LAN. Connect a LAN HUB (10BASE-T/100BASE-TX), using a LAN cable (shielded type of category 5 or more).

❺ AUDIO OUT CH1, CH2 (audio output 1, 2) connectors (XLR 3-pin)

Used to output the audio signal to the AUDIO IN connectors of the video camera.

❻ CAMERA connector (optical fiber connector)

Used to connect a video camera, using an optical fiber cable. All video camera signals, including power supply, control, video, and audio, are sent and received over one optical fiber cable.

Notes

- Dust on the connection surface of the optical fiber cable may result in transmission errors. When not connected, always cover the end of the connector with the supplied cap.
- Connection with an HDC-P43 requires an HKCU-SM100 CCU Extension Adaptor and single-mode fiber cable.

❼ INTERCOM/TALLY/PGM (intercom/tally/program audio) connector (D-sub 25-pin)

Used to input and output intercom, tally, and program audio signals. Connect to the intercom/tally/program audio connector of the intercom system.
REAR PREVIEW function: Pin 10 is assigned for the output pin of the REAR PREVIEW function.

❽ RETURN SDI IN 1/2 (3G/HD/SD-SDI return video 1/2) connectors (BNC-type)

Two different 3G/HD/SD-SDI return video input signals may be received independently. The selection of RET 1 or 2 is made by the return switch of the video camera. The aspect ratio can also be selected for an SD signal.
The type of input signal on RET 1 and 2 may be set individually using the setup menu, or using the MSU-1000 series Master Setup Unit.

For details on the setup menu, contact a Sony service or sales representative.

Refer also to the Master Setup Unit manual.

❾ 3G/HD SDI I/O 1/2 (SDI input/output 1/2) connectors (SLOT3) (BNC-type)

These can be used as return video inputs, HD prompter inputs, camera video signal outputs, and HD-TRUNK outputs. Set them in SLOT3 on the <I/F SETTINGS> page of the MAINTENANCE menu according to the application.

❿ INPUT area

① PROMPTER 1, 2 (tele-prompter input) connectors (BNC-type)

Input the prompter signal of 1 channel or 2 channels depending on the setting of PROMPTER CHANNEL MODE on the <TRUNK/PROMPTER1> page of the MAINTENANCE menu. When 1 channel is set, the input signal is output from the other connector as is (loop-through). If loop-through output

is not used, terminate the unused connector at 75 ohms.
When 2 channels are set, both connectors become inputs and they are terminated at 75 ohms inside the unit.
If the signal used is a 1.0 Vp-p, 75-ohm analog signal, it may be output from the PROMPTER OUT connector of the video camera with a frequency bandwidth of 5 MHz, regardless of signal format.

② REFERENCE connectors (BNC-type)
Input an HD tri-level reference sync signal or SD reference sync signal (black burst signal, or black burst signal with 10 Field ID) to either of the two connectors.
The input signal is output from the other connector as is (loop-through output). If loop-through output is not used, terminate the unused connector at 75 ohms.
The type of reference signal is selected using the setup menu, or using the MSU-1000 series Master Setup Unit.

For details on the setup menu, contact a Sony service or sales representative.

Note

When a black burst signal with a 10 Field ID is input, 10F BB on the <GENLOCK> page of the SYSTEM OPERATION menu must be set to ON.

⓫ RETURN VBS IN 3/4 (VBS return video input 3/4) connectors (BNC-type)
Two different VBS return video input signals may be received independently.
The selection of RET 3 or 4 is made by the return switch of the video camera. The type of input signal on RET 3 and 4 may be set individually using the setup menu, or using the MSU-1000 series Master Setup Unit. An aspect ratio may also be selected for SD signals.

For details on setup menu operations, contact a Sony service or sales representative.

Refer also to the Master Setup Unit manual.

⓬ 3G/HD SDI OUTPUT (SDI output) connector (SLOT2) (BNC-type)
The signal from the video camera may be output as four 3G-SDI signals, HD-SDI signals or SD-SDI signals. They can output signals with superimposed text characters and markers.

For details on settings, contact a Sony service or sales representative.

⓭ NETWORK TRUNK connector (RJ-45 8-pin)
Used to connect the NETWORK TRUNK connector of the device connected to the camera with the network connection device.

⓮ OUTPUT area

① VBS MONITOR (VBS monitor output) connector (BNC-type)
Outputs an SD analog video signal.

② CHARACTER/SYNC (character output / sync signal output) connector (BNC-type)
Outputs the self-diagnostic results or setup menu of the unit as an SD analog video signal. If CHARACTER/SYNC OUT on the <I/F SETTINGS> page of the MAINTENANCE menu is set to SYNC, this connector can also be used as the sync signal output (SYNC) connector. An SD composite sync or HD tri-level sync signal will be output from the internal sync signal generator.

For details on how to select the signal, contact a Sony service or sales representative.

⓯ ∿ AC IN (AC power input) connector
Use the specified AC power cord to connect to an AC power supply. The AC power cord can be secured to this unit, using the plug holder (optional).

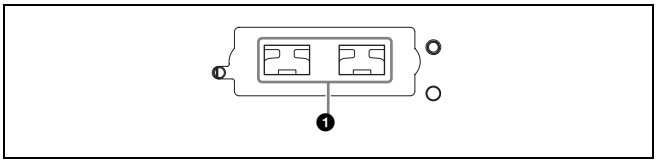
HKCU-IP43F Networked Media Interface Board (Option)

Note

For safety, only a qualified technician with service training should perform tasks inside the unit.

The HDCU4300 supports IP output of a single 4K signal or dual HD signals by installing an HKCU-IP43F in the HDCU4300.
HDCU4300 software version 1.11 or later is required. In addition, an OTM-10GSR1 or other SFP+ module is required to use IP output.

For details about installation, contact a Sony service or sales representative.



❶ NMI-LAN connectors (SFP+)
These connectors output IP video signals and audio. The output signal format is the same as the format set for SLOT4.

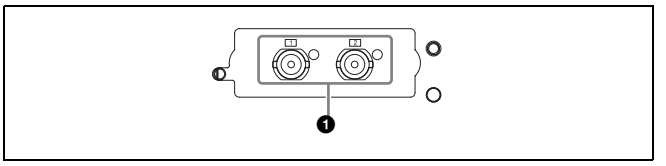
HKCU-4002 12G-SDI Extension Kit (Option)

Note

For safety, only a qualified technician with service training should perform tasks inside the unit.

The HDCU4300 supports 4K 2-system 12G-SDI output or 6G-SDI output by installing an HKCU-4002 in the HDCU4300.
HDCU4300 software version 1.50 or later is required.

For details about installation, contact a Sony service or sales representative.



❶ 12G/6G-SDI output connectors

These connectors are 12G-SDI output connectors or 6G-SDI output connectors. The output format is the same as the format set for SLOT1 of the HDCU4300.

For details, see page 33.

Connections and Settings

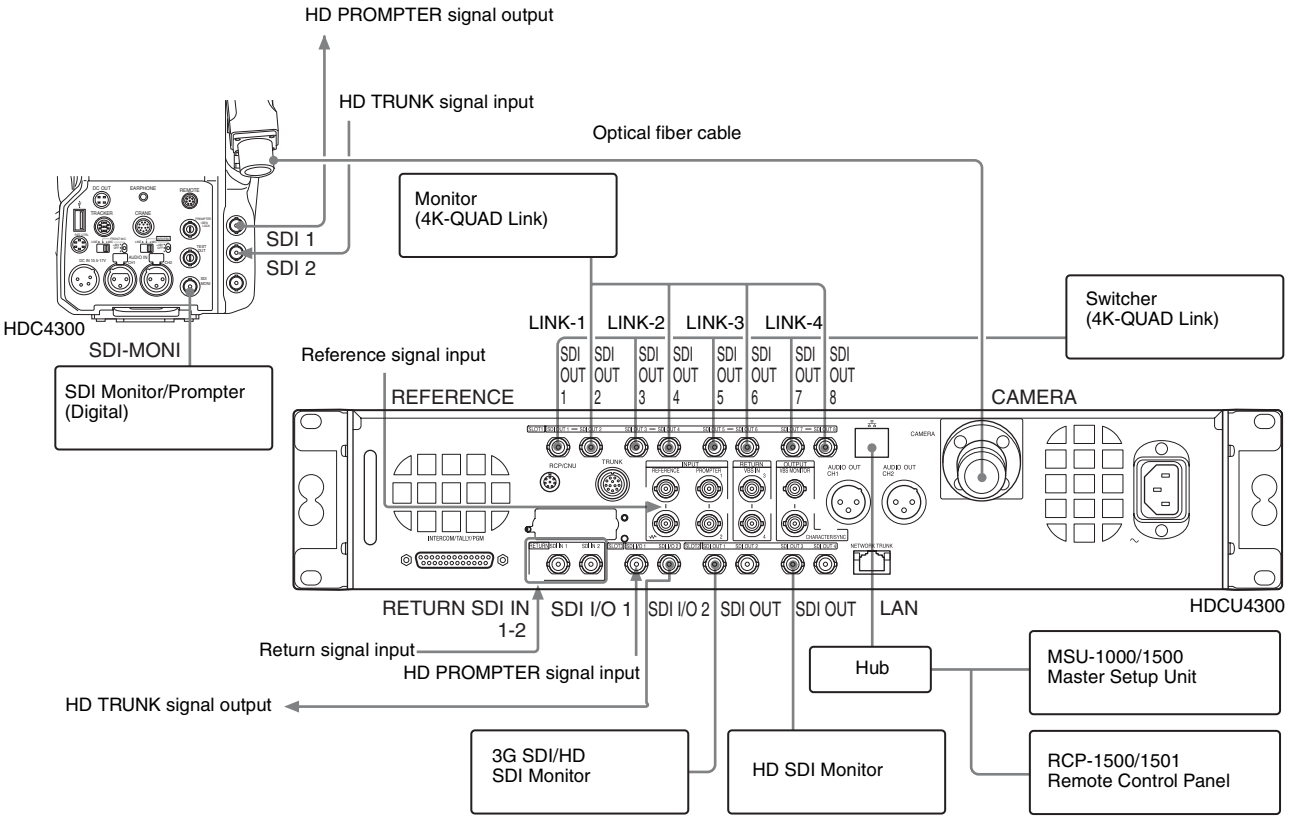
4K System Connection

A 4K format camera system is formed by connecting the unit and a video camera (HDC4300 or HDC-P43[1)]) with optical fiber cables.
The functions provided by the unit (genlock, power supply to the video camera, various interface functions, etc.) can be used as is.

HD signals down-converted from 4K signals can be output from SLOT2 and SLOT3.

1) Requires an HKCU-SM100 CCU Extension Adaptor and single-mode fiber cable.

Connection example



For details about the assignments of BNC connectors of the unit, see "Relationship between Connection Type and BNC Connector Assignment" (page 16).

Settings

Device	Purpose	Menu/Page	Item	Set value
HDCU4300	HD system format setting	SYSTEM OPERATION/<MULTI FORMAT>	BASE FORMAT	Set other than 3G-SDI
	Video format setting	SYSTEM OPERATION/<MULTI FORMAT>	4K/HFR FORMAT	Video format
	Video output format setting	SYSTEM OPERATION/<OUTPUT FORMAT>	SLOT1 to SLOT3	Video output format of each slot
	Assignment of function of SDI I/O connector	MAINTENANCE/<I/F SETTINGS>	SLOT3	RET3/HD-PROMPTER, HD-TRUNK
HDC4300	HD-PROMPTER output and HD Trunk input settings	MAINTENANCE/<SDI OUT>	SDI-1 OUT	HD PROMPTER
			SDI-2 OUT/IN	HD TRUNK/RET IN

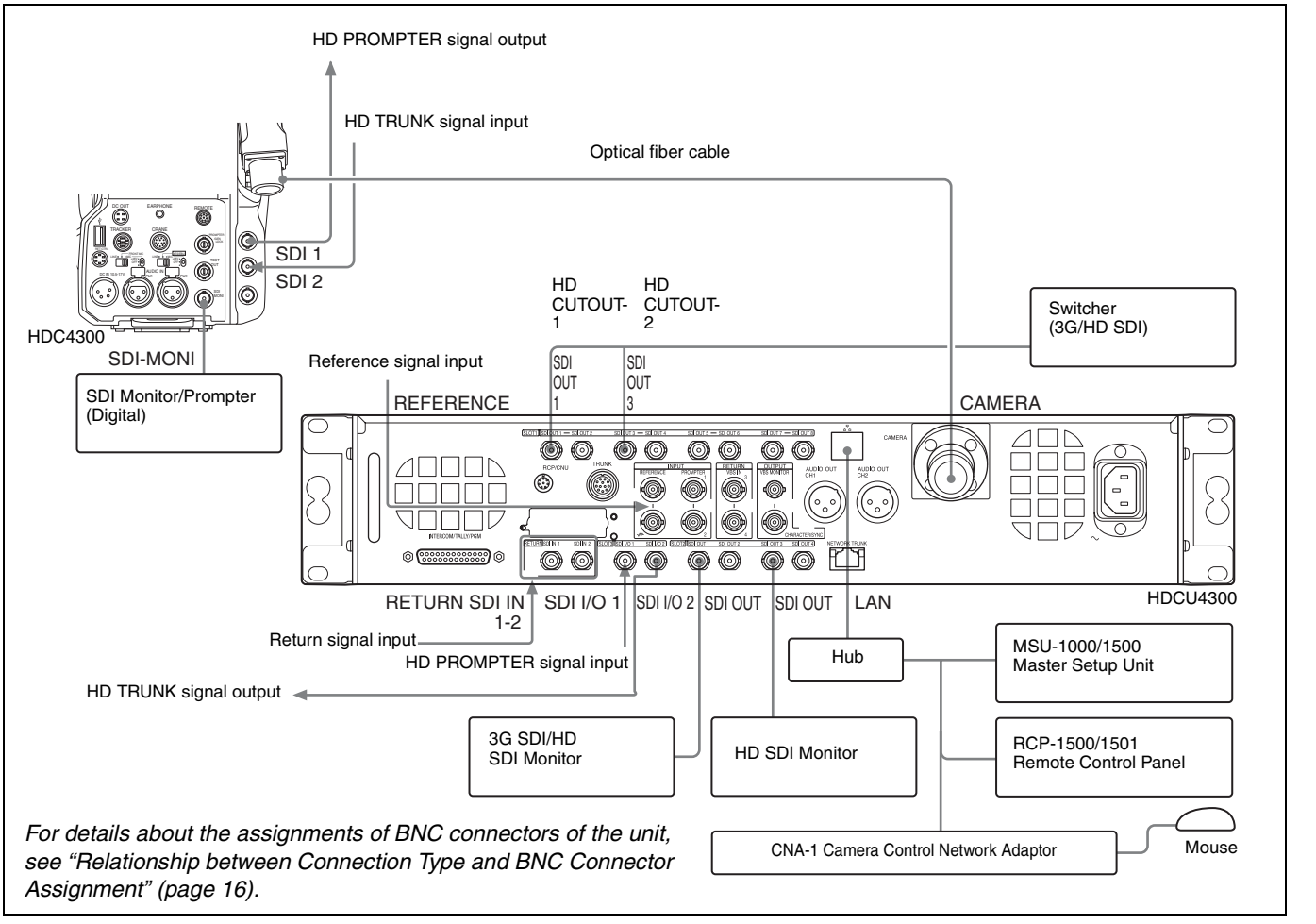
HD CUTOUT Video System

An HD signal can be extracted from the 4K signal by installing the optional SZC-2001/2001M/2001W HD CUTOUT Software in the HDCU4300.
The region that is cut out can be controlled using a mouse or other device connected to the HD CUTOUT Controller.

For details about setup and operation, refer to the SZC-2001/2001M/2001W User's Guide.

