SONY

4-599-596-**15** (1)

Baseband Processor Unit

Operating Instructions

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

BPU4800

Table of Contents

Overview

The BPU4800 Baseband Processor Unit connects to an HDC4800 Color Camera, using an optical fiber cable, and performs signal processing and video output of the signal from the camera.
The unit is equipped with high-speed, large-capacity storage for recording and playback of signals from a camera.

- When the 4K HFR option[1)] is installed, recording 4K (3840×2160) at 8×/4× speed is supported.
- When the HD HFR option[2)] is installed, recording HD (1920×1080) at 16×/8× speed is supported.
- When the option memory board[3)] is installed, recording/playback of up to four hours of 4K at 8× speed is supported.

1) SZC-4008 4K HFR software
2) SZC-2016 HD HFR software
3) SKC-MEM4 extension memory board

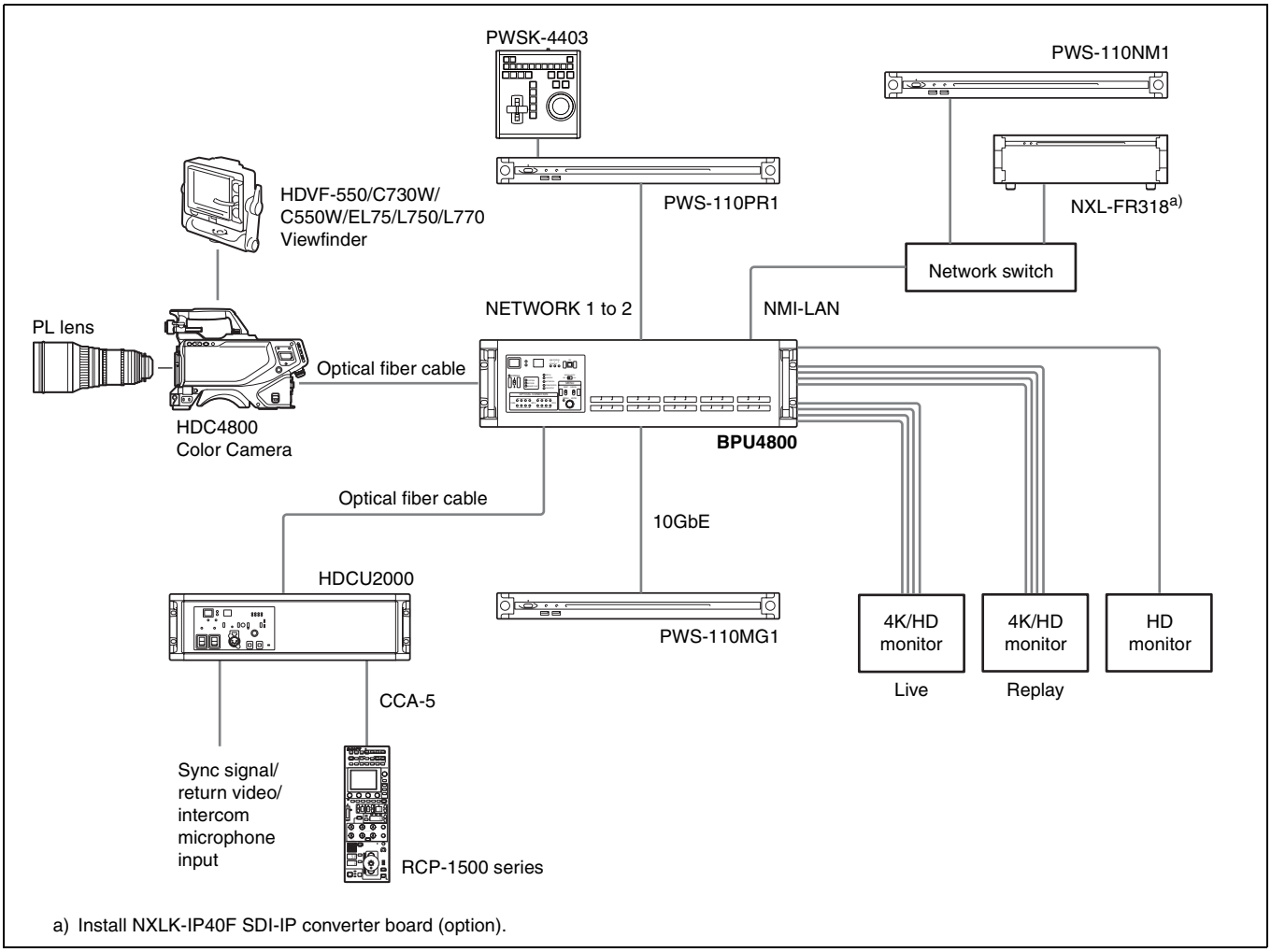
It supports the Share Play function for file sharing when connected to a PWS-4500 Production Video Server via a network connection, allowing you to play back BPU4800 content from the PWS-4500. It supports the high dynamic range and wide color gamut required for high-definition video production. It also supports transmission over IP for high affinity with network infrastructures.
The unit can be connected to an HDCU2000-series Camera Control Unit for conventional camera system operation, supplying power to the camera and transferring various signals (such as intercom, tally, prompter, and audio).

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.

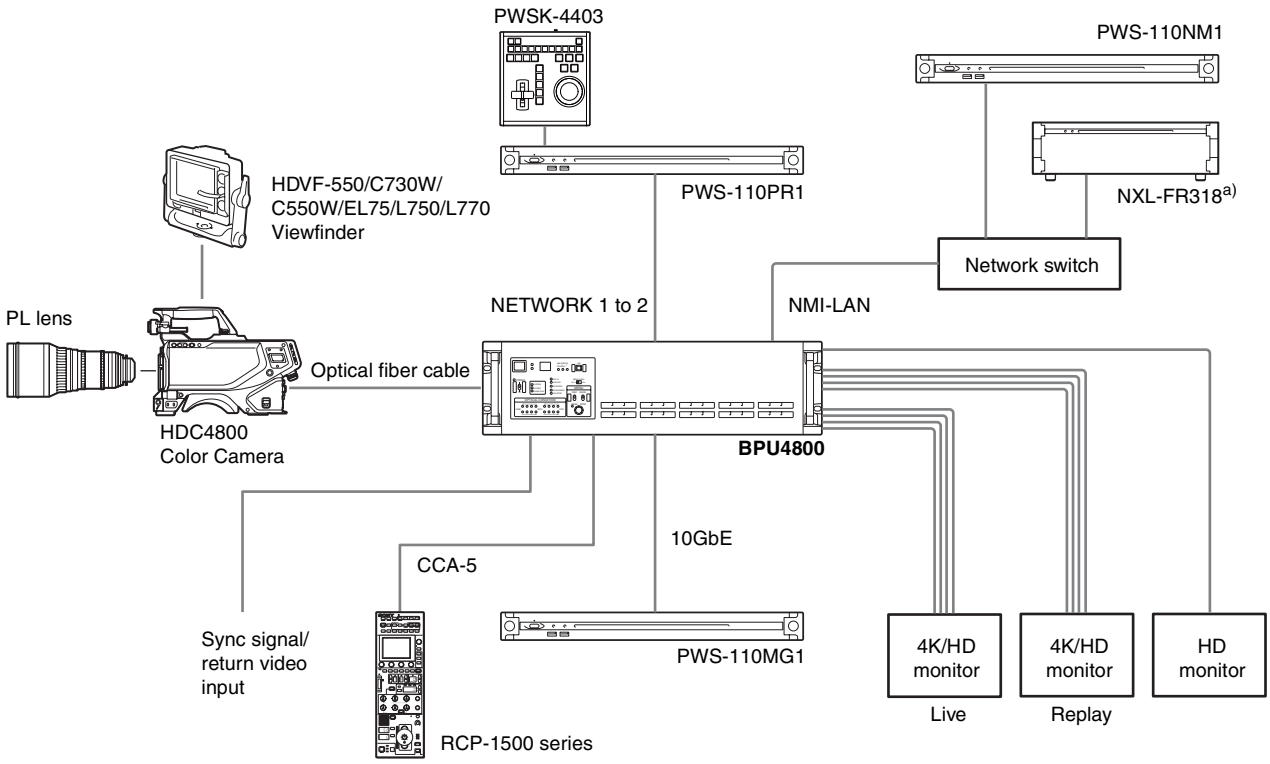
HDC4800 connection example



a) Install NXLK-IP40F SDI-IP converter board (option).

Extension mode connection example

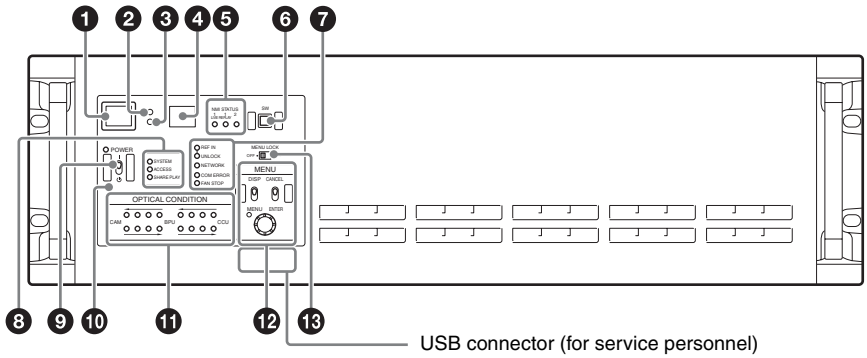
Connection example without HDCU2000/2500 for operation as a camera extension unit.



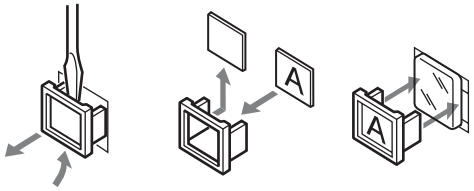
a) Install NXLK-IP40F SDI-IP converter board (option).

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 NMI LAN STATUS Indicators
Displays the status of NMI-LAN.
1: Corresponds to SLOT1 LIVE NMI LAN 1 to 2.
2: Corresponds to SLOT1 REPLAY NMI LAN 1 to 2.
3: Corresponds to SLOT2 NMI LAN 1 to 2.
Green: Normal state
Flashing green: Network synchronization process is in progress.
Off: SFP+ module is not installed.
IP Live System Manager has been disconnected.
IP Live System Manager connection is being established.
Flashing red: Not locked to network synchronization signal.
Signal reception is unavailable.

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

❼ 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.
NETWORK: Displays the camera control system LAN 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 SETTINGS> 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 SETTINGS> 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 SETTINGS> is set to BRIDGE.
The indicator is always off when CNS MODE is set to LEGACY.
For details, see "<CNS SETTINGS>" (page 21).
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.

❽ SYSTEM/ACCESS/SHARE PLAY indicators

SYSTEM indicator
Displays the status of the server.
Green: Operating normally
Green (flashing once per second): Starting up
Orange (flashing once per second): Warning message was issued.
Red (high-speed flashing four times per second): Serious error has occurred.
Purple (flashing once per second): Network reset is in progress.

ACCESS indicator
Displays the access status of storage.
Off: Not being accessed
Blue: Accessing
Blue (flashing): Formatting or deleting files

SHARE PLAY indicator
Indicates whether content can be shared using Share Play.
Flashing orange: Before genlock
Flashing green: Genlock operating
Solid green: Share Play enabled

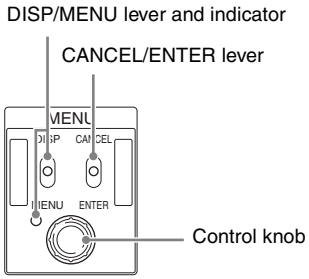
❾ POWER switch and indicator
Turns the system power supply on/off to the unit, video camera, and RCP-1000 series Remote Control Panel or other device connected to the REMOTE connector. Switch to ON to turn the power on, and switch to OFF to turn the power off.
The indicator lights up when power is turned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

❿ Network reset switch
Resets the IP address and network settings to their default values. Insert and hold the end of a paper clip or other thin object into the hole to operate the internal switch and then start the unit. The SYSTEM indicator will begin flashing purple.

⓫ 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 low.
One red indicator (left): Receive signal level is extremely low.

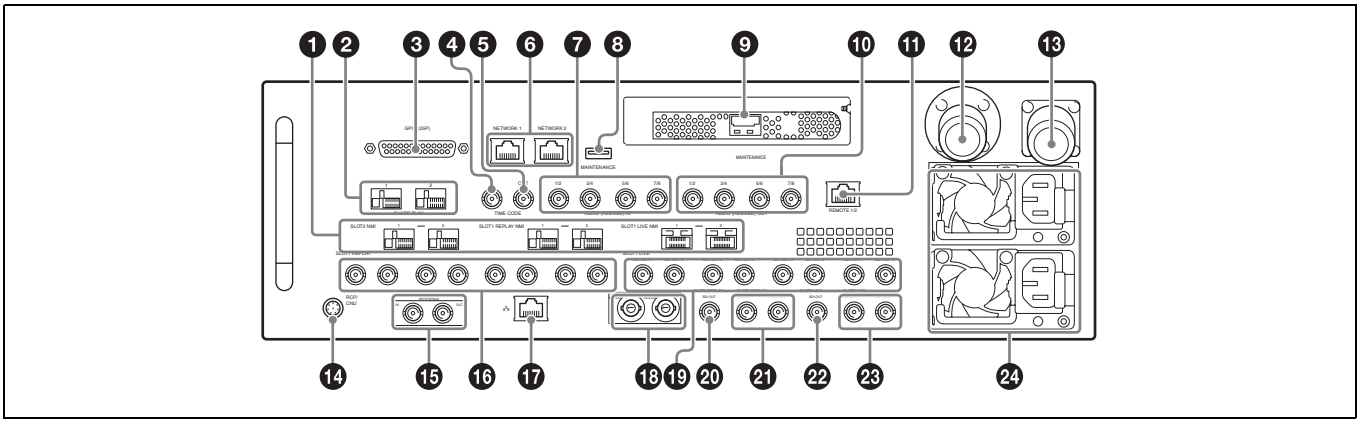
⓬ MENU control block



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

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

Rear Panel



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 the slot of each connector.

❷ SHARE PLAY 1 to 2 connectors
Connects via a network switch to devices that support Share Play for sharing content.

❸ GPIO (25-pin) connector
Parallel I/O connector.
For details, refer to the Maintenance Manual or Interface Manual.

❹ TIME CODE IN connector
Inputs a time code generated by an external device.

❺ TIME CODE OUT connector
When the time code generator is synchronized to the external time code signal input on the TIME CODE IN connector, the external time code is output according to the [TC Out Select] setting on the Port screen of the web menu.

❻ NETWORK 1 to 2 connectors
When controlling the unit from a PWS-110PR1, this connects to a network cable for monitoring the unit by SNMP, configuring or checking the unit via HTTP, transferring files via FTP, etc.

CAUTION

- For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to these ports.
  Follow the instructions for these ports.

- When you connect a network cable of the unit to peripheral device, use a shielded-type cable to prevent malfunction due to radiation noise.

❼ AUDIO (AES/EBU) input connector
Inputs the audio signals in AES/EBU format for channels 1 to 8.

❽ MAINTENANCE connector
For use by service personnel. Not used for normal operation.

❾ NETWORK 3 connector
The unit is equipped with a 10G Ethernet interface board. Install an SFP+ module and connect to this port using a network cable.

❿ AUDIO (AES/EBU) output connector
Outputs the audio signals in AES/EBU format for channels 1 to 8.

⓫ REMOTE 1/2 connector
Connects to an external device used to control the unit. Connect devices using a 9-pin remote control cable and a dedicated RJ45 to D-Sub adaptor cable.
SONY VTR/Disk protocol, VDCP, and Odetics control protocols are supported.

CAUTION

For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to this port. Follow the instructions for this port.

⓬ 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.

⓭ 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.

⓮ 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.

⓯ 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.

⓰ 3G/HD SDI OUTPUT connector (SLOT1 REPLAY) (BNC type)
Outputs video signals from the server as Multi-Link interface 3G-SDI signals or as HD-SDI signals. For details about assigning each signal to an output connector in a Multi-Link interface, see *"Relationship between Operation Mode and Output Slots" (page 12)*.

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

CAUTION

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

⓲ 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.

⓳ 3G SDI OUTPUT connector (SLOT1 LIVE) (BNC type)
Outputs video signals from the video camera as Multi-Link interface 3G-SDI signals.

For details about assignments to each signal output connector in the Multi-Link interface, see "Relationship between Operation Mode and Output Slots" (page 12).

⓴ HD SDI OUTPUT connector (SLOT3 REPLAY) (BNC type)
Outputs the 1-system video signals from the server as HD-SDI signals.
It can output signals with superimposed text characters and markers.
The NETWORK 1 connector IP address characters are superimposed for a fixed time after the unit boots.

㉑ 3G/HD SDI OUTPUT connector (SLOT2 REPLAY) (BNC type)
Outputs video signals from the server (3G-SDI signals or HD-SDI signals).
The same signal is output from both connectors.

㉒ HD SDI OUTPUT connector (SLOT3 LIVE) (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.

㉓ 3G/HD SDI OUTPUT connector (SLOT2 LIVE) (BNC type)

Outputs video signals from the video camera as 3G-SDI signals or HD-SDI signals.
The same signal is output from each connector grouped in pairs.

