SONY

BASEBAND PROCESSOR UNIT

BPU4000

OPERATION MANUAL English

1st Edition (Revised 2)

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Overview

The BPU4000 Baseband Processor Unit connects to a CA4000 Camera System Adaptor, mounted on a PMW-F55 Solid-state Memory Camcorder[1)] or F65 Digital Motion Picture Camera[2)], or an HDC4300 Color Camera[3)] via an optical fiber cable. It processes video signals from the camera and provides an interface with external devices.
It can also connect to an HDCU2000-series or HDCU1000-series[4)] Camera Control Unit (hereinafter referred to as the "CCU") to form a 4K video multi-camera system, supplying power to the camera and transferring various signals (intercom, tally, prompter, audio, etc.).

1) Requires PMW-F55 software version 2.10 or later.
2) Requires the SKC-4065 F65 Adaptor.
3) Requires BPU4000 software version 3.00 or later.
4) If using a HDCU1000-series unit, please contact your Sony representative.

Features

Note

For system camera operation, first check that the software and ROM version of this unit, PMW-F55, F65, F65 Adaptor, CA4000, and HDC4300 support this function.

4K and HD dual system support

Equipped with 4K video signal processing functions, and down-converter for conversion to HD format.
It can support a 4K camera system and HD camera system at the same time when used in combination with a CCU.
It can also be used as a camera (PMW-F55 or F65) extension unit when not connected to a CCU.

Various HFR (High Frame Rate) functions

The unit supports a wide range of HFR video signal output, including 2×/3×/4×/6×/8× HD and 2× 4K. The formats that are available for use depend on the connected devices.
The unit has a built-in function for generating normal speed video from HFR video, allowing it to output both HFR video and normal speed video simultaneously. The normal speed video can be used in a conventional HD camera system and similar systems by connecting a CCU.

Slim enclosure

Houses high-performance signal processing circuits in a slim, 1.5U enclosure equipped with dual 2-system 4K signal output connectors, dual 2-system HD signal output connectors, one set of optical fiber connectors, and interface connectors on the rear panel.

Video input/output

Outputs

- 3G/HD-SDI: 2-system (4 outputs/system), 2 connectors for each output
- 3G/HD-SDI: 1 system (2 outputs)
- HD-SDI: 1 system (2 outputs)

Inputs

- Reference signal (analog), 1-system [1)]
- 3G/HD-SDI return signal, 2-system [1)]

1) Available only when used as a camera extension unit.

External sync signal

When connected with a CCU, operation is synchronized with the CCU and an external sync signal is not required.
When not connected with a CCU (i.e. when used as a camera extension unit), operation can be synchronized to a sync signal (HD tri-level sync or SD black burst) from an external device.

4K/HD parallel processor built-in

Equipped with built-in 4K signal processor and HD signal processor (down-converted from 4K signal). The processors operate independently in parallel, allowing you to optimize functions, such as detail processing, for both the 4K and HD systems.

Optical digital transmission

Digital signal transmission over a single optical fiber cable (two single-mode optical fibers, two power supply lines, two control lines) connecting the unit and a camera adaptor for stable, high-capacity transfers.
The unit and a CCU are also connected using a single optical fiber cable.
When used in combination with an HDCU2000, data signals and power can be transferred distances up to 2,000 m (6,560 ft) (camera cable length) when connected to a PMW-F55. When used in combination with an HDCU2500, the maximum distance is 1,000 m (3,280 ft).
(The maximum distance power can be supplied varies with the camera peripheral system configuration and type of optical fiber cable).

Wide dynamic range

Supports S-Log2 and S-Log3 gamma curve selection.

Wide color gamut

Output of 4K signals with color space close to BT.2020 is supported.

Optional accessories

Additional functionality can be added by incorporating the following optional accessories.

For details about installing optional accessories, please contact your Sony representative.

SZC-2001/SZC-2001M/SZC-2001W HD CUTOUT software

Extracts a region, selected by the operator, from the 4K image as an HD image.

SZC-4002/SZC-4002M/SZC-4002W HFR software

Transfers HFR (High Frame Rate) video and performs signal processing for the following formats. Note that when an HDC4300 is connected, HD 59.94P (2×)/50P (2×) and HD 59.94P (3×)/50P (3×) are supported without installing SZC-4002/4002M/4002W software.

Yes: Supported, No: Not supported

Supported format	Connected device		
	PMW-F55	F65	HDC4300
HD 59.94P (4×)/50P (4×)	Yes	No	Yes
HD 59.94P (6×)/50P (6×)	Yes	No	Yes
HD 59.94P (8×)/50P (8×)	No	No	Yes
4K 59.94P (2×)/50P (2×)	No	Yes	No

Interlaced output is also supported in HD HFR 1080 format.

Notes

- The SZC-2001M/2002M/4002M can be used for 30 days.
- The SZC-2001W/2002W/4002W can be used for 7 days.
- SZC-2002/2002M/2002W HD HFR Software is optional software for enabling HFR when connected to a PMW-F55 or F65. SZC-4002/4002M/4002W software is required to use 4×/6×/8× HD with the HDC4300.

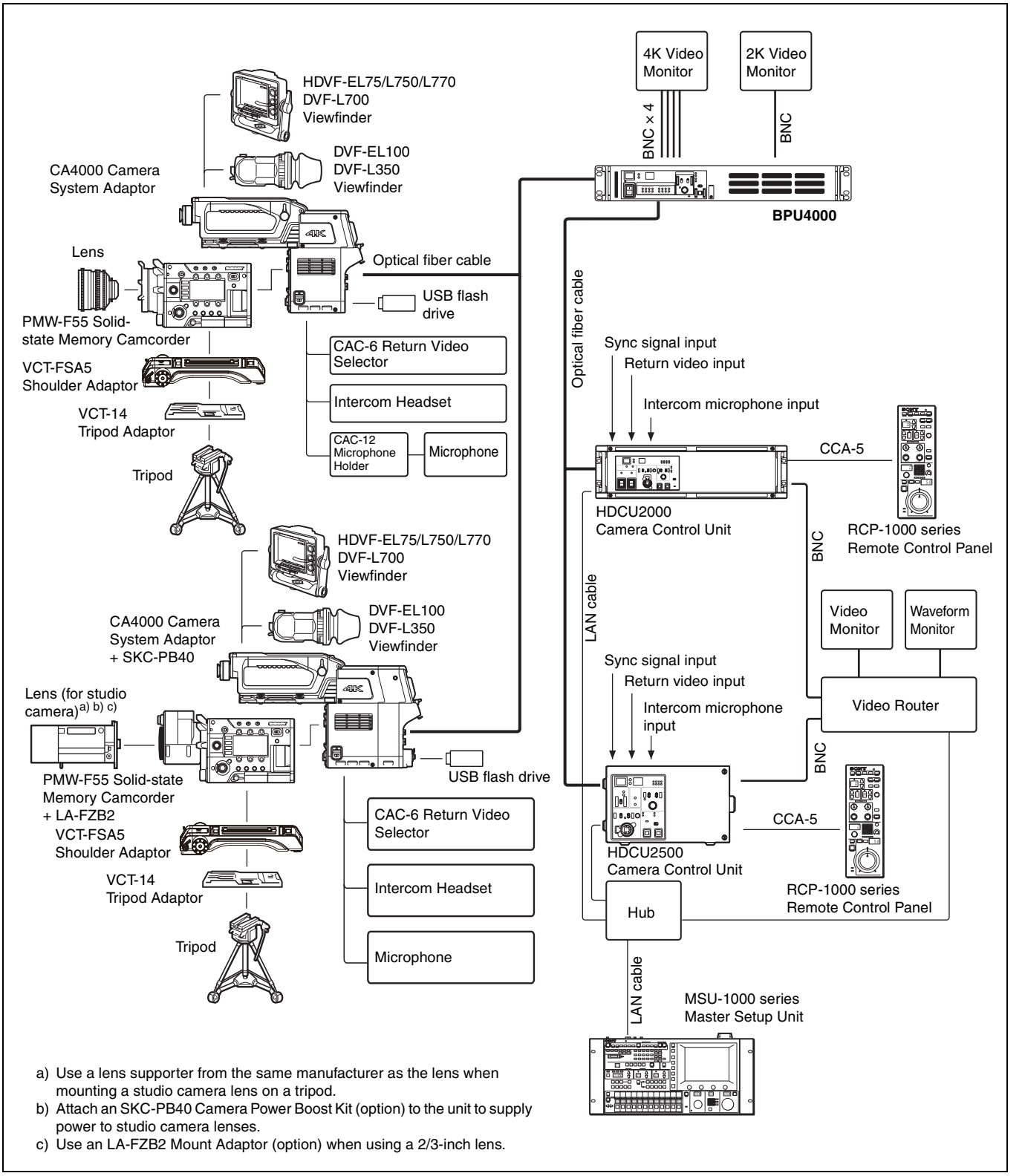
System Configuration

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.

PMW-F55 connection example

Connection example of PMW-F55 and HDCU2000/2500 for operation as a system camera.



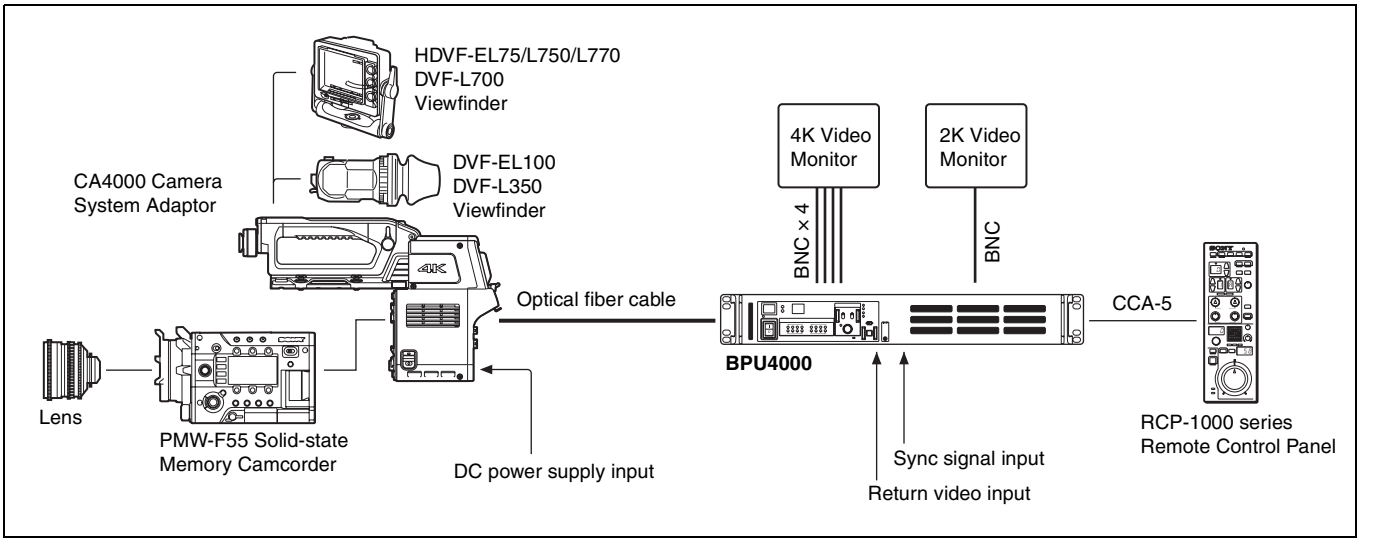
a) Use a lens supporter from the same manufacturer as the lens when mounting a studio camera lens on a tripod.
b) Attach an SKC-PB40 Camera Power Boost Kit (option) to the unit to supply power to studio camera lenses.
c) Use an LA-FZB2 Mount Adaptor (option) when using a 2/3-inch lens.

Extension mode connection example

Connection example without HDCU2000/2500 for operation as a camera extension unit.