The cutout HD signal is output from SLOT1.
HD video down-converted from 4K signals can be output from SLOT2, SLOT3, and SLOT4.
Also, a wire frame indicating the cutout region can be displayed.

Connection example



For details about the assignments of BNC connectors of the unit, see "Relationship between Connection Type and BNC Connector Assignment" (page 16).

Settings

Device	Purpose	Menu/Page	Item	Set value
HDCU4300	HD system format setting	SYSTEM OPERATION/<MULTI FORMAT>	BASE FORMAT	Select 59.94 or 50 frequency format
	Video format setting	SYSTEM OPERATION/<MULTI FORMAT>	4K/HFR FORMAT	Video format
	Video output format setting	SYSTEM OPERATION/<OUTPUT FORMAT>	SLOT1 to SLOT4	Video output format of each slot
	HD CUTOUT settings	SYSTEM OPERATION/<CHU MODE>	CHU MODE	HDC(HD CUTOUT)
		SYSTEM OPERATION/<HD CUTOUT>	HD CUTOUT	ON (fixed)
HDC4300	HD-PROMPTER output and HD Trunk input settings	MAINTENANCE/<SDI OUT>	SDI-1 OUT	HD PROMPTER
			SDI-2 OUT/IN	HD TRUNK/RET IN

HFR Video System

The unit can transfer HFR video and perform signal processing for the following formats according to the connected camera.

Yes: Supported, No: Not supported

HFR format	Connected device	
	HDC4300, HDC-P43 (without option)	HDC4300, HDC-P43 (when SZC-4002 series installed on the unit)
1080/59.94P (2×) [1]	Yes	Yes
1080/50P (2x) [1]	Yes	Yes
720/59.94P (2x) [2]	Yes	Yes
720/50P (2x) [2]	Yes	Yes
1080/59.94P (3x) [1]	Yes	Yes
1080/50P (3x) [1]	Yes	Yes
720/59.94P (3x) [2]	Yes	Yes
720/50P (3x) [2]	Yes	Yes
1080/59.94P (4x) [1]	No	Yes
1080/50P (4x) [1]	No	Yes
720/59.94P (4x) [2]	No	Yes
720/50P (4x) [2]	No	Yes
1080/59.94i (6x) [1]	No	Yes
1080/50i (6x) [1]	No	Yes
720/59.94P (6x) [2]	No	Yes
720/50P (6x) [2]	No	Yes
1080/59.94i (8x) [1]	No	Yes
1080/50i (8x) [1]	No	Yes
720/59.94P (8x) [2]	No	Yes
720/50P (8x) [2]	No	Yes

1) Interlaced output is also supported in HD HFR 1080 format.

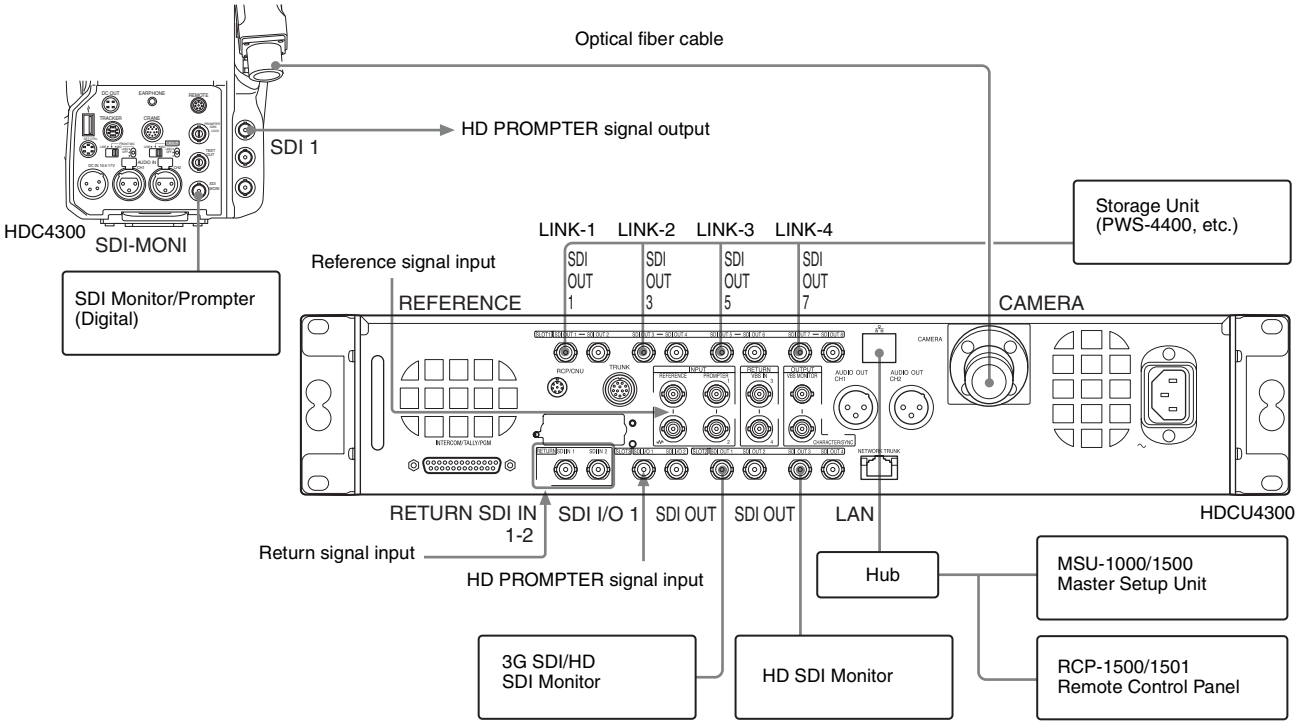
2) Selectable only when the format is set to 720P.

1x video can be output at the same time from SLOT2 and SLOT3.

Note

The HFR imaging function is dependent on the software version of the connected camera. Check the compatibility of each device before use.

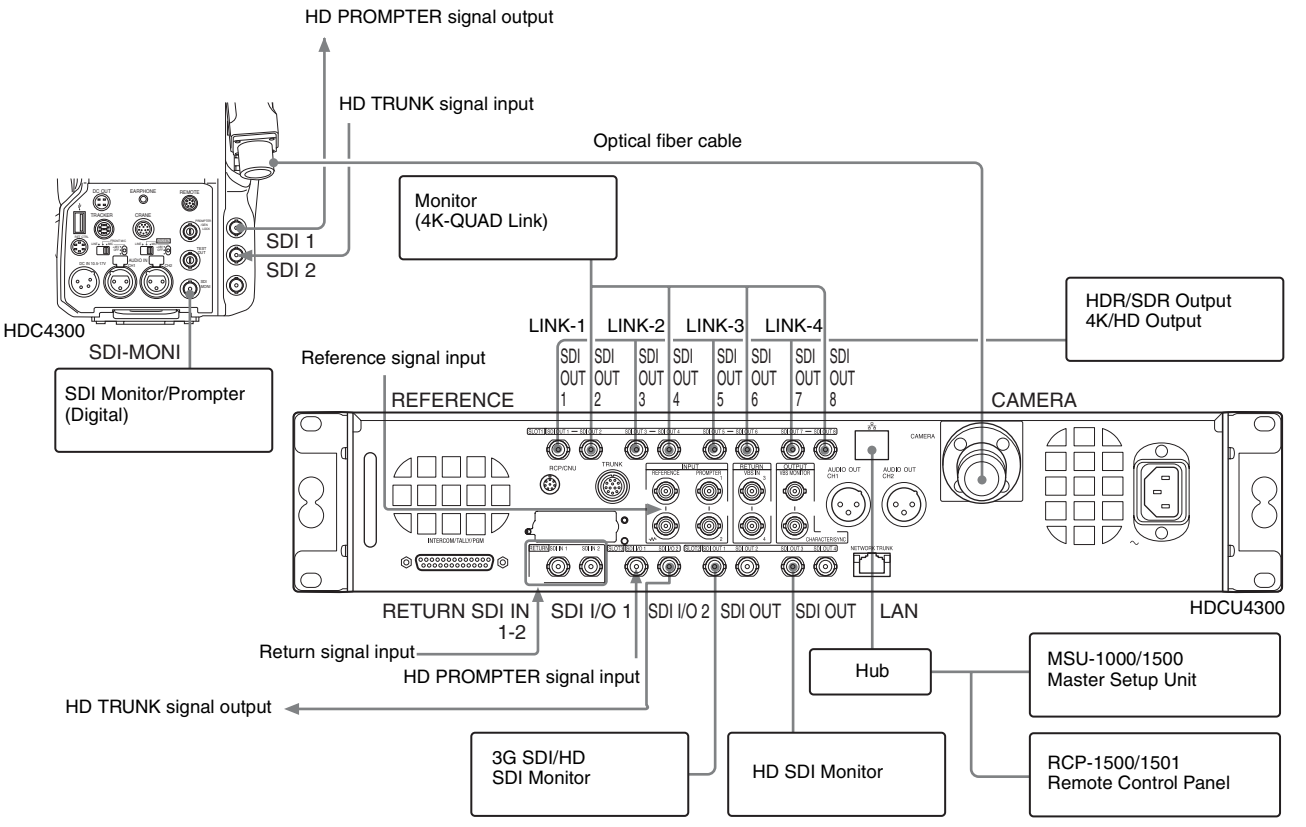
Connection example (4x HD)



For details about the assignments of BNC connectors of the unit, see “Relationship between Connection Type and BNC Connector Assignment” (page 16).

HDR Video System

When a 4K format camera system is selected, the dynamic range of the camera can be enhanced to produce HDR video output from SLOT1 by setting HDR MODE to Live HDR.
HDR/SDR or 4K/HD can be output from SLOT1.
The HD output from SLOT2, SLOT3, and SLOT4 is always SDR video.



For details about the assignments of BNC connectors of the unit, see "Relationship between Connection Type and BNC Connector Assignment" (page 16).

Settings

Device	Purpose	Menu/Page	Item	Set value
HDCU4300	Transfer to HDR mode	SYSTEM OPERATION/<HDR>	HDR MODE	LIVE HDR (Live HDR video output)
		SYSTEM OPERATION/<OUTPUT FORMAT>	SLOT1 OETF	S-Log3 (SR Live recommended setting) HLG_BT.2100 (HLG format compliant, LIVE HDR mode only) HLG_Live (HLG format compliant, image adapted for SR Live image reproduction, SR Live recommended setting, LIVE HDR mode only)

Relationship between Connection Type and BNC Connector Assignment

The names of output interfaces in Table 1 correspond to BNC connector assignments in Table 2 *(page 18)*. Check the output interface for the format you want to use in Table 1, then check the signal assignments to BNC connectors in Table 2.

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

Operation mode	Frame rate	Slot1			Slot2/Slot3
		Output format	Output interface		Output format
4K	59.94	4K/59.94P [3]	Quad-Link-1	3G	1080/59.94P(3G), 1080/59.94i(1.5G), 720/59.94P(1.5G) [2], 525/59.94i
			Single-Link	12G [5]	
		1080/59.94P [4]	Single-Link	3G	
		1080/59.94i [4]		1.5G	
	50	4K/50P [3]	Quad-Link-1	3G	1080/50P(3G), 1080/50i(1.5G), 720/50P(1.5G) [2], 625/50i
			Single-Link	12G	
		1080/50P [4]	Single-Link	3G	
		1080/50i [4]		1.5G	
	29.97	4K/29.97P [1] [3]	Dual-Link-2	3G	1080/29.97PsF(1.5G), 525/29.97PsF
			Single-Link	6G [5]	
		4K/29.97PsF [1] [3]	Dual-Link-2	3G	
			Quad-Link-1	1.5G	
		1080/29.97PsF [4]	Single-Link		
	25	4K/25P [1] [3]	Dual-Link-2	3G	1080/25PsF(1.5G), 625/25PsF
			Single-Link	6G [5]	
		4K/25PsF [1] [3]	Dual-Link-2	3G	
			Quad-Link-1	1.5G	
		1080/25PsF [4]	Single-Link		
	24	4K/24P [1] [3]	Dual-Link-2	3G	1080/24PsF(1.5G), 1080/50i(1.5G), 625/50i
			Single-Link	6G [5]	
		4K/24PsF [1] [3]	Dual-Link-2	3G	
			Quad-Link-1	1.5G	
		1080/24PsF [4]	Single-Link		
	23.98	4K/23.98P [1] [3]	Dual-Link-2	3G	1080/23.98PsF(1.5G), 1080/59.94i(1.5G), 525/59.94i
			Single-Link	6G [5]	
		4K/23.98PsF [1] [3]	Dual-Link-2	3G	
			Quad-Link-1	1.5G	
		1080/23.98PsF [4]	Single-Link		

Operation mode	Frame rate	Slot1			Slot2/Slot3
		Output format	Output interface		Output format
HD HFR	59.94(8x)	1080/59.94i(8x), 720/59.94P(8x) [2]	Quad-Link-2	3G	1080/59.94i(1.5G), 720/59.94P(1.5G) [2], 525/59.94i
	50(8x)	1080/50i(8x), 720/50P(8x) [2]	Quad-Link-2	3G	1080/50i(1.5G), 720/50P(1.5G) [2], 625/50i
	59.94(6x)	1080/59.94i(6x), 720/59.94P(6x) [2]	Triple-Link-2	3G	1080/59.94i(1.5G), 720/59.94P(1.5G) [2], 525/59.94i
	50(6x)	1080/50i(6x), 720/50P(6x) [2]	Triple-Link-2	3G	1080/50i(1.5G), 720/50P(1.5G) [2], 625/50i
	59.94(4x)	1080/59.94P(4x)	Quad-Link-1	3G	1080/59.94P(3G), 1080/59.94i(1.5G), 720/59.94P(1.5G) [2], 525/59.94i
		1080/59.94i(4x), 720/59.94P(4x) [2]		1.5G	
			Dual-Link-2	3G	
	50(4x)	1080/50P(4x)	Quad-Link-1	3G	1080/50P(3G), 1080/50i(1.5G), 720/50P(1.5G) [2], 625/50i
		1080/50i(4x), 720/50P(4x) [2]		1.5G	
			Dual-Link-2	3G	
	59.94(3x)	1080/59.94P(3x)	Triple-Link-1	3G	1080/59.94P(3G), 1080/59.94i(1.5G), 720/59.94P(1.5G) [2], 525/59.94i
		1080/59.94i(3x), 720/59.94P(3x) [2]		1.5G	
	50(3x)	1080/50P(3x)	Triple-Link-1	3G	1080/50P(3G), 1080/50i(1.5G), 720/50P(1.5G) [2], 625/50i
		1080/50i(3x), 720/50P(3x) [2]		1.5G	
	59.94(2x)	1080/59.94P(2x)	Dual-Link-1	3G	1080/59.94P(3G), 1080/59.94i(1.5G), 720/59.94P(1.5G) [2], 525/59.94i
		1080/59.94i(2x), 720/59.94P(2x) [2]		1.5G	
			Single-Link	3G	
	50(2x)	1080/50P(2x)	Dual-Link-1	3G	1080/50P(3G), 1080/50i(1.5G), 720/50P(1.5G) [2], 625/50i
		1080/50i(2x), 720/50P(2x) [2]		1.5G	
			Single-Link	3G	
HD CUTOUT	59.94	1080/59.94P [4]	Single-Link	3G	1080/59.94P(3G), 1080/59.94i(1.5G), 720/59.94P(1.5G) [2], 525/59.94i
		1080/59.94i [4]		1.5G	
		720/59.94P [2]			
	50	1080/50P [4]	Single-Link	3G	1080/50P(3G), 1080/50i(1.5G), 720/50P(1.5G) [2], 625/50i
		1080/50i [4]		1.5G	
		720/50P [2]			

1) Output is P when the division method is 2SI, and PsF when the division method is SQD.
2) Output only when the BASE FORMAT is 720P.
3) A Slot1 output format of “4K” refers to 4096×2160 or 3840×2160.
4) Supported when the BASE FORMAT is 1080.
5) Supported when HKCU-4002 is installed.