㉔ AC power supply unit

Connects to an AC power outlet using the power cord.
The unit can be equipped with two power supply units to provide power supply redundancy. When used in systems where reliability is required, a second power supply unit allows the unit to continue operation if one of the supplies fails.

Connection and Setup

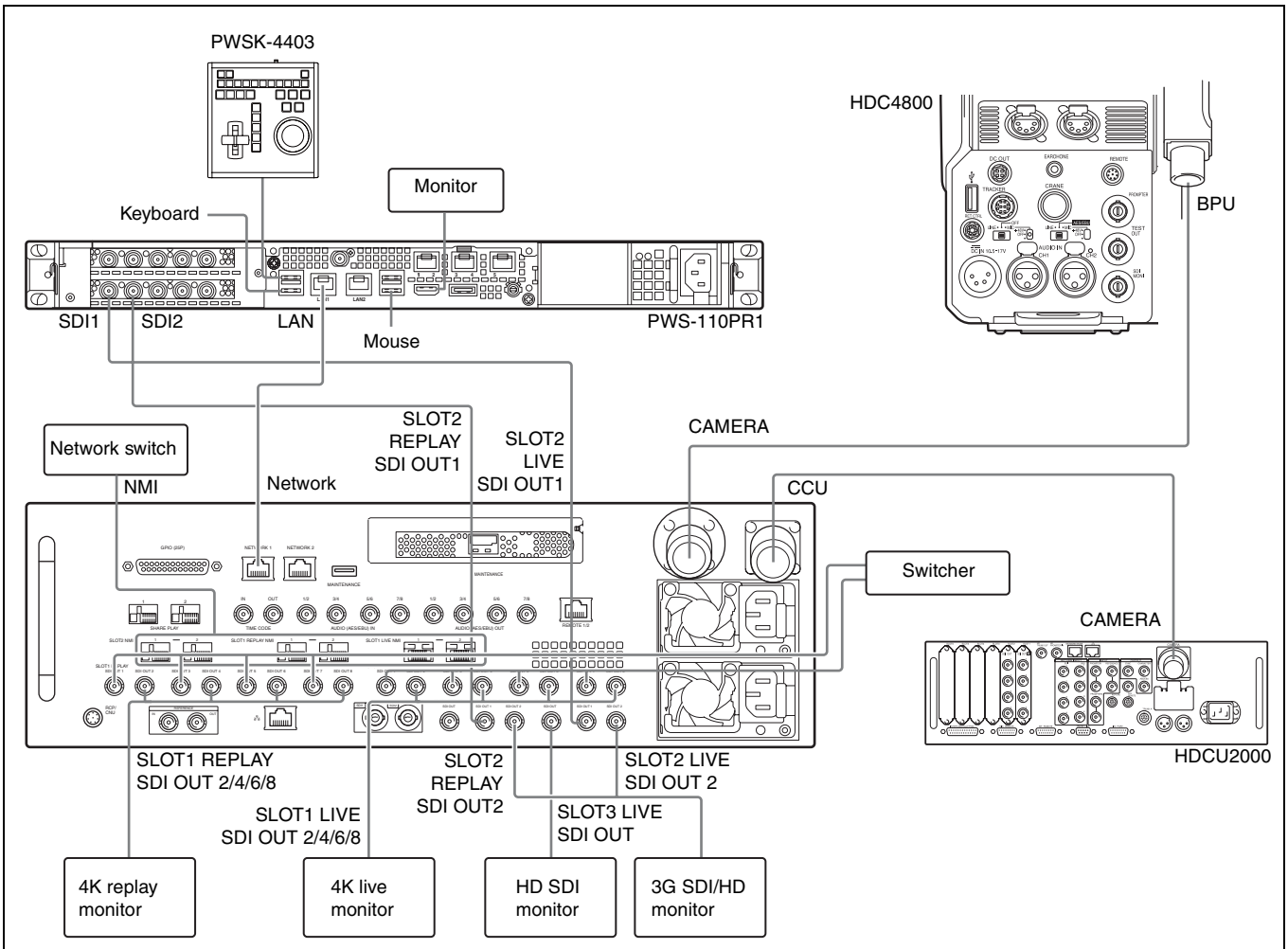
4K System Connection

A 4K format camera system is formed by connecting the unit to a HDC4800 Color Camera and HDCU2000/2500 Camera Control Unit (CCU) using optical fiber cables.

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 SLOT2, SLOT3, and the CCU.
Slow-speed playback and clip/playlist management are supported using PWA-PRC1 Production Control Software and a PWSK-4403 USB Control Device by connecting a PWS-110PR1 Production Control Station to the unit.

Connection example



For details about assignment of BNC connectors, see “Relationship between Operation Mode and Output Slots” (page 12).

Settings

Device	Setting	Menu/Page	Item		Set value
BPU4800	Image format settings	CONFIGURATION/<OUTPUT FORMAT>	SYSTEM FORMAT	RESOLUTION	3840×2160
				FREQUENCY	Displays value set on CCU.
	Video output connector settings	CONFIGURATION/<OUTPUT FORMAT> Can also be set using the control panel.	SLOT1 to SLOT3		Video output format of each slot

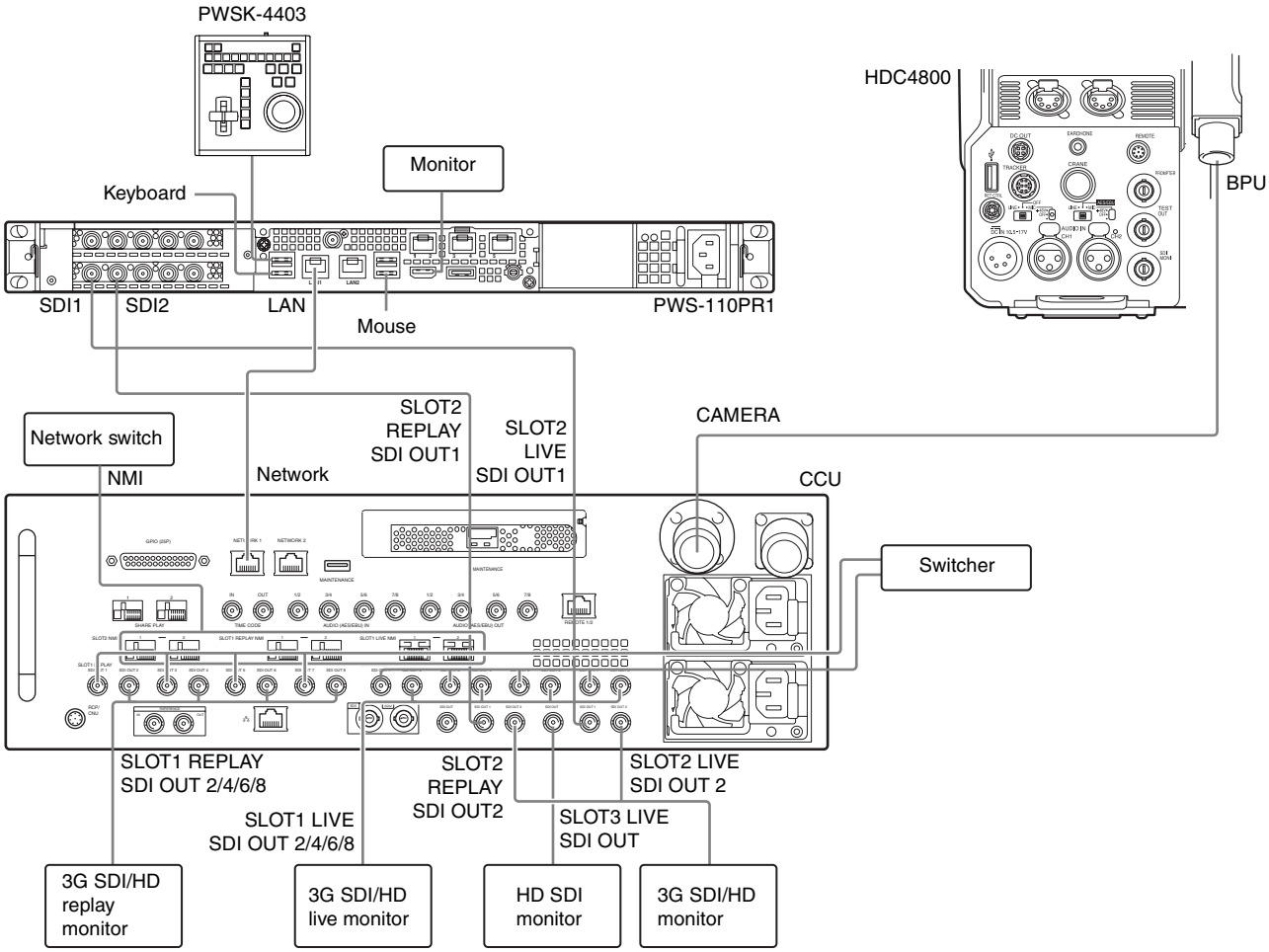
Device	Setting	Menu/Page	Item	Set value
HDCU2000 /2500	Image format settings	SYSTEM OPERATION/ <MULTI FORMAT>	FREQUENCY HD	Frame frequency
			HD-SD DELAY	0-Delay, Frame (1F)
	Video output connector settings	SYSTEM OPERATION/ <OUTPUT FORMAT> Can also be set using the control panel.	SLOT1 to SLOT6	Video output format of each slot
	Transfer rate settings	CCU CONFIGURATION/ <PROMPT/TRUNK>	TRANSMIT	AUTO, HIGH BIT RATE
HDC4800	Prompter output connector settings	MAINTENANCE/<SDI-OUT>	SDI-MONI OUT	HD-PROMPT
		MAINTENANCE/<PROMPTER2 OUT>	OUTPUT	PROMPTER2

Extension Mode (HD System) Connection

The unit can be used to form a video signal extension system by connecting it to a HDC4800 Color Camera 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 can be output from the SLOT1, SLOT2, and SLOT3 outputs.
Slow-speed playback and clip/playlist management are supported using PWA-PRC1 Production Control Software and a PWSK-4403 USB Control Device by connecting a PWS-110PR1 Production Control Station to the unit.

Connection example



For details about assignment of BNC connectors, see “Relationship between Operation Mode and Output Slots” (page 12).

Settings

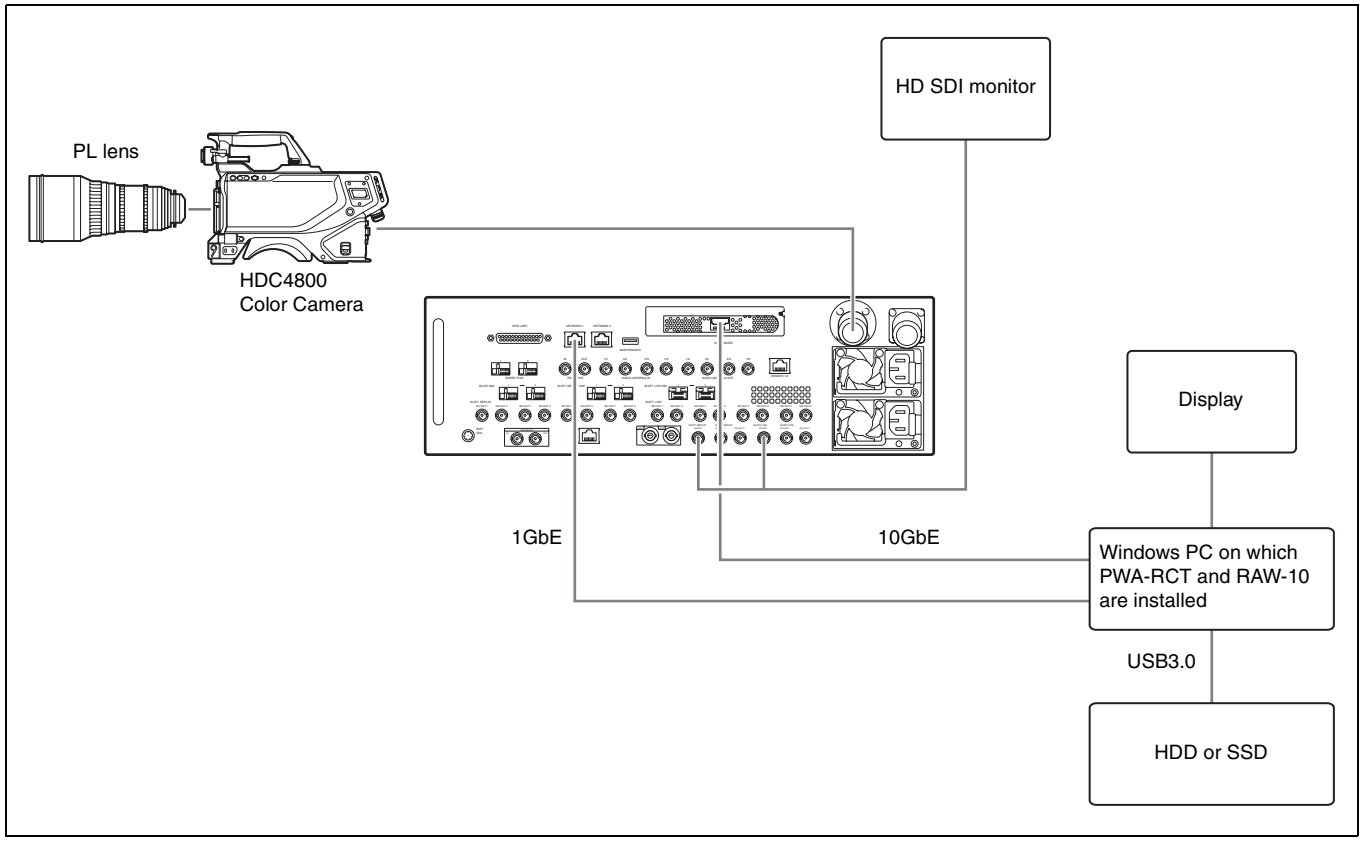
Device	Setting	Menu/Page	Item		Set value
BPU4800	Image format settings	CONFIGURATION/ <OUTPUT FORMAT>	SYSTEM FORMAT	RESOLUTION	3840×2160
				FREQUENCY	Frame frequency
	Video output connector settings	CONFIGURATION/ <OUTPUT FORMAT> Can also be set using the control panel.	SLOT1 to SLOT3		Video output format of each slot
HDC4800	Prompter output connector settings	MAINTENANCE/<SDI OUT>	SDI-MONI OUT		HD-PROMPT

HFR Data Transfer Connection

HFR data that was recorded on the unit can be transferred to external storage using the PWA-RCT1 Record Control Software.

The transferred HFR data can be played back using the RWV-10 RAW Viewer Software.

Connection example



Relationship between Operation Mode and Output Slots

The relationship between the picture size, frame rate, and output format of each output slot in QFHD (3840×2160), HD (1920×1080), and HD Cutout mode is shown in the following tables.

Note

The format of the output signal from the NMI-LAN connector is the same as for the SDI connector, but the NMI-LAN output has some limitations (see table footnotes).