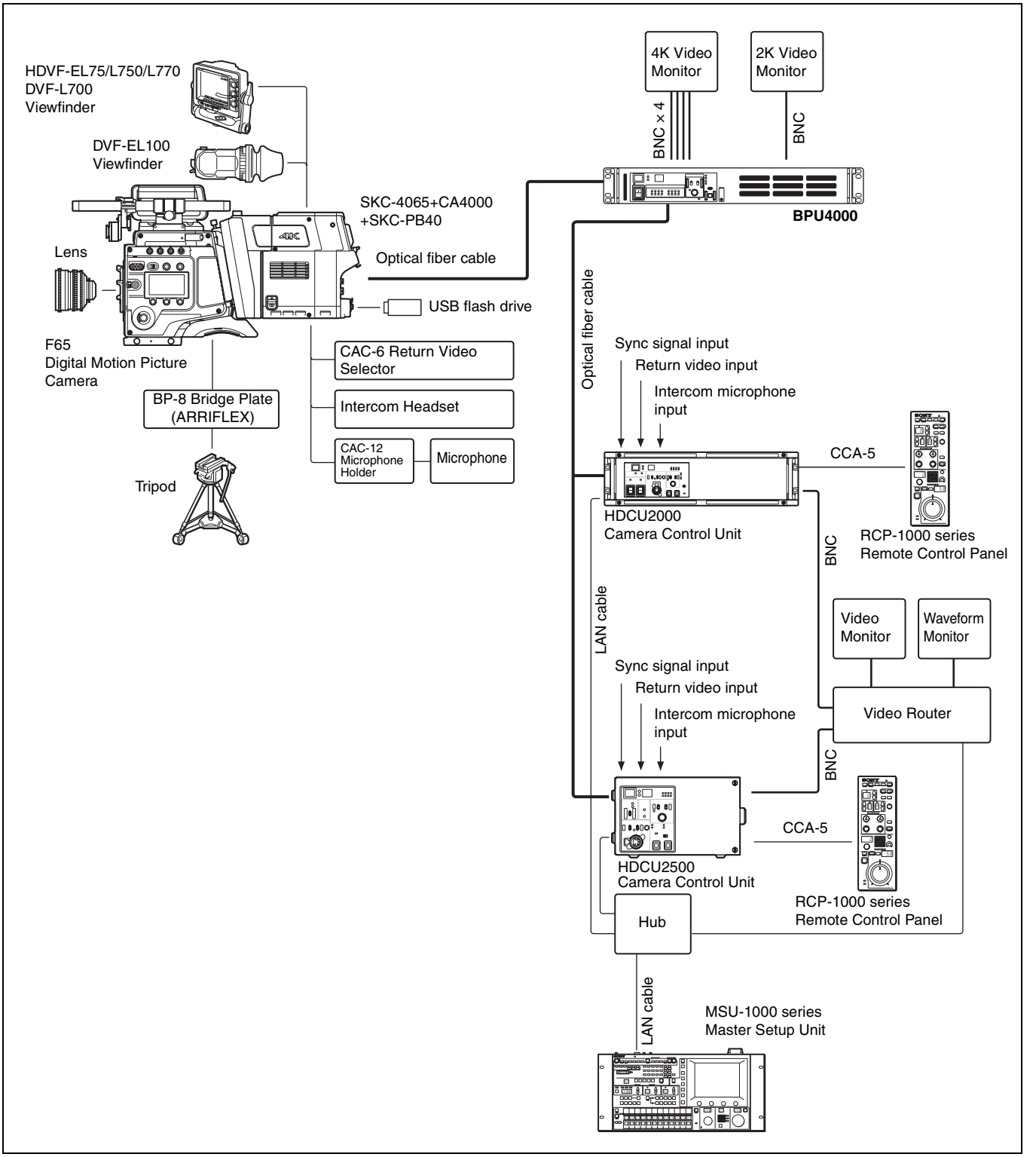
Note

Extension mode connection is not supported when connected to an HDC4300.

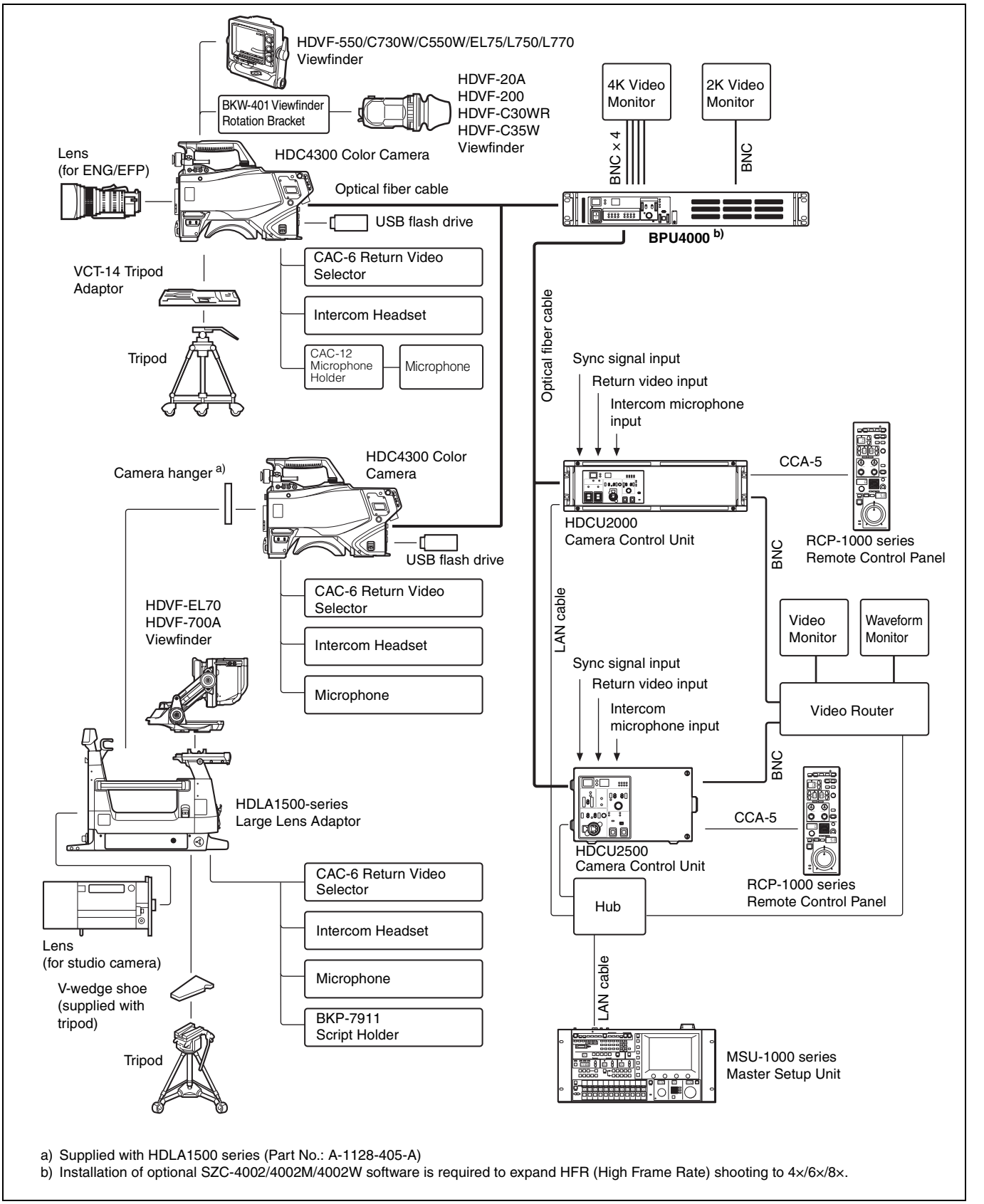


F65 connection example

Connection example of operation using an F65 as a system camera.



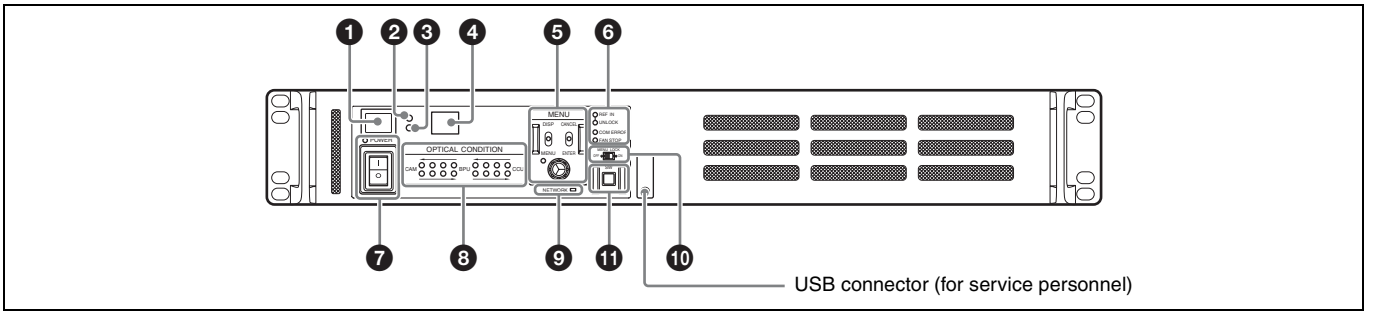
HDC4300 connection example



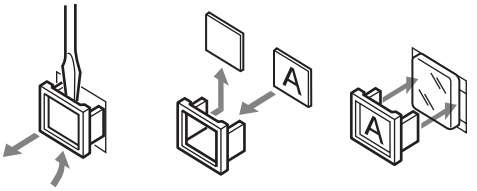
a) Supplied with HDLA1500 series (Part No.: A-1128-405-A)
b) Installation of optional SZC-4002/4002M/4002W software is required to expand HFR (High Frame Rate) shooting to 4×/6×/8×.

Name and Function of Parts

Front Panel



❶ Red tally light
Turns on when a red tally signal is received. When the CALL button on the video camera, the MSU-1000 Master Setup Unit, or the RCP-1000 series Remote Control Panel is pressed, the light turns off if lit or turns on if not lit.
A supplied number plate can be attached (see following diagram).

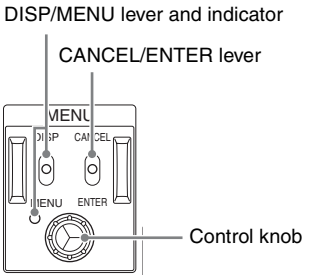


❷ Yellow tally light
Turns on when a yellow tally signal is received.

❸ Green tally light
Turns on when a green tally signal is received.

❹ CCU number display
Displays the camera number specified in the menu of the CCU for a system connection.
A number is not displayed when this unit is used as an extension unit.

❺ MENU control block



DISP/MENU lever and indicator: Used to display the status and menu. The indicator flashes when the menu is displayed.
CANCEL/ENTER lever: Used to cancel/enter settings when the menu is displayed.
Control knob (rotary encoder): Used to switch pages when the status screen is displayed. Used to move the cursor within a page and to change the setting of the selected item when the menu is displayed.
Pushing the control knob has the same function as setting the CANCEL/ENTER level to ENTER.

❻ Status display indicators
REF IN (green): Indicates presence of reference input signal.
UNLOCK (red): Indicates operation is not synchronized to input reference signal.
When connected to a CCU, REF IN and UNLOCK indicate the lock status for the CCU.
COM ERROR (red): Indicates a communications error with the video camera, CCU, or external control device (such as an RCP-1000 series Remote Control Panel).
FAN STOP (red): Indicates the internal fan has stopped.

❼ POWER switch and indicator
Turns the system power supply on/off to the unit, video camera, and RCP-1000 series Remote Control Panel or other device connected to the REMOTE connector. Switch to "**I**" to turn the power on, and switch to "○" to turn the power off.
The indicator lights up when power is turned on.

❽ Optical signal condition indicators
Displays the communications link optical signal level condition between the video camera, CCU, and the unit.
CAM←BPU: Signal level from the unit to the video camera
CAM→BPU: Signal level from the video camera to the unit
BPU←CCU: Signal level from the CCU to the unit
BPU→CCU: Signal level from the unit to the CCU

Indicates the receive signal status according to the following indicators.
Two green indicators (right): Receive signal condition is very good.
One green indicator (2nd from right): Receive signal condition is OK.
One yellow indicator (2nd from left): Receive signal level is weak.
One red indicator (left): Receive signal level is severely degraded.