Figure 1: Slot numbers and BNC connectors

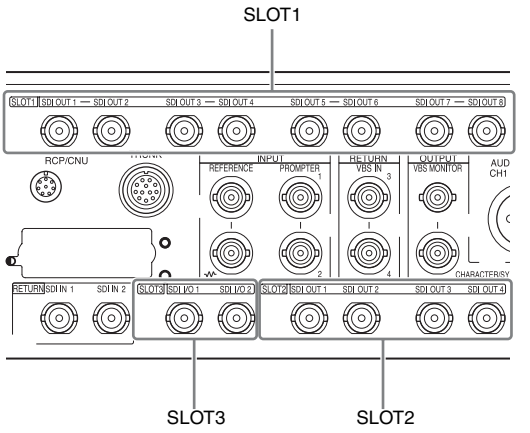


Table 2: Relationship between output interface and BNC connector assignment

MAIN Output		4K / HD HFR/HD CUTOUT			
		SLOT 1			
Operation mode	Output interface	SDI OUT 1-2[a)]	SDI OUT 3-4[b)]	SDI OUT 5- 6[c)]	SDI OUT 7- 8[d)]
4K	Quad-Link-1	Link-1	Link-2	Link-3	Link-4
	Dual-Link-1	Link-1	Link-2	Link-1	Link-2
HD HFR	Quad-Link-1	Link-1	Link-2	Link-3	Link-4
	Quad-Link-2	Link-1/2	Link-3/4	Link-5/6	Link-7/8
	Triple-Link-1	Link-1	Link-2	Link-3	(Link-2)
	Triple-Link-2	Link-1/2	Link-3/4	Link-5/6	(Link-3/4)
	Dual-Link-1	Link-1	Link-2	Link-1	Link-2
	Dual-Link-2	Link-1/2	Link-3/4	Link-1/2	Link-3/4
	Single-Link	Link-1/2	Link-1/2	Link-1/2	Link-1/2
HD CUTOUT	Perspective	CUTOUT	CUTOUT	CUTOUT	CUTOUT
	Simple HD	CUTOUT1	CUTOUT2	CUTOUT1	CUTOUT2

a) SDI OUT 1 and SDI OUT 2 output the same data.
b) SDI OUT 3 and SDI OUT 4 output the same data.
c) SDI OUT 5 and SDI OUT 6 output the same data.
d) SDI OUT 7 and SDI OUT 8 output the same data.

Paint Functions in HDR MODE and COLOR SPACE

Some paint functions are disabled, depending on the HDR MODE and COLOR SPACE settings on the HDCU4300.

Disabled items can still be adjusted from the PAINT menu on the camera or RCP/MSU, but the settings are not applied to the HDR video that is output from SLOT1.

Paint functions that can be adjusted when HDR MODE is selected

Paint function		HDR MODE setting	
		OFF	LIVE HDR
Gain	Step Gain	Yes	Yes
	Master White Gain	Yes	Yes
White	R/G/B	Yes	Yes
	Balance/C Temp	Yes	Yes

Paint function		HDR MODE setting	
		OFF	LIVE HDR
Gamma	ON/OFF	Yes	(Fixed OETF)
	R/G/B/Master	Yes	No
	Step Gamma	Yes	No
Black	R/G/B/Master	Yes	Yes
Black Gamma	ON/OFF	Yes	Yes
	Range	Yes	Yes
	R/G/B/Master	Yes	Yes
Flare	ON/OFF	Yes	Yes
	R/G/B/Master	Yes	Yes
Knee	ON/OFF	Yes	(Fixed OFF)
	Knee Point R/G/B/Master	Yes	No
	Knee Slope R/G/B/Master	Yes	No
	Auto Knee ON/OFF	Yes	No
	Auto Knee Point Limit	Yes	No
	Auto Knee Auto Slope	Yes	No
Detail	ON/OFF	Yes	Yes
	Level	Yes	Yes
	Limiter	Yes	Yes
	Crispening	Yes	Yes
	Level Dep	Yes	Yes
	H/V Ratio	Yes	Yes
	Frequency	Yes	Yes
	Mix Ratio	Yes	No
	W.Limiter	Yes	Yes
	B.Limiter	Yes	Yes
	Knee Apt ON/OFF	Yes	(Fixed OFF)
	Knee Apt Level	Yes	No
Shutter	Shutter ON/OFF	Yes	Yes
	ECS ON/OFF	Yes	Yes
	Shutter Level	Yes	Yes
	ECS Level	Yes	Yes
Skin Detail	ON/OFF	Yes	Yes
	Gate ON/OFF	Yes	No
	Zoom Link ON/OFF	Yes	Yes
	Natural Skin DTL ON/OFF	Yes	Yes
	Level	Yes	Yes
	Phase	Yes	Yes
	Width	Yes	Yes
	Saturation	Yes	Yes
	Y Limit	Yes	Yes
Saturation	ON/OFF	Yes	Yes
	Saturation	Yes	Yes

Paint function		HDR MODE setting	
		OFF	LIVE HDR
Matrix	ON/OFF	Yes	Yes
	User Matrix ON/OFF	Yes	Yes
	User Matrix R-G/G-B/B-R/R-B/G-R/B-G	Yes	Yes
	Multi Matrix ON/OFF	Yes	Yes
	Multi Matrix Phase	Yes	Yes
	Multi Matrix Hue/Saturation	Yes	Yes
	Adaptive Matrix ON/OFF	Yes	Yes
	Adaptive Matrix Level	Yes	Yes
	Preset Matrix ON/OFF	Yes	Yes
	Preset Matrix Preset	Yes	Yes
V Mod Saw	ON/OFF	Yes	Yes
	R/G/B/Master	Yes	Yes
Low Key Saturation	ON/OFF	Yes	Yes
	Range	Yes	Yes
	Low Key Sat	Yes	Yes
White Clip	ON/OFF	Yes	(Fixed OFF)
	R/G/B/Master	Yes	No
Knee Saturation	ON/OFF	Yes	(Fixed OFF)
	Knee Sat	Yes	No
Auto Iris	ON/OFF	Yes	Yes
	Pattern	Yes	Yes
	Level	Yes	Yes
	APL Ratio	Yes	Yes
	Iris Gain	Yes	Yes
Gamma Table	Standard ON/OFF	Yes	(Fixed OETF)
	Standard	Yes	(Fixed OETF)
	Hyper ON/OFF	Yes	(Fixed OETF)
	Hyper	Yes	(Fixed OETF)
	Special ON/OFF	Yes	(Fixed OETF)
	Special	Yes	(Fixed OETF)
	User ON/OFF	Yes	(Fixed OETF)
	User	Yes	(Fixed OETF)
Noise Suppression	ON/OFF	Yes	Yes
	Noise Sup	Yes	Yes
Flicker Reduction	ON/OFF	Yes	Yes
	Frequency	Yes	Yes
	ACM/Standard	Yes	Yes
Black Shading	R/G/B H/V Para/Saw	Yes	Yes
White Shading	R/G/B H/V Para/Saw	Yes	Yes
Black Set	Black Set	Yes	Yes
OHB Matrix	ON/OFF	Yes	Yes
	User Matrix R-G/G-B/B-R/R-B/G-R/B-G	Yes	Yes
	Multi Matrix Phase	Yes	Yes
	Multi Matrix Hue/Saturation	Yes	Yes
ATW	ON/OFF	Yes	Yes
	Speed	Yes	Yes
ALAC	ON/OFF	Yes	Yes

Paint functions that can be adjusted when COLOR SPACE is selected

Paint function		COLOR SPACE setting		
		BT.709	BT.2020	
			BT.2020 COLOR MODE setting	
			WIDE-F	WIDE-BC
Gain	Step Gain	Yes		
	Master White Gain	Yes		
White	R/G/B	Yes		
	Balance/C Temp	Yes		
Gamma	ON/OFF	Yes		
	R/G/B/Master	Yes		
	Step Gamma	Yes		
Black	R/G/B/Master	Yes		
Black Gamma	ON/OFF	Yes		
	Range	Yes		
	R/G/B/Master	Yes		
Flare	ON/OFF	Yes		
	R/G/B/Master	Yes		
Knee	ON/OFF	Yes		
	Knee Point R/G/B/Master	Yes		
	Knee Slope R/G/B/Master	Yes		
	Auto Knee ON/OFF	Yes		
	Auto Knee Point Limit	Yes		
	Auto Knee Auto Slope	Yes		
Detail	ON/OFF	Yes		
	Level	Yes		
	Limiter	Yes		
	Crispening	Yes		
	Level Dep	Yes		
	H/V Ratio	Yes		
	Frequency	Yes		
	Mix Ratio	Yes		
	W.Limiter	Yes		
	B.Limiter	Yes		
	Knee Apt ON/OFF	Yes		
	Knee Apt Level	Yes		
Shutter	Shutter ON/OFF	Yes		
	ECS ON/OFF	Yes		
	Shutter Level	Yes		
	ECS Level	Yes		
Skin Detail	ON/OFF	Yes		
	Gate ON/OFF	Yes		
	Zoom Link ON/OFF	Yes		
	Natural Skin DTL ON/OFF	Yes		
	Level	Yes		
	Phase	Yes		
	Width	Yes		
	Saturation	Yes		
	Y Limit	Yes		

Paint function		COLOR SPACE setting		
		BT.709	BT.2020	
			BT.2020 COLOR MODE setting	
			WIDE-F	WIDE-BC
Saturation	ON/OFF	Yes		
	Saturation	Yes		
Matrix	ON/OFF	Yes	(Fixed OFF)	Yes
	User Matrix ON/OFF	Yes	No	Yes
	User Matrix R-G/G-B/B-R/R-B/G-R/B-G	Yes	No	Yes
	Multi Matrix ON/OFF	Yes	No	Yes
	Multi Matrix Phase	Yes	No	Yes
	Multi Matrix Hue/Saturation	Yes	No	Yes
	Adaptive Matrix ON/OFF	Yes		
	Adaptive Matrix Level	Yes		
	Preset Matrix ON/OFF	Yes	No	Yes
	Preset Matrix Preset	Yes	No	Yes
V Mod Saw	ON/OFF	Yes		
	R/G/B/Master	Yes		
Low Key Saturation	ON/OFF	Yes		
	Range	Yes		
	Low Key Sat	Yes		
White Clip	ON/OFF	Yes		
	R/G/B/Master	Yes		
Knee Saturation	ON/OFF	Yes		
	Knee Sat	Yes		
Auto Iris	ON/OFF	Yes		
	Pattern	Yes		
	Level	Yes		
	APL Ratio	Yes		
	Iris Gain	Yes		
Gamma Table	Standard ON/OFF	Yes		
	Standard	Yes		
	Hyper ON/OFF	Yes		
	Hyper	Yes		
	Special ON/OFF	Yes		
	Special	Yes		
	User ON/OFF	Yes		
	User	Yes		
Noise Suppression	ON/OFF	Yes		
	Noise Sup	Yes		
Flicker Reduction	ON/OFF	Yes		
	Frequency	Yes		
	ACM/Standard	Yes		
Black Shading	R/G/B H/V Para/Saw	Yes		
White Shading	R/G/B H/V Para/Saw	Yes		
Black Set	Black Set	Yes		

Paint function		COLOR SPACE setting		
		BT.709	BT.2020	
			BT.2020 COLOR MODE setting	
			WIDE-F	WIDE-BC
OHB Matrix	ON/OFF	Yes	No	Yes
	User Matrix R-G/G-B/B-R/R-B/G-R/B-G	Yes	No	Yes
	Multi Matrix Phase	Yes	No	Yes
	Multi Matrix Hue/Saturation	Yes	No	Yes
ATW	ON/OFF	Yes		
	Speed	Yes		
ALAC	ON/OFF	Yes		

PWS-100NM1 Connection Settings

When an HKCU-IP43F is installed and a PWS-100NM1 IP Live System Manager station is connected, settings on the NETWORKED MEDIA INTERFACE page and IP LIVE SYSTEM MANAGER page must be configured in the NETWORK menu and also on the PWS-100NM1.

SNMP agent settings

Item		Set value (defaults are underlined)	Meaning
Enable/Disable		Enable, **Disable**	
IP Address		**0.0.0.0**	Fixed value Address for listening for both LAN1 and LAN2.
Port		**161**	Fixed value
sysName		–	ASCII code, up to 63 characters
sysContact		–	ASCII code, up to 63 characters
sysLocation		–	ASCII code, up to 63 characters
Sub Agent List		–	Setting not required
V1/V2c			
	Enable/Disable	Enable, **Disable**	
	Name	**public**	ASCII code, up to 32 characters
	Version	V2C	Fixed value
	Access Mode	READ_ONLY	Fixed value
	ACL Network Address	**0.0.0.0** to 255.255.255.255	When set to 0.0.0.0, all access is denied.
	ACL Prefix Length	**0** to 32	When set to 0, all access is denied.

Trap Settings dialog

Item	Set value (defaults are underlined)	Meaning
Enable/Disable	Enable, **Disable**	
Name	**public**	ASCII code, up to 32 characters
Network Interface Name	**LAN1**, LAN2	Specifies the network to send trap notifications.
IP Address	**0.0.0.0** to 255.255.255.255	Specifies the trap destination. SNMP walk/get from the specified trap destination is supported.
Port	**162**	
Version	V2C	Fixed value
Type	TRAP	Fixed value

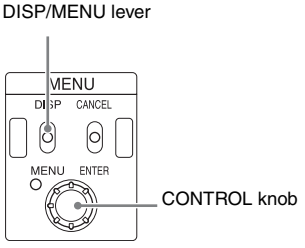
Status Display

The CCU system status can be monitored using a video monitor connected to the PIX connector.

For information on monitoring and changing settings, see “Menu Settings” (page 26).

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. The most recently viewed status screen page is displayed (when first powered on, the camera settings page is displayed). Turning the CONTROL knob changes the displayed page.

To exit the status screen display

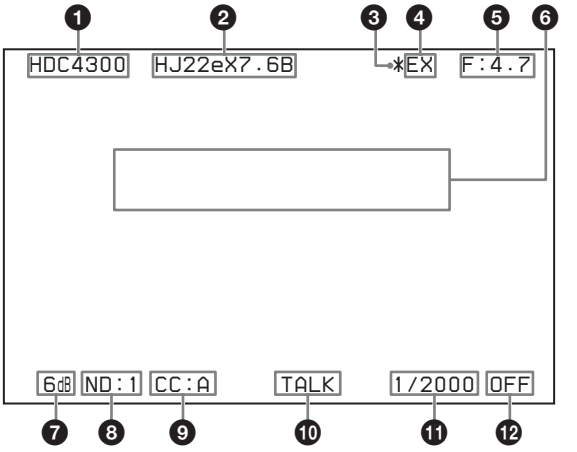
In status screen display mode, set the DISP/MENU lever to the DISP position.

Status Display Screen

The following information is displayed on the status display screen.

- Camera settings
- System status
- Camera and unit audio status
- Camera and unit intercom status
- Warning display

Camera settings



❶ CHU MODE indication

Displays the CHU MODE (connected camera).

❷ Lens file name indication

Displays the lens file name.

❸ F drop indication

Displayed when an F drop occurs.

❹ EX (lens extender) indication

Displayed during use of the lens extender.

❺ F-stop value indication

Displays the lens F-stop value (iris value).

❻ Camera auto control information area

Top: Displays the Auto Setup type and execution status.
Bottom: Displays the execution item.

❼ Gain value indication

Displays the video output signal gain setting value (dB).

❽ ND filter indication

Displays the currently selected ND filter type.

❾ CC filter indication

Displays the currently selected CC filter type.