Live output

QFHD 3840×2160									
SDI	**SLOT1 LIVE**			**SLOT2 LIVE**				**SLOT3 LIVE**	
Picture size	3840×2160			1920×1080			1280×720	1920×1080	1280×720
Frame rate	59.94p, 50p			59.94p, 50p	59.94i, 50i		59.94p, 50p	59.94i, 50i	59.94p, 50p
Output format	3G-A/3G-B			3G-A/3G-B	1.5G		1.5G	1.5G	
NMI-LAN	**SLOT1 LIVE NMI**			**SLOT2 NMI**					
Picture size	3840×2160			1920×1080			*2	*3	
Frame rate	59.94p, 50p			59.94p, 50p	59.94i, 50i				
Output format	3G-A*1			3G-A	1.5G				
HD 1920×1080									
SDI	**SLOT1 LIVE**			**SLOT2 LIVE**				**SLOT3 LIVE**	
Picture size	1920×1080		1280×720	1920×1080			1280×720	1920×1080	1280×720
Frame rate	59.94p, 50p	59.94i, 50i	59.94p, 50p	59.94p, 50p	59.94i, 50i		59.94p, 50p	59.94i, 50i	59.94p, 50p
Output format	3G-A/3G-B	1.5G	1.5G	3G-A/3G-B	1.5G		1.5G	1.5G	
NMI-LAN	**SLOT1 LIVE NMI**			**SLOT2 NMI**					
Picture size	1920×1080		*2	1920×1080			*2	*3	
Frame rate	59.94p, 50p	59.94i, 50i		59.94p, 50p	59.94i, 50i				
Output format	3G-A*1	1.5G		3G-A	1.5G				
HD Cutout									
SDI	**SLOT1 LIVE**			**SLOT2 LIVE**				**SLOT3 LIVE**	
Picture size	3840×2160			1920×1080			1280×720	1920×1080	1280×720
Frame rate	59.94p, 50p			59.94p, 50p	59.94i, 50i		59.94p, 50p	59.94i, 50i	59.94p, 50p
Output format	3G-A/3G-B			3G-A/3G-B	1.5G		1.5G	1.5G	
NMI-LAN	**SLOT1 LIVE NMI**			**SLOT2 NMI**					
Picture size	3840×2160			1920×1080			*2	*3	
Frame rate	59.94p, 50p			59.94p, 50p	59.94i, 50i				
Output format	3G-A*1			3G-A	1.5G				

Replay output

QFHD 3840×2160								
SDI	**SLOT1 REPLAY**			**SLOT2 REPLAY**			**SLOT3 REPLAY**	
Picture size	3840×2160			1920×1080		1280×720	1920×1080	1280×720
Frame rate	59.94p, 50p			59.94p, 50p	59.94i, 50i	59.94p, 50p	59.94i, 50i	59.94p, 50p
Output format	3G-A/3G-B			3G-A/3G-B	1.5G	1.5G	1.5G	
NMI-LAN	**SLOT1 REPLAY NMI**			**SLOT2 NMI**				
Picture size	3840×2160			1920×1080		*2	*3	
Frame rate	59.94p, 50p			59.94p, 50p	59.94i, 50i			
Output format	3G-A*1			3G-A	1.5G			
HD 1920×1080								
SDI	**SLOT1 REPLAY**			**SLOT2 REPLAY**			**SLOT3 REPLAY**	
Picture size	1920×1080		1280×720	1920×1080		1280×720	1920×1080	1280×720
Frame rate	59.94p, 50p	59.94i, 50i	59.94p, 50p	59.94p, 50p	59.94i, 50i	59.94p, 50p	59.94i, 50i	59.94p, 50p
Output format	3G-A/3G-B	1.5G	1.5G	3G-A/3G-B	1.5G	1.5G	1.5G	
NMI-LAN	**SLOT1 REPLAY NMI**			**SLOT2 NMI**				
Picture size	1920×1080		*2	1920×1080		*2	*3	
Frame rate	59.94p, 50p	59.94i, 50i		59.94p, 50p	59.94i, 50i			
Output format	3G-A*1	1.5G		3G-A	1.5G			
HD Cutout								
SDI	**SLOT1 REPLAY**			**SLOT2 REPLAY**			**SLOT3 REPLAY**	
Picture size	1920×1080		1280×720	1920×1080		1280×720	1920×1080	1280×720
Frame rate	59.94p, 50p	59.94i, 50i	59.94p, 50p	59.94p, 50p	59.94i, 50i	59.94p, 50p	59.94i, 50i	59.94p, 50p
Output format	3G-A/3G-B	1.5G	1.5G	3G-A/3G-B	1.5G	1.5G	1.5G	
NMI-LAN	**SLOT1 REPLAY NMI**			**SLOT2 NMI**				
Picture size	1920×1080		*2	1920×1080		*2	*3	
Frame rate	59.94p, 50p	59.94i, 50i		59.94p, 50p	59.94i, 50i			
Output format	3G-A*1	1.5G		3G-A	1.5G			

*1 SLOT1 NMI-LAN output supports 3G 2SI Level-A.
*2 SLOT2 NMI-LAN output does not support 1280×720 picture size.
*3 HD character monitor is not added to SLOT2 NMI-LAN output.

About Recording Times

The recording times for the combination of recording format (picture size, frame rate, recording rate) and optional SKC-MEM4 extension memory boards are listed in the following table.
The recording time assumes that all memory space is recorded as HFR data (does not include XAVC transcode region)

Note

The maximum recording time may be reduced depending on the number of clips recorded.

Recording format			Recording time			
Picture size	**Frame rate**	**Recording rate (speed)**	**Normal**	**Number of SKC-MEM4 extension memory boards**		
				1 board	**2 boards**	**3 boards**
QFHD 3840×2160	59.94p	480fps (8×)	1h 0m	2h 0m	3h 0m	4h 0m
		240fps (4×)	2h 0m	4h 0m	6h 0m	8h 0m
		60fps (1×)	7h 50m	15h 40m	23h 30m	31h 20m
	50p	400fps (8×)	1h 10m	2h 20m	3h 30m	4h 40m
		200fps (4×)	2h 30m	5h 0m	7h 30m	10h 0m
		50fps (1×)	9h 30m	19h 0m	28h 30m	38h 0m

Recording format			Recording time			
Picture size	Frame rate	Recording rate (speed)	Normal	Number of SKC-MEM4 extension memory boards		
				1 board	2 boards	3 boards
HD 1920×1080	59.94p	960fps (16×)	1h 20m	2h 40m	4h 0m	5h 20m
		480fps (8×)	2h 40m	5h 20m	8h 0m	10h 40m
		240fps (4×)	5h 20m	10h 40m	16h 0m	21h 20m
		60fps (1×)	18h 50m	37h 40m	56h 30m	76h 20m
	50p	800fps (16×)	1h 30m	3h 0m	4h 30m	6h 0m
		400fps (8×)	3h 10m	6h 20m	9h 30m	12h 40m
		200fps (4×)	6h 20m	12h 40m	19h 0m	25h 20m
		50fps (1×)	22h 40m	45h 20m	68h 0m	90h 40m

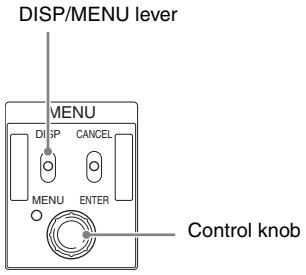
Status Display

The device and system status can be monitored using text characters superimposed on the output signal of the SLOT3 LIVE monitor.

For details about checking and changing settings, see “BPU Menu Settings” (page 16).

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.

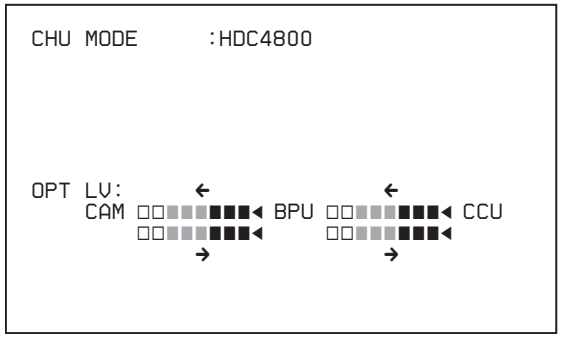
To exit the status screen

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



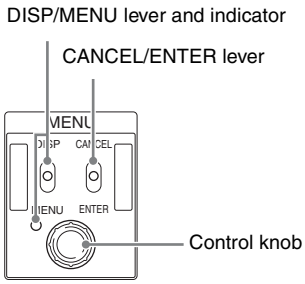
CAM ← BPU: Signal level on the BPU connector of camera.
CAM → BPU: Signal level on the camera connector of BPU unit.
BPU ← CCU: Signal level on the CCU connector of BPU unit.
BPU → CCU: Signal level on the CAMERA connector of CCU unit.

BPU Menu Settings

The device and system status can be monitored and settings can be modified using the menu displayed in the video output of the SLOT3 LIVE monitor.

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.

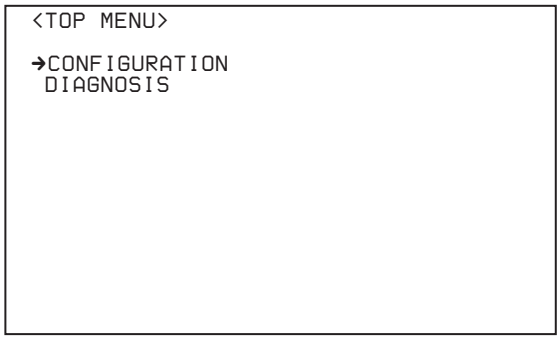


To display a menu page

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.



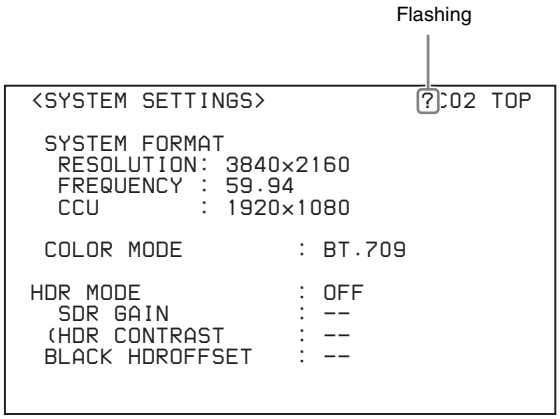
Menu	Description
CONFIGURATION	BPU configuration settings.
DIAGNOSIS	Displays the device status.

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.

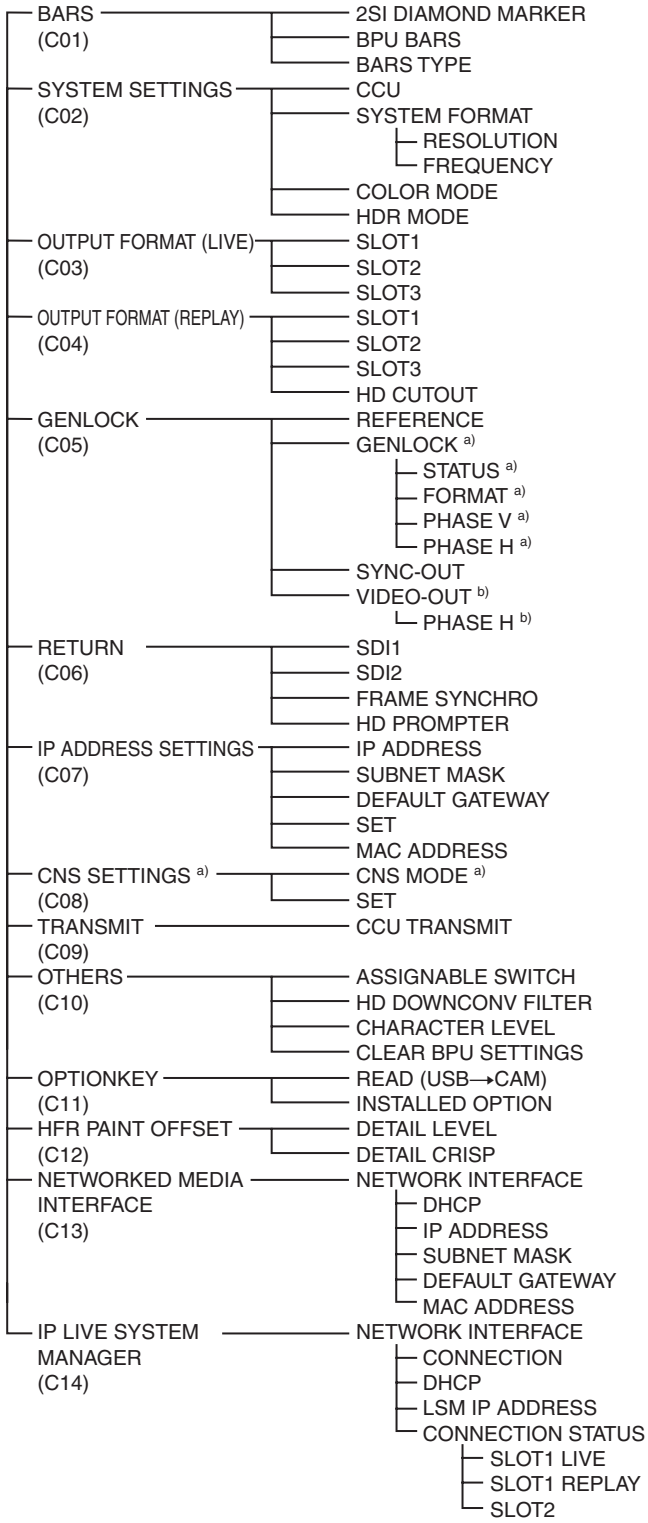
To cancel all settings
Move the ➡ cursor to ESC and push the control knob.
The ∗ (asterisk) changes back to ➡, and all the changes for the item are discarded.

To exit the menu

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

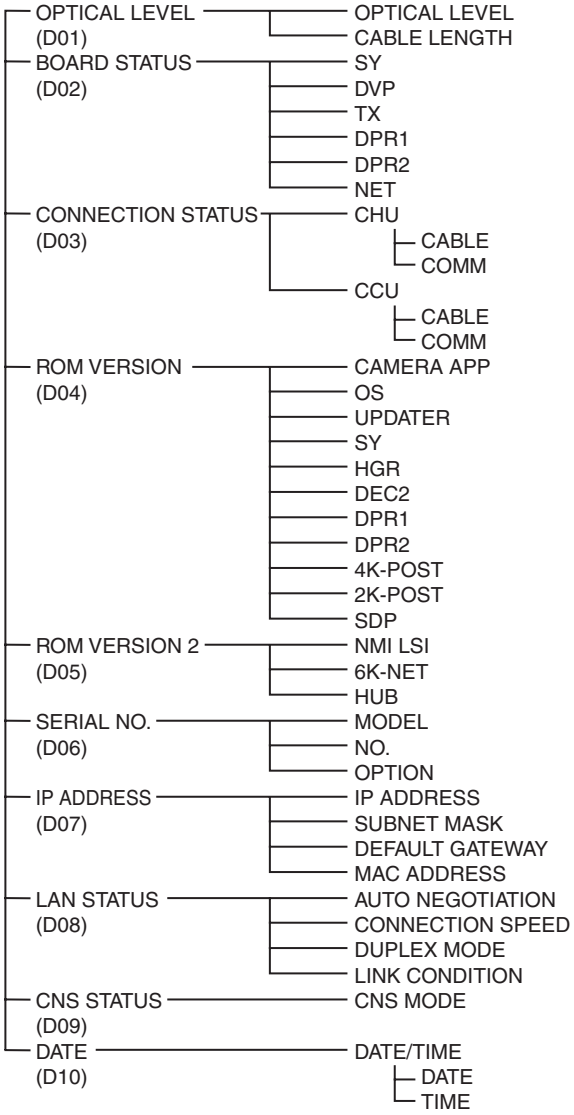
Menu Tree

CONFIGURATION menu



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 <u>ON</u>, <u>OFF</u>, <u>0</u>, etc.: Factory default settings shown underlined.
ENTER to execute: Execute by pushing the control knob or setting the CANCEL/ENTER lever to the ENTER position.

CONFIGURATION menu

Page name Page No.	Item	Set value	Meaning
<BARS> C01	BPU BARS	**<u>OFF</u>**, ON	BPU color bar output on/off setting (output on SLOT1/2/3 LIVE only)
	BARS TYPE	**<u>BAR 16:9 (100%)</u>**, 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.
	2SI DIAMOND MARKER	**<u>OFF</u>**, ON	Sets diamond mark superposition on the color bar for 4K 2-sample interleave output. *See "4K 2SI diamond marks" (page 22).*
<SYSTEM SETTINGS> (C02)	CCU	1920×1080, 1280×720	Video resolution setting for transfer to CCU (display only)
	SYSTEM FORMAT		System format settings (The selectable system format options vary depending on the installed options.)
	RESOLUTION	**<u>3840×2160</u>**, 1920×1080	
	FREQUENCY	**<u>59.94</u>**, 50	
	COLOR MODE	**<u>BT.709</u>**, BT.2020 (WIDE-F), BT.2020 (WIDE-BC)	SLOT1 output color space setting BT.709: Color space setting close to HDC series. BT.2020 (WIDE-F): Color space setting close to BT.2020. (If HD Cutout is set when WIDE-F is selected, then the color space of the SLOT1 REPLAY HD Cutout output is set to NORMAL.) BT.2020 (WIDE-BC): Color space setting close to BT.2020, which maintains compatibility with BT.709.
	HDR MODE	**<u>OFF</u>**, LIVE HDR	OFF: Normal SDR shooting mode. LIVE HDR: Enhances the video dynamic range on the camera, and outputs adjusted HDR video.
	SDR GAIN	**<u>0.0db</u>** to –15.0db	SDR output gain setting relative to HDR output (Enabled in LIVE HDR mode only)
	HDR CONTRAST	**<u>100%</u>** to 566%	HDR output contrast ratio relative to SDR output (display only) (Enabled in LIVE HDR mode only)
	HDR BLACK OFFSET	–99.9 to 99.9, **<u>0.0</u>**	HDR output black offset relative to SDR output (display only) (Enabled in LIVE HDR mode only)