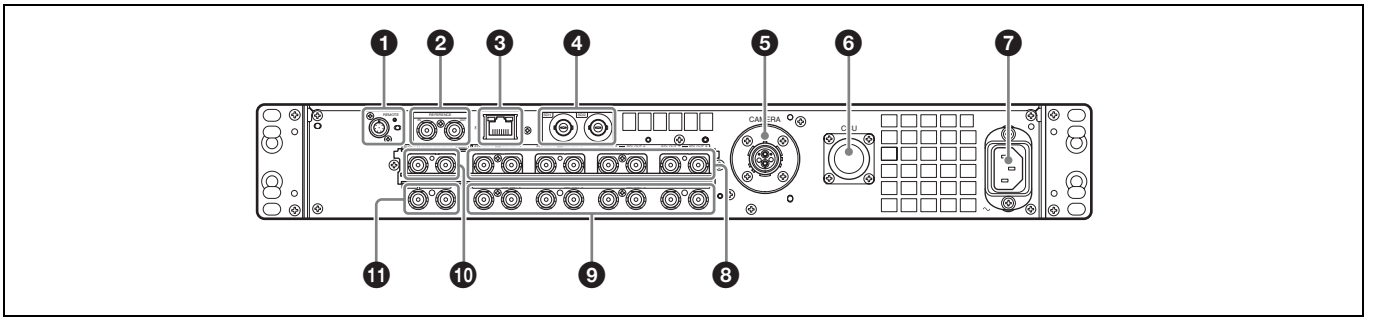
❾ NETWORK indicator
Displays the network system connection status.
On: Indicates that an external control device (MSU-1000 Master Setup Unit or RCP-1000 series Remote Control Panel) is connected when the CNS MODE setting in <CNS SETTING> is set to BRIDGE.
Flashing: Indicates that an external control device (MSU-1000 Master Setup Unit or RCP-1000 series Remote Control Panel) is not connected successfully when the CNS MODE setting in <CNS SETTING> is set to BRIDGE.
Off: Indicates that the LAN cable is not connected or network system connection parameters have not been set when the CNS MODE setting in <CNS SETTING> is set to BRIDGE.
The indicator is always off when CNS MODE is set to LEGACY.

For details, see "<CNS SETTINGS>" (page 30).

❿ Menu lock switch
Locks the menu control block on the front panel.

⓫ Assignable buttons
You can assign functions to these buttons from the BPU menu.

Rear Panel



❶ REMOTE connector (round type, 8-pin)
Connects to an RCP-1000 series Remote Control Panel or MSU-1000 Master Setup Unit using a CCA-5 connection cable. Remote control signals are transmitted and received via this connector. It also supplies power when connected to an RCP-1000 series Remote Control Panel.

Note

When connected to a CCU, do not connect anything to this connector.

❷ REFERENCE IN/OUT (reference sync signal) connectors

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

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

Note

When connected to a CCU, do not connect anything to this connector.

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

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

❸ 品 (LAN) connector (RJ-45 8-pin)
Connects to a LAN. Connect to a LAN hub (10BASE-T/100Base-TX) using a LAN cable (shielded type, category 5 or higher).

❹ SDI1 and SDI2 (return video input) connectors (BNC type)
Connects to 2-system, independent, 3G/HD-SDI return video signal inputs. The SDI1/SDI2 selection is made using the return switch on the video camera. The SDI2 connector becomes the HD prompter input connector by enabling HD PROMPTER on the <RETURN> page in the CONFIGURATION menu.
Available only when used as a camera extension unit.

❺ CAMERA connector (optical fiber connector)
Connects to a video camera using an optical fiber cable. All video camera signals (power supply, control signals, video signal, audio signal, etc.) can be transmitted and received via a single optical fiber cable.

❻ CCU (camera control unit) connector (optical fiber connector)
Connects to a camera control unit using an optical fiber cable. All video camera signals (power supply, control signals, video signal, audio signal, etc.) can be transmitted and received via a single optical fiber cable. In an extension mode connection, it can also supply power to the camera by connecting an HDCE-200 Camera Extension Adaptor.

Note

A communications error may occur if there is any dust or other matter on the surface of the optical fiber cable connector. Always attach the connector cap when not in use.

❼ ∿ AC IN (AC power supply) connector
Connects to the AC power supply using the specified power supply cord. The power supply cord can be attached to the unit using the optional plug holder.

❽ 3G/HD SDI OUTPUT connector (SLOT1) (BNC type)
Outputs video signals from the video camera using Multi-Link format comprising 3G-SDI signals and 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 19).

When using the HD CUTOUT option, the extracted cut-out signal is output from this connector.

❾ 3G/HD SDI OUTPUT connector (SLOT2) (BNC type)
Outputs video signals from the video camera using Multi-Link format comprising 3G-SDI signals and 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 19).

❿ 3G/HD SDI OUT connector (SLOT3) (BNC type)
Outputs 1-system video signals from the video camera as 3G-SDI signals or HD-SDI signals.
They can also output signals with superimposed text characters and markers.
The same signal is output from each connector grouped in pairs.

⓫ HD SDI OUT connector (SLOT4) (BNC type)
Outputs 1-system video signals from the video camera as HD-SDI signals.
They can also output signals with superimposed text characters and markers.
The same signal is output from each connector grouped in pairs.

Connection and Setup

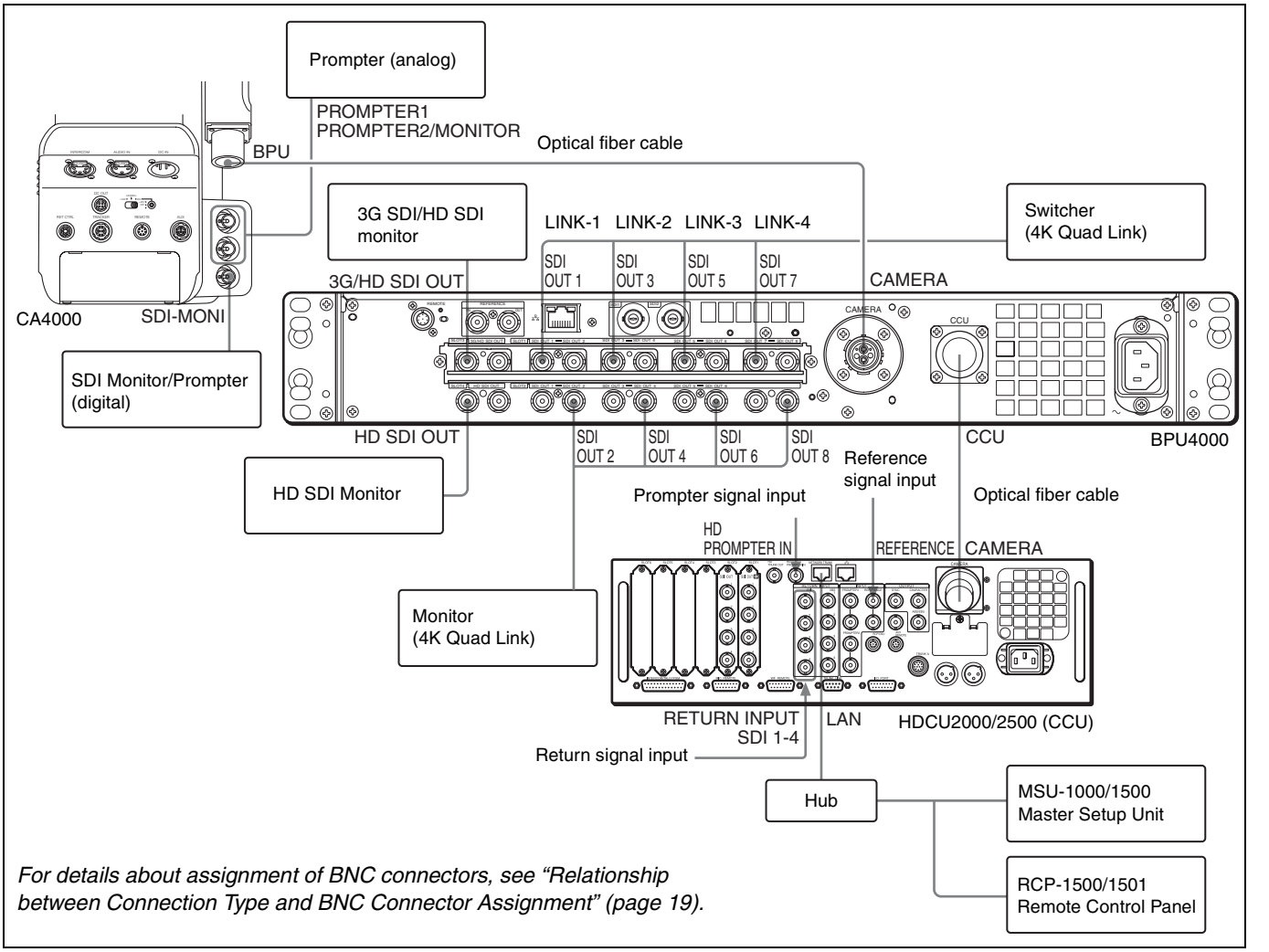
4K System Connection

A 4K format camera system is formed by connecting the unit to a video camera (F65[1)] or PMW-F55[2)] with CA4000, or HDC4300[3)]) and HDCU2000/2500 Camera Control Unit (CCU) using optical fiber cables.

1) Requires the SKC-4065 F65 Adaptor.
2) Requires PMW-F55 software version 2.10 or later.
3) Requires BPU4000 software version 3.00 or later.

Functions provided by the CCU (genlock, power supply to the video camera, and various interface functions) can be used as-is.
HD signals down-converted from the 4K signal can be output from SLOT3, SLOT4, and the CCU.

Connection example



For details about assignment of BNC connectors, see "Relationship between Connection Type and BNC Connector Assignment" (page 19).

Settings

Device	Setting	Menu/Page	Item		Set value
BPU4000	Image format settings	CONFIGURATION/<OUTPUT FORMAT>	SYSTEM FORMAT	RESOLUTION	4096×2160
				FREQUENCY	Displays value set on CCU.
	Video output connector settings	CONFIGURATION/<OUTPUT FORMAT> Can also be set using the control panel.	SLOT1 to SLOT4		Video output format of each slot

Device	Setting	Menu/Page	Item	Set value
HDCU2000/ 2500	Image format settings	SYSTEM OPERATION/ <MULTI FORMAT>	FREQUENCY HD	Frame frequency
			HD-SD DELAY	0-Delay, Frame (1F)
	Video output connector settings	SYSTEM OPERATION/ <OUTPUT FORMAT> Can also be set using the control panel.	SLOT1 to SLOT6	Video output format of each slot
	Transfer rate settings	CCU CONFIGURATION/ <PROMPT/TRUNK>	TRANSMIT	AUTO, HIGH BIT RATE
CA4000	Prompter output connector settings	MAINTENANCE/<SDI-OUT>	SDI-MONI OUT	HD-PROMPT
		MAINTENANCE/<PROMPTER2 OUT>	OUTPUT	PROMPTER2

Extension Mode Connection

The unit can be used to form a video signal extension system by connecting it to a video camera (F65[1) 2)] or PMW-F55 with CA4000) using an optical fiber cable.
The system can be synchronized because using the external genlock function.
Intercom systems and multi-camera operation systems are not supported.
An external power supply or power supplied from the CCU connector of an HDCE-200 is also required for the camera, since power is not supplied from the unit.