❿ Camera microphone status indication

Displayed when the camera microphone is on.

⓫ Shutter speed/Clear scan frequency indication

Displays the shutter speed. When ECS is on, displays the clear scan frequency.

⓬ Shutter/ECS indication

Displays the on/off state of the shutter/ECS.

Notes

- Items that are turned off using the <DISPLAY> page settings of the VIDEO/MONITOR menu are not displayed.

- A “-” mark is displayed for each item when a camera is not connected.

System status

```
*System Status*                    01/05

 CHU Mode :HDC4300

 Reference:1080/59.94I Locked

 Slot1    :1080/59.94P(3x)/3G-B


 Slot2-1  :1080/59.94P/3G-A
     2-2  :1080/59.94P/3G-B
     2-3  :1080/59.94P/Link-A
     2-4  :1080/59.94P/Link-B

 Slot3-1   1080/59.94I
     3-2   525/59.94I
```

CHU Mode: CHU MODE (connected camera) setting
Reference: Reference signal format used and genlock status (“Not detected” is displayed when a reference signal is not input)
Slot1: Output signal format of SLOT1
Slot2: Output signal format of each connector of SLOT2
Slot3: Output signal format of each connector of SLOT3

Camera system diagnostics

```
*System Diagnosis*                 02/05

 Optical Condition

  CAM □□■■■■■◁ OK
  CCU □□■■■■■◁ Warning

 Camera  Cable :Connected
  Power Supply :OK
  Cable Length :～100m

 Network
  Link Status  :Up

 CCU No.       :10
```

Optical Condition CAM: Camera light sensor level
Optical Condition CCU: Unit light sensor level
Camera Cable: Camera cable connection status
Power Supply: Camera power supply status
Cable Length: Cable length
Network Link Status: LAN connection status
CCU No.: CCU number setting status

Camera and unit audio status

```
*Audio*                            03/05

 Camera
  MIC Gain CH1 :60dB
           CH2 :60dB

 CCU
  Audio Out    :AES/EBU
```

Camera MIC Gain CH1: Camera microphone circuit 1 amp gain status
Camera MIC Gain CH2: Camera microphone circuit 2 amp gain status
CCU Audio Out: Output format of the AUDIO OUT connector of the unit

Camera and unit intercom status

```
*Intercom*                         04/05

 Camera
  Engineer     :MIC On
  Producer     :MIC Off

 CCU
  MIC/PGM      :MIC Off
  Line         :System
```

Camera Engineer: Camera microphone status of the ENG line of the camera
Camera Producer: Camera microphone status of the PROD line of the camera
CCU MIC/PGM: Status of MIC/PGM switch on the front of the unit
CCU Line: Intercom system connection status

Warning display

```
*Alarm*                          05/05

 CCU:DVP FAN STOP
 CCU:NETWORK ERROR
```

Displays any warning that occurs.

NMI-LAN connector status (when HKCU-IP43F is installed)

```
*NMI Status*                     06/06

 LAN1   :Link down
 LAN2   :Link down

 LSM1   :Connecting
 LSM2   :Disabled

 Genlock:Freerun

 Link1  :Available
 Link2  :Unavailable
 Link3  :Unavailable
 Link4  :Unavailable
```

LAN1: Link status of NMI-LAN1 connector
LAN2: Link status of NMI-LAN2 connector
LSM1: LSM1 connection status
LSM2: LSM2 connection status
Genlock: Network Genlock status
Link1: Link1 AV stream status
Link2: Link2 AV stream status
Link3: Link3 AV stream status
Link4: Link4 AV stream status

12G/6G-SDI connector output status (when HKCU-4002 is installed)

```
*12G/6G-SDI Status*              06/06

 SDI OUT      SLOT1-2
  STATUS:     OK
```

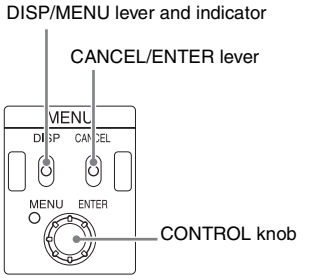
STATUS: 12G/6G-SDI connector output status ("-----" is displayed when there is no output)

Menu Settings

The CCU system and peripheral settings can be checked and modified using a video monitor connected to the PIX connector.

Changing Menu Item Settings

The menu screen is controlled using the knob and levers in the MENU control block on the front panel. Setting the CANCEL/ ENTER lever to the ENTER position and pressing the CONTROL knob perform the same function.



To display a menu page

Set the DISP/MENU lever to the MENU position.
When first powered on, the CCU MENU page is displayed.

To display the CCU MENU page

In menu display mode, turn the CONTROL knob to move the pointer (➡) to TOP in the upper right corner of the menu page, then press the CONTROL knob. The CCU MENU showing the menu configuration is displayed.

```
** CCU MENU **

→SYSTEM OPERATION
 VIDEO/MONITOR
 AUDIO/INTERCOM
 MAINTENANCE
 NETWORK
 DIAGNOSIS
```

Menu name	Description
SYSTEM OPERATION	Input/output signal format and system-related settings
VIDEO/MONITOR	Video-related settings
AUDIO/INTERCOM	Audio- and intercom-related settings
MAINTENANCE	CCU configuration settings
NETWORK	Network-related settings
DIAGNOSIS	Displays the unit status.

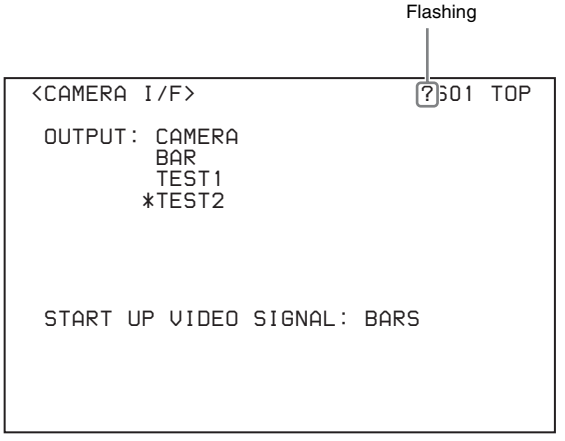
To select an item in the CCU MENU

Turn the CONTROL knob to move the pointer (➡) up/down to the desired menu item, then press the CONTROL knob. The most recently viewed page in the selected menu is displayed.

To change the displayed page

1 Turn the CONTROL knob to move the pointer (➡) to the page number, then press the CONTROL knob.

The pointer (➡) changes to a flashing question mark (?).



2 Turn the CONTROL knob to change the displayed page to the desired page, then press the CONTROL knob.

The question mark (?) changes back to the pointer (➡). Items on the page can now be selected and changed.

To change a menu item setting

If a question mark (?) is displayed beside the page number, press the CONTROL knob to restore the pointer (➡). Items on the page can now be selected and changed.

1 Turn the CONTROL knob to move the pointer to the desired item, then press the CONTROL knob.

The pointer (➡) 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 the CANCEL position before pressing the CONTROL knob. The item is restored to its current setting.

To suspend menu changes
Set the DISP/MENU lever to the MENU position to exit the menu screen.
The DISP/MENU lever can be set to the MENU position again to restart the operation.

3 Press the CONTROL knob.

The question mark (?) changes back to the pointer (➡), and the item setting is registered.

4 Repeat steps 1 to 3 to change other settings on the same page.

To enter a character string

Some menu items require a character string input.
Moving the pointer (➡) to an item with a character string input and pressing the CONTROL knob displays a rectangular cursor and a list of selectable characters.
Turning the CONTROL knob moves the cursor between characters. The following menu item has character strings:

- VIDEO/MONITOR menu → <BAR CHARACTER> page → BAR CHARACTER

1 Move the text cursor to the input position, then press the CONTROL knob.

A second cursor is displayed in the character list.

2 Turn the CONTROL knob to move the cursor to the desired character, then press the CONTROL knob.

Repeat steps 1 and 2 to enter other characters.

- Select INS to insert a space character at the cursor position.
- Select DEL to delete the character at the cursor position.
- Select RET to return to step 1 without changing the string.
- Entering the maximum number of characters (up to the right edge) moves the cursor to ESC on the lower right of the character list.

3 Turn the CONTROL knob to move the cursor to END, then press the CONTROL knob.

The new input string is registered.

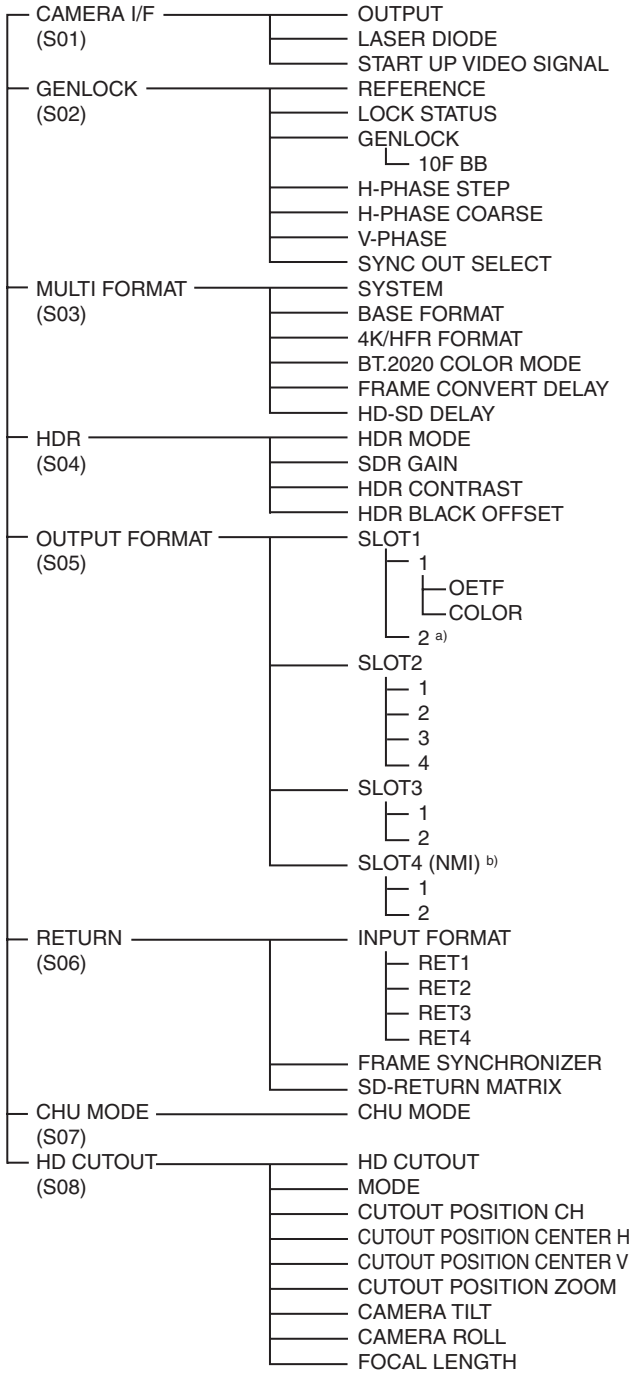
To cancel the character string setting
Turn the CONTROL knob to move the cursor to ESC, then press the CONTROL knob.

To exit the menu display

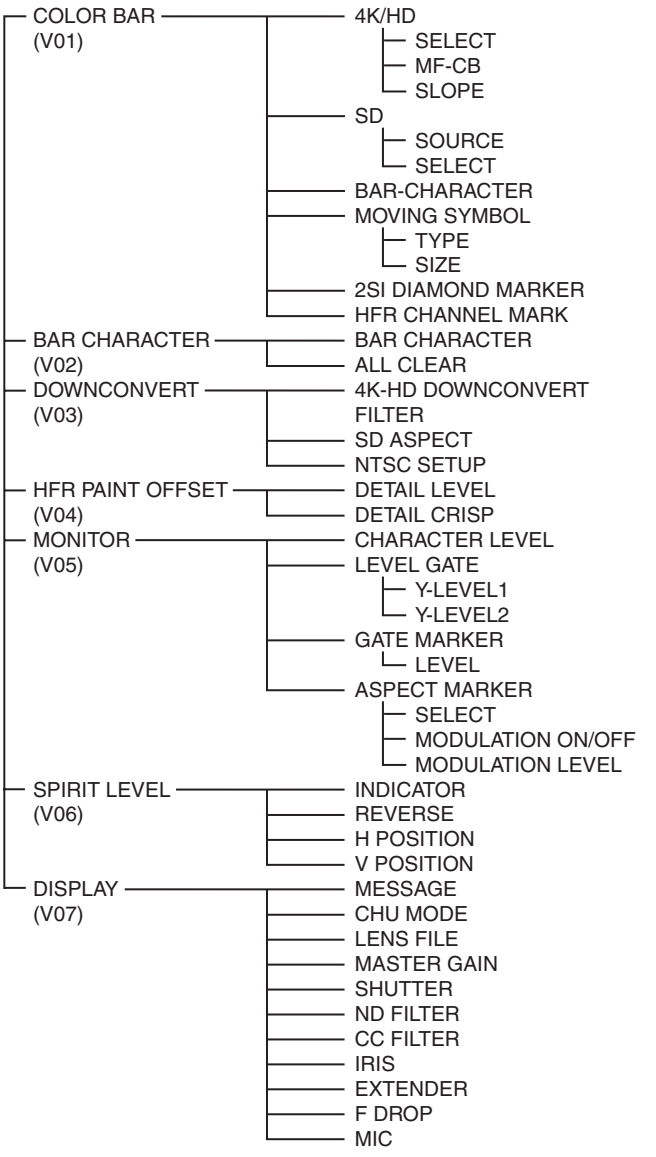
In menu display mode, set the DISP/MENU lever to the MENU position.