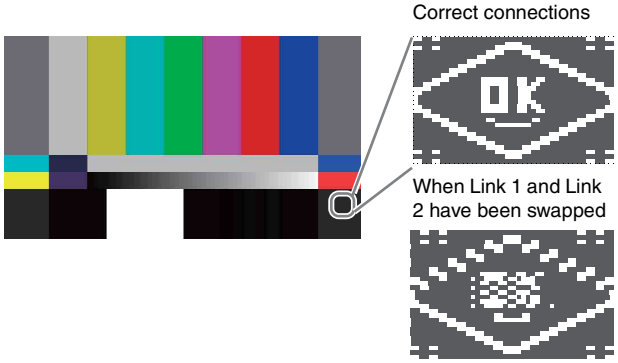
Page name Page No.	Item	Set value	Meaning
<OUTPUT FORMAT (LIVE)> C03	SLOT1		SLOT1 output format settings
		3840×2160, 1920×1080	SLOT1 output video resolution setting
		SQD, **2SI**	SLOT1 4K video division output method setting SQD: Square Division (quadrants) 2SI: 2-sample Interleave (The IP output is 2SI, even when SQD is selected.)
		HD-SDI, **3G(Lv-A)**, 3G(Lv-B)	SLOT1 video output system setting
	OETF	**SDR**, S-Log3, HLG_BT.2100, HLG_Live	SLOT1 OETF setting
	COLOR	**BT.709**, BT.2020	SLOT1 color space setting (display only)
	SLOT2		SLOT2 output format settings
		1920×1080	SLOT2 output video resolution setting
		HD-SDI, **3G(Lv-A)**, 3G(Lv-B)	SLOT2 video output system setting
	OETF	SDR	SLOT2 OETF setting (display only)
	COLOR	BT.709	SLOT2 color space setting (display only)
	SLOT3 (SDI output only)		SLOT3 output format settings
		HD-SDI	SLOT3 video output system setting
	OETF	SDR	SLOT3 OETF setting (display only)
	COLOR	BT.709	SLOT3 color space setting (display only)
<OUTPUT FORMAT (REPLAY)> C04	SLOT1		SLOT1 output format settings (display only)
		3840×2160, 1920×1080	SLOT1 output video resolution setting
		HD-SDI, SQD, **2SI**	SLOT1 4K video division output method setting SQD: Square Division (quadrants) 2SI: 2-sample Interleave (The IP output is 2SI, even when SQD is selected.)
		3G(Lv-A), 3G(Lv-B)	SLOT1 video output system setting
	SLOT2		SLOT2 output format settings (display only)
		1920×1080	SLOT2 output video resolution setting
		HD-SDI, **3G(Lv-A)**, 3G(Lv-B)	SLOT2 video output system setting
	SLOT3 (SDI output only)		SLOT3 output format settings (display only)
		HD-SDI	SLOT3 video output system setting
	HD CUTOUT	OFF, ON	HD Cutout mode indicator (display only)
<GENLOCK> C05	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)
	STATUS		Status of reference sync signal input on REFERENCE IN connector (display only).
	FORMAT		Format of reference sync signal input on REFERENCE IN connector (display only).
	PHASE V	–1024 to +1023, **0**	Output video V phase relative to the input reference sync signal (delay represented by positive values)
	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 SLOT3 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> C06	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> C07	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> C08 (Not available when a CCU is connected.)	CNS MODE	LEGACY, BRIDGE	Communications mode setting
	SET	ENTER to execute	
<TRANSMIT> C09	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.
<OTHERS> C10	ASSIGNABLE SWITCH	**OFF**, BPU BARS	Assignable button function select
	HD DOWNCONV FILTER	**1** to 4, 0.3, 0.6	4K video signal to HD signal down-converter filter type
	CHARACTER LEVEL	1 to **5**	Menu character contrast level
	CONTROL CSA MENU	ENTER to execute	
	CLEAR BPU SETTINGS	ENTER to execute	Reset to factory default settings (not executed when using HD Cut Out in the web menu)
<OPTION KEY> C11	READ (USB→CAM)	ENTER to execute	Read the install key from a USB flash drive.
	INSTALLED OPTION		List of installed options (display only)
<HFR PAINT OFFSET> C12	DETAIL LEVEL	–99 to 99, **0**	Sets the offset amount of DETAIL LEVEL to be added to HFR video. DETAIL LEVEL is the standard for normal speed that is set from the MSU/RCP. 0 is the same as normal speed.
	DETAIL CRISP	–99 to 99, **0**	Sets the offset amount of DETAIL CRISP to be added to HFR video. DETAIL CRISP is the standard for normal speed that is set from the MSU/RCP. 0 is the same as normal speed.

Page name Page No.	Item	Set value	Meaning
<NETWORKED MEDIA INTERFACE> C13	NETWORK INTERFACE	**SLOT 1 LIVE NMI LAN1**, SLOT 1 LIVE NMI LAN2, SLOT 1 REPLAY NMI LAN1, SLOT 1 REPLAY NMI LAN2, SLOT 2 NMI LAN1, SLOT 2 NMI LAN2	Selects the network interface to be set/displayed.
	DHCP	OFF, **ON**	Enables or disables DHCP.
	IP ADDRESS	**0.0.0.0** ~ 255.255.255.255	When DHCP enabled: Displays the IP address assigned using DHCP for the selected network interface. When DHCP disabled: Sets and displays the IP address for the selected network interface.
	SUBNET MASK	**0.0.0.0** ~ 255.255.255.255	When DHCP enabled: Displays the subnet mask set using DHCP for the selected network interface. When DHCP disabled: Sets and displays the subnet mask for the selected network interface.
	DEFAULT GATEWAY	**0.0.0.0** ~ 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 ~ FF:FF:FF:FF:FF:FF	Specified MAC address of the selected network interface (display only)
<IP LIVE SYSTEM MANAGER> C14	NETWORK INTERFACE	**NMI LAN1**, NMI LAN2	Selects the network interface to configure/display.
	CONNECTION	DISABLE, **ENABLE**	Sets whether to connect the IP Live System Manager (LSM) for the selected network interface.
	DHCP	OFF, **ON**, (OFF)	Sets whether to connect the LSM using DHCP information. (If DHCP on the NETWORKED MEDIA INTERFACE page is set to OFF, this function is disabled and OFF is displayed.)
	LSM IP ADDRESS	**0.0.0.0** to 255.255.255.255	Sets the IP address of the LSM. The setting is applied when SET is executed. Disabled when DHCP is set to ON.
	CONNECTION STATUS		
	SLOT1 LIVE	DISCONNECTED, CONNECTING, CONNECTED	Displays the LSM connection status for the selected network interface of SLOT1 LIVE.
	SLOT1 REPLAY	DISCONNECTED, CONNECTING, CONNECTED	Displays the LSM connection status for the selected network interface of SLOT1 REPLAY.
	SLOT2	DISCONNECTED, CONNECTING, CONNECTED	Displays the LSM connection status for the selected network interface of SLOT2.

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.



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
<BOARD STATUS> D02	SY		OK, NG	Internal board status
	DVP		OK, NG	
	TX		OK, NG	
	DPR1		OK, NG	
	DPR2		OK, NG	
	NET		OK, NG	
<CONNECTION STATUS> D03	CHU	CABLE	OPEN, CONNECTED	Video camera cable connection status.
		COMM	OK, NG, ---	Communications status of the video camera. ---: 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	
	HGR		Vx.xx	
	DEC2		Vx.xx	
	DPR1		Vx.xx	
	DPR2		Vx.xx	
	4K-POST		Vx.xx	
	2K-POST		Vx.xx	
	SDP		Vx.xx	
<ROM VERSION 2> D05	NMI LSI		Vx.xx	Software version of LSI for IP output
	6K-NET		Vx.xx	PLD version
	HUB		Vx.xx	PLD version
<SERIAL NO> D06	MODEL		Model name	
	NO		Serial number	
<IP ADDRESS> D07	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> D08	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> D09	CNS MODE		LEGACY, BRIDGE	Communications mode setting
<DATE> D10	DATE/TIME			
		DATE	2013.**.** to 20**.**.**	Date display
		TIME	00:00 to 23:59	Time display

Web Menu Settings

Displaying the Web Menu

You set up and control the unit by connecting to a computer via the network and displaying the web menu in a web browser on the computer.

Validated operating environments

Web browser:
- Windows: Microsoft Internet Explorer 11, Google Chrome 62, Firefox 57, Opera 49, Safari 5
- Mac OS: Safari 6

Display: Screen width of 1024 pixels or greater

Connect a computer that satisfies the above requirements to NETWORK connector 1 or 2 on the rear panel of the unit. Enter “http://(device_IP_address)/” in the address bar of a web browser on the computer to display the web menu. When prompted to provide a user name, enter “usr1” and click the [Log on] button. The following IP addresses are configured at the factory for the NETWORK connectors of the unit.
- NETWORK 1 connector: 192.168.0.1
- NETWORK 2 connector: 192.168.0.2

If the IP addresses are changed, specify the new addresses. The IP address to connect to can be specified on the [System] screen > [Network] tab of the web menu.

Notes

- For details about network settings, contact your network administrator.
- You may be unable to connect to the network, depending on your proxy server settings.
- It may not be possible to set the appropriate setting due to conflicts if the computer is using a multi-session connection. If this occurs, reconfigure the settings.
- The web menu cannot be displayed on a computer connected to the NETWORK 3 connector. To display the web menu, always connect the computer to NETWORK connector 1 or 2.

Do not browse any other website in the Web browser while making settings or after making settings. Since the login status remains in the Web browser, close the Web browser when you complete the settings to prevent unauthorized third parties from using the unit or harmful programs from running.

Configuring the Network

Access the [System] screen > [Network] tab of the web menu to configure settings related to the IP address and network. For details about settings, see *“Network tab” (page 31)*.

Configure each setting on the [Network] tab, and then click the [Submit] button. A confirmation message appears. Click [OK] to restart the unit. The settings are enabled after the unit restarts.
To display the web menu subsequently, enter the IP address you specified.

Accessing over a network

When accessing files using a network cable, you can also transfer files while recording or playback is in progress. However, since camera signal recording and replay output have priority, the transfer rate over the network may decrease depending on input/output port usage.

Setting the System and Boards

Configure the board settings for the unit using the web menu. The settings are specified using a setup wizard.

1 Display the [System] screen of the web menu, and click the [Board] tab.

2 Click the [Setting] button.
The [Step 1] screen appears.

3 Check or set the following items, and click the [NEXT] button.

System Frequency

Displays the system frequency (25 Hz or 29.97 Hz) set in the BPU menu.

Replay Port + XAVC Transcode Port

Select one of the following methods of use as a Replay Port and/or XAVC Transcode Port.
- Replay Port
- HD Cut Out Port
- XAVC Transcode Port
- Replay Port + XAVC Transcode Port

HFR Data Record Port

Displays the current recording mode of the high-frame recording port, set in the BPU menu.

Replay Port / HD Cut Out Port

Displays the current playback mode of the replay port. In the case of the HD Cut Out Port only, boards are configured using [Slot 1 Configuration].

Note

The system frequency and recording mode configuration can be changed in the BPU menu *(page 16)*.

Click the [Next] button to display the [Step 2] screen.

4 Check the displayed items, and click the [Submit] button. A confirmation message appears. Click [OK].
Depending on the settings content, the settings are enabled after the [Waiting] screen closes.

For the individual settings of each port, see *“Port Screen” (page 35)* of the web menu.

Note

Changing the system frequency or other board settings in the BPU menu will disable the loop recording area settings. Reconfigure the settings on the [Loop] tab on the [Storage] screen of the web menu, as required.

Web Menu Organization

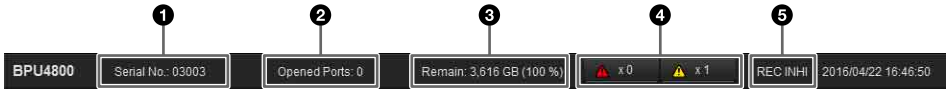
The web menu comprises the following screens.

Home screen: Displays the operating status of unit's boards and the network.
Status screen: Displays a list of errors and warnings that have occurred on the unit.
System screen: Makes basic settings for the unit.
Port screen: Makes settings for each port of the unit.
File screen: Displays a file list.
Storage screen: Displays information about memory and configures the memory of the unit.
Maintenance screen: Used for maintenance of the unit. For details about this screen, refer to the Maintenance Manual.
SNMP screen: Makes SNMP settings. For details about this screen, refer to the Maintenance Manual.

In the descriptions of each screen, the underlined option is the default value for each item.

Title bar

The title bar is common to each screen of the web menu.



❶ Serial number
Displays the serial number of the unit.

❷ Number of open ports

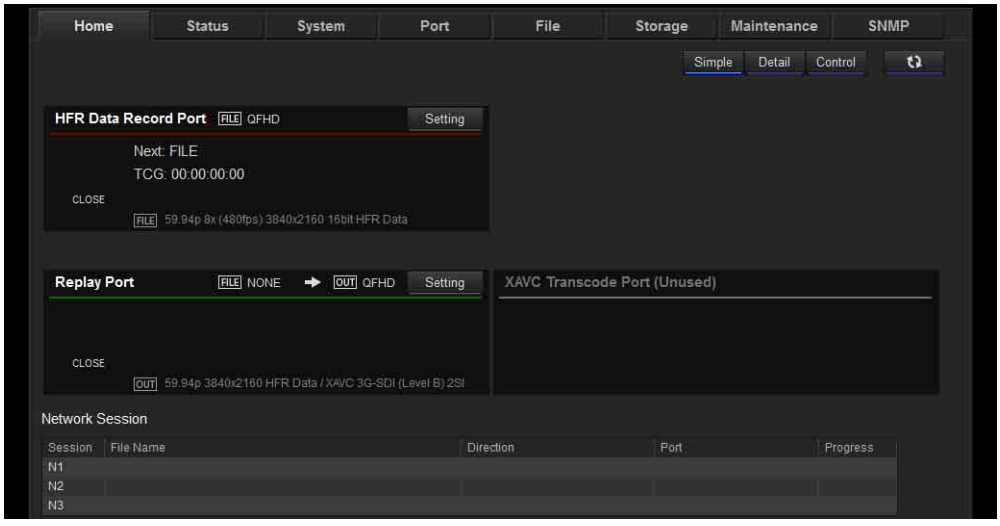
❸ Storage capacity

❹ Error/warning indicators
Displays the number of errors and warnings that have occurred.
Clicking the indicator displays detailed information about the error/warning.

❺ REC INHI indicator
Indicates when recording is inhibited (red).
The indicator is white when recording is supported.

Home Screen

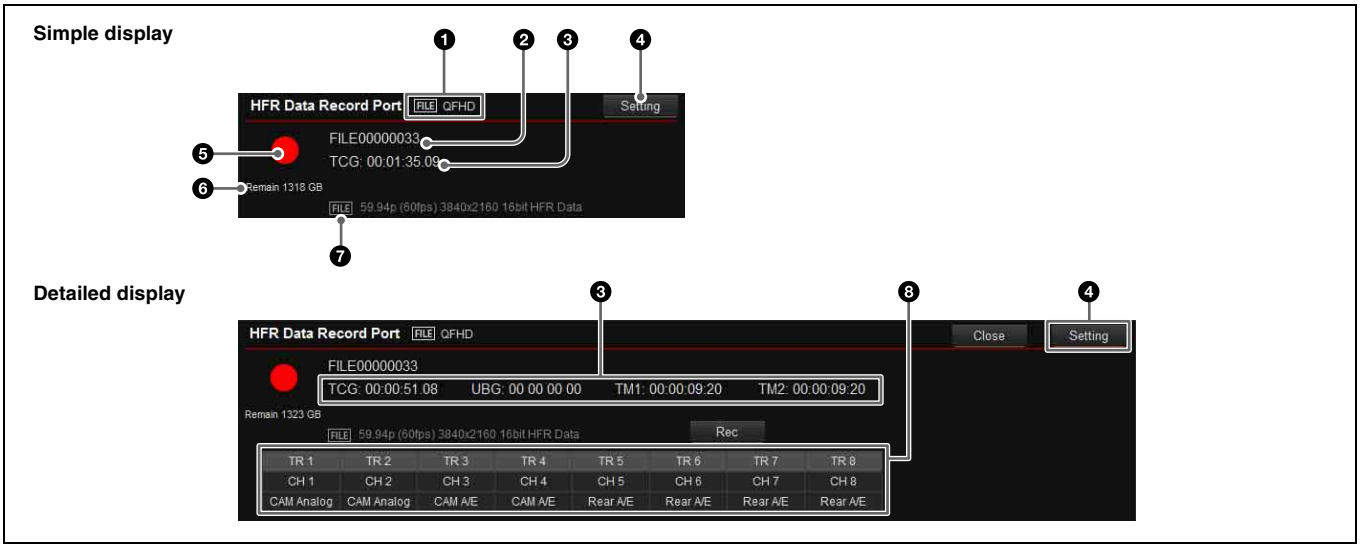
Displays the operating status of units boards and the network.
The Home screen supports simple display mode and detail display mode. You can switch mode using the [Simple]/[Detail] buttons.
Clicking the button, turning it on, updates the screen display automatically.
The [Control] button function is provided for service administrators. A password is required to use it.



The Home screen displays the status of each port.

HFR (high frame rate) Data Record Port

The following information is displayed.



❶ Recording format

[FILE] displays the video format of the recording.

❷ File name

Displays the name of the file being recorded. “Next: FILE” is displayed before recording.

❸ Time code display

Displays time code data (TCG).
In detail display mode, UBG, TM1, and TM2 are also displayed simultaneously.

❹ [Setting] button

Displays the [Port] screen *(page 35)* for the corresponding port to configure port settings.

❺ Recording indicator

Displays ● mark when recording.
Displays icon when a loop recording area is specified.

❻ Remaining capacity

Displays the remaining memory capacity.
When a loop recording area is specified, this displays the capacity of the writable area of the capacity assigned to the loop recording area. In loop recording, the recording loops back to the start of the loop recording area when it reaches the end of the area, overwriting the previous recording. However, if a subclip is created in a loop recording area file, the subclip area cannot be overwritten. Accordingly, the capacity of the loop recording area decreases by the size of the subclip.
If the remaining capacity that can be used for loop recording is reduced to less than five minutes after creating a subclip in the loop recording area, further subclips cannot be created.