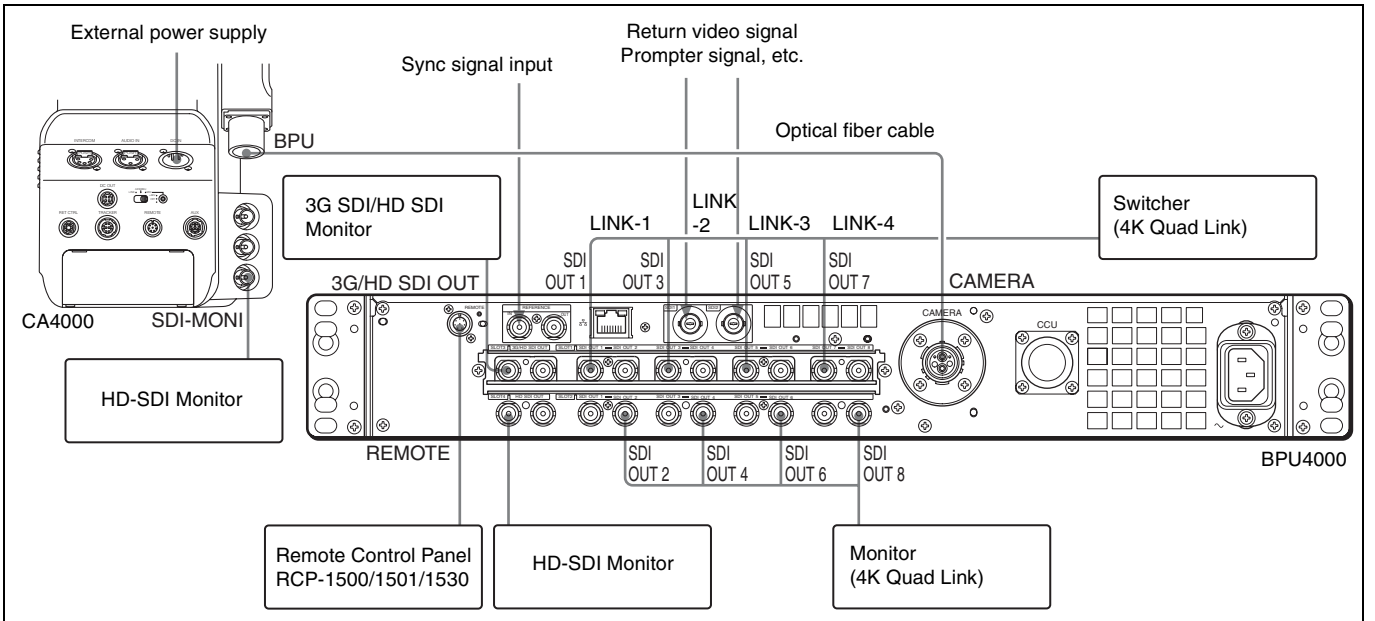
HD signals down-converted from 4K signals or generated normal speed signals from HFR video can be output from the SLOT3 and SLOT4 outputs.

1) Requires an external power supply when the F65 is used in an extension connection.
2) Requires the SKC-4065 F65 Adaptor.

Note

Extension mode connection is not supported when connected to an HDC4300.

Connection example



For details about assignment of BNC connectors, see "Relationship between Connection Type and BNC Connector Assignment" (page 19).

Settings

Device	Setting	Menu/Page	Item		Set value
BPU4000	Image format settings	CONFIGURATION/ <OUTPUT FORMAT>	SYSTEM FORMAT	RESOLUTION	4096×2160 (4K system) 1920×1080 (HD HFR system)
				FREQUENCY	Frame frequency
	Video output connector settings	CONFIGURATION/ <OUTPUT FORMAT> Can also be set using the control panel.	SLOT1 to SLOT4		Video output format of each slot
CA4000	Prompter output connector settings	MAINTENANCE/<SDI OUT>	SDI-MONI OUT		HD-PROMPT

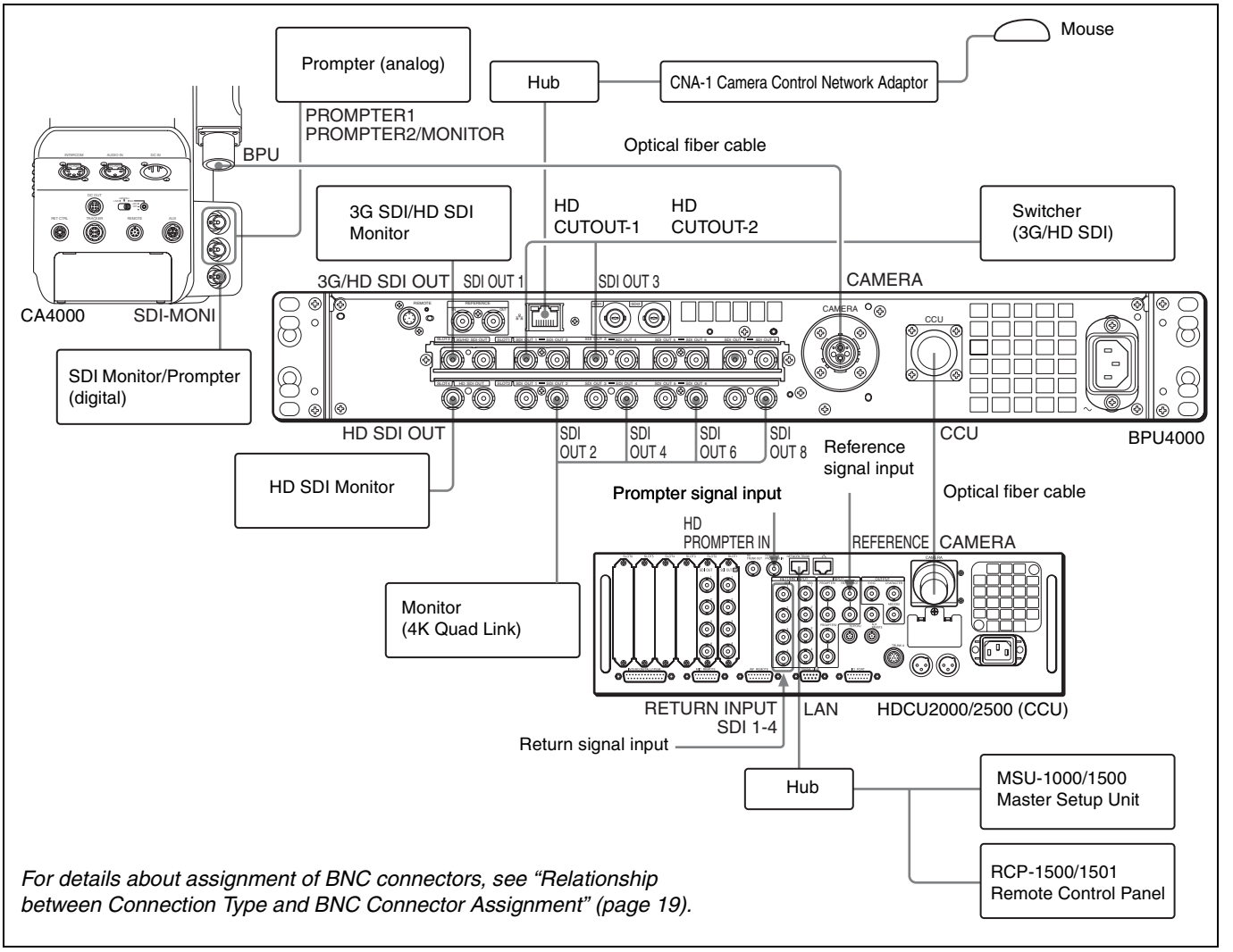
HD CUTOUT Video System

An HD signal can be extracted from the 4K signal by installing the optional SZC-2001 (HD CUTOUT software) in the BPU4000.
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 manual supplied with the SZC-2001.

The cut-out HD signal is output from SLOT1 and a 4K signal can also be output simultaneously from SLOT2.
HD signals down-converted from the 4K signal can be output from SLOT3, SLOT4, and the CCU.
Also, a wire frame indicating the cut-out region can be displayed on the signal from SLOT3.

Connection example



For details about assignment of BNC connectors, see "Relationship between Connection Type and BNC Connector Assignment" (page 19).

Settings

Device	Setting	Menu/Page	Item		Set value
BPU4000	Image format settings	CONFIGURATION/<OUTPUT FORMAT>	SYSTEM FORMAT	RESOLUTION	4096×2160
				FREQUENCY	Displays value set on CCU.
	Video output connector settings	CONFIGURATION/<OUTPUT FORMAT> Can also be set using the control panel.	SLOT1 to SLOT4		Video output format of each slot
	HD CUTOUT settings	CONFIGURATION/<HD CUTOUT>	HD CUTOUT		ON
HDCU2000/2500	Image format settings	SYSTEM OPERATION/<MULTI FORMAT>	FREQUENCY	HD	Frame frequency
			HD-SD DELAY		Frame (1F)
	Video output connector settings	SYSTEM OPERATION/<OUTPUT FORMAT> Can also be set using the control panel.	SLOT1 to SLOT6		Video output format of each slot
	Transfer rate settings	CCU CONFIGURATION/<PROMPT/TRUNK>	TRANSMIT		AUTO, HIGH BIT RATE
CA4000	Prompter output connector settings	MAINTENANCE/<SDI-OUT>	SDI-MONI OUT		HD-PROMPT
		MAINTENANCE/<PROMPTER2 OUT>	OUTPUT		PROMPTER2

HFR Video System

The BPU4000 can transfer HFR video and perform signal processing for the following formats according to the connected camera.

Optional SZC-4002/4002M/4002W software must be installed to support formats other than 2× and 3× HD.

Yes: Supported, No: Not supported

HFR format	Connected device					
	Without option	SZC-2002 series installed		SZC-4002 series installed		
	HDC4300	PMW-F55	F65	PMW-F55	F65	HDC4300
1080/59.94P (2×) [1]	Yes	No	No	No	No	No
1080/50P (2×) [1]	Yes	No	No	No	No	No
720/59.94P (2×) [2]	Yes	No	No	No	No	No
720/50P (2×) [2]	Yes	No	No	No	No	No
1080/59.94P (3×) [1]	Yes	No	No	No	No	No
1080/50P (3×) [1]	Yes	No	No	No	No	No
720/59.94P (3×) [2]	Yes	No	No	No	No	No
720/50P (3×) [2]	Yes	No	No	No	No	No
1080/59.94P (4×) [1]	No	Yes	No	Yes	No	Yes
1080/50P (4×) [1]	No	Yes	No	Yes	No	Yes
720/59.94P (4×) [2]	No	Yes	No	Yes	No	Yes
720/50P (4×) [2]	No	Yes	No	Yes	No	Yes
1080/59.94P (6×) [1]	No	Yes	No	Yes	No	Yes
1080/50P (6×) [1]	No	Yes	No	Yes	No	Yes
720/59.94P (6×) [2]	No	Yes	No	Yes	No	Yes
720/50P (6×) [2]	No	Yes	No	Yes	No	Yes
1080/59.94P (8×) [1]	No	No	No	No	No	Yes
1080/50P (8×) [1]	No	No	No	No	No	Yes
720/59.94P (8×) [2]	No	No	No	No	No	Yes
720/50P (8×) [2]	No	No	No	No	No	Yes
4096×2160/59.94P (2×)	No	No	Yes	No	Yes	No
4096×2160/50P (2×)	No	No	Yes	No	Yes	No

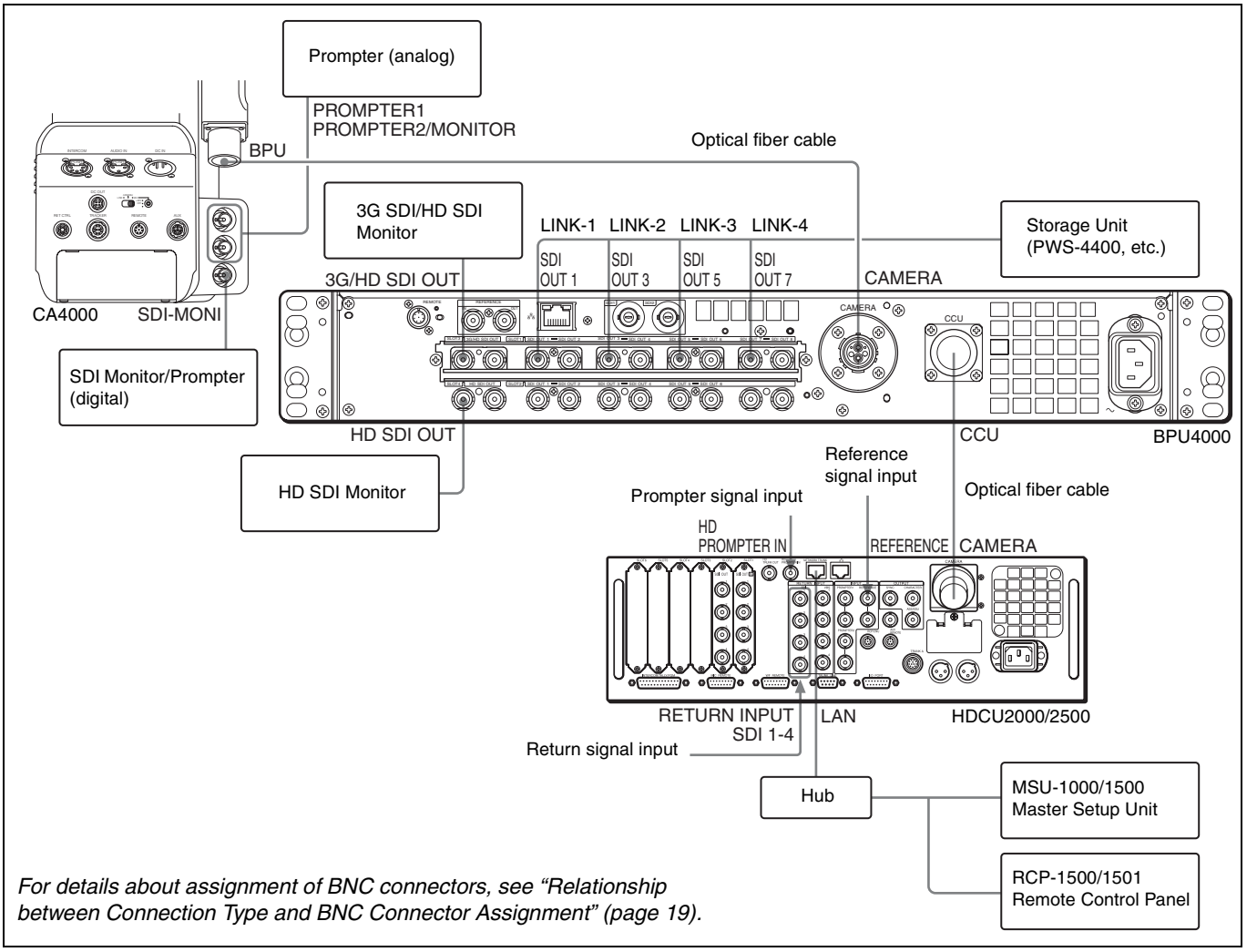
1) Interlaced output also supported in HD HFR 1080 format
2) Selectable only when the format is set to 720P by the camera control unit (such as the HDCU2000).