Menu Tree

SYSTEM OPERATION menu



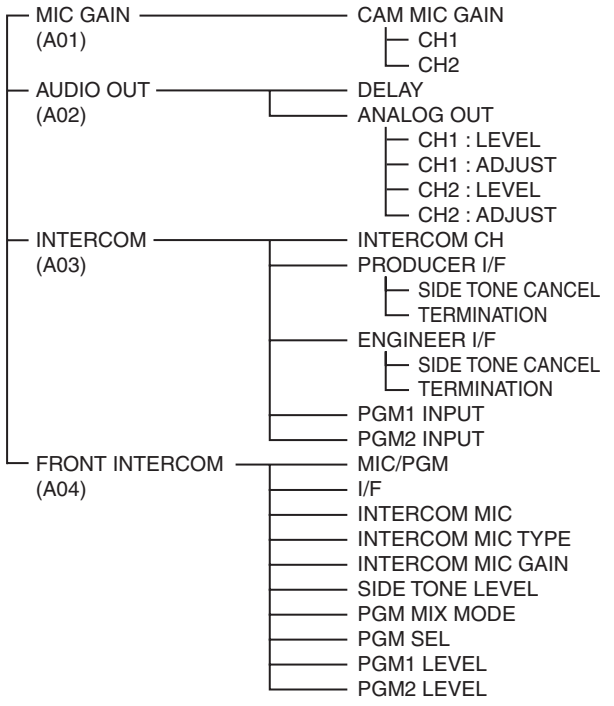
VIDEO/MONITOR menu



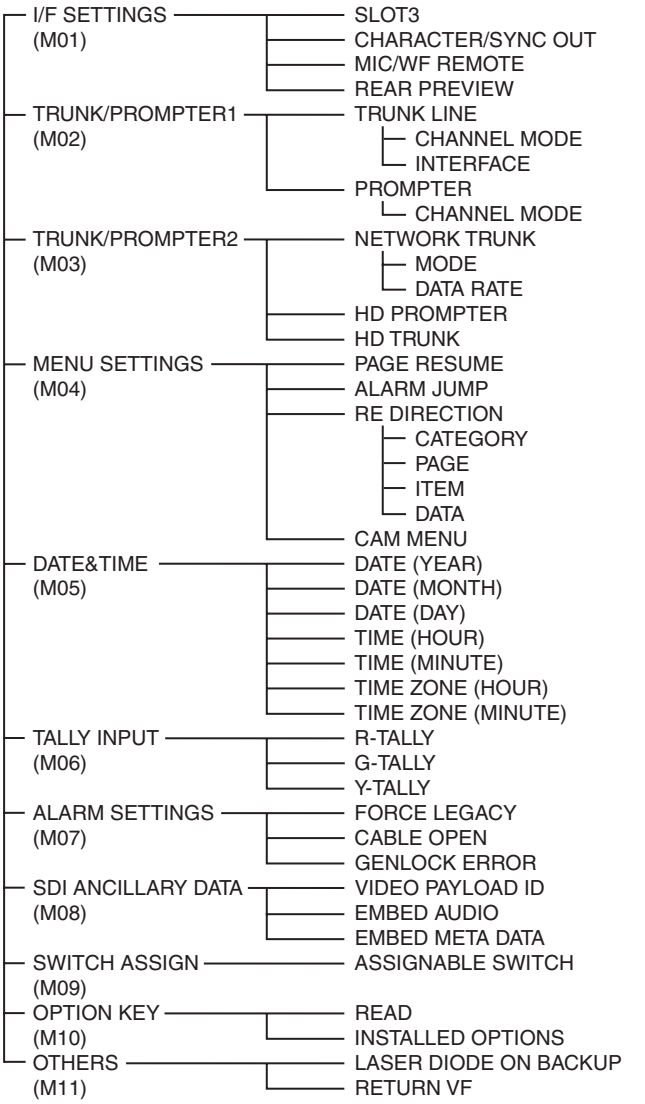
a) When HKCU-4002 is installed

b) When HKCU-IP43F is installed

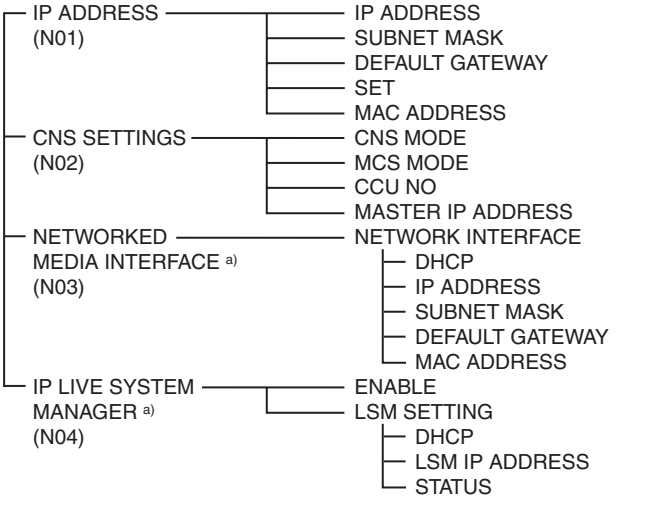
AUDIO/INTERCOM menu



MAINTENANCE menu

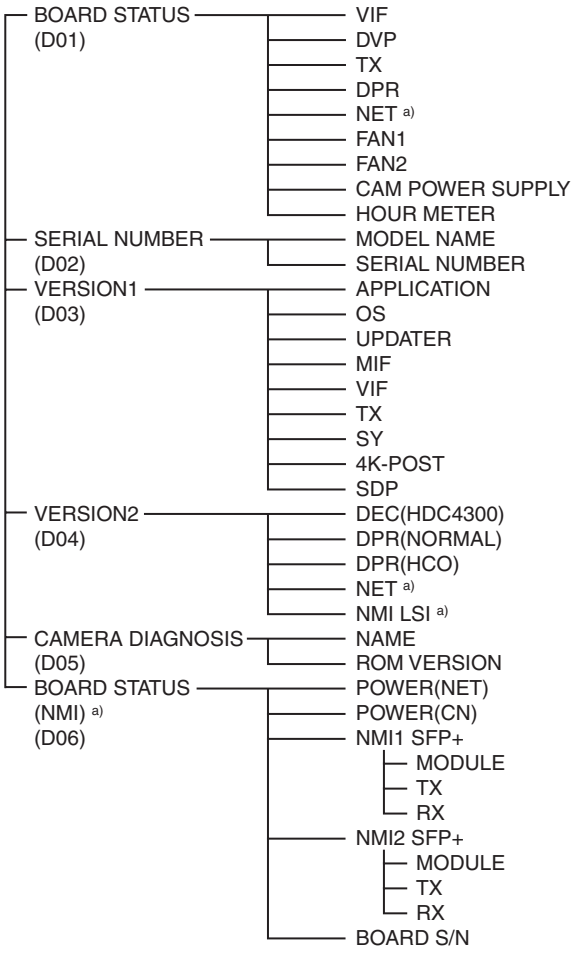


NETWORK menu



a) When HKCU-IP43F is installed

DIAGNOSIS menu



a) When HKCU-IP43F is installed

Menu List

Note

The following conventions are used in the menu list table.
Settings column values (e.g. ON, OFF, 0): Default settings are underlined
Execute via ENTER: Press the CONTROL knob or move the CANCEL/ENTER lever to the ENTER position to execute.

SYSTEM OPERATION menu

SYSTEM OPERATION			
Page name Page No.	**Item**	**Set value**	**Indication**
<CAMERA I/F> S01	OUTPUT	CAMERA, **BAR**, TEST1, TEST2	Selects the output signal. TEST1 and TEST2 are not selectable if there is no communication with the camera.
	LASER DIODE	ON, **OFF**	Turns the optical signal output from the CCU to the camera ON/OFF. (Displayed only when connected using optical fiber composite cable.)
	START UP VIDEO SIGNAL	**BARS**, GRAY	Selects the signal to output until the unit connects with the camera after power-on.
<GENLOCK> S02	REFERENCE	(NOT DETECTED), (1080/59.94I), (1080/23.98PsF), (720/59.94P), (1080/50I), (1080/24PsF), (720/50P), (UNKNOWN)	Signal input of the Reference connector (Display only)
	LOCK STATUS	(LOCKED), (NOT LOCKED)	Lock status of the external reference signal (Display only).
	GENLOCK	HD, **SD**	Selects the lock mode of the external reference signal.
	10F BB	**OFF**, ON	Sets whether to use the 10Field ID added to the external reference signal This can be selected when GENLOCK is SD and <MULTI FORMAT> Page → SYSTEM is 1.001 (525).
	H-PHASE STEP	When HD is selected in GENLOCK: –3.01 to +3.45 µsec **0.00** When SD is selected in GENLOCK: –8.29 to +9.48 µsec **0.00**	Adjusts the horizontal lock phase in relation to the reference signal (steps)
	H-PHASE COARSE	–99 to 99 **0**	Adjusts the horizontal lock phase in relation to the reference signal (fine adjustment)
	V-PHASE	**0** to 7	Adjusts the vertical lock phase in relation to the reference signal (line)
	SYNC OUT SELECT	**SD SYNC**, HD SYNC	Sets the output signal of the CHARACTER/SYNC OUT connector This is enabled only when MAINTENANCE Menu → <I/F SETTINGS> page → CHARACTER/SYNC is SYNC.

SYSTEM OPERATION			
Page name Page No.	**Item**	**Set value**	**Indication**
<MULTI FORMAT> S03	SYSTEM	**1.001(525)**, 1.000(625)	Selects the operating frequency of the system.
	BASE FORMAT	When 1.001 (525) is selected in SYSTEM: 1080/59.94P, **1080/59.94I**, 1080/29.97PsF, 1080/23.98PsF, 720/59.94P When 1.000 (625) is selected in SYSTEM: 1080/50P, **1080/50I**, 1080/25PsF, 1080/24PsF, 720/50P	Selects the format of the HD system.
	4K/HFR FORMAT	*See "4K/HFR FORMAT" (page 36).*	Sets the 4K/HD HFR operation format based on the BASE FORMAT setting.
	BT.2020 COLOR MODE	WIDE-F, **WIDE-BC**	**WIDE-F:** Color space setting closest to BT.2020. Suitable for wide color gamut recording, such as for cinema applications. **WIDE-BC:** Can be operated as BT.2020 color gamut with high affinity for 709 color gamut output. Applicable for simultaneous 709 color gamut output and BT.2020 color gamut output operation. It also supports all camera paint functions. **Note** When WIDE-F is selected, the MATRIX function is fixed and cannot be adjusted.
	FRAME CONVERT DELAY	0.8, 1.2, **1.6** F@23.98PsF	Sets the video delay time when 2-3 Pulldown. This is enabled only when SYSTEM is 1.001 (525).
	HD-SD DELAY	When 1080/59.94P, 1080/59.94I, 1080/29.97PsF, 1080/23.98PsF, 1080/50P, 1080/50I, 1080/25PsF, or 1080/24PsF is selected in BASE FORMAT: **FRAME(1F)** When 720/59.94P or 720/50P is selected in BASE FORMAT: **FRAME(2F)**	Displays the phase output for SD signals down converted from HD signals.
<HDR> S04	HDR MODE	**OFF,** LIVE HDR	**OFF:** Normal shooting operation. **LIVE HDR:** Used for LIVE HDR shooting. **Note** When LIVE HDR is selected, camera paint functions can be used for both HDR output and SDR output. However, some paint functions are not supported for HDR output. *For details, see "Paint Functions in HDR MODE and COLOR SPACE" (page 18).*
	SDR GAIN	**0.0** to –15.0 dB	Enabled in LIVE HDR mode only. Gain setting applied to SDR output
	HDR CONTRAST	**100** to 560 %	Enabled in LIVE HDR mode only. HDR output contrast maintained by setting SDR GAIN (Display only)
	HDR BLACK OFFSET	–99 to 99, **0**	Enabled in LIVE HDR mode only. HDR output black offset

SYSTEM OPERATION			
Page name Page No.	**Item**	**Set value**	**Indication**
<OUTPUT FORMAT> S05	SLOT1		
	1	See *"Formats settable for SLOT1-1" (page 36)*.	Sets the output signal format of the SLOT1-1 connector.
	OETF	**SDR**, S-Log3, HLG_BT.2100, HLG_Live	Sets the gamma curve of the SLOT1 video output. Fixed to SDR when HDR MODE is OFF.
	COLOR	**BT.709**, BT.2020	Selects the color space of SLOT1 video output. **BT.709:** 709 color space setting close to HDC series cameras. **BT.2020:** Applicable for color space selected in BT.2020 COLOR MODE on the MULTI FORMAT page. Fixed to BT.709 if the format is HD resolution and OETF is set to SDR.
	2	*See "Formats settable for SLOT1-2 (when HKCU-4002 is installed)" (page 38).*	Displays the SLOT1-2 connector output format when SLOT1-1 is set to 4K format.
	SLOT2		
	1	**C**, M	Sets whether to add characters to the output signal. **C:** Characters are not added. **M:** Characters are added.
		See "Formats settable for SLOT2 and SLOT3" (page 38).	Sets the output signal format of the SLOT2-1 connector.
	2	**C**, M	Sets whether to add characters to the output signal. **C:** Characters are not added. **M:** Characters are added.
		See "Formats settable for SLOT2 and SLOT3" (page 38).	Sets the output signal format of the SLOT2-2 connector.
	3	**C**, M	Sets whether to add characters to the output signal. **C:** Characters are not added. **M:** Characters are added.
		See "Formats settable for SLOT2 and SLOT3" (page 38).	Sets the output signal format of the SLOT2-3 connector.
	4	**M**	**M:** Characters are added.
		See "Formats settable for SLOT2 and SLOT3" (page 38).	Sets the output signal format of the SLOT2-4 connector.
	SLOT3		
	1	**C**, M	Sets whether to add characters to the output signal. **C:** Characters are not added. **M:** Characters are added.
		See "Formats settable for SLOT2 and SLOT3" (page 38).	Sets the output signal format of the SLOT3-1 connector.
	2	**C**, M	Sets whether to add characters to the output signal. **C:** Characters are not added. **M:** Characters are added.
		See "Formats settable for SLOT2 and SLOT3" (page 38).	Sets the output signal format of the SLOT3-2 connector.
	SLOT4(NMI)		(When HKCU-IP43F is installed)
	1	**C**	**C:** Characters are not added.
		See "Formats settable for SLOT4 (NMI) (when HKCU-IP43F is installed)" (page 38).	Sets the output signal format of the SLOT4-1 connector.
	2	**M**	**M:** Characters are added.
		See "Formats settable for SLOT4 (NMI) (when HKCU-IP43F is installed)" (page 38).	Sets the output signal format of the SLOT4-2 connector.

SYSTEM OPERATION			
Page name Page No.	**Item**	**Set value**	**Indication**
<RETURN> S06	INPUT FORMAT RET1 RET2 RET3 RET4	When 1.001(525) is selected for SYSTEM: 1080/59.94P, **1080/59.94I(PsF)**, 1080/23.98PsF, 720/59.94P, 525/59.94I(PsF), NTSC When 1.000(625) is selected for SYSTEM: 1080/50P, **1080/50I(PsF)**, 1080/24PsF, 720/50P, 625/50I(PsF), PAL When 525/59.94I (PsF), NTSC, 625/50I (PsF), or PAL is selected, the aspect of the input signal can be set. SQUEEZE, LETTER BOX(16:9), EDGE CROP	Sets the format of the return signal to be input. When 525/59.94I (PsF), NTSC, 625/50I (PsF) or PAL is selected, set the aspect of the input signal. For the return format that can be selected for each BASE FORMAT setting, refer to *"Formats settable for RETURN FORMAT" (page 39)*.
	FRAME SYNCHRONIZER	**OFF**, ON	Sets the frame synchronizer function for the return signal.
	SD-RETURN MATRIX	**OFF**, ON	Sets application of the HD matrix to the SD return signal.
<CHU MODE> S07	CHU MODE	**HDC4300/HDC-P43**, HDC(HD CUTOUT)	Sets the camera head to connect. The unit starts automatically after changing the setting. Restarting may take a few minutes due to internal mode change. **HDC(HD CUTOUT):** Select to use the cutout function.

SYSTEM OPERATION			
Page name Page No.	**Item**	**Set value**	**Indication**
<HD CUTOUT> S08	HD CUTOUT	**OFF**, ON	Turns the HD cutout function ON/OFF. Enabled only when HDC(HD CUTOUT) is selected in CHU MODE. The cutout HD signal from the 4K source is output from SLOT1.
	MODE	**SIMPLE HD**, ZOOM&PERSPECTIVE	Selects the cutout mode. **SIMPLE HD:** Outputs a 1920×1080 HD region cutout from the 4K video as-is. Dual output is supported. The cutout signal set by the CUTOUT POSITION CH1 setting is output from the 1/2 connector and 5/6 connector of Slot1, and the cutout signal set by the CUTOUT POSITION CH2 setting is output from the 3/4 connector and 7/8 connector of Slot1. **ZOOM&PERSPECTIVE:** Outputs an HD signal formed by zooming in or out of the cutout region from the 4K video. In this mode, a perspective transformation is performed according to the focal length of the lens, and an image similar to the image obtained by the camera facing the cutout direction is output.
	CUTOUT POSITION CH	**1**, 2	Selects the cutout position channel. Only channel 1 is available when ZOOM&PERSPECTIVE is selected.
	CUTOUT POSITION CENTER H	–1536 to 1535, **0**	Specifies the cutout position center (horizontal direction, 0: center). (Setting when MODE is ZOOM&PERSPECTIVE, CUTOUT POSITION ZOOM is 4.0, and FOCAL LENGTH is Infinity)
	CUTOUT POSITION CENTER V	–810 to 809, **0**	Specifies the cutout position center (vertical direction, 0: center). (Setting when MODE is ZOOM&PERSPECTIVE, CUTOUT POSITION ZOOM is 4.0, and FOCAL LENGTH is Infinity)
	CUTOUT POSITION ZOOM	1.0 to 4.0, **2.0**	Specifies the zoom factor (1.0: same position as the 4K video) Enabled only when ZOOM&PERSPECTIVE is selected.
	CAMERA TILT	–45.0 to 45.0, **0**	Specifies the tilt angle of the camera (0: horizontal, positive angles represent upward tilt) Enabled only when ZOOM&PERSPECTIVE is selected.
	CAMERA ROLL	–5.0 to 5.0, **0**	Specifies the roll angle of the camera (0: horizontal, positive values represent counterclockwise roll) Enabled only when ZOOM&PERSPECTIVE is selected.
	FOCAL LENGTH	**7** to 500, ∞	Specifies the focal length of the lens (unit: mm) To avoid shape change due to perspective transformation, increase the focal length until “INFINITY” is displayed. Enabled only when ZOOM&PERSPECTIVE is selected.