❼ [FILE]

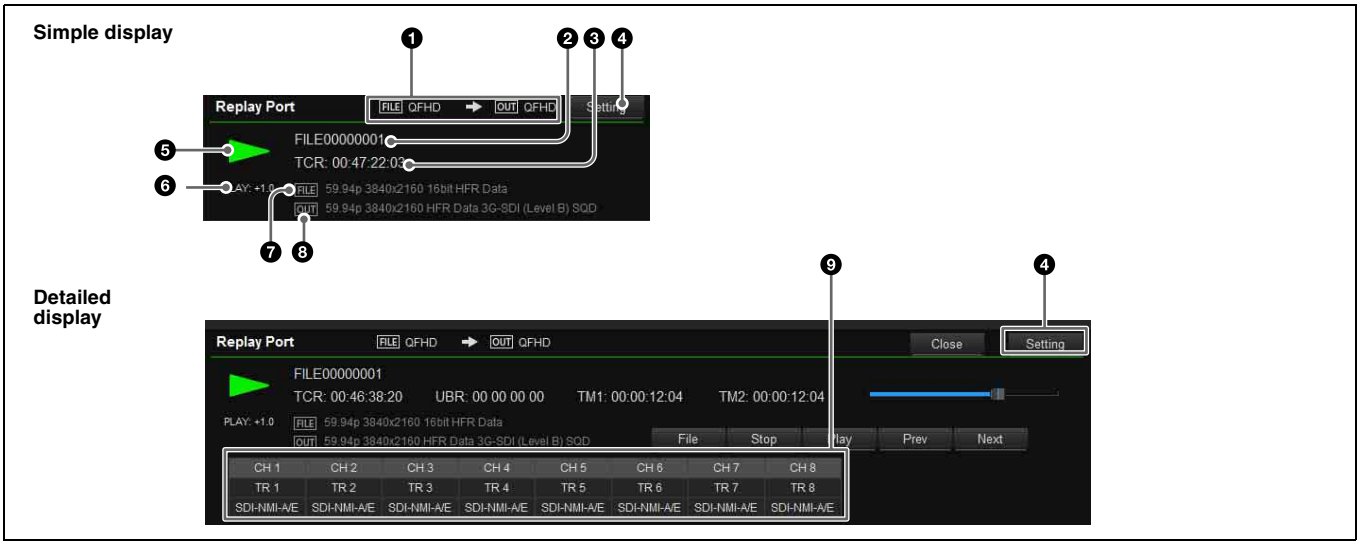
Displays the video format of the recorded file.

❽ Audio tracks

Displays which signal (Rear A/E, CAM Analog, CAM A/E) is used on each audio track.

Replay Port / HD Cut Out Port

The following information is displayed.



❶ File/output format

[FILE] displays the video format of the file, and [OUT] displays the video format of the output signal.

❷ File name

Displays the name of the file being played back. “Sub” is displayed beside the file name when playing back a subclip.

❸ Time code display
Displays time code data (TCR).
In detail display mode, UBR, TM1, and TM2 are also displayed simultaneously.

❹ [Setting] button
Displays the [Port] screen *(page 35)* for the corresponding port to configure port settings.

❺ Playback indicator
Displays "▶" during playback. The following are displayed as the playback mode.
- No indication: Normal file playback
- (File Repeat): File repeat playback
- (List): Normal playlist playback
- (List Repeat): Playlist repeat playback

❻ Playback status indicator
The following are displayed as the playback status.
- CLOSE
- STOP
- PLAY (playback speed)
- SHUTTLE (playback speed)
- JOG (FWD/REV)
- VAR (playback speed)
- STILL

❼ [FILE]
Displays the video format of the file being played back.

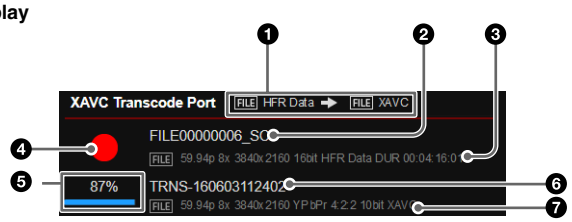
❽ [OUT]
Displays the video format of the video signal being output.

❾ External audio channels
Displays which audio track is used on each external audio channel.

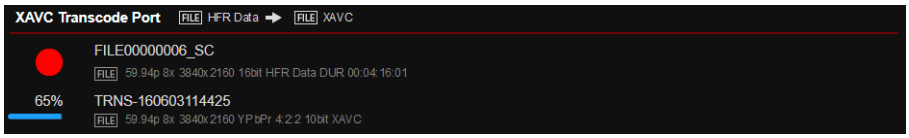
XAVC Transcode Port

The following information is displayed.

Simple display



Detailed display



❶ Codec
Displays the codec of the transcode source file and the codec of the transcoded file.

❷ Transcode source file name
Displays the file name of the transcode source material file.

❸ Transcode source file format
Displays the video format of the transcode source material file.

❹ Transcode status indicator
Displays "●" during transcoding.

❺ Transcode progress indicator
Displays the transcode processing progress.

❻ Transcoded file name
Displays the file name of the transcoded video file.

❼ Transcode format
Displays the video format of the transcoded video file.

Network Session

Displays the operating status of the network connection.
The following information is displayed.

Session

Displays the session name (N1 to N3).

File Name

Displays the name of the file being transferred.

Direction

Displays the transfer direction as an icon (unit t computer, unit T computer).

Port

Displays the NETWORK connector that is used.
- Network 1/2 (1GbE)
- Network 3 (10GbE)

Progress

Displays the transfer progress.

Status Screen

Displays a list of errors and warnings that have occurred on the unit, and the power supply status. Click the button, turning it on, to update the display automatically.

Error/Warning Status

Displays a list of errors and warnings.

Power Supply Status

Displays the status of the AC power supply unit(s).

Existence

Indicates whether the AC power supply unit(s) have been recognized.

AC In Status

Indicates the presence or otherwise of AC input.

Ambient Temperature

Displays the ambient temperature of the unit.

Hotspot Temperature

Displays the hotspot temperature.

Fan Speed

Displays the speed of the fan.

Power Out

Displays the output power.

Power In

Displays the input power.

PRCM Status

Connection Status

Displays the PRC manager connection status.

Port Number

Displays the PRC manager board number.

PRCM 1 Connection

Displays whether PRC manager 1 is connected or not.

PRCM 1 IP Address

Displays the IP address of the PRC manager 1 to connect.

System Screen

Makes basic settings for the unit.

Board tab

Makes input/output board settings using a setup wizard. Click the [Setting] button at the bottom of the screen to start configuration.
For details about settings, see *“Setting the System and Boards” (page 24)*.

Step 1

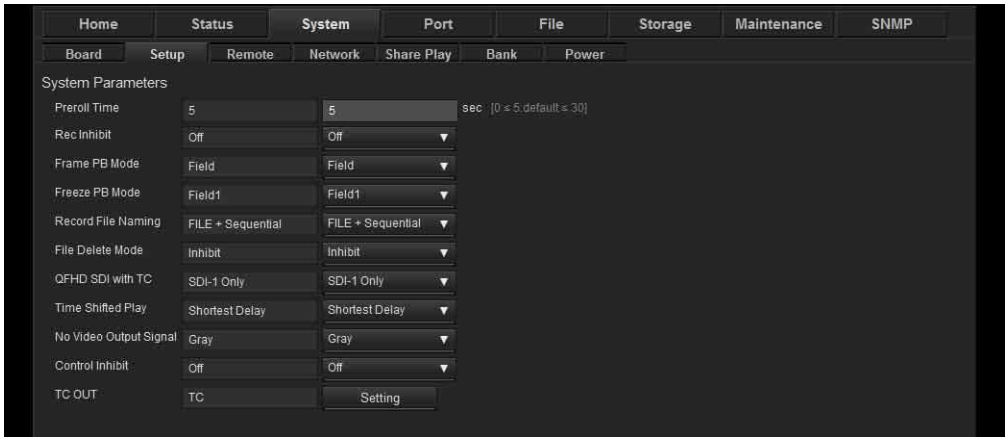
Configure the port structure of the unit, and select whether to use HD Cut Out and XAVC Transcode.

Step 2

Check the settings made in step 1, and submit the settings.

Setup tab

Makes basic operating mode settings of the unit.



System Parameters

Preroll Time

Sets the preroll time in units of seconds.

- 0 to 5 to 30 seconds

Rec Inhibit

Sets record inhibit mode.

- Off: Enables recording
- On: Disables recording

Frame PB Mode

Selects the playback mode during variable speed playback.

- Field: Field playback
- Frame: Frame playback

Freeze PB Mode

Specifies the freeze mode and freeze timing for manual freeze (freeze control using REMOTE 1/2 (9-pin) connectors and GPIO (25-pin) connector) and auto freeze.

- Field 1: Freezes the 1st (odd) field.
- Field 2: Freezes the 2nd (even) field.
- Frame: Freezes in frame mode.

Record File Naming

Selects the file naming convention for automatically generated files.

- File + Sequential: Assigns a sequential number.
- Serial + Time: Uses the recorded time as the file name.
- User Specified Name: Allows the user to specify a 4-character prefix for the file name (set using [User Specified Name] on the [HFR Data Record Port] tab of the [Port] screen).

File Delete Mode

Selects whether to delete a file if the Delete command is received for a file for which playback or file transfer (export) is in progress.

- Inhibit: Prevents deletion of files during playback or file transfer.
- Permit: For a file during playback, it deletes the file when the port closes. For a file during file transfer, it stops the transfer and then deletes the file.

QFHD SDI with TC

Selects whether to superimpose the time code on the output from SLOT1 REPLAY SDI OUT 1/2 only or on all SDI signals, if QFHD is specified as the video format.

- SDI-1 only
- All SDI

Time Shifted Play

Selects, when using chasing playback, whether to play back video stored in a buffer for playback with the shortest delay, or to play back video that is recorded in storage.

- Shortest Delay
- From Storage Only

No Video Output Signal

Selects the display color or the main output and monitor output if there is no input signal on the input port or nothing is playing on the output port.

- Gray
- Dark Gray
- White
- Black

Control Inhibit

When enabled, this prevents all changes to the configuration using the web menu.

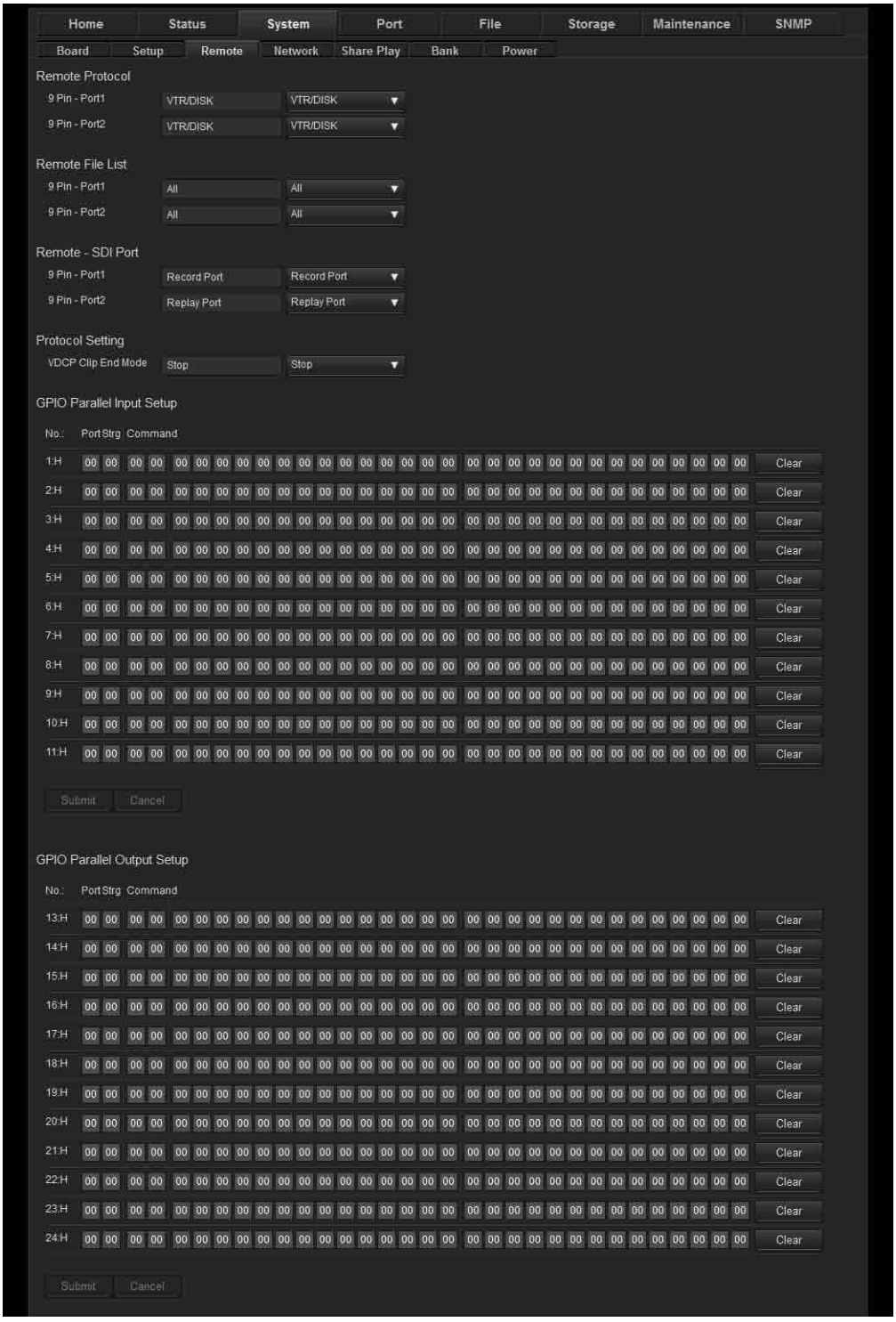
TC OUT

Displays the signal to output from the TIME CODE OUT connector on the connector panel. However, it is fixed to “Through” when using QFHD XAVC Transcode Port.

- TC
- Through
- TM1
- TM2

Remote tab

Makes settings related to remote control.



Remote Protocol

Selects the protocol used on the REMOTE 1/2 connectors.

- VTR/DISK: SONY VTR/Disk protocol
- VDCP: VDCP protocol
- Odetics: Odetics protocol

Remote File List

Selects the information returned in response to a file information sense command on the REMOTE 1/2 connectors.

- All: Information about all files
- Playable Replay Port: Information about playable files on the replay port
- Editable Replay Port: Information about files that can be switched seamlessly during playback on the replay port

Remote - SDI Port

Selects the port to operate remotely on the REMOTE 1/2 connectors.
Record Port: HFR Data Record Port

Replay Port: Replay Port or HD Cut Out Port

Protocol Setting

VDCP Clip End Mode

Sets whether the to automatically play the next clip or whether to stop playback upon reaching the end of a clip during continuous playback using VDCP.

- Auto Play: Play the next clip automatically upon reaching the end of a clip.
- Stop: Stop playback upon reaching the end of a clip if a Play command is not received from a remote control device.

Network tab

Makes network settings.

Network 1 (1GbE)

Sets the IP address, subnet mask, and default gateway of the NETWORK 1 connector.
Displays the MAC address of the NETWORK 1 connector.
The following values are the factory default values.
IP Address: 192.168.0.1
Subnet Mask: 255.255.255.0
Default Gateway: 0.0.0.0
The NETWORK 1 connector IP address characters are superimposed on SLOT3 REPLAY for a fixed time after the unit boots.

Network 2 (1GbE)

Sets the IP address and subnet mask of the NETWORK 2 connector. The default gateway setting for Network 1 is displayed.
Displays the MAC address of the NETWORK 2 connector.
The following values are the factory default values.
IP Address: 192.168.0.2
Subnet Mask: 255.255.255.0

Network 3 (10GbE)

When an optional 10 Gigabit network is used, this sets the IP address, subnet mask, default gateway, and MTU.
Displays the MAC address of the 10Gb network connector.
The following values are the factory default values.

GPIO Parallel Input Setup

Assigns the commands for the input side of the GPIO (25-pin) connector.
A 32-byte setting can be specified for pin 1 to pin 11.

GPIO Parallel Output Setup

Assigns the commands for the output side of the GPIO (25-pin) connector.
A 32-byte setting can be specified for pin 13 to pin 24.
For details about commands, refer to the Interface Manual.

IP Address: 192.168.0.10
Subnet Mask: 255.255.255.0
Default Gateway: 0.0.0.0
MTU: 1500

FTP Server

Activation
Enables/disables the FTP port used for import/export.

Importing File Naming
Selects whether to add a “Tmp_” prefix to the file name during importing.
- Off
- Adding [Tmp_]

Import Clips with Odd Frames (50p & 59.94p)
Selects the processing to perform when the last frame is odd when importing 50p or 59.94p files.
- Not Acceptable: Do not import.
- Acceptable (Omit Last Frame): Import, omitting the last frame.