A 1× frame rate signal can be output at the same time from SLOT3, SLOT4, and the CCU.

Note

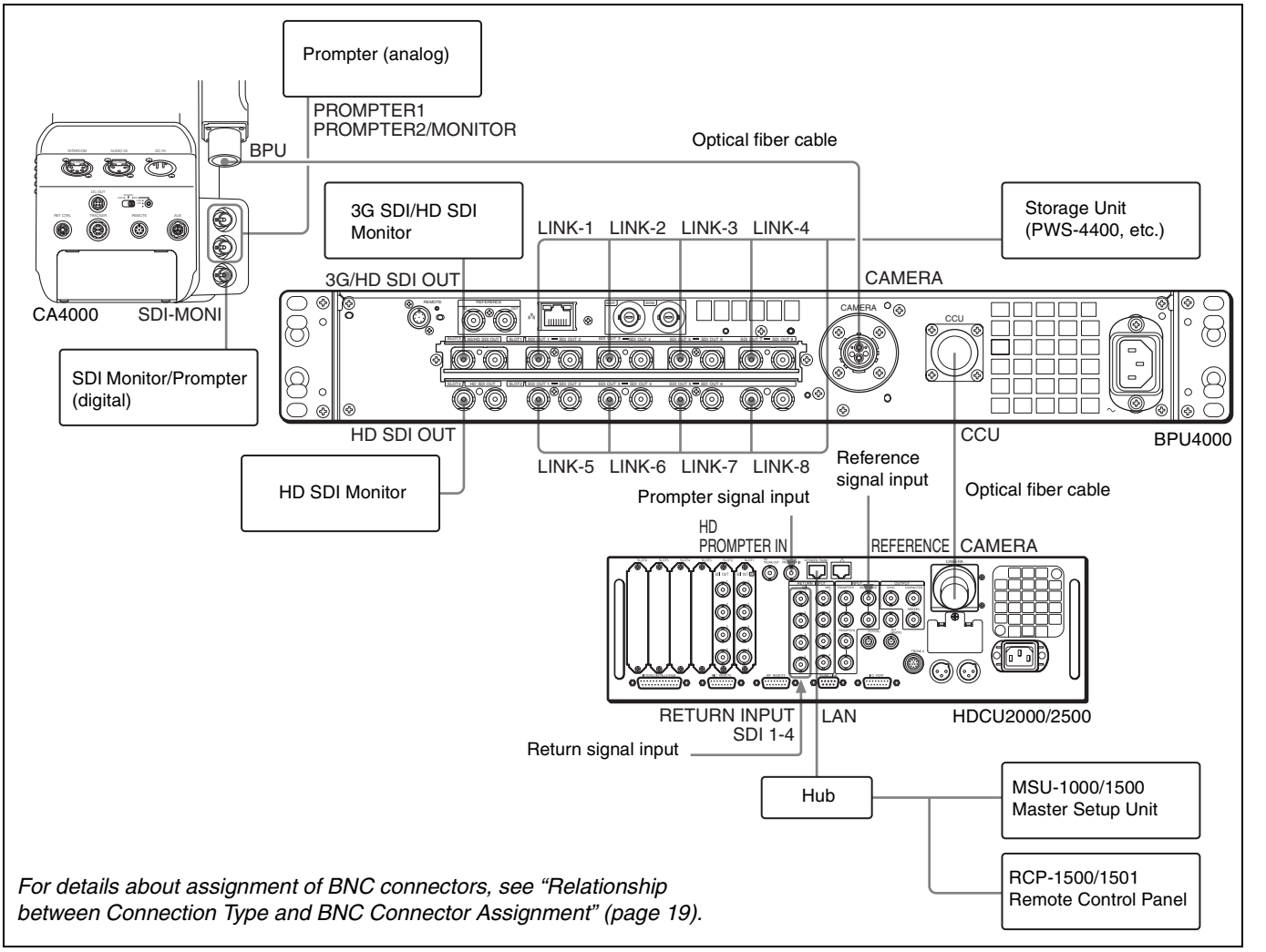
The HFR imaging function is dependent on the software version of the connected camera and camera adaptor. Check the compatibility of each device before use.

Connection example (4× HD)



For details about assignment of BNC connectors, see "Relationship between Connection Type and BNC Connector Assignment" (page 19).

Connection example (4K HFR)



For details about assignment of BNC connectors, see "Relationship between Connection Type and BNC Connector Assignment" (page 19).

Settings

Device	Setting	Menu/Page	Item		Set value
BPU4000	Image format settings	CONFIGURATION/<OUTPUT FORMAT>	SYSTEM FORMAT	RESOLUTION	4096×2160 (4K HFR) 1920×1080 (HD HFR)
				FREQUENCY	CCU frame frequency selectable from 2×/3×/4×/6×/8× (2× only in 4K HFR mode)
	Video output connector settings	CONFIGURATION/<OUTPUT FORMAT> Can also be set using the control panel.	SLOT1 to SLOT4		Video output format of each slot
HDCU2000/2500	Image format settings	SYSTEM OPERATION/ <MULTI FORMAT>	FREQUENCY	HD	1× frame frequency
	Video output connector settings	SYSTEM OPERATION/ <OUTPUT FORMAT> Can also be set using the control panel.	SLOT1 to SLOT6		Video output format of each slot
	Transfer rate settings	CCU CONFIGURATION/ <PROMPT/TRUNK>	TRANSMIT		AUTO, HIGH BIT RATE
CA4000	Prompter output connector settings	MAINTENANCE/<SDI-OUT>	SDI-MONI OUT		HD-PROMPT
		MAINTENANCE/<PROMPTER2 OUT>	OUTPUT		PROMPTER2

Relationship between Connection Type and BNC Connector Assignment

The names of output interfaces in Table 1 correspond to BNC connector assignments in Table 2 *(see page 21)*. 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	Slot4
		Output format	Output format		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)]	1080/59.94i (1.5G), 720/59.94P (1.5G) [2)]
		4K/59.94i [3)]		1.5G		
	50	4K/50P [3)]		3G	1080/50P (3G), 1080/50i (1.5G), 720/50P (1.5G) [2)]	1080/50P (3G), 720/50P (1.5G) [2)]
		4K/50i [3)]		1.5G		
	29.97	4K/29.97P [1) 3)]	Dual-Link-2	3G	1080/29.97PsF (1.5G)	1080/29.97PsF (1.5G)
		4K/29.97PsF [1) 3)]				
		4K/29.97P [1) 3)]	Quad-Link-1	1.5G		
		4K/29.97PsF [1) 3)]				
	25	4K/25P [1) 3)]	Dual-Link-2	3G	1080/25PsF (1.5G)	1080/25PsF (1.5G)
		4K/25PsF [1) 3)]				
		4K/25P [1) 3)]	Quad-Link-1	1.5G		
		4K/25PsF [1) 3)]				
	24	4K/24P [1) 3)]	Dual-Link-2	3G	1080/24PsF (1.5G)	1080/24PsF (1.5G)
		4K/24PsF [1) 3)]				
		4K/24P [1) 3)]	Quad-Link-1	1.5G		
		4K/24PsF [1) 3)]				
	23.98	4K/23.98P [1) 3)]	Dual-Link-2	3G	1080/23.98PsF (1.5G)	1080/23.98PsF (1.5G)
		4K/23.98PsF [1) 3)]				
		4K/23.98P [1) 3)]	Quad-Link-1	1.5G		
		4K/23.98PsF [1) 3)]				

Operation mode	Frame rate	Slot1/Slot2			Slot3	Slot4
		Output format	Output format		Output format	
HD HFR	59.94 (8×)	1080/59.94P (8x)	Octa-Link	3G	1080/59.94P (3G), 1080/59.94i (1.5G), 720/59.94P (1.5G) [2]	1080/59.94i (1.5G), 720/59.94P (1.5G) [2]
		1080/59.94i (8×), 720/59.94P (8×) [2]		1.5G		
			Quad-Link-2	3G		
	50 (8×)	1080/50P (8×)	Octa-Link	3G	1080/50P (3G), 1080/50i (1.5G), 720/50P (1.5G) [2]	1080/50i (1.5G), 720/50P (1.5G) [2]
		1080/50i (8×), 720/50P (8×) [2]		1.5G		
			Quad-Link-2	3G		
	59.94 (6×)	1080/59.94P (6×)	Hexa-Link	3G	1080/59.94P (3G), 1080/59.94i (1.5G), 720/59.94P (1.5G) [2]	1080/59.94i (1.5G), 720/59.94P (1.5G) [2]
		1080/59.94i (6×), 720/59.94P (6×) [2]		1.5G		
			Triple-Link-2	3G		
	50 (6×)	1080/50P (6×)	Hexa-Link	3G	1080/50P (3G), 1080/50i (1.5G), 720/50P (1.5G) [2]	1080/50i (1.5G), 720/50P (1.5G) [2]
		1080/50i (6×), 720/50P (6×) [2]		1.5G		
			Triple-Link-2	3G		
	59.94 (4×)	1080/59.94P (4×)	Quad-Link-1	3G	1080/59.94P (3G), 1080/59.94i (1.5G), 720/59.94P (1.5G) [2]	1080/59.94i (1.5G), 720/59.94P (1.5G) [2]
		1080/59.94i (4×), 720/59.94P (4×) [2]		1.5G		
			Dual-Link-2	3G		
	50 (4×)	1080/50P (4×)	Quad-Link-1	3G	1080/50P (3G), 1080/50i (1.5G), 720/50P (1.5G) [2]	1080/50i (1.5G), 720/50P (1.5G) [2]
		1080/50i (4×), 720/50P (4×) [2]		1.5G		
			Dual-Link-2	3G		
	59.94 (3×)	1080/59.94P (3×)	Octa-Link	3G	1080/59.94P (3G), 1080/59.94i (1.5G), 720/59.94P (1.5G) [2]	1080/59.94i (1.5G), 720/59.94P (1.5G) [2]
		1080/59.94i (3×), 720/59.94P (3×) [2]		1.5G		
	50 (3×)	1080/50P (8×)	Octa-Link	3G	1080/50P (3G), 1080/50i (1.5G), 720/50P (1.5G) [2]	1080/50i (1.5G), 720/50P (1.5G) [2]
		1080/50i (8×), 720/50P (8×) [2]		1.5G		
	59.94 (2×)	1080/59.94P (2×)	Dual-Link-1	3G	1080/59.94P (3G), 1080/59.94i (1.5G), 720/59.94P (1.5G) [2]	1080/59.94i (1.5G), 720/59.94P (1.5G) [2]
		1080/59.94i (2×), 720/59.94P (2×) [2]		1.5G		
			Single-Link	3G		
	50 (2×)	1080/50P (2×)	Dual-Link-1	3G	1080/50P (3G), 1080/50i (1.5G), 720/50P (1.5G) [2]	1080/50i (1.5G), 720/50P (1.5G) [2]
		1080/50i (2×), 720/50P (2×) [2]		1.5G		
			Single-Link	3G		
4K HFR	59.94 (2×)	3840×2160/59.94P (2×)	Octa-Link	3G	1080/59.94P (3G), 1080/59.94i (1.5G), 1080/59.94i (2×) (3G)	1080/59.94i (1.5G)
		3840×2160/59.94i (2×)		1.5G		
	50 (2×)	3840×2160/50P (2×)		3G	1080/50P (3G), 1080/50i (1.5G), 1080/50i (2×) (3G)	1080/50i (1.5G)
		3840×2160/50i (2×)		1.5G		