4K/HFR FORMAT

BASE FORMAT settings	4K/HFR FORMAT selection options	
	When CHU MODE is HDC4300/HDC-P43	When CHU MODE is HDC(CUTOUT)
1080/59.94P	4096x2160/59.94P, 1080/59.94P, 1080/59.94P(2x), 1080/59.94P(3x), 1080/59.94P(4x)	4096x2160/59.94P
1080/59.94I	4096x2160/59.94P, 1080/59.94P, 1080/59.94P(2x), **1080/59.94P(3x)**, 1080/59.94P(4x), 1080/59.94I(6x), 1080/59.94I(8x)	4096x2160/59.94P
1080/29.97PsF	4096x2160/29.97P, 1080/29.97P	–
1080/23.98PsF	4096x2160/23.98P, 1080/23.98P	–
720/59.94P	4096x2160/59.94P, 720/59.94P(2x), 720/59.94P(3x), 720/59.94P(4x), 720/59.94P(6x), 720/59.94P(8x)	4096x2160/59.94P
1080/50P	4096x2160/50P, 1080/50P, 1080/50P(2x), 1080/50P(3x), 1080/50P(4x)	4096x2160/50P
1080/50I	4096x2160/50P, 1080/50P, 1080/50P(2x), 1080/50P(3x), 1080/50P(4x), 1080/50i(6x), 1080/50i(8x)	4096x2160/50P
1080/25PsF	4096x2160/25P, 1080/25P	–
1080/24PsF	4096x2160/24P, 1080/24P	–
720/50P	4096x2160/50P, 720/50P(2x), 720/50P(3x), 720/50P(4x), 720/50P(6x), 720/50P(8x)	4096x2160/50P

Formats settable for SLOT1-1

4K/HFR FORMAT settings	SLOT1 selection options	
	When CHU MODE is HDC4300/HDC-P43	When CHU MODE is HDC(CUTOUT)
4096x2160/59.94P	4096x2160/59.94P/SQD/3G-A 4096x2160/59.94P/SQD/3G-B 4096x2160/59.94P/2SI/3G-A 4096x2160/59.94P/2SI/3G-B 3840x2160/59.94P/SQD/3G-A 3840x2160/59.94P/SQD/3G-B 3840x2160/59.94P/2SI/3G-A 3840x2160/59.94P/2SI/3G-B ● When BASE FORMAT is 1080/59.94P or 1080/59.94I 1080/59.94P/3G-A 1080/59.94P/3G-B 1080/59.94I ● When BASE FORMAT is 720/59.94P 720/59.94P	● When BASE FORMAT is 1080/59.94P or 1080/59.94I 1080/59.94P/3G-A 1080/59.94P/3G-B 1080/59.94I ● When BASE FORMAT is 720/59.94P 720/59.94P
4096x2160/29.97P	4096x2160/27.97PsF/SQD/3G-B 4096x2160/27.97P/2SI/3G-B 4096x2160/27.97PsF/SQD 3840x2160/27.97PsF/SQD/3G-B 3840x2160/27.97P/2SI/3G-B 3840x2160/27.97PsF/SQD/3G-B 1080/29.97PsF	–
4096x2160/23.98P	4096x2160/23.98PsF/SQD/3G-B 4096x2160/23.98P/2SI/3G-B 4096x2160/23.98PsF/SQD 3840x2160/23.98PsF/SQD/3G-B 3840x2160/23.98P/2SI/3G-B 3840x2160/23.98PsF/SQD/3G-B 1080/23.98PsF	–
1080/59.94P	1080/59.94P/3G-A 1080/59.94P/3G-B 1080/59.94I	–
1080/59.94P(2x)	1080/59.94P(2x)/3G-A 1080/59.94P(2x)/3G-B 1080/59.94I(2x)/3G-B 1080/59.94I(2x)	–

4K/HFR FORMAT settings	SLOT1 selection options	
	When CHU MODE is HDC4300/HDC-P43	When CHU MODE is HDC(CUTOUT)
1080/59.94P(3x)	1080/59.94P(3x)/3G-A **1080/59.94P(3x)/3G-B** 1080/59.94I(3x)	–
1080/59.94P(4x)	1080/59.94P(4x)/3G-A 1080/59.94P(4x)/3G-B 1080/59.94I(4x)/3G-B 1080/59.94I(4x)	–
1080/59.94I(6x)	1080/59.94I(6x)/3G-B	–
1080/59.94I(8x)	1080/59.94I(8x)/3G-B	–
720/59.94P	720/59.94P	–
720/59.94P(2x)	720/59.94P(2x)/3G-B 720/59.94P(2x)	–
720/59.94P(3x)	720/59.94P(3x)	–
720/59.94P(4x)	720/59.94P(4x)/3G-B 720/59.94P(4x)	–
720/59.94P(6x)	720/59.94P(6x)/3G-B	–
720/59.94P(8x)	720/59.94P(8x)/3G-B	–
4096x2160/50P	4096x2160/50P/SQD/3G-A 4096x2160/50P/SQD/3G-B 4096x2160/50P/2SI/3G-A 4096x2160/50P/2SI/3G-B 3840x2160/50P/SQD/3G-A 3840x2160/50P/SQD/3G-B 3840x2160/50P/2SI/3G-A 3840x2160/50P/2SI/3G-B ● When BASE FORMAT is 1080/50P or 1080/50I 1080/50P/3G-A 1080/50P/3G-B 1080/50I ● When BASE FORMAT is 720/50P 720/50P	● When BASE FORMAT is 1080/50P or 1080/50I 1080/50P/3G-A 1080/50P/3G-B 1080/50I ● When BASE FORMAT is 720/50P 720/50P
4096x2160/25P	4096x2160/25PsF/SQD/3G-B 4096x2160/25P/2SI/3G-B 4096x2160/25PsF/SQD 3840x2160/25PsF/SQD/3G-B 3840x2160/25P/2SI/3G-B 3840x2160/25PsF/SQD/3G-B 1080/25PsF	–
4096x2160/24P	4096x2160/24PsF/SQD/3G-B 4096x2160/24P/2SI/3G-B 4096x2160/24PsF/SQD 3840x2160/24PsF/SQD/3G-B 3840x2160/24P/2SI/3G-B 3840x2160/24PsF/SQD/3G-B 1080/24PsF	–
1080/50P	1080/50P/3G-A 1080/50P/3G-B 1080/50I	–
1080/50P(2x)	1080/50P(2x)/3G-A 1080/50P(2x)/3G-B 1080/50I(2x)/3G-B 1080/50I(2x)	–
1080/50P(3x)	1080/50P(3x)/3G-A 1080/50P(3x)/3G-B 1080/50I(3x)	–
1080/50P(4x)	1080/50P(4x)/3G-A 1080/50P(4x)/3G-B 1080/50I(4x)/3G-B 1080/50I(4x)	–
1080/50I(6x)	1080/50I(6x)/3G-B	–

4K/HFR FORMAT settings	SLOT1 selection options	
	When CHU MODE is HDC4300/HDC-P43	When CHU MODE is HDC(CUTOUT)
1080/50I(8x)	1080/50I(8x)/3G-B	–
720/50P	720/50P	–
720/50P(2x)	720/50P(2x)/3G-B 720/50P(2x)	–
720/50P(3x)	720/50P(3x)	–
720/50P(4x)	720/50P(4x)/3G-B 720/50P(4x)	–
720/50P(6x)	720/50P(6x)/3G-B	–
720/50P(8x)	720/50P(8x)/3G-B	–

Formats settable for SLOT1-2 (when HKCU-4002 is installed)

SLOT1-1 format setting status	SLOT1-2 output format
4096x2160/59.94	4096x2160/59.94P/12G
3840x2160/59.94	3840x2160/59.94P/12G
4096x2160/27.97	4096x2160/29.97P/6G
3840x2160/27.97	3840x2160/29.97P/6G
4096x2160/23.98	4096x2160/23.98P/6G
3840x2160/23.98	3840x2160/23.98P/6G
4096x2160/50	4096x2160/50P/12G
3840x2160/50	3840x2160/50P/12G
4096x2160/27.97	4096x2160/25P/6G
3840x2160/27.97	3840x2160/25P/6G
4096x2160/24	4096x2160/24P/6G
3840x2160/24	3840x2160/24P/6G
Other settings	SLOT1-2 output not supported

Formats settable for SLOT2 and SLOT3

BASE FORMAT settings	SLOT 2 and SLOT 3 selection options	
	When CHU MODE is HDC4300/HDC-P43	When CHU MODE is HDC(CUTOUT)
1080/59.94P	1080/59.94P/3G-A, 1080/59.94P/3G-B, 1080/59.94P/Link-A, 1080/59.94P/Link-B, 1080/59.94i, 525/59.94I	1080/59.94P/3G-A, 1080/59.94P/3G-B, 1080/59.94P/Link-A, 1080/59.94P/Link-B, 1080/59.94i, 525/59.94I
1080/59.94I	**1080/59.94I**, 525/59.94I	**1080/59.94I**, 525/59.94I
1080/29.97PsF	1080/29.97PsF, 525/29.97PsF	–
1080/23.98PsF	1080/23.98PsF, 1080/59.94I, 525/59.94I	–
720/59.94P	720/59.94P, 525/59.94I	720/59.94P, 525/59.94I
1080/50P	1080/50P/3G-A, 1080/50P/3G-B, 1080/50P/Link-A, 1080/50P/Link-B, 1080/50I, 625/50I	1080/50P/3G-A, 1080/50P/3G-B, 1080/50P/Link-A, 1080/50P/Link-B, 1080/50I, 625/50I
1080/50I	1080/50i, 625/50I	1080/50i, 625/50I
1080/25PsF	1080/25PsF, 625/25PsF	–
1080/24PsF	1080/24PsF, 1080/50I, 625/50I	–
720/50P	720/50P, 625/50I	720/50P, 625/50I

Formats settable for SLOT4 (NMI) (when HKCU-IP43F is installed)

SLOT1-1 settings	SLOT4(NMI) selection options [1)]	
	When CHU MODE is HDC4300/HDC-P43	When CHU MODE is HDC(CUTOUT)
4096x2160/59.94 3840x2160/59.94	3840x2160/59.94P/2SI/3G-A, 1080/59.94I	–
1080/59.94	1080/59.94I	1080/59.94I
4096x2160/50 3840x2160/50	3840x2160/50P/2SI/3G-A, 1080/50I	–

SLOT1-1 settings	SLOT4(NMI) selection options [1]	
	When CHU MODE is HDC4300/HDC-P43	When CHU MODE is HDC(CUTOUT)
1080/50	1080/50I	1080/50I
Other settings	SLOT4 output not supported	SLOT4 output not supported

1) If SLOT4-1 is set to 4K, SLOT4-2 is unavailable. If SLOT4-1 is set to HD, SLOT4-2 is also set to HD.

Formats settable for RETURN FORMAT

BASE FORMAT settings	RETURN FORMAT selection options
1080/59.94P 1080/59.94I 1080/29.97PsF	1080/59.94P [1], 1080/59.94I (PsF), 525/59.94I (PsF), NTSC [2]
1080/23.98PsF	1080/23.98PsF, 1080/59.94I (PsF), 525/59.94I (PsF), NTSC [2]
720/59.94P	720/59.94P, 525/59.94I (PsF), NTSC [2]
1080/50P 1080/50I 1080/25PsF	1080/50P [1], 1080/50I (PsF), 625/50I (PsF), PAL [2]
1080/24PsF	1080/24PsF, 1080/50I (PsF), 625/50I (PsF), PAL [2]
720/50P	720/50P, 625/50I (PsF), PAL [2]

1) Level A and Level B of 3G-SDI are detected automatically.
2) Only RET3 and RET4 are supported.

VIDEO/MONITOR menu

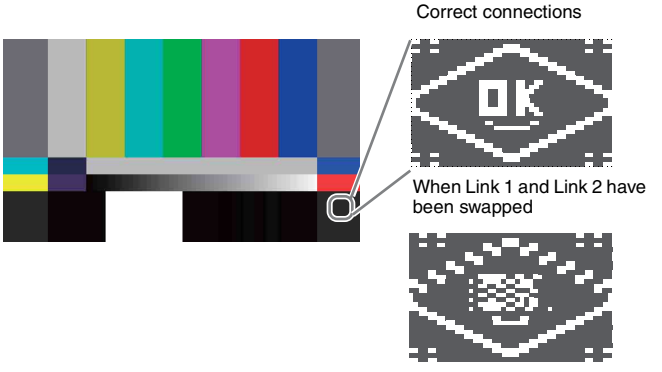
VIDEO/MONITOR			
Page name **Page No.**	**Item**	**Set value**	**Description**
<COLOR BAR> V01	4K/HD		
	SELECT	**BAR 16:9(100%)**, BAR 16:9(75%), SMPTE 16:9(BLACK), SMPTE 16:9(-I/Q), BAR 4:3(100%), BAR 4:3(75%), SMPTE 4:3(BLACK), SMPTE 4:3(-I/Q), MF-ARIB(75%), MF-ARIB(100%), MF-ARIB(+I), MF-SMPTE(-I,Q), MF-SMPTE(75%,Q), MF-SMPTE(100%,Q), MF-SMPTE(+I,Q), HD-CUSTOM, SDI CHECK FIELD, Y-RAMP, Y/C-RAMP, HD-CUSTOM2	Selects the color bar of 4K output/HD output.
	MF-CB	**MODIFY**, EVEN	Sets the stripe width for multi-format color bar output. **MODIFY:** Stripe width adjusted to prevent colors mixing when 4:3 Edge crop. **EVEN:** Stripe width in accordance with standard.
	SLOPE	**WIDE**, NARROW	Sets the color difference signal band of the color bar. **WIDE:** Band not limited. **NARROW:** Band is limited to prevent ringing.
	SD		
	SOURCE	4K/HD BAR, **SD BAR**	Selects the color bar signal source for output to SD. **4K/HD BAR:** Down converts the 4K/HD color bar and then outputs it. **SD BAR:** Outputs the SD color bar selected in SELECT.
	SELECT	SYSTEM OPERATION menu → <MULTI FORMAT> page → When 1.001(525) is selected for SYSTEM: **SMPTE**, EIA, FULL, 95%, NTSC100%, Y/C-RAMP, Y-RAMP SYSTEM OPERATION menu → <MULTI FORMAT> page → When 1.000(625) is selected for SYSTEM: **SMPTE**, EIA, FULL, 95%, PAL100%, Y/C-RAMP, Y-RAMP	Selects the SD color bar.
	BAR-CHARACTER	ON, **OFF**	Sets the character superposition on the color bar signal.
	MOVING SYMBOL	ON, **OFF**	Sets symbol moving on the color bar screen.
	TYPE	0, 1, 2	Selects the symbol type.
	SIZE	**SMALL**, LARGE	Selects the symbol size.
	2SI DIAMOND MARKER	**OFF**, ON	Sets diamond mark superposition on the color bar for 4K 2 sample interleave output. *See "4K 2SI diamond marks" (page 42).*
	HFR CHANNEL MARK	**OFF**, ON	Sets channel identification mark superimposition on HD HFR output video. *See "HFR channel marks" (page 42).*
<BAR CHARACTER> V02	BAR CHARACTER		Sets the character string to be displayed on each of lines 1 to 16.
	ALL CLEAR		Clears all the character strings set for BAR CHARACTER.