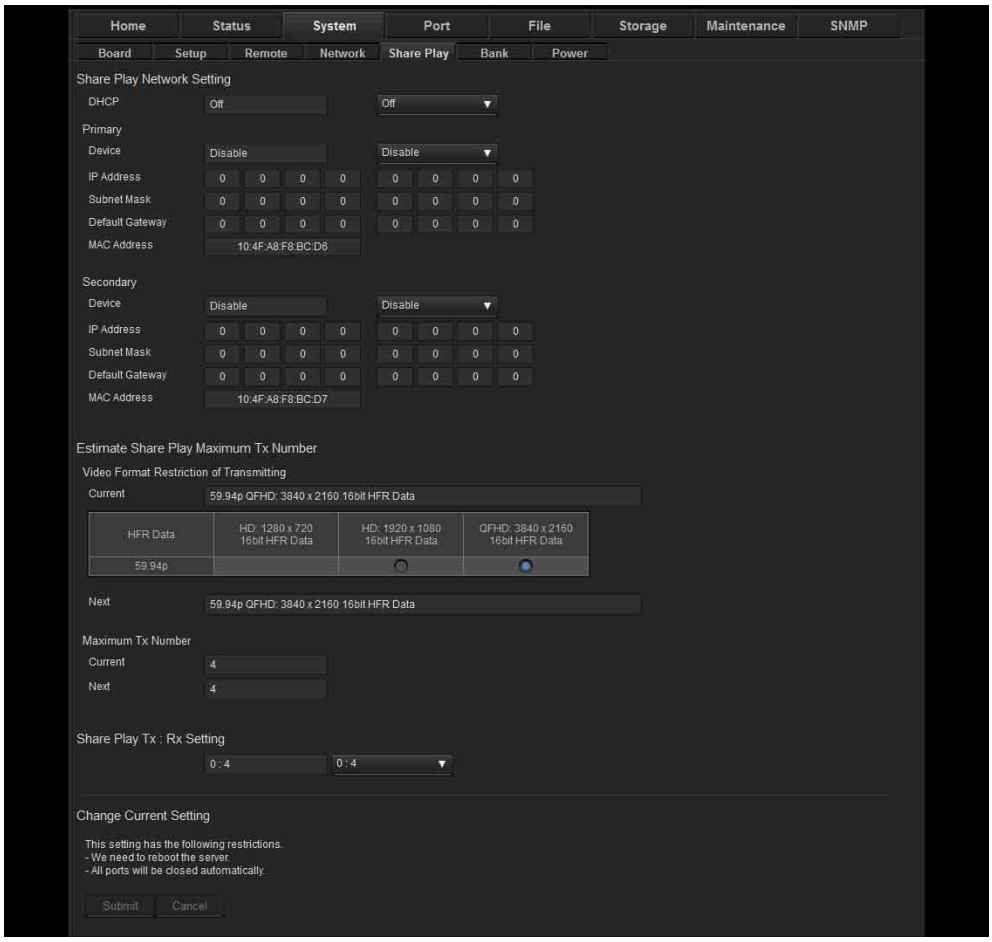
PRCM Setting
Configures network settings when using a PRC manager.

Port Number
Sets the port number of the PRC manager.

PRCM 1 Connection
Selects whether to connect the PRC manager 1.

PRCM 1 IP Address
Sets the IP address of PRC manager 1.

Share Play tab
Makes Share Play settings.



Share Play Network Setting
Configures network settings when using Share Play.

DHCP
This setting is fixed to Off.

Primary/Secondary
Used to set the IP address, subnet mask, and default gateway used for Share Play manually. Displays the MAC address.

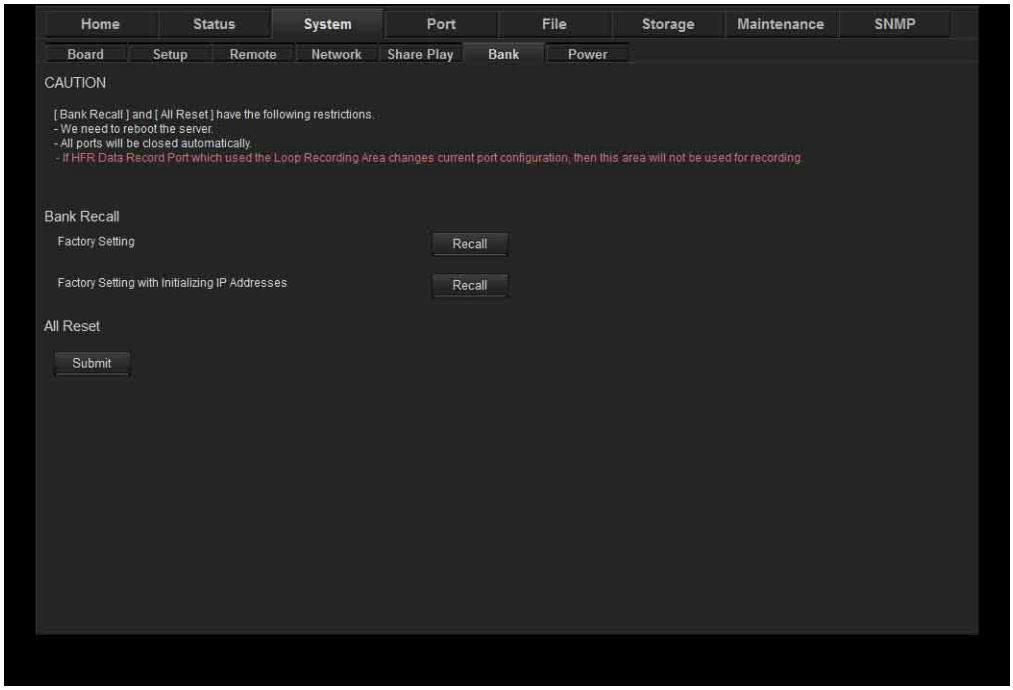
Estimate Share Play Maximum Tx Number
Selects the video format for Share Play from the matrix.

Share Play Tx:Rx Setting

Specify the number of Share Play output transmitters (Tx) and receivers (Rx) to guarantee the network storage bandwidth for the selected video format.

Bank tab

Makes settings for user banks of saving settings.



Bank Recall

Factory Setting

Click the [Recall] button to return the settings on the System screen to their default factory values. The network IP address settings are not initialized.

Factory Setting with Initializing IP Addresses

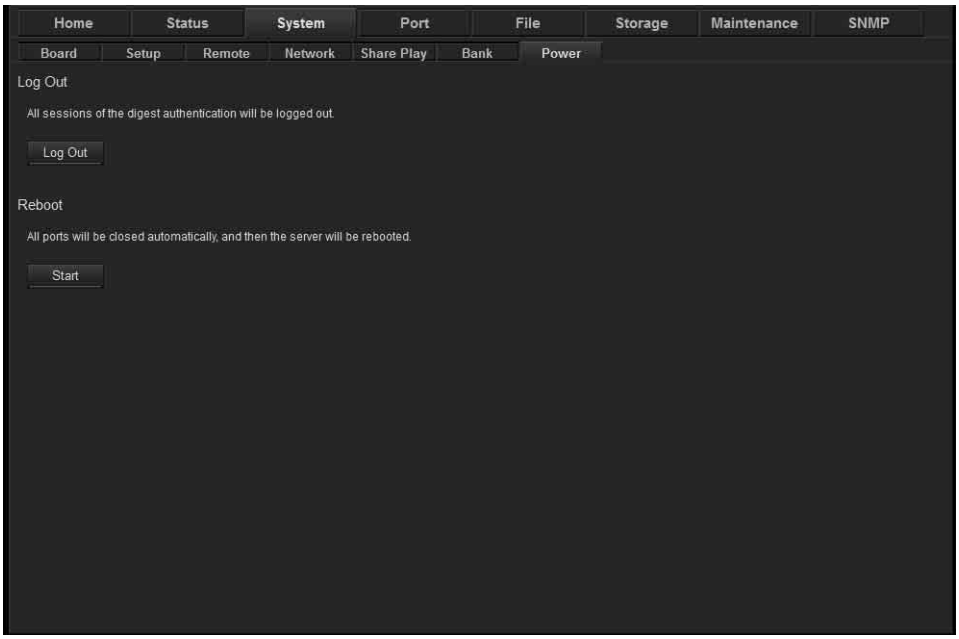
Click the [Recall] button to return the settings on the System screen to their default factory values.

All Reset

Click the [Submit] button to reset all settings. The IP addresses and other network settings and the menu settings saved in all banks are also reset.

Power tab

Used to reboot and shut down the unit.



Log Out

Click the [Log Out] button to log out from the web menu.

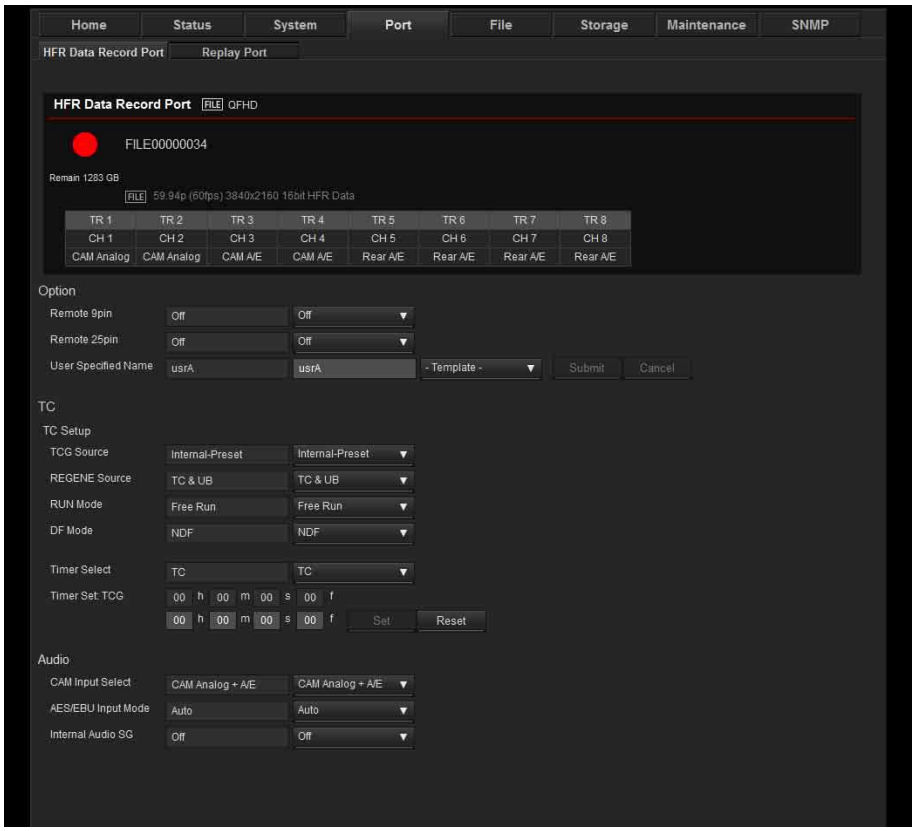
Reboot

Click the [Start] button to close all ports and reboot the unit.

Port Screen

Makes settings for each port of the unit.

HFR (high frame rate) Data Record Port



Port information

Displays the operating status of the selected port. The display is the same as on the Home screen.

Option

Remote 9pin

Selects whether to enable remote control from the device connected to the REMOTE 1/2 connectors.

- Off
- On

Remote 25pin

Selects whether to enable remote control from the device connected to the GPIO (25-pin) connector.

- Off
- On

User Specified Name

Sets the 4-character prefix for the names of recorded files. Enter an arbitrary string in the text box or select a prefix from the drop-down list.
[Record File Naming] must be set to [User Specified Name] on the [Setup] tab of the [System] screen to enable this setting.

TC

Makes time code settings.

TCG Source

Selects the source signal for synchronizing the internal time code generator.

- Internal-Preset
- External-LTC

REGENE Source

Selects the signal to regenerate when the time code generator is in regenerate mode or in automatic editing mode.

- TC&UB: Regenerates both the time code signal and user bit signal.
- TC Only: Regenerates the time code signal only.
- UB Only: Regenerates the user bit signal only.

RUN Mode

Sets the running mode of the time code generator.

- Free Run: The time code advances when the power is on regardless of the unit's operating mode.
- Rec Run: The time code advances during recording only.

DF Mode

Sets the drop frame mode of the time code generator or timer counter.

- NDF
- DF

Note

This setting is valid only when [TCG Source] is set to “Internal-Preset” and the frame frequency is 29.97 Hz.

Timer Select

Selects the time data to display.

- TC
- UB
- TM1
- TM2

Timer Set

Displays the time counter.
To change the counter, enter a value and click the [Set] button. Clicking the [Reset] button resets the counter.

Note

Displayed only when [Timer Select] is set to TC, UB, or TM1.

Audio

CAM Input Select

Selects the input signal from the camera to record on the audio file track.

- Off: Do not use the input signal from the camera.
- CAM Analog: Record the analog signal from the camera.
- CAM A/E: Record the AES/EBU signal from the camera.
- CAM Analog + A/E: Record the analog signal and AES/EBU signal from the camera.

AES/EBU Input Mode

Selects whether to pass the input AES/EBU signal through the sampling rate converter when recording.

- Auto: Use the converter. In this mode, there are no limitations on the input signal.
- Vlock: Bypass the converter. In this mode, the input signal must be 48 kHz and be locked to the video signal. Noise may occur if this condition is not satisfied.

Internal Audio SG

Selects the type of signal to output from the internal signal generator.

- Off: No output
- Silence: Silent signal
- 1kHz: 1 kHz sine wave

Replay Port / HD Cut Out Port

Port information

Displays the operating status of the selected port. The display is the same as on the Home screen.

Option

Remote 9pin

Selects whether to enable remote control from the device connected to the REMOTE 1/2 (9-pin) connectors.

- Off
- On

Remote 25pin

Selects whether to enable remote control from the device connected to the GPIO (25-pin) connector.

- Off
- On

Continuous Mode

Sets the preview file or list selection, and the repeat operation.

- Single File Normal
- Single File Repeat
- File List Normal

- File List Repeat

Feed Play Mode
Sets the playback speed of feed play.
If the playback speed is controlled using the PWA-PRC1 application, this setting is ignored.
- Off (1x)
- On (4x)
- On (8x)
- On (16x)

Forced Shuttle Mode
Selects whether to forcibly switch to shuttle control when using the Jog/Var command.
- Off
- On

TC Setup

TCR Select
Sets the readout value of the time code reader.
- LTC
- VITC

DF Mode
Sets the drop frame mode of the timer counter.
- NDF
- DF

TC OUT
Selects the signal to output from the TIME CODE OUT connector of the connector panel.
- TC
- Through
- TM1
- TM2

Timer Select
Selects the time data to display.
- TC
- UB
- TM1
- TM2

Timer Set
Displays the time counter.
To change the counter, enter a value and click the [Set] button. Clicking the [Reset] button resets the counter.

Note

Displayed only when [Timer Select] is set to TM1.

Character

Character On/Off
Selects whether to display superimposed character information, such as the time code, on the monitor signal.
- Off
- On

Character Size
Sets the display size of character information.
- Small
- Medium

Vertical Position
Sets the vertical display position of character information.
- 0 (top) to 22 to 255

Horizontal Position
Sets the horizontal display position of character information.
- 0 (left) to 128 to 255

Character Info.
Sets the character information content if [Character On/Off] is set to “On.”
- Timedata Only: Timer counter only
- Timedata & VITC: Timer counter and VITC
- Timedata & TM1: Timer counter and TM1
- Timedata & TM2: Timer counter and TM2
- Timedata & UB: Timer counter and user bits
- Timedata & Status: Timer counter and operating status
- Timedata & Audio: Timer counter and audio level
- PRC Character: Cannot be selected.

Background
Sets the character information background.
- Outline: White characters with black outlines
- Translucent: White characters on a gray transparent background.
- without BG: White characters with no background
- with BG: White characters on a black background

Sub Status
Sets additional information displayed with the character information.
- Off: Displays no additional information.
- File Name: Displays the file name.

Warning Display
Sets whether to display a flashing warning message on the second line of character information when [Character Info.] is set to an item other than “Timedata Only.”
- Off
- On

Audio Meter

Audio Meter On/Off
Sets the audio meter display.
- Off
- On

Position
Sets the display position of the audio meter.
- Upper Left: Upper left
- Upper Right: Upper right
- Left: Left
- Right: Right
- Lower Left: Lower left
- Lower Right: Lower right

Translucency
Sets the translucency of the audio meter display.
- Off: Non-translucent display
- Half-translucent: Semi-translucent display

Channel Setting
Sets the channels to display in the audio meter.
- L - R
- CH01 - CH02
- CH03 - CH04

- CH05 - CH06
- CH07 - CH08
- CH01 - CH04
- CH05 - CH08
- CH01 - CH06
- CH01 - CH08

Video

Y ADD

Selects whether to set “Y add” forcibly to Off.

- Auto
- Off

Audio

Audio Output Select

Selects the file track to output on each audio output channel.

Muting

Shuttle Muting

Sets whether to output the audio signal during shuttle playback.

- Off: Output
- On: Do not output

VAR Muting

Sets whether to output the audio signal during variable playback modes other than normal playback.