Operation mode	Frame rate	Slot1/Slot2			Slot3	Slot4
		Output format	Output format		Output format	
HD CUTOUT	59.94	1080/59.94P	Perspective	3G	1080/59.94P (3G), 1080/59.94i (1.5G), 720/59.94P (1.5G) [2]	1080/59.94i (1.5G), 720/59.94P (1.5G) [2]
		1080/59.94i, 720/59.94P [2]		1.5G		
		1080/59.94P	Simple HD	3G		
		1080/59.94i, 720/59.94P [2]		1.5G		
		4K/59.94P [3]	4K (Quad-Link-1)	3G		
		4K/59.94i [3]		1.5G		
	50	1080/50P	Perspective	3G	1080/50P (3G), 1080/50i (1.5G), 720/50P (1.5G) [2]	1080/50i (1.5G), 720/50P (1.5G) [2]
		1080/50i, 720/50P [2]		1.5G		
		1080/50P	Simple HD	3G		
		1080/50i, 720/50P [2]		1.5G		
		4K/50P [3]	4K (Quad-Link-1)	3G		
		4K/50i [3]		1.5G		

1) When the division method is 2SI, the output is P (progressive). When the division method is SQD, the output is PsF.
2) 720P format is output only when the format of the connected CCU is 720P.
3) A Slot1/Slot2 output format of “4K” refers to 4096×2160 or 3840×2160.

Slot numbers and BNC connectors

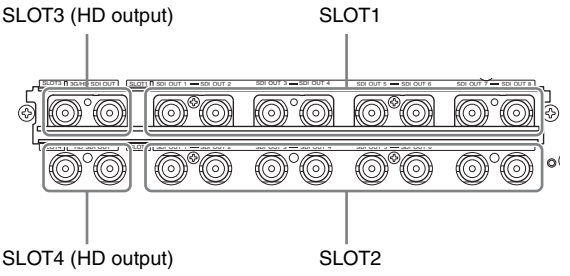


Table 2: Relationship between output interface and BNC connector assignment

MAIN Output		4K / HD HFR / HD CUTOUT							
		SLOT1				SLOT2			
Operation mode	Output format	SDI OUT 1-2[a]	SDI OUT 3-4[b]	SDI OUT 5- 6[c]	SDI OUT 7- 8[d]	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	Link-1	Link-2	Link-3	Link-4
	Dual-Link-1	Link-1	Link-2	Link-1	Link-2	Link-1	Link-2	Link-1	Link-2
HD HFR	Octa-Link	Link-1	Link-2	Link-3	Link-4	Link-5	Link-6	Link-7	Link-8
	Quad-Link-1	Link-1	Link-2	Link-3	Link-4	Link-1	Link-2	Link-3	Link-4
	Quad-Link-2	Link-1/2	Link-3/4	Link-5/6	Link-7/8	Link-1/2	Link-3/4	Link-5/6	Link-7/8
	Hexa-Link	Link-1	Link-2	Link-3	(Link-4)	Link-4	Link-5	Link-6	(Link-3)
	Triple-Link-1	Link-1	Link-2	Link-3	(Link-2)	Link-1	Link-2	Link-3	(Link-2)
	Triple-Link-2	Link-1/2	Link-3/4	Link-5/6	(Link-3/4)	Link-1/2	Link-3/4	Link-5/6	(Link-3/4)
	Dual-Link-1	Link-1	Link-2	Link-1	Link-2	Link-1	Link-2	Link-1	Link-2
	Dual-Link-2	Link-1/2	Link-3/4	Link-1/2	Link-3/4	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	Link-1/2	Link-1/2	Link-1/2	Link-1/2
4K HFR	Octa-Link	Link-1	Link-2	Link-3	Link-4	Link-5	Link-6	Link-7	Link-8

MAIN Output		4K / HD HFR / HD CUTOUT							
		SLOT1				SLOT2			
Operation mode	Output format	SDI OUT 1-2[a]	SDI OUT 3-4[b]	SDI OUT 5- 6[c]	SDI OUT 7- 8[d]	SDI OUT 1-2[a]	SDI OUT 3-4[b]	SDI OUT 5- 6[c]	SDI OUT 7- 8[d]
HD CUTOUT	Perspective	CUTOUT	CUTOUT	CUTOUT	CUTOUT	–	–	–	–
	Simple HD	CUTOUT 1	CUTOUT 2	CUTOUT 1	CUTOUT 2				
	4K Quad-Link-1	–	–	–	–	Link-1	Link-2	Link-3	Link-4

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.

S-Log2/S-Log3 Compatibility

The S-Log2/S-Log3 output combinations that can be selected are given below.

Frame rate (fps)	Output format		Notes
	SLOT1	SLOT2	
Up to 59.94	4K	–	• S-Log2/S-Log3 cannot be selected for SLOT3 or SLOT4. • S-Log2/S-Log3 cannot be selected when using the HD CUTOUT function. • S-Log2/S-Log3 cannot be selected when using 720P.
	HD	–	
	HD	4K	
100 and higher	–	–	

Gamma and Matrix combinations

When 4K COLOR SPACE *(see page 30)* is NORMAL

Wide-D mode	Color space	SLOT1		SLOT2		SLOT3/4	
		Gamma	Matrix	Gamma	Matrix	Gamma	Matrix
Standard (Wide-D off)	–	4K		4K		HD	
		709	709	709	709	709	709
Mode 1		4K		4K		HD	
SLOT1 4K	Normal	S-Log2	709	709	709	709	709
	S-Gamut	S-Log2	S-Gamut	709	709	709	709
	S-Gamut3	S-Log3	S-Gamut3	709	709	709	709
	S-Gamut3.Cine	S-Log3	S-Gamut3.Cine	709	709	709	709
Mode 2		HD		4K		HD	
SLOT1 HD	Normal	S-Log2	709	709	709	709	709
	S-Gamut	S-Log2	S-Gamut	709	709	709	709
	S-Gamut3	S-Log3	S-Gamut3	709	709	709	709
	S-Gamut3.Cine	S-Log3	S-Gamut3.Cine	709	709	709	709
Mode 3		HD		4K		HD	
SLOT1 HD / SLOT2 4K	Normal	S-Log2	709	S-Log2	709	709	709
	S-Gamut	S-Log2	S-Gamut	S-Log2	S-Gamut	709	709
	S-Gamut3	S-Log3	S-Gamut3	S-Log3	S-Gamut3	709	709
	S-Gamut3.Cine	S-Log3	S-Gamut3.Cine	S-Log3	S-Gamut3.Cine	709	709

When 4K COLOR SPACE *(see page 30)* is WIDE

Wide-D mode	Color space	SLOT1		SLOT2		SLOT3/4	
		Gamma	Matrix	Gamma	Matrix	Gamma	Matrix
Standard (Wide-D off)	–	4K		4K		HD	
		709	2020	709	2020	709	709
Mode 1		4K		4K		HD	
SLOT1 4K	Normal	S-Log2	2020	709	2020	709	709
	S-Gamut	S-Log2	S-Gamut	709	2020	709	709
	S-Gamut3	S-Log3	S-Gamut3	709	2020	709	709
	S-Gamut3.Cine	S-Log3	S-Gamut3.Cine	709	2020	709	709
Mode 2		HD		4K		HD	
SLOT1 HD	Normal	S-Log2	709	709	2020	709	709
	S-Gamut	S-Log2	S-Gamut	709	2020	709	709
	S-Gamut3	S-Log3	S-Gamut3	709	2020	709	709
	S-Gamut3.Cine	S-Log3	S-Gamut3.Cine	709	2020	709	709
Mode 3		HD		4K		HD	
SLOT1 HD / SLOT2 4K	Normal	S-Log2	709	S-Log2	2020	709	709
	S-Gamut	S-Log2	S-Gamut	S-Log2	S-Gamut	709	709
	S-Gamut3	S-Log3	S-Gamut3	S-Log3	S-Gamut3	709	709
	S-Gamut3.Cine	S-Log3	S-Gamut3.Cine	S-Log3	S-Gamut3.Cine	709	709

Note

S-Gamut, S-Gamut3, and S-Gamut.Cine cannot be used in combination with the HDC4300.

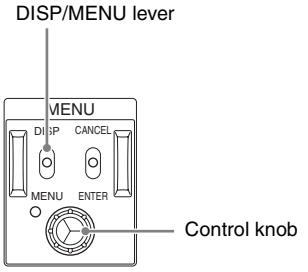
Status Display

The device and system status can be monitored using text characters superimposed on the output signal configured for the monitor output (M).

For details about checking and changing settings, see “Menu Settings” (page 25).

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 video camera settings status is displayed.
Turn the control knob to change the displayed page.

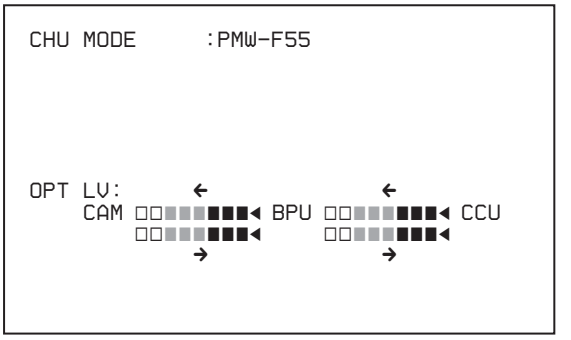
To exit the status screen

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

Status Display Screen

The optical level status can be monitored on the status display screen.

Optical level status



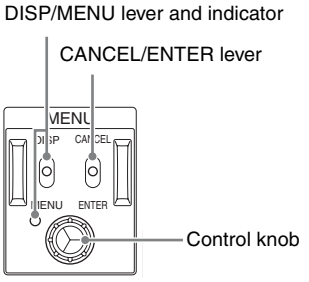
CAM ← BPU: Signal level on the BPU connector of CA unit.
CAM → BPU: Signal level on the CA connector of BPU unit.
BPU ← CCU: Signal level on the CCU connector of BPU unit.
BPU → CCU: Signal level on the CAMERA connector of CCU unit.

Menu Settings

The device and system status can be monitored and settings can be modified using the menu displayed in the video output configured for the monitor output (M).

Changing Settings using the Menu

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



To display a menu page

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

To display the TOP MENU screen

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

```
<TOP MENU>

➔CONFIGURATION
 DIAGNOSIS
```

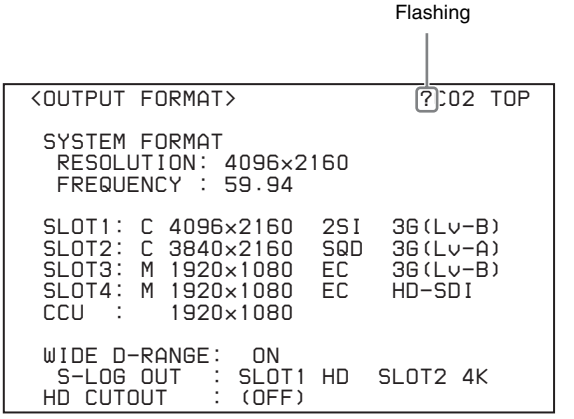
Menu	Description
CONFIGURATION	BPU configuration settings.
DIAGNOSIS	Displays the device status.