VIDEO/MONITOR			
Page name Page No.	**Item**	**Set value**	**Description**
<DOWNCONVERT> V03	4K-HD DOWNCONVERT FILTER	**1**, 2, 3, 4, 1(V:0.3), 1(V:0.6)	Selects the type of filter for down converting from 4K video signals to HD signals.
	SD ASPECT	SQUEEZE, **EDGE CROP**, LETTER BOX	Selects the aspect for SD output.
	NTSC SETUP	**7.5**, 0 IRE	Sets the NTSC signal setup level.
<HFR PAINT OFFSET> V04	DETAIL LEVEL	–99 to 99 **0**	Sets the offset amount of DETAIL LEVEL to be added to HD HFR video. DETAIL LEVEL is the standard for HD normal speed that is set from the MSU/RCP. 0 is the same as HD normal speed.
	DETAIL CRISP	–99 to 99 **0**	Sets the offset amount of DETAIL CRISP to be added to HD HFR video. DETAIL CRISP is the standard for HD normal speed that is set from the MSU/RCP. 0 is the same as HD normal speed.
<MONITOR> V05	CHARACTER LEVEL	1, 2, 3, 4, **5**	Sets the brightness of text in menus, etc.
	LEVEL GATE	**OFF**, 1&2, 1, 2, (---)	Sets level gate display. **OFF:** Level gate is not displayed. **1:** Displays level gate 1. **2:** Displays level gate 2. **1&2:** Displays level gate 1 & 2. **(---):** Displayed when a camera is not connected. (Display only)
	Y-LEVEL1 MIN	0 to 108% **49**	Sets the minimum detection levels for level gate 1 display.
	MAX	0 to 108% **61**	Sets the maximum detection levels for level gate 1 display.
	LEVEL	–99 to 99 **–25**	Sets the zebra display level to be added to the detection area.
	Y-LEVEL2 MIN	0 to 108% **74**	Sets the minimum detection levels for level gate 2 display.
	MAX	0 to 108% **108**	Sets the maximum detection levels for level gate 2 display.
	LEVEL	–99 to 99 **–25**	Sets the zebra display level to be added to the detection area.
	GATE MARKER	**OFF**, ON, (---)	Sets the display of the gate signal detected by the camera. **OFF:** Gate signal is not displayed. **ON:** Displays zebra in the area (skin gate, etc.) detected by the camera. **(---):** Displayed when a camera is not connected. (Display only)
	LEVEL	–99 to 99 **0**	Sets the zebra display level to be added to the detection area.
	ASPECT MARKER	**OFF**, ON	Sets aspect marker display.
	SELECT	**4:3**, 13:9, 14:9, EU VISTA, VISTA, CINEMA, FOLLOW DC	Selects the marker type.
	MODULATION ON/OFF	**OFF**, ON	Sets the mask function for outside the marker frame.
	MODULATION LEVEL	–99 to 99 **0**	Sets the mask level.

VIDEO/MONITOR			
Page name Page No.	**Item**	**Set value**	**Description**
<SPIRIT LEVEL> V06	INDICATOR	**OFF**, ON, ---	Sets spirit level display. This can be set when connected with a camera which has a lens that supports serial communication attached.
	REVERSE	**OFF**, ON	Selects the indicator move direction for tilting.
	H POSITION	0 to 99, **50**	Spirit level display position (horizontal)
	V POSITION	0 to 99, **50**	Spirit level display position (vertical)
<DISPLAY> V07 Sets the items to be displayed on the camera setting status page of the status display screen.	MESSAGE	**ALL**, WARNING, OFF	Sets the display of messages for the camera auto setup operation status, warnings that occur in the system, etc. **ALL:** Displays all messages. **WARNING:** Displays system warning messages and menu control messages. **OFF:** Displays only menu control messages.
	CHU MODE	**ON**, OFF	Displays or hides the CHU MODE.
	LENS FILE	**ON**, OFF	Displays or hides the LENS FILE name.
	MASTER GAIN	**ON**, OFF	Displays or hides the master gain setting value.
	SHUTTER	**ON**, OFF	Displays or hides the shutter speed/ECS frequency setting value.
	ND FILTER	**ON**, OFF	Displays or hides the ND filter type.
	CC FILTER	**ON**, OFF	Displays or hides the CC filter type.
	IRIS	**ON**, OFF	Displays or hides the iris status.
	EXTENDER	**ON**, OFF	Displays or hides the lens extender/digital extender status.
	F DROP	**ON**, OFF	Display or hides the F-drop status.
	MIC	**ON**, OFF	Displays or hides the camera microphone switch status.

4K 2SI diamond marks

This function is for displaying a test pattern like the following in the area at the bottom right of the 4K color bar when 4K 2 sample interleave output. OK is displayed if the connections for Links 1 to 4 are correct, and OK is not displayed if they are incorrect. This function can be used to check the connections.



HFR channel marks

This function is for displaying marks in the video area of HD HFR output.

The number of squares indicates the channel number so you can easily identify the channel number of a multi-link interface.

Example: Indication for channel 4

AUDIO/INTERCOM menu

AUDIO/INTERCOM Page name Page No.	Item	Set value	Description
<MIC GAIN> A01	CAM MIC GAIN		Sets the camera microphone gain.
	CH1	(---), 20, 30, 40, 50, **60** dB	Sets according to the microphone used.
	CH2	(---), 20, 30, 40, 50, **60** dB	**(---):** Displayed when a camera is not connected. (Display only)
<AUDIO OUT> A02	DELAY	0, 5, 11, 16, 21, 27, 32, 37, 43, 48, 53, 59, 64, 69, 75, 80 ms	Sets the camera microphone output phase.
	ANALOG OUT	**MIC1/2**, AES/EBU	Selects the MIC OUT ANALOG output. **MIC1/2:** Outputs the camera MIC1/2 input from the CCU MIC OUT connector. **AES/EBU:** Outputs the camera AES/EBU input from the CCU MIC OUT connector.
	CH1 LEVEL	–20, **0**, +4 dBu	Sets the AUDIO CH1 output level.
	ADJUST	–99 to 99 **0**	
	CH2 LEVEL	–20, **0**, +4 dBu	Sets the AUDIO CH2 output level.
	ADJUST	–99 to 99 **0**	
<INTERCOM> A03	INTERCOM CH	1CH(PROD), **2CH(PROD&ENG)**	Selects the intercom channel number to be used.
	PRODUCER I/F	CLEAR COM, **4WIRE**, RTS	Sets the producer line intercom system.
	SIDETONE CANCEL	–99 to 99 **0**	Sets the side tone cancel level. (Setting is possible when CLEAR COM or RTS)
	TERMINATION	**OFF**, ON	Sets termination resistance (200 ohms). (Setting is possible when CLEAR COM or RTS) **OFF:** Displayed when 4WIRE is selected in SYSTEM I/F. (Display only)
	ENGINEER I/F	CLEAR COM, **4WIRE**, RTS	Sets the engineer line intercom system.
	SIDETONE CANCEL	–99 to 99 **0**	Sets the side tone cancel level. (Setting is possible when CLEAR COM or RTS)
	TERMINATION	**OFF**, ON	Sets termination resistance (200 ohms). (Setting is possible when CLEAR COM or RTS) **OFF:** Displayed when 4WIRE is selected in SYSTEM I/F. (Display only)
	PGM1 INPUT	–20, **0**, +4 dBu	Sets the PGM1 input level.
	PGM2 INPUT	–20, **0**, +4 dBu	Sets the PGM2 input level.

AUDIO/INTERCOM			
Page name **Page No.**	**Item**	**Set value**	**Description**
<FRONT INTERCOM> A04	MIC/PGM	(PGM ON), (MIC OFF), (MIC ON)	CCU front panel MIC/PGM switch position. (Display only)
	I/F	(PROD), (ENG), (PRIV)	CCU front panel INTERCOM switch position. (Display only)
	INTERCOM MIC	**DYNAMIC**, ECM, CARBON	Sets the headset microphone connected to the INTERCOM connector on the front panel. **CARBON:** Carbon microphone (power supply, 20 dB gain) **ECM:** Electret condenser microphone (power supply, 40 dB gain) **DYNAMIC:** Dynamic microphone (no power supply, 60 dB gain)
	INTERCOM MIC TYPE	BALANCED, **UNBALANCED**	Sets the headset microphone connected to the INTERCOM connector on the front panel. **BALANCED:** Balanced microphone **UNBALANCED:** Unbalanced microphone
	INTERCOM MIC GAIN	–6, **0**, +6 dB	Sets the microphone input gain.
	SIDE TONE LEVEL	0 to 99, **50**	Sets the side tone level.
	PGM MIX MODE	**OFF**, INCOM+PGM, L-INCOM/R-PGM	**OFF:** Signals are not mixed. **INCOM+PGM:** INCOM and PGM signals are mixed. **L-INCOM/R-PGM:** Outputs an INCOM signal through the left channel and a PGM signal through the right.
	PGM SEL	**PGM1**, PGM2, PGM1+PGM2	Selects the PGM audio output from the FRONT INTERCOM connector.
	PGM1 LEVEL	0 to 99, **50**	Sets the MIX level of PGM1.
	PGM2 LEVEL	0 to 99, **50**	Sets the MIX level of PGM2.

MAINTENANCE menu

MAINTENANCE			
Page name Page No.	**Item**	**Set value**	**Description**
<I/F SETTINGS> M01	SLOT3	Top (for SDI I/O 1): OUTPUT, **RET3/HD-PROMPTER** Bottom (for SDI I/O 2): OUTPUT, HD-TRUNK, **RET4**	Sets the functions to assign to the SLOT3 connectors. The top one is the SDI I/O 1 connector setting. The bottom one is the SDI I/O 2 connector setting. **OUTPUT:** Used as the SLOT3-1 and SLOT3 outputs. **HD-TRUNK:** Used as the HD-TRUNK output. **RET3/HD-PROMPTER:** Used as both the RET3 input and HD-PROMPTER input connector. **RET4:** Used as the RET4 input connector. **Note** When this is set to RET3/HD-PROMPTER, the same image will be used for the camera's RET3 and HD PROMPTER outputs.
	CHARACTER/SYNC OUT	**CHARACTER**, SYNC	Sets the function to assign to the CHARACTER/ SYNC OUT connector. **CHARACTER:** Set to VBS (CHARACTER superposition) output. **SYNC:** Set to SYNC OUT output.
	MIC/WF REMOTE	**MIC REMOTE**, WF REMOTE	Displayed only when a 50-pin board is installed.
	REAR PREVIEW	**MOMENTARY**, TOGGLE	Sets the operation mode of REAR PREVIEW connector output.
<TRUNK/PROMPTER1> M02	TRUNK LINE		
	CHANNEL MODE	**2CH(MAX 75Kbps)**, 1CH(MAX 150Kbps)	Sets the number of channels to be used.
	INTERFACE	**232C**, 422A	Sets the communication line mode.
	PROMPTER		
	CHANNEL MODE	**2CH**, 1CH	Sets the number of prompter lines.
<TRUNK/PROMPTER2> M03	NETWORK TRUNK		
	MODE	**OFF**, NETWORK, NETWORK+VIDEO	Sets the mode for the network trunk. **OFF:** Network TRUNK is not used. **NETWORK:** Network Trunk is used (maximum 1 Gbps) **NETWORK+VIDEO:** Network trunk is used at the same time as HD Trunk/HD Prompter (maximum 100 Mbps)
	DATA RATE	100Mbos, 1Gbps	Displays the data transfer rate. (Display only)
	HD PROMPTER	(ENABLED), (DISABLED)	Displays "ENABLE" or "DISABLE" for HD PROMPTER. (Display only)
	HD TRUNK	(ENABLED), (DISABLED)	Displays "ENABLE" or "DISABLE" for HD TRUNK. (Display only)

Page name Page No.	Item	Set value	Description
<MENU SETTINGS> M04	PAGE RESUME	**ON**, OFF	Turns ON/OFF the menu mode resume page display function.
	ALARM JUMP	ON, **OFF**	Turns ON/OFF the error-related page display function for when an error occurs while in menu mode.
	RE DIRECTION		
	CATEGORY	**STD**, RVS	**STD:** CONTROL knob clockwise rotation moves the CCU MENU pointer (→) down. **RVS:** CONTROL knob counterclockwise rotation moves the CCU MENU pointer (→) down.
	PAGE	**STD**, RVS	**STD:** CONTROL knob clockwise rotation displays the next page in the menu. **RVS:** CONTROL knob counterclockwise rotation displays the next page in the menu.
	ITEM	**STD**, RVS	**STD:** CONTROL knob clockwise rotation moves the pointer (→) down to the next item on the page. **RVS:** CONTROL knob counterclockwise rotation moves the pointer (→) down to the next item on the page.
	DATA	**STD**, RVS	**STD:** CONTROL knob clockwise rotation selects the next data option. **RVS:** CONTROL knob counterclockwise rotation selects the next data option.
	CAM MENU	**OFF**, ON	Displays the Camera menu. **Notes** • If CAM MENU is set to ON, CCU menu operations cannot be performed because only Camera menu operations are available. • The Camera menu is not displayed when SD signal is output.
<DATE&TIME> M05	DATE (YEAR)	15 to 99	Sets the date and time.
	DATE (MONTH)	1 to 12	
	DATE (DAY)	1 to 31	
	TIME (HOUR)	0 to 23	
	TIME (MINUTE)	0 to 59	
	TIME ZONE (HOUR)	–23 to +23, **0**	Sets the time zone.
	TIME ZONE (MINUTE)	**0** to 59	
<TALLY INPUT> M06	R-TALLY	**CONTACT**, POWER(24V), POWER(TTL)	RED tally input setting
	G-TALLY	**CONTACT**, POWER(24V), POWER(TTL)	GREEN tally input setting
	Y-TALLY	**CONTACT**, POWER(24V), POWER(TTL)	YELLOW tally input setting
<ALARM SETTINGS> M07	FORCE LEGACY	OFF, **ON**	Set to OFF to not display the FORCE LEGACY alarm.
	CABLE OPEN	OFF, **ON**	Set to OFF to not display the CABLE OPEN alarm.
	GENLOCK ERROR	OFF, **ON**	Set to OFF to not display the GENLOCK ERROR alarm.