- Off: Output
- On: Do not output

Others

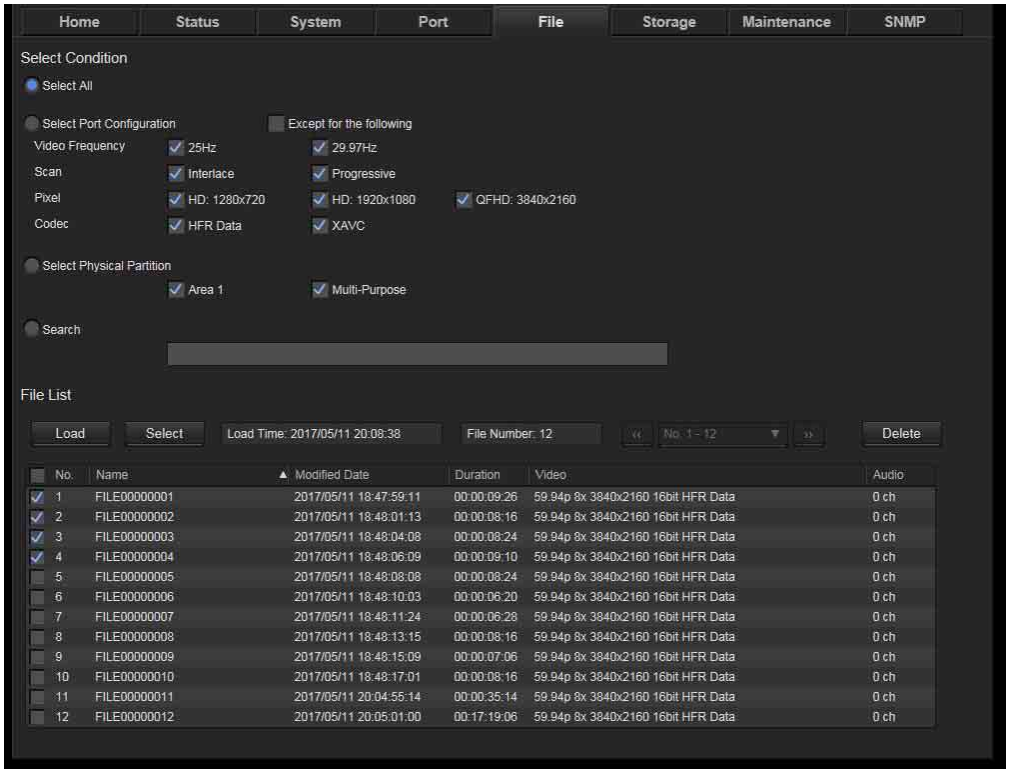
Audio Output Phase

Adjusts the audio output phase.

- 0 to 128 to 255 samples

File Screen

Displays a list of the files stored in the unit. You can filter the files to display only the required files.



Select Condition

Select All

Displays all files in the list.

Select Port Configuration

Displays files filtered by system frequency, scanning method, resolution, and codec.
You can place a check mark in [Except for the following] to exclude the display of files matching the selected conditions.

Select Physical Partition

Specifies and displays the recording area within internal memory.

Search

Displays files with file names that contain the specified character string.

File List

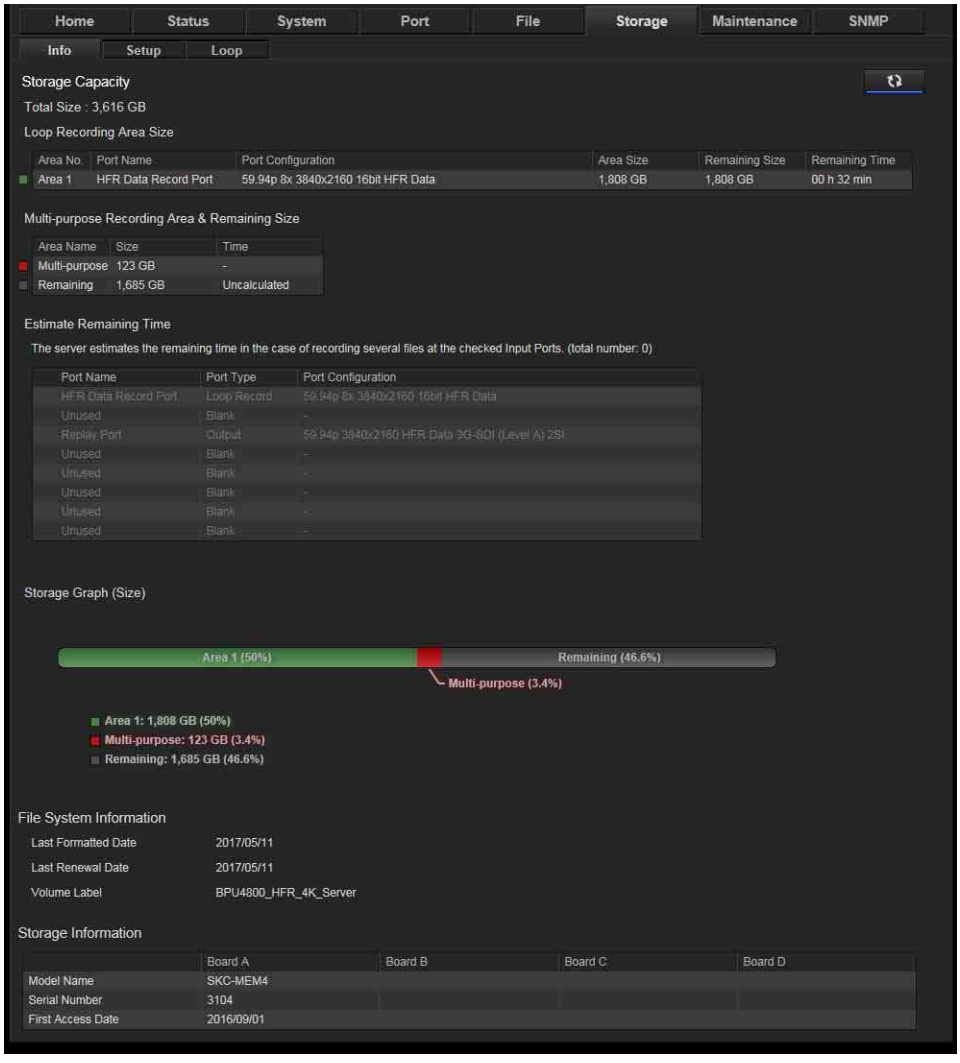
Displays the file list.
To filter the files using options, specify the search criteria in [Select Condition] and click the [Load] button.
To filter the currently displayed files using different search criteria, change the setting in [Select Condition] and click the [Select] button.

Storage Screen

Displays information about memory and configures the memory of the unit.

Info tab

Displays the status of internal memory boards A to D.



Storage Capacity

Total Size

Displays the total capacity of internal memory.

Loop Recording Area Size

Displays the size and usage status of each area for loop recording.

Multi-purpose Recording Area & Remaining Size

Displays estimated values for the used capacity, remaining free space, and remaining recording time for the area used for non-loop recording, such as normal recording or the recording of files received from the network.

Estimate Remaining Time

Selects the port whose parameters are used when calculating the estimate of the remaining recording time.

Storage Graph
Displays a graph of the usage status of each recording area in internal memory.

File System Information

Last Formatted Date
Displays the date the file system was last formatted.

Last Renewal Date
Displays the date the file system was last renewed.

Storage Information
Displays information about memory boards A to D.

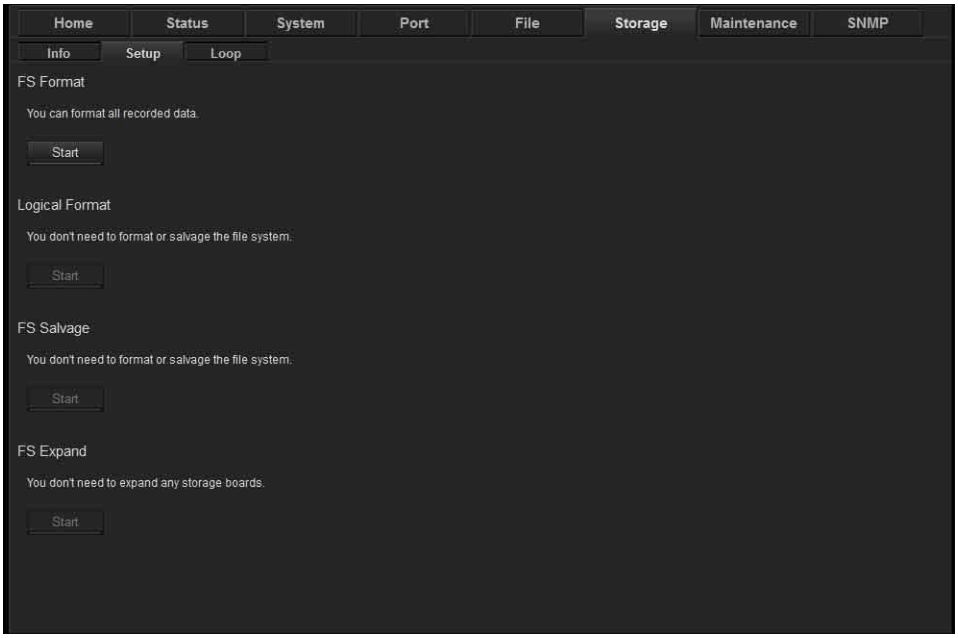
Model Name
Displays the model name of the memory board.

Serial Number
Displays the serial number of the memory board.

Volume Label
Displays the volume label of the memory board.

First Access Date
Displays the date that files were first accessed.

Setup tab



FS Format
Formats the file system. All recorded data is deleted.

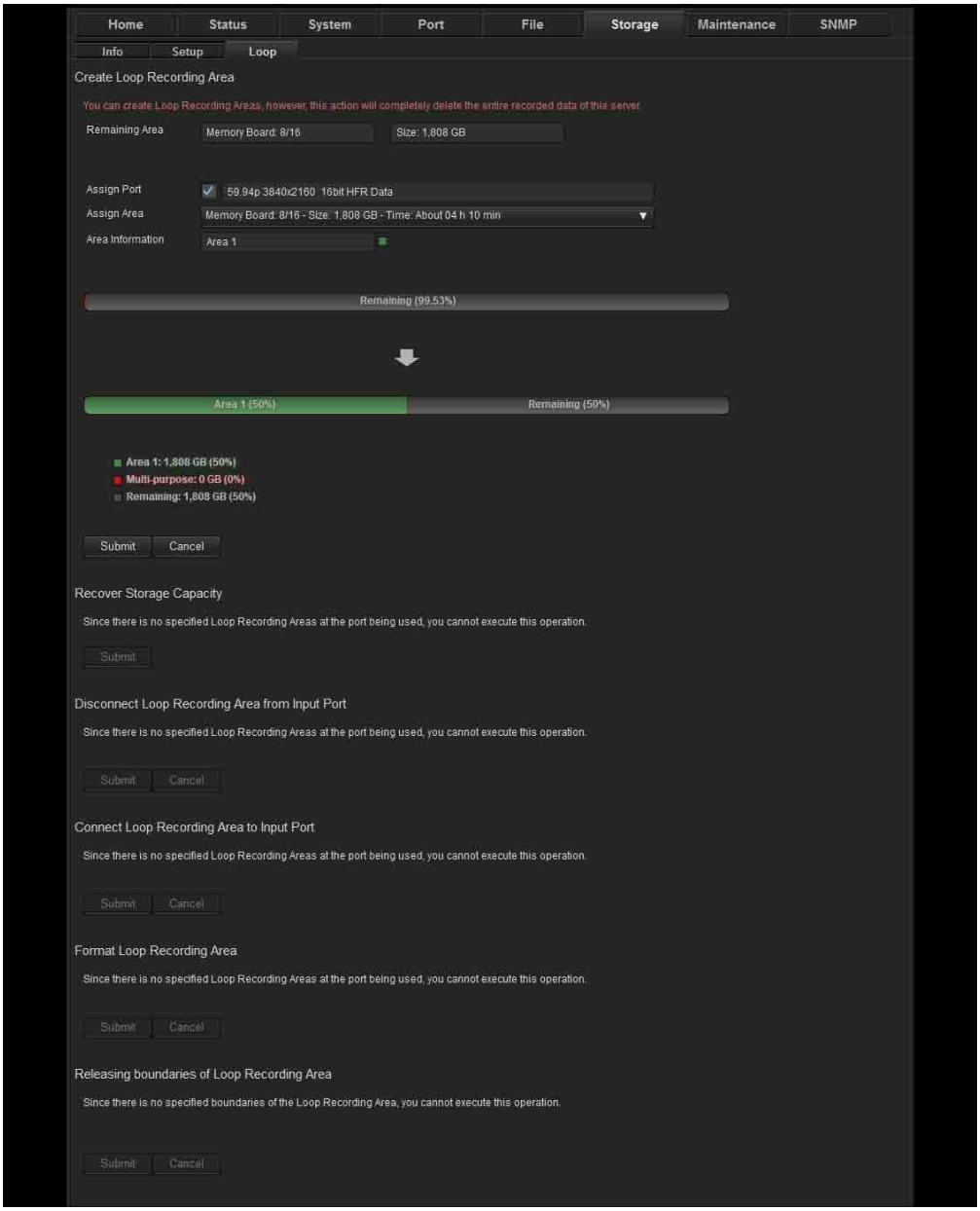
Logical Format
Formats the logical file system.
Use to recover memory, when required, due to power outage while writing data to memory storage or other cause. All recorded data will be erased.

FS Salvage
Salvages the file system.
Use to recover memory, when required, due to power outage while writing data to memory storage or other cause.
Recorded data is recovered where possible.

FS Expand
Expands the file system when an additional memory board is installed.

Loop tab

Assigns the recording area for each input/output when using loop recording. The recording loops back to the start of the loop recording area when it reaches the end of the area, overwriting the file. If there is more than one file in the loop recording area, files are overwritten starting with the oldest file.



Create Loop Recording Area

Remain Area

Displays the remaining area capacity assigned for loop recording.

Assign Port

Selects the input board to assign a loop recording area.

Assign Area

Specifies the capacity assigned for loop recording for the corresponding port. Also, the loop recording time is calculated for display from the specified capacity.

The capacity is specified in 1/16 units of the capacity of the memory board installed in the unit.

- For one memory board:
  1/16, 2/16 to 15/16, 1
- For two memory boards:
  1/16, 2/16 to 15/16, 1, 1 + 1/16 to 1 + 15/16, 2

Area Information

Displays the Loop Recording Area numbers for use.

When finished making settings, click the [Submit] button. The storage is formatted, and the specified capacity and the loop recording areas are assigned. Click the [Cancel] button to return to the current settings.

Note

When a loop recording area is specified, all files in memory are deleted.

Recover Storage Capacity

If PWA-PRC1 operation creates subclips in the loop recording area and overwriting the loop recording area is inhibited, the overwrite setting of the loop recording area is retained even when subclips are deleted. In this case, click the [Submit] button for this item to cancel the overwrite setting. This function can be executed when defining the loop recording area.

Disconnect Loop Recording Area from Input Port

Select the corresponding loop recording area and click the [Submit] button to disconnect the loop recording area from the recording port.

Connect Loop Recording Area to Input Port

Select the corresponding loop recording area and click the [Submit] button to reconnect the loop recording area to the recording port. This function can be executed when defining the loop recording area.

Format Loop Recording Area

Deletes the files recorded in the loop recording area of each port, and then formats the loop recording area. You can select individual areas to be formatted.

Releasing boundaries of Loop Recording Area

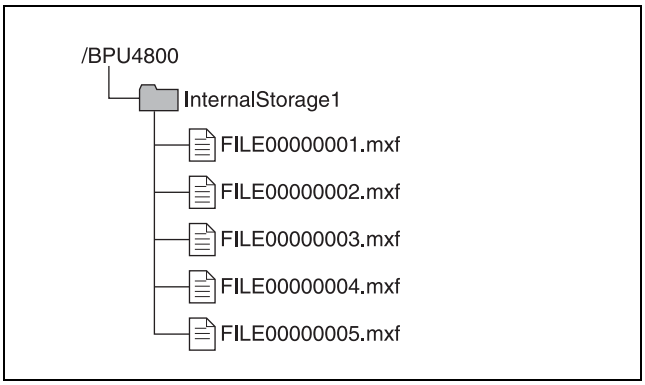
Deallocates the loop recording area of each port, deleting the recorded data. You can select individual areas to be deleted.

File Operations via FTP

File operations between the unit and the computer are performed using the File Transfer Protocol (FTP). This is used when transferring files transcoded to XAVC on the unit.

Directory structure

The following diagram shows the BPU4800 internal directory structure that is visible on the computer.



Setting up

1 **Connect the unit and the computer network terminals using a network cable. Alternatively, connect the unit to the same network as the computer.**

2 **Set the IP address and other settings of the unit.**

See “Network tab” (page 31).

Connecting a computer running Windows Vista/Windows 7/Windows 8

Disable internet protocol version 6 (TCP/IPv6).

On Windows Vista: (1) Open [Network and Sharing Center] > [Manage network connections] > [Local Area Connection] in Control Panel. (2) Display [Local Area Connection Properties], uncheck the [Internet Protocol Version 6 (TCP/IPv6)] checkbox, and click the [OK] button.

On Windows 7/Windows 8: (1) Open [View network status and tasks] > [Change adapter settings] > [Local Area Connection] in Control Panel. (2) Display [Local Area Connection Properties], uncheck the [Internet Protocol Version 6 (TCP/IPv6)] checkbox, and click the [OK] button.

Connecting via FTP

You can connect the unit and computer via FTP using the following methods.

- Using the command prompt.
- Using FTP client software.

This section describes using the command prompt method. If using FTP client software, set up the software as required.

Logging in

1 **Launch the command prompt.**

2 **Enter “ftp <SP> <IP_address>” and press the Enter key (where <SP> is a space character).**

For example, if the IP address of the unit is set to “192.168.0.1”, enter “ftp 192.168.0.1”.

For information about the FTP command, refer to the Help in Windows.

If the connection is successful, you will be prompted to enter a user name.

3 **Enter a user name of “usr1” and press the Enter key.**

If the user name is authenticated, you will be prompted for a password.

4 **Enter the password and press the Enter key.**

The password is the model name (“bpu4800”).
If the password is verified, login is complete.

You can change both the user name and password.

If a connection timeout occurs

The unit disconnects the FTP connection if no command is received within 90 seconds of the last command being received. In this case, first log out (see next section) and then repeat steps **1** to **3**.

Note

If the power to the unit is turned off during an FTP connection, any data being transferred will be discarded.