To select a menu from the TOP MENU

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

To change page

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



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

To set a menu item

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

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

2 Turn the control knob to change the setting.

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

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

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

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

To set a menu item with multiple input fields

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

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

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

3 **Turn the control knob to change the setting.**

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

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

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

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

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

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

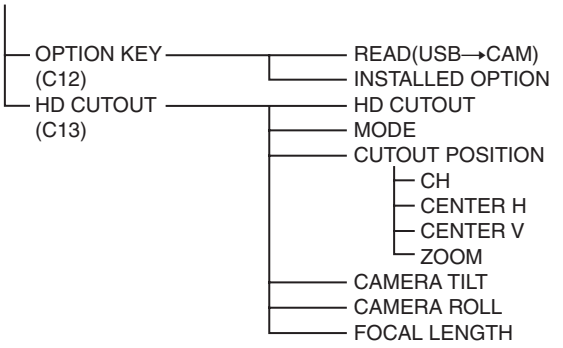
To exit the menu

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

Menu Tree

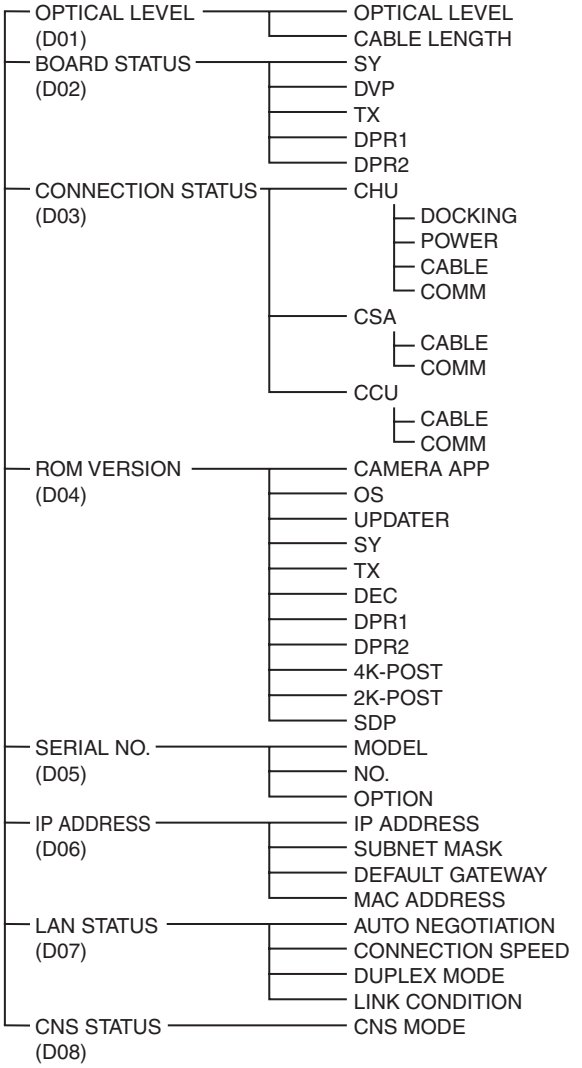
CONFIGURATION menu

- BARS (C01)
  - BPU BARS
  - BARS TYPE
- OUTPUT FORMAT (C02)
  - SYSTEM FORMAT
    - RESOLUTION
    - FREQUENCY
  - SLOT1
  - SLOT2
  - SLOT3
  - SLOT4
  - CCU
  - WIDE D-RANGE
    - S-LOG OUT
  - HD CUTOUT
- GENLOCK (C03)
  - REFERENCE
  - GENLOCK [a]
    - GENLOCK STATUS [a]
    - GENLOCK FORMAT [a]
    - GENLOCK PHASE V [a]
    - GENLOCK PHASE H [a]
  - SYNC OUT
  - VIDEO OUT [b]
    - VIDEO OUT PHASE H [b]
- RETURN (C04)
  - SDI1
  - SDI2
  - FRAME SYNCHRO
  - HD PROMPTER
- IP ADDRESS SETTINGS (C05)
  - IP ADDRESS
  - SUBNET MASK
  - DEFAULT GATEWAY
  - SET
  - MAC ADDRESS
- CNS SETTINGS [a] (C06)
  - CNS MODE [a]
  - SET
- DATE (C07)
  - DATE/TIME
    - DATE
    - TIME
  - FILE TIMESTAMP FORMAT
    - FILE_TIMESTAMP
- CHU MODE (C08)
  - CURRENT
  - PMW-F55
  - F65(1x)
  - F65(2x)
  - HDC4300
- BPU MODE (C09)
  - 4K COLOR SPACE
  - WIDE D-RANGE SETTINGS
    - COLOR SPACE
    - GAMMA
    - COLOR TEMP
- TRANSMIT (C10)
  - CCU TRANSMIT
- OTHERS (C11)
  - ASSIGNABLE SWITCH
  - HD DOWNCONV FILTER
  - CHARACTER LEVEL
  - 2x MODE(HD)
  - CLEAR BPU SETTINGS
  - FLICKER REDUCTION
  - CCU TRANSMIT



a) Not displayed when a CCU is connected.
b) Displayed when a CCU is connected.

DIAGNOSIS menu



Menu List

Legend

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

CONFIGURATION menu

Page name Page No.	Item	Set value	Meaning
<BARS> C01	BPU BARS	**OFF**, ON	BPU color bar output on/off setting
	BARS TYPE	**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	Color bar type When connected to a CCU, it is set by the CCU and cannot be modified from the BPU menu.
<OUTPUT FORMAT> C02	SYSTEM FORMAT		System format settings (The selectable system format options vary depending on the selected camera head setting.)
	RESOLUTION	**4096×2160**, 1920×1080	
	FREQUENCY	**59.94**, 50, 59.94(2×), 50(2×), 29.97, 25, 24, 23.98, 59.94(3×), 50(3×), 59.94(4×), 50(4×), 59.94P(6×), 50(6×), 59.94(8×), 50(8×)	
	SLOT1		SLOT1 output format settings
		3840×2160, 4096×2160, 1920×1080, 1280×720	SLOT1 output video resolution setting
		SQD, 2SI	SLOT1 4K video division output method setting (displayed only for 4K format) SQD: Square Division (quadrants) 2SI: 2-sample Interleave
		59i, **59P**, 50i, 50P	SLOT1 output frequency and scanning method setting in HFR mode (displayed only for HD HFR format)
		(8×), (6×), (4×), **(3×)**, (2×)	SLOT1 speed setting in HFR mode (displayed only for HD HFR format)
		HD-SDI, **3G(Lv-B)**, 3G(Lv-A)	SLOT1 video output system setting
	SLOT2		SLOT2 output format settings
		3840×2160, 4096×2160, 1920×1080, 1280×720	SLOT2 output video resolution setting
		SQD, 2SI	SLOT2 4K video division output method setting (displayed only for 4K format) SQD: Square Division (quadrants) 2SI: 2-sample Interleave
		59i, **59P**, 50i, 50P	SLOT2 output frequency and scanning method setting in HFR mode (displayed only for HD HFR format)
		(8×), (6×), (4×), **(3×)**, (2×)	SLOT2 speed setting in HFR mode (displayed only for HD HFR format)
		HD-SDI, **3G(Lv-B)**, 3G(Lv-A)	SLOT2 video output system setting

Page name Page No.	Item	Set value	Meaning
<OUTPUT FORMAT> C02	SLOT3		SLOT3 output format settings
		C, **M** (M:Monitor, C:Clean)	When set to M, character text and markers are output on SLOT3.
		1920×1080, 1280×720	SLOT3 output video resolution setting
		EC, LB	Edge Crop (EC) and Letter Box (LB) setting. When CCU is set to 720P, this is fixed to EC displayed in parentheses (displayed only for 4K format).
		59i, **59P**, 50i, 50P	SLOT3 output frequency and scanning method setting in HFR mode (displayed only for HD HFR and 4K HFR formats)
		__ **(blank)**, (2×)	SLOT3 output frame rate speed setting. Selectable only when CURRENT in <CHU MODE> (C08) is set to F65(2×) (displayed only for HD HFR and 4K HFR formats).
		HD-SDI, 3G(Lv-B), 3G(Lv-A)	SLOT3 video output system setting
	SLOT4		SLOT4 output format settings
		1920×1080, 1280×720	SLOT4 output video resolution setting (display only)
		EC, LB	Edge Crop (EC) and Letter Box (LB) setting. Linked to the setting for SLOT3 (displayed only for 4K format).
		59i, 50i	SLOT4 output frequency and scanning method setting in HFR mode (displayed only for HD HFR and 4K HFR formats)
	CCU		Displays the CCU output format.
		1920×1080, 1280×720	Video resolution setting for transfer to CCU (display only)
	WIDE D-RANGE	**OFF**, ON	Wide dynamic range mode on/off setting
	S-LOG OUT	SLOT1 4K, SLOT1 HD, SLOT1 HD SLOT2 4K, ---	SLOT1 4K: 4K S-LOG2 is output from SLOT1. SLOT1 HD: HD S-LOG2 is output from SLOT1. SLOT1 HD SLOT2 4K: HD S-LOG2 is output from SLOT1, and 4K S-LOG2 is output from SLOT2. ---: WIDE D-RANGE is OFF.
	HD CUTOUT	**OFF**, ON	HD CUTOUT on/off setting. Displayed only when the SZC-2001 is installed.
<GENLOCK> C03	REFERENCE	CCU, INTERNAL, GENLOCK	Reference sync signal in use (display only)
	GENLOCK		Setting and status of reference sync signal input on REFERENCE IN connector (not displayed when a CCU is connected)
	GENLOCK STATUS		Status of reference sync signal input on REFERENCE IN connector (display only).
	GENLOCK FORMAT		Format of reference sync signal input on REFERENCE IN connector (display only).
	GENLOCK PHASE V	–1024 to +1023, **0**	Output video V phase relative to the input reference sync signal (delay represented by positive values)
	GENLOCK PHASE H	–1700 to +1700, **0**	Output video H phase relative to the input reference sync signal (delay represented by positive values)
	SYNC OUT	**SD SYNC**, HD SYNC, (THROUGH)	SD composite sync signal and HD tri-level sync signal selector setting. (THROUGH is selected when a signal is input on the REFERENCE IN connector.)
	VIDEO OUT		Video output phase adjustment (displayed when connected to CCU). SLOT1 to SLOT4 output video H phase relative to the internal sync signal (delay represented by positive values)
	VIDEO OUT PHASE H	–256 to +255, **0**	

Page name Page No.	Item	Set value	Meaning
<RETURN> C04	SDI1	**1080/59.94i(PsF)**, 1080/59.94P, 1080/50i(PsF), 1080/50P, NO SIGNAL, ---	Format of video signal input on SDI1 connector (display only) ---: When a CCU is connected Available only for extension connection.
	SDI2	**1080/59.94i(PsF)**, 1080/59.94P, 1080/50i(PsF), 1080/50P, NO SIGNAL, ---, HD PROMPTER	Format of video signal input on SDI2 connector (display only) ---: When a CCU is connected HD PROMPTER: HD prompter is on. Available only for extension connection.
	FRAME SYNCHRO	**OFF**, ON, ---	Return signal frame synchronizer on/off setting
	HD PROMPTER	**OFF**, ON, ---	HD prompter on/off setting Available only for extension connection.
<IP ADDRESS SETTINGS> C05	IP ADDRESS	**0.0.0.0** to 255.255.255.255	IP address setting
	SUBNET MASK	**0.0.0.0** to 255.255.255.255	Subnet mask setting
	DEFAULT GATEWAY	**0.0.0.0** to 255.255.255.255	Gateway IP address setting
	SET	ENTER to execute	
	MAC ADDRESS	00:00:00:00:00:00 to FF:FF:FF:FF:FF:FF	MAC address of the unit (display only)
<CNS SETTINGS> C06 (Not available when a CCU is connected.)	CNS MODE	LEGACY, BRIDGE	Communications mode setting
	SET	ENTER to execute	
<DATE> C07	DATE/TIME		
	DATE	2013.**.** to 20**.**.**	Date setting and display
	TIME	00:00 to 23:59	Time setting and display
	FILE TIMESTAMP FORMAT		**Y**: Year **Mn**: Month (numeric) **Mn**: Month (English abbreviation) **D**: Day
	FILE_TIMESTAMP	1 Y/Mn/D, 2 Mn/D, 3 D/M/Y 4 D/M, **5 M/D/Y**, 6 M/D	
<CHU MODE> C08	CURRENT	**PMW-F55**, F65(1×), F65(2×), HDC4300	Currently selected camera head setting
	PMW-F55	ENTER to execute	Sets camera head setting to PMW-F55.
	F65(1×)	ENTER to execute	Sets camera head setting to F65 (normal speed).
	F65(2×)	ENTER to execute	Sets camera head setting to F65 (2× frame rate). Available only when the SZC-2002/4002 is installed.
	HDC4300	ENTER to execute	Sets camera head setting to HDC4300.
<BPU MODE> C09	4K COLOR SPACE	**NORMAL**, WIDE	Selects the color space of 4K output on SLOT1/2. NORMAL: Color space setting close to HDC series. WIDE: Color space setting close to BT.2020.
	WIDE D-RANGE SETTINGS		Enabled when WIDE D-RANGE (C02) is set to ON. ---: WIDE D-RANGE is OFF.
	COLOR SPACE	**NORMAL**, S-GAMUT, SGAMUT3, S-GAMUT3.CINE, ---	Selects the color space. GAMMA is automatically set according to the color space selection. NORMAL: (S-LOG2) S-GAMUT: (S-LOG2) SGAMUT3: (S-LOG3) S-GAMUT3.CINE: (S-LOG3)
	GAMMA	**S-LOG2**, S-LOG3, ---	Gamma setting (display only)
	COLOR TEMP	**VARIABLE**, 3200K, 4300K, 5500K, ---	Selects the color temperature. 3200K/4300K/5500K options are selectable when COLOR SPACE is set to NORMAL.
<TRANSMIT> C10	CCU TRANSMIT	**HIGH BIT RATE**, HD-SDI	Selects the speed of optical transmission with the CCU.