MAINTENANCE			
Page name Page No.	**Item**	**Set value**	**Description**
<SDI ANCILLARY DATA> M08	VIDEO PAYLOAD ID	**LATEST**, 2002, 2010, 2011	Selects the standard year of the payload ID to be added to the video output of SLOT2 and SLOT3.
	EMBED AUDIO	OFF, **ON**	Sets whether there is audio data superposition for SDI output.
	EMBED META DATA	OFF, **ON**	Sets whether there is metadata superposition for SLOT2 and SLOT3 output.
<SWITCH ASSIGN> M09	ASSIGNABLE SWITCH	**NONE**, BARS, CAM POWER, FORCE LEGACY, LASER DIODE ON	Sets the function to be assigned to the assignable button on the front panel. **NONE:** No assignment. **BARS:** Sets the color bar output to ON/OFF. **CAM POWER:** Sets camera power to ON/OFF. **FORCE LEGACY:** Forces the communication mode to LEGACY mode. **LASER DIODE ON:** Turns the optical signal output from the CCU to the camera ON/OFF.
<OPTION KEY> M10	READ	Execute with ENTER.	Reads the installation key from the USB flash drive.
	INSTALLED OPTIONS		List of installed options. (Display only)
<OTHERS> M11	LASER DIODE ON BACKUP	ENABLE, **DISABLE**	Sets whether to save the state of the LASER DIODE setting on the <CAMERA I/F> page of the SYSTEM OPERATION menu for the next startup.
	RETURN VF	**NORMAL**, HFR LINK	Sets the VF return signal to the camera. **NORMAL:** Normal-speed signal **HFR LINK:** HFR signal 1LINK (steady image can be used as the image to display in the viewfinder)

NETWORK menu

NETWORK			
Page name Page No.	**Item**	**Set value**	**Description**
<IP ADDRESS> N01	IP ADDRESS	**0.0.0.0** to 255.255.255.255	Sets the IP address.
	SUBNET MASK	**0.0.0.0** to 255.255.255.255	Sets the subnet mask.
	DEFAULT GATEWAY	**0.0.0.0** to 255.255.255.255	Sets the default gateway.
	SET		A “SET OK?” message is displayed. Press ENTER again to confirm the change. (Execute via ENTER.)
	MAC ADDRESS	(xx:xx:xx:xx:xx:xx)	Displays the MAC address of the unit.
<CNS SETTINGS> N02	CNS MODE	**LEGACY**, BRIDGE, MCS	Sets the communication mode.
	MCS MODE	CLIENT	Indicates that the unit is the client when MCS mode is selected. (Display only)
	CCU NO	When MCS is selected in CNS MODE: Blank, 1 to 96 When LEGACY or BRIDGE is selected in CNS MODE: Blank, 1 to 96, A to Z	Sets the CCU number.
	MASTER IP ADDRESS	**0.0.0.0** to 255.255.255.255	Sets the master device IP address for MCS mode.

NETWORK			
Page name Page No.	**Item**	**Set value**	**Description**
<NETWORKED MEDIA INTERFACE> N03 (When HKCU-IP43F is installed)	NETWORK INTERFACE	**NMI LAN1**, NMI LAN2	Selects the network interface to configure/display.
	DHCP	OFF, **ON**	Enables or disables DHCP.
	IP ADDRESS	**0.0.0.0** to 255.255.255.255	When DHCP enabled: Displays the IP address assigned using DHCP for the selected network interface. When DHCP disabled: Displays the IP address setting for the selected network interface.
	SUBNET MASK	**0.0.0.0** to 255.255.255.255	When DHCP enabled: Displays the subnet mask set using DHCP for the selected network interface. When DHCP disabled: Displays the subnet mask setting for the selected network interface.
	DEFAULT GATEWAY	**0.0.0.0** to 255.255.255.255	When DHCP enabled: Displays the default gateway IP address set using DHCP for the selected network interface. When DHCP disabled: Sets and displays the default gateway IP address for the selected network interface.
	MAC ADDRESS	00:00:00:00:00:00 to FF:FF:FF:FF:FF:FF	Specified MAC address of the selected network interface (Display only)
<IP LIVE SYSTEM MANAGER> N04 (When HKCU-IP43F is installed)	ENABLE	LSM1, **LSM1&LSM2**	Sets IP Live System Manager (LSM) redundancy. **LSM1:** Communicates with LSM using LAN1 only. **LSM1&LSM2:** Communicates with LSM using LAN1 and LAN2 (redundancy).
	LSM SETTING	LSM1, LSM2	Select the LSM to configure or display status. **LSM1:** Sets LSM for communication using LAN1. **LSM2:** Sets LSM for communication using LAN2.
	DHCP	**ON**, OFF	Enables/disables the IP address setting of the LSM. Fixed to OFF when DHCP is set to OFF on the <NETWORKED MEDIA INTERFACE> page.
	LSM IP ADDRESS	**0.0.0.0** to 255.255.255.255	Sets the IP address of the LSM. Displays the configured value when DHCP is set to ON.
	STATUS	DISCONNECTED, CONNECTING, CONNECTED	Displays the connection status of the LSM.

DIAGNOSIS menu

DIAGNOSIS			
Page name Page No.	**Item**	**Display**	**Description**
<BOARD STATUS> D01	VIF	OK, POWER ERROR, PLD ERROR, TEMP WARNING	VIF board self-diagnosis result
	DVP	OK, POWER ERROR, FAN STOP, PLD ERROR, TEMP WARNING	DVP board self-diagnosis result
	TX	OK, POWER ERROR, PLD ERROR, TEMP WARNING	TX board self-diagnosis result
	DPR	OK, POWER ERROR, PLD ERROR, TEMP WARNING	DPR board self-diagnosis result
	NET	OK, POWER ERROR, PLD ERROR, TEMP WARNING	NET board self-diagnosis result (When HKCU-IP43F is installed)
	FAN1	OK, STOP	Power supply unit fan operation status
	FAN2	OK, STOP	Fan operation status
	CAM POWER SUPPLY	ON, OFF	Status of powers supply to camera
	HOUR METER		Accumulated power-on time
<SERIAL NUMBER> D02	MODEL NAME		Unit model name
	SERIAL NUMBER		Serial number
<VERSION1> D03	APPLICATION		Unit software version
	OS		Unit software version
	UPDATER		Unit software version
	MIF		ROM version of MIF PLD (VIF board)
	VIF		ROM version of VIF PLD (VIF board)
	TX		ROM version of TX PLD (TX board)
	SY		ROM version of SY PLD (SY board)
	4K-POST		ROM version of 4K-POST PLD (DVP board)
	SDP		ROM version of SPD PLD (DVP board)
<VERSION2> D04	DEC(HDC4300)		ROM version of DEC PLD (DVP board) for HDC4300 connection
	DPR(NORMAL)		ROM version of DPR PLD (DPR board)
	DPR(HCO)		ROM version of DPR PLD (DPR board) for HD CUTOUT
	NET		ROM version of NET PLD (When HKCU-IP43F is installed)
	NMI LSI		NMI software version (When HKCU-IP43F is installed)
<CAMERA DIAGNOSIS> D05	NAME		Model name of connected camera
	ROM VERSION	X.XX	ROM version of camera

DIAGNOSIS			
Page name Page No.	**Item**	**Display**	**Description**
<BOARD STATUS(NMI)> D06 (When HKCU-IP43F is installed)	POWER(NET)		
	POWER(CN)		
	NMI1 SFP+		Displays the SFP+ module status of NMI1.
	MODULE	OK, ABSENT	**OK:** SFP+ module is inserted successfully. **ABSENT:** SFP+ module is not inserted.
	TX	OK, FAULT	**OK:** Normal **FAULT:** An error occurred during signal transmission.
	RX	OK, LOS	**OK:** Normal **LOS:** Signal could not be received.
	NMI2 SFP+		Displays the SFP+ module status of NMI2.
	MODULE	OK, ABSENT	**OK:** SFP+ module is inserted successfully. **ABSENT:** SFP+ module is not inserted.
	TX	OK, FAULT	**OK:** Normal **FAULT:** An error occurred during signal transmission.
	RX	OK, LOS	**OK:** Normal **LOS:** Signal could not be received.
	BOARD S/N		Serial number of the NET board.

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 Sony representative.

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.

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 this unit or the camera, the ALARM indicator turns on and an error message is displayed on this unit.

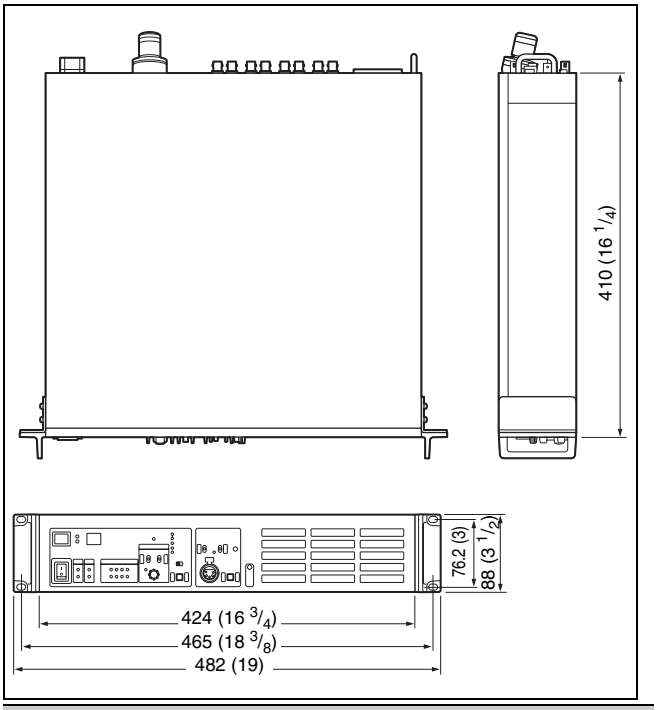
Error message	Description
CCU:GENLOCK ERROR	External reference sync error
CCU:10FIELD-ID ERROR	10Field ID is not detected even though the 10F BB setting is On
CCU:FORCE LEGACY	FORCE LEGACY is set for CNS MODE
CCU:PS FAN STOP	Power supply block FAN error
CCU:PS CABLE SHORT	CAMERA connector optical fiber cable short circuit error
CCU:PS CABLE OPEN	CAMERA connector optical fiber cable open circuit error
CCU:PS RCP POWER SUPPLY ERROR	Remote control panel (connected to REMOTE connector) power supply error
CCU:PS TEMP WARNING	Power supply unit temperature error
CCU:DVP FAN STOP	DVP board fan stopped
CCU:OPTICAL CONDITION ERROR	Light sensor level on CCU side dropped
CCU:OPTICAL CONDITION WARNING	
CCU:OPTICAL CONDITION CARE	
CCU:COMMAND ERROR	Command communication error of camera and remote control panel
CCU:XXX POWER ERROR	Board power supply section error (XXX is the board name)
CCU:XXX PLD ERROR	PLD error (XXX is the PLD name)
CCU:XXX TEMP WARNING	Board temperature error (XXX is the board name)
CCU:OPT NO OPTION	Option key required for when CHU MODE is set to HDC(CUTOUT) is not installed.
CCU:PLEASE UPDATE CAMERA SOFTWARE	There is a software version mismatch between the camera and this unit.
CCU:PLD CONFIG ERROR	DPR PLD is not configured for HD CUTOUT when CHU MODE is set to HDC(HD CUTOUT).

Specifications

HDCU4300

General	
Power requirements	100 V to 240 V AC, 50/60 Hz
Current consumption	4.0 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. 10.1 kg (22 lb. 4.3 oz.)

Dimensions (Unit: mm (inches))



Input/output connectors	
CAMERA	Optical fiber connector (1)
INTERCOM/TALLY/ PGM	D-sub 25-pin connector (1) • INTERCOM (PROD/ENG), 4W: 0 dBu, RTS: 0 dBu, CC: –14 dBu • PGM, 2 systems, 0 dBu/–20 dBu • TALLY (R, G, Y) • FLAG
RCP/CNU	8-pin multi-connector (1)
TRUNK	12-pin (1)
LAN	8-pin (1)
NETWORK TRUNK	8-pin (1)
SDI I/O	3G/HD/SD SDI I/O (SLOT3) BNC-type (2) 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 SD-SDI: SMPTE ST259, 0.8 Vp-p, 75 ohms, 270 Mbps 3G-SDI/HD-SDI/SD-SDI, character signal selectable

Input connectors	
AC IN	100 V to 240 V AC (1)
SDI RET IN	BNC-type (2) 3G-SDI: SMPTE ST424/425, 2.970 Gbps/ 2.967 Gbps HD-SDI: SMPTE ST292, 1.485 Gbps/ 1.4835 Gbps SD-SDI: SMPTE ST259, 270 Mbps
VBS RET IN	BNC-type (2), analog signal, 1.0 Vp-p, 75 ohms
REFERENCE	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) or NTSC 10F-BB
PROMPTER	BNC-type (2), loop-through output during 1CH mode, terminate internally at 75 ohms during 2CH mode, analog signal, 1.0 Vp-p, 75 ohms

Output connectors	
AUDIO OUT CH1, CH2	XLR 3-pin, male (2), 0 dBu/–20 dBu/ +4 dBu
VBS MONITOR	BNC-type (1), VBS, 1 Vp-p, 75 ohms
CHARACTER/SYNC	BNC-type (1), VBS, 1 Vp-p, 75 ohms HD SYNC: BTA-S001, tri-level sync, 0.6 Vp-p, 75 ohms SD SYNC: composite sync, 0.3 Vp-p, 75 ohms VBS/HD SYNC/SD SYNC selectable

SDI OUTPUT	• 3G/HD SDI OUTPUT (SLOT1) BNC-type (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 3G-SDI/HD-SDI switchable • 3G/HD/SD SDI OUTPUT (SLOT2) BNC-type (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 SD-SDI: SMPTE ST259, 0.8 Vp-p, 75 ohms, 270 Mbps 3G-SDI/HD-SDI/SD-SDI, character signal selectable
Supplied accessories	
Number plates (1 set)	
Operation guide (1)	
Operation manual (CD-ROM) (1)	
Optional accessories	
United States and Canada: Power cord set (1-551-812-XX) Other areas: Power cord set (1-782-929-XX)	
United States and Canada: Plug holder B (2-990-242-01) Other areas: Plug holder C (3-613-640-01)	
CCA-5-3 Connection Cable (3 meters), CCA-5-10 Connection Cable (10 meters)	
Maintenance Manual	
Related devices	
HDC4300 Color Camera	
HDC-P43 Multi Purpose Camera	
RCP-1000 Series Remote Control Panel	
MSU-1000 Series Master Setup Unit	
HZC-CSM10 Camera System Management Software	
SZC-4002/4002M/4002W HFR Software	
SZC-2001/2001M/2001W HD CUTOUT Software	
HKCU-IP43F Networked Media Interface Board	
HKCU-4002 12G-SDI Extension Kit	

HKCU-IP43F

General	
Power consumption	18.2 W
Operating temperature	5 °C to 40 °C (41 °F to 104 °F)
Storage temperature	–20 °C to +60 °C (–4 °F to +140 °F)
Dimensions (w/h/d, excluding protrusions)	NET board: Approx. 94 × 10 × 227 mm ($3\ ^{3}/_{4} \times\ ^{13}/_{32} \times 9$ inches) CN board: Approx. 55 × 22 × 136 mm ($2\ ^{1}/_{4} \times\ ^{7}/_{8} \times 5\ ^{3}/_{8}$ inches)
Mass	NET board: Approx. 0.18 kg (6.3 oz.) CN board: Approx. 0.14 kg (4.9 oz.)
Output connectors	
CN board: NMI-LAN	SFP+ (2) 10G BASE-** (using SFP+ transceiver module)
Supplied accessories	
30-pin cable (1)	
Harnesses (4)	
Screws (M3 × 8) (5)	
Installation Guide (1)	
Related devices	
OTM-10GSR1 SFP+ transceiver module	

HKCU-4002

General	
Power consumption	3 W
Operating temperature	5 °C to 40 °C (41 °F to 104 °F)
Storage temperature	–20 °C to +60 °C (–4 °F to +140 °F)
Dimensions (w/h/d, excluding protrusions)	DIF board: 80 × 150 × 24 mm ($3\ ^{1}/_{4} \times 6 \times\ ^{31}/_{32}$ inches)
Mass	DIF board: Approx. 0.16 kg (5.6 oz.)
Output connectors	
DIF board: BNC type (2)	12G-SDI: SMPTE ST2082, 0.8 Vp-p, 75 ohms, 11.880 Gbps/11.868 Gbps 6G-SDI: SMPTE ST2081, 0.8 Vp-p, 75 ohms, 5.940 Gbps/5.934 Gbps 12G-SDI/6G-SDI switchable
Supplied accessories	
40-pin cable (1)	
Harnesses (2)	
Operating Instructions (1)	

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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