Page name Page No.	Item	Set value	Meaning
<OTHERS> C11	ASSIGNABLE SWITCH	**OFF**, BPU BARS	Assignable button function select
	HD DOWNCONV FILTER	**1** to 4	4K video signal to HD signal down-converter filter type
	CHARACTER LEVEL	1 to **5**	Menu character contrast level
	2× MODE (HD)	0 (SRMASTER), **1 (EVS)**	Selects the output mode for 2× HD video (SLOT3). 0 (SRMASTER): Output aligned with horseshoe-shaped field (compatible with the SR-R1000). 1 (EVS): Output aligned with field (compatible with servers manufactured by EVS). Displayed only when CURRENT in <CHU MODE> (C08) is set to F65(2×).
	CLEAR BPU SETTINGS	ENTER to execute	Reset to factory default settings
	FLICKER REDUCTION	**MODE1**, MODE2, ---	MODE1: Enable when the full screen is flickering. MODE2: Enable when there is localized flickering. ---: Displayed for all formats other than HD HFR.
	CCU TRANSMIT	**HIGH BIT RATE**, HD-SDI	Sets the type of CCU connected. HIGH BIT RATE: CCU that support high bit rate. HD-SDI: CCU that does not support high bit rate. CCUs with 1.5 Gbps optical transmission are not supported.
<OPTION KEY> C12	READ (USB→CAM)	ENTER to execute	Read the install key from a USB flash drive.
	INSTALLED OPTION		List of installed options (display only)
<HD CUTOUT> C13	HD CUTOUT	**OFF**, ON	HD CUTOUT function on/off setting (available only when the SZC-2001 is installed)
	MODE	**SIMPLE HD**, ZOOM-PERSPECTIVE	HD CUTOUT mode selection SIMPLE HD: HD image cut out as-is from 4K image. ZOOM-PERSPECTIVE: When HD image is cut out from 4K image, distortion is corrected. Zoom in/out is supported.
	CUTOUT POSITION		
	CH	**1**, 2	Specify the cut-out frame to control.
	CENTER H	–2048 to +2047, **0**	Center position of cut-out frame (H)
	CENTER V	–1080 to +1079, **0**	Center position of cut-out frame (V)
	ZOOM	1.0 to 4.0, **2.0**	Zoom factor
	CAMERA TILT	–45.0 to +45.0, **0**	Camera tilt angle
	CAMERA ROLL	–5.0 to +5.0, **0**	Camera roll angle
	FOCAL LENGTH	**7** to 500, ∞	Lens focal length (2.8× lens focal length when LA-FZB2 is connected). ∞: Equivalent to simple CUTOUT with zoom

DIAGNOSIS menu

Page name Page No.	Item	Set value	Meaning
<OPTICAL LEVEL> D01	OPTICAL LEVEL	Bar graph display	Bar graph display of optical signal level condition between the unit and the CCU.
	CABLE LENGTH	x.x km	Length of the optical fiber cable between the CCU and camera head

Page name Page No.	Item		Set value	Meaning
<BOARD STATUS> D02	SY		OK, NG	Internal board status
	DVP		OK, NG	
	TX		OK, NG	
	DPR1		OK, NG	
	DPR2		OK, NG	
<CONNECTION STATUS> D03	CHU	DOCKING	OK, NG, ---	Video camera connection status (not displayed for HDC4300 connection). ---: When camera system adaptor is not connected.
		POWER	OK, NG, ---	Video camera power status (not displayed for HDC4300 connection). ---: When DOCKING is NG or camera system adaptor is not connected.
		CABLE	OPEN, CONNECTED	Video camera cable connection status (not displayed for HDC4300 connection).
		COMM	OK, NG, ---	Communications status of the video camera. ---: When DOCKING is NG or camera system adaptor is not connected.
	CSA	CABLE	OPEN, CONNECTED	Camera system adaptor connection status (not displayed for HDC4300 connection)
		COMM	OK, NG, ---	Camera system adaptor communications status (not displayed for HDC4300 connection) ---: When CABLE is OPEN.
	CCU	CABLE	OPEN, CONNECTED	CCU connection status
		COMM	OK, NG, ---	CCU communications status. ---: When CABLE is OPEN.
<ROM VERSION> D04	CAMERA APP		Version number, date, device name	ROM version information installed on each device
	OS		OS version	
	UPDATER		Version of software updater	
	SY		Vx.xx	ROM version of SY board
	TX		Vx.xx	ROM version of TX board
	DEC		Vx.xx	ROM version of DVP board
	DPR1		Vx.xx	ROM version of DPR1 board
	DPR2		Vx.xx	ROM version of DPR2 board
	4K-POST		Vx.xx	ROM version of DVP board
	2K-POST		Vx.xx	ROM version of DVP board
	SDP		Vx.xx	ROM version of DVP board
<SERIAL NO> D05	MODEL		Model name	
	NO		Serial number	
	OPTION		Option name	Displays the installed options.
<IP ADDRESS> D06	IP ADDRESS		0.0.0.0 to 255.255.255.255	IP address of the unit (display only)
	SUBNET MASK		0.0.0.0 to 255.255.255.255	Subnet mask (display only)
	DEFAULT GATEWAY		0.0.0.0 to 255.255.255.255	Gateway IP address (display only)
	MAC ADDRESS		00:00:00:00:00:00 to FF:FF:FF:FF:FF:FF	MAC address of the unit (display only)
<LAN STATUS> D07	AUTO NEGOTIATION		OFF, ON	Auto negotiation setting
	CONNECTION SPEED		10M, 100M	Connection speed
	DUPLEX MODE		HALF, FULL	Duplex mode setting
	LINK CONDITION		DOWN, UP	LAN connection status
<CNS STATUS> D08	CNS MODE		LEGACY, BRIDGE	Communications mode setting

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.

Error Messages

When an error is detected in the unit or video camera, the following messages may be displayed on the video output configured for the monitor output (M).

Note

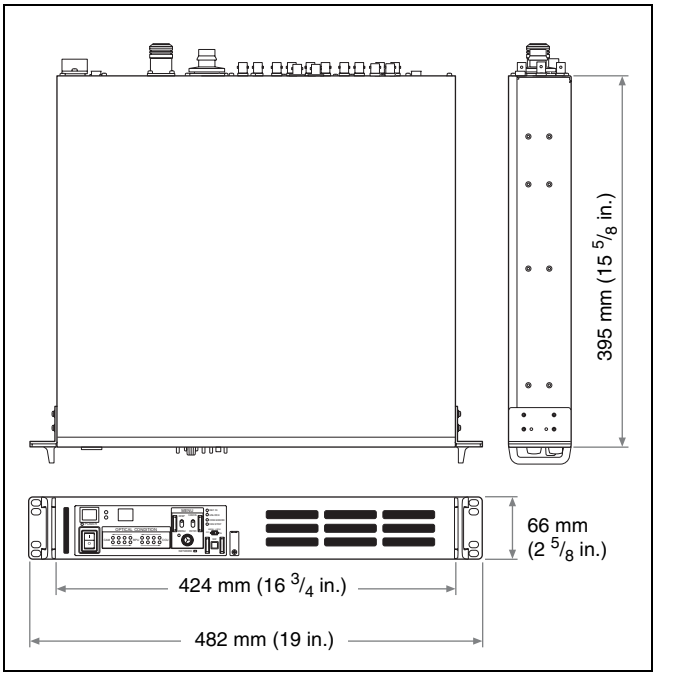
Display the menu or status screen to view messages.

Error message	Meaning
TEMP WARNING	Internal temperature error.
PLD NG	Internal PLD error.
PLEASE CONFIRM CHU MODE ON CSA	The CSA camera head setting does not match the connected camera head.
PLEASE CONFIRM CHU MODE ON BPU	The BPU camera head setting does not match the connected camera head.
PLEASE UPDATE CSA SOFTWARE	The BPU and CSA software versions do not match.

Specifications

General	
Power requirement	100 V to 240 V AC, 50/60 Hz
Current consumption	1.4 A (max.)
Operating temperature	5 °C to 40 °C (41 °F to 104 °F)
Storage temperature	–20 °C to +60 °C (–4 °F to +140 °F)
Mass	Approx. 6.8 kg (15 lb)
Input/output connectors	
CAMERA	Optical fiber connector (1)
CCU	Optical fiber connector (1)
REMOTE	8-pin multi-connector (1)
LAN	8-pin (1)
Input connectors	
AC IN	100 V to 240 V AC (1)
SDI1, SDI2	BNC type (2) 3G-SDI: SMPTE ST424/425 Level-B, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps
REFERENCE IN	BNC type (1) HD: SMPTE ST274, tri-level sync, 0.6 Vp-p, 75 ohms SD: Black burst (NTSC: 0.286 Vp-p, 75 ohms/PAL: 0.3 Vp-p, 75 ohms)
Output connectors	
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 selectable
3G/HD SDI OUTPUT (SLOT2)	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 selectable
3G/HD SDI OUTPUT (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 3G-SDI/HD-SDI selectable
HD SDI OUTPUT (SLOT4)	BNC type (2) HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps
REFERENCE OUT	BNC type (1) HD: SMPTE ST274, tri-level sync, 0.6 Vp-p, 75 ohms SD: Composite sync, 0.3 Vp-p, 75 ohms HD SYNC/SD SYNC selectable
Supplied accessories	
Number plates (1 set)	
Operation Guide (1)	
OPERATION MANUAL (CD-ROM) (1)	
Optional accessories	
United States and Canada: Plug holder B (2-990-242-01) Other areas: Plug holder C (3-613-640-01)	
United States and Canada: Power cord set (1-551-812-XX) Other areas: Power cord set (1-782-929-XX)	
CCA-5-3 (3 m) and CCA-5-10 (10 m) connection cables	
Maintenance manual	
Related equipment	
PMW-F55 Solid-state Memory Camcorder	
F65 Digital Motion Picture Camera	
CA4000 Camera System Adaptor	
HDC4300 Color Camera	
HDCU2000/2500 HD Camera Control Unit	
SZC-2001/2001M/2001W HD CUTOUT Software	
SZC-2002/2002M/2002W HD HFR Software	
SZC-4002/4002M/4002W HFR software	
RCP-1000 series Remote Control Panel	
MSU-1000/1500 Master Setup Unit	
CNA-1 Camera Control Network Adaptor	

Dimensions



Design and specifications are subject to change without notice.

Notes

- Always verify that the unit is operating properly before use. SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS DUE TO FAILURE OF THIS UNIT, EITHER DURING THE WARRANTY PERIOD OR AFTER EXPIRATION OF THE WARRANTY, OR FOR ANY OTHER REASON WHATSOEVER.
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