Logging out

To log out after completing file operations, enter “QUIT” at the command prompt and press the Enter key.

Command list

The FTP protocol commands supported on the unit comprise standard commands (below) and extended commands *(page 46)*.

Notes

- To execute an FTP command, the application software must be installed on the computer.
- The supported commands may vary depending on the application software.
- Only ASCII characters can be used in file names.

Standard commands

In the command syntax, <SP> represents a space character, and <CRLF> represents a carriage-return/line-feed entered using the Enter key.

USER

Authenticates a user name.

Syntax: USER <SP> <user_name> <CRLF>

Example: USER usr1

PASS

Authenticates a password.

Syntax: PASS <SP> <password> <CRLF>

Example: PASS bpu4800

QUIT

Terminates the FTP connection. If executed during a file transfer, the connection closes after the file transfer ends.

Syntax: QUIT <CRLF>

PORT

Notifies the unit of the IP address and port number of the computer to use for data connection (for initiating data connection from the unit).

Syntax: PORT <SP> <h1,h2,h3,h4,p1,p2> <CRLF>

- h1 (byte 1) to h4 (byte 4): IP address
- p1 (byte 1) and p2 (byte 2): Port number

Example: PORT 10,0,0,1,242,48
(IP address: 10.0.0.1, Port number: 62000)

PASV

Requests that the unit listen to a port other than the default data connection port (sets the unit to Passive mode for initiating a data connection from the computer).

Syntax: PASV <CRLF>

TYPE

Specifies the data type.

Syntax: TYPE <SP> <type_code (<SP>-delimited options)> <CRLF>

The following type codes exist. However, this unit transmits code “I” regardless of the specified code.

- A: ASCII
  - N: Non-print
  - T: Telnet format
  - C: ASA carriage control
- E: EBCDIC
  - N: Non-print
  - T: Telnet format
  - C: ASA carriage control
- I: IMAGE (Binary) (default)
- L: LOCAL BYTE
  - SIZE: Byte size

Example: TYPE I

STRU

Specifies the data structure.

Syntax: STRU <SP> <structure_code> <CRLF>

The following structure codes exist. However, this unit transmits code “F” regardless of the specified code.

- F: File structure (default)
- R: Record structure
- P: Page structure

Example: STRU F

MODE

Specifies the transfer mode.

Syntax: MODE <SP> <mode_code> <CRLF>

The following mode codes exist. However, this unit transmits code “S” regardless of the specified code.

- S: Stream mode (default)
- B: Block mode
- C: Compressed mode

Example: MODE S

LIST

Transfers a list of files from the unit to the computer.

Syntax: LIST <SP> <path_name> <CRLF>

The following data is transferred, depending on the presence or otherwise of the directory or file specified in <path_name>.

- When a directory is specified: A list of files in the specified directory
- When a file is specified: Information about the specified file
- Nothing specified: A list of files in the current directory

Example 1: LIST InternalStorage1

Example 2: LIST FILE00000010.mxf

NLST

Transfers a list of file names only from the unit to the computer.

Syntax: NLST <SP> <path_name> <CRLF>

The following data is transferred, depending on the presence or otherwise of the directory specified in <path_name>.

- When a directory is specified: A list of the names of files in the specified directory
- Nothing specified: A list of names of files in the current directory

Example: NLST InternalStorage1

RETR

Copies files from the specified path on the unit to the current directory on the computer.

Syntax: RETR <SP> <path_name> <CRLF>

Example: RETR FILE00000010.mxf

STOR

Copies MXF files on the computer to the current directory.

Syntax: STOR <SP> <path_name> <CRLF>

Example: STOR FILE00000010.mxf

RNFR
RNTO

Renames a file.
Specify the current file name using the RNFR command and specify the new file name using the RNTO command (always execute the RNFR command before executing the RNTO command).

Note

Files cannot be renamed during recording or playback.

Syntax: RNFR <SP> <path_name (current file name)> <CRLF>
RNTO <SP> <path_name (new file name)> <CRLF>

Example: RNFR FILE00000010.mxf
RNTO SCENE100.mxf

DELE

Deletes the file at the specified path on the unit.

Notes

- Files cannot be deleted during recording or playback.
- Files may not be deleted, depending on the type of directory or file.

Syntax: DELE <SP> <path_name> <CRLF>

Example: DELE FILE00000099.mxf

STAT

Transmits attribute information about the file at the specified path or transmits data transfer status from the unit to the computer. If a file is specified, the following attribute information is displayed.

- MXF file
  - File name (excluding .mxf extension)
  - File protection information
  - File type
  - File length (number of frames)
  - File size (number of bytes)
  - File recording date
  - File recording time
  - File update date
  - File update time
  - DF flag (NDF/DF)
  - First LTC value
  - Flag (OK/NG/KEEP)
  - System frequency (23/24/25/29)
  - Video system frequency (23/24/25/29/50/59/100/119/150/179/200/239/300/359/400/479)
  - Video scan type (Interlaced/Progressive)
  - Number of video pixels (e.g. 3480 × 2160)
  - Video signal type (YPbPr/RGB/XYZ)
  - Video bit depth (8/10/12 bits)
  - Video codec information
  - Video compression mode
  - Audio codec and sample frequency information
  - Number of audio channels
  - Non-audio information (1-bit × 16 channels)
  - Emphasis information (2-bit × 16 channels)
  - Recording model information (15: BPU4800)
  - Playback permission information and editing permission information
- Subclip In-point information
- Subclip Out-point information
- Color space information

If a storage folder is specified, detailed storage information is displayed.

- Model name
- Serial number
- Protection information
- Volume label
- Access start date
- Final formatting date
- Final update date
- Remaining capacity (GB)
- General file area remaining capacity (%)

Syntax: STAT <SP> <path_name> <CRLF>

The following data is transferred, depending on the presence or otherwise of the file specified in <path_name>.

- When a file is specified: Attribute information about the specified file
- When storage is specified: Detailed information about the specified storage
- Nothing specified: RETR transfer progress rate (%) (over 4 sessions)
  Typical output: 211 45 75 10 25

Example 1: STAT FILE0000001.mxf
Example 2: STAT InternalStorage1

ABOR

Aborts the currently executing data transfer and other tasks on the unit.

Syntax: ABOR <CRLF>

SYST

Displays the system name of the unit.

Syntax: SYST <CRLF>

NOOP

No operation (command used to check operation of the unit).

Syntax: NOOP <CRLF>

PWD

Displays the current directory (“/” is displayed for the root directory).

Syntax: PWD <CRLF>

CWD

Changes the current directory (switches from the current directory to another directory).

Syntax: CWD <SP> <path_name> <CRLF>

Switches to the following directory, depending on the presence or otherwise of the directory specified in <path_name>.

- When a directory is specified: The specified directory
- Nothing specified: The root directory

Example: CWD InternalStorage1

CDUP

Changes the current directory to the directory one level up (parent directory).

Syntax: CDUP <CRLF>

SIZE

Transmits the size of the specified file.

Syntax: SIZE <SP> <path_name> <CRLF>

Extension commands

In the command syntax, <SP> represents a space character, and <CRLF> represents a carriage-return/line-feed entered using the Enter key.

SITE REPF

Transfers the MXF file from the specified path on the unit to the current directory on the computer.
You can use this command to specify a portion of the body of the MXF file to transfer required portions only.

Syntax: SITE REPF <SP> <path_name> <SP>
<start_frame> <SP> <transfer_size> <SP>
<number_of_audio_channels> <SP>
<metadata_packets> <CRLF>

<start_frame> specifies the offset of the start video frame to transfer from the first frame in the file (first frame is 0).
<transfer_size> specifies the number of video frames to transfer (specify 0 to transfer all frames to the end of the file).
<number_of_audio_channels> specifies the number of audio data channels to transfer with the video.
<metadata_packets> specifies whether to add metadata packets. Specify “1” to add packets, or “0” to not add packets.

Example: SITE REPF FILE00000010.mxf 50 200 4 0
This command transfers FILE00000010.mxf. It transfers a body portion of 200 frames from frame 50, audio channels 1 to 4, and does not add metadata packets.

SITE DF

Displays the free storage space.

Syntax: SITE DF <CRLF>

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.

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.

Troubleshooting

Salvaging Memory when Recording Ends Abnormally

When recording ends, press the POWER switch on the front panel to finish operation of the unit. Recording will not end normally if the main power switch of the connector panel is turned off or the power cord is disconnected during recording. If this happens, the file system will not be updated and the video/audio data that was recorded in real time will not be recognized as a file, resulting in the content of the file that was recorded being lost.
The unit is equipped with a function (salvage function) for restoring the data in memory with minimal loss. The salvage function allows the file to be restored based on marker and other information recorded to memory.
The salvage process can take a few seconds or up to 10 minutes, depending on the state of the memory when the recording was interrupted.

Notes

- Before disconnecting the power cord on the connector panel, switch the unit off using the POWER button on the front panel.
- The salvage function is designed to salvage as much recorded material as possible in the event that an unforeseen accident occurs but there is no guarantee that 100% of the data will be restored.
- Data immediately before recording was interrupted cannot be restored even if you execute this function. Approximately one second of data prior to the interruption is lost.
- A dialog prompting you to salvage or format is displayed each time you turn the power on if there are files that have not been restored.
- Recording and playback cannot be performed if files have not been restored.
- Formatting memory will immediately enable you to use it again as storage, but all recorded data will be lost.
- Even if data is successfully restored after a salvage, it is recommended that you transfer files you want to keep to external network storage or run playback to copy the files to other media, and then reformat the memory.

Restoring files using salvage

1 **If memory for which recording did not end normally is detected, a warning message appears on the web menu screen and a confirmation message appears prompting you to salvage or format memory.**

Note

The salvage process cannot be stopped once it is started. Allow plenty of time for the salvage process to complete.

2 **Select [FS Salvage] on the Storage screen of the web menu.**
The salvage process begins and a “Please wait.” message appears.

The message window closes automatically when the process ends.

When files cannot be restored using salvage

If files cannot be restored even by performing a salvage, the internal memory cannot be used in this condition. Formatting memory will enable you to use it again.

1 If memory for which recording did not end normally is detected, a warning message appears on the web menu screen and a confirmation message appears prompting you to salvage or format memory.

2 Select [FS Format] on the Storage screen of the web menu.

The format process begins and a “Please wait.” message appears.

The message window closes automatically when the process ends.

Note

If [Rec Inhi] is set to “On” on the [Setup] tab of the System screen of the web menu, change the setting to “Off.”

Error Messages

Error messages displayed on monitor

When an error is detected in the unit or video camera, the following messages may be displayed on the video output of the SLOT3 LIVE monitor.

Note

Display the menu or status screen to view messages.

Error message	Meaning
TEMP WARNING	Internal temperature error.
PLD NG	Internal PLD error.

Error message	Meaning
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.

Error messages displayed in web menu

If the unit ceases to operate correctly due to malfunction or an internal system error, the SYSTEM indicator on the front panel starts flashing yellow or red, and an error message appears on the web menu screen.

After an error message appears, resolve the cause of the error based on the error message and then turn the unit back on. If the error message appears again when the unit is turned on, contact your Sony representative.

Code [1)]	Indication	Description
14xx00	PS FAN1 TROUBLE, etc.	A malfunction of cooling fan motor was detected. For details, refer to the Maintenance Manual.
260100	POWER SUPPLY A UNIT TROUBLE	A failure was detected in power supply unit A.
260200	POWER SUPPLY B UNIT TROUBLE	A failure was detected in power supply unit B.
960100	CALENDAR CLOCK ERROR	An internal calendar clock error was detected.
B3xx00 B3xxpp B3xxii B33Ess	SY CPLD2 INITIAL ERROR, etc.	An error was detected at the device initialization stage. For details, refer to the Maintenance Manual.
B80100	SYS1-SYS2 NO COMMUNICATION ERROR	An error occurred in communications with the two CPUS (SYS1, SYS2) on the SY-422 board.
B80300	SYS1-NW NO COMMUNICATION ERROR	An error occurred in communications with the CPU (SYS1) on the SY-422 board and the CPU (NW) on the CPU-453 board.
B90100	SYS1 INTERNAL ERROR	A software task error in SYS1 CPU was detected. For details, refer to the Maintenance Manual.
BCxx00	SYS1-APP NO COMMUNICATION ERROR 1, etc.	An error occurred in CAMERA APP and SYS1 communications.
D103pp	PORT x ENC PROC ERROR	An error occurred during encoding. For details, refer to the Maintenance Manual.
D2xxpp	PORT x DEC PROC ERROR, etc.	An error occurred during decoding. For details, refer to the Maintenance Manual.
D3xx01	SLOT Mx AV WRITE ERROR1, etc.	An error occurred while writing to memory. For details, refer to the Maintenance Manual.
D4xx01	SLOT Mx AV READ ERROR1, etc.	An error occurred while reading from memory. For details, refer to the Maintenance Manual.

Code [1)]	Indication	Description
D5xx01	SLOT Mx INTERFACE ERROR1, etc.	Cannot use memory because cannot communicate with the memory inserted in the unit. If this error persists after turning the unit on again, the unit or memory may be faulty.
D6xx01	SLOT Mx UNMOUNT ERROR1, etc.	An error occurred when attempting to unmount memory. The memory may not be usable. If error D7xx01 occurs every time the power is turned on, the data must be salvaged.
D7xx01	SLOT Mx MOUNT ERROR1, etc.	An error occurred when detecting the memory. If error D7xx01 occurs every time the power is turned on, the data must be salvaged.
D80101	SLOT Mx FILE SYSTEM ERROR	An error was detected with the file system in memory. If the same error occurs every time the power is turned on, the memory must be formatted. Follow the on-screen instructions to format memory.
E101pp	PORT x COND3 BAD, STOP REC	Recording was aborted because all the swap space to replace bad memory cells has been consumed in the memory in use.
E106pp	PORT x FS STUFFED, STOP REC	Recording was aborted because file system control limits have been reached in the memory in use. Format the memory to use it for recording.
E108pp	PORT x WRITE FAIL, STOP REC	Recording was aborted to protect existing data because an attempt was made to overwrite data in the memory in use. Format the memory to use it for recording.
E10901	SLOT Mx CANNOT REC	An abnormality was detected in an unrecorded area in memory. This memory cannot be used for recording. Format the memory to use it for recording.
E10App	PORT x MAX LENGTH, STOP REC	Recording stopped because the maximum recording time of the port was reached.
E43100	INTERNAL MEMORY LACK	Some or all of the internal memory boards are not installed.
E43200	INTERNAL MEMORY WRONG POSITION	An internal memory board was inserted in the wrong position.

1) The portion in lower case letters in the above codes is one of the following numbers.
ii: Number identifying the SHARE PLAY connector position on the corresponding DM-156 board.
11: SHARE PLAY 1/2 (common)
91: SHARE PLAY 1
92: SHARE PLAY 2
pp: Number identifying the corresponding port.
81: HFR Data Record Port
82: Replay Port or HD Cut Out Port
B1: Transcode Port
ss: Number indicating the slot position on the corresponding MDC-20 board.
01: Slot 1
02: Slot 2
03: Slot 3
04: Slot 4
xx: Number identifying the error location. For details, refer to the Maintenance Manual.

Warning Messages

When one of the problems described below is detected by the unit, a warning mark appears on the status bar of the web menu. Operation can continue even when the warning mark appears. When multiple errors occur simultaneously, the number of errors is indicated to the right of the warning mark.

After a warning message appears, resolve the cause of the warning based on the message.

For details on resolving the causes of warning messages, refer to the Maintenance Manual.

Code [1)]	Indication [2)]	Description
0102pp	REFERENCE DISTURBED IN TRANSCODING	Sync reference was disrupted during transcoding.
020100	LOST LOCK	Synchronization was lost during playback, recording, or editing.
0B01pp	PORT x VIDEO DATA ERROR	Part of the playback video signal on the indicated port was accompanied by noise.
0B02pp	PORT x VIDEO DATA ERROR IN SHARE PLAY	Could not play correctly due to an NMI data transfer system fault.
16xx00	SYS1-APP PARAMETER DISCORD 1, etc.	An erroneous value was detected in CAMERA APP and SYS1 communications parameter.
1901pp	PORT x NO A1/A2 INPUT (P-x NO A1/A2)	Carrier cannot be detected on digital audio channel 1/channel 2 input of the displayed port.
1A01pp	PORT x NO A3/A4 INPUT (P-x NO A3/A4)	Carrier cannot be detected on digital audio channel 3/channel 4 input of the displayed port.
1B01pp	PORT x NO A5/A6 INPUT (P-x NO A5/A6)	Carrier cannot be detected on digital audio channel 5/channel 6 input of the displayed port.

Code [1]	Indication [2]	Description
1C01pp	PORT x NO A7/A8 INPUT (P-x NO A7/A8)	Carrier cannot be detected on digital audio channel 7/channel 8 input of the displayed port.
210101	SLOT MX REC INHIBIT (REC INHBIT)	Cannot record to memory due to a menu setting.
220201	SLOT MX FS LOCKED (FS LOCKED)	The memory in the indicated slot is locked and cannot be recorded.
220400	UNFORMATTED MEMORY BOARD DETECTION	An unformatted memory board was detected.
300100	POWER SUPPLY A INVALID INPUT VOLTAGE	The input voltage applied to power supply unit A is incorrect. Check the applied power supply voltage.
300200	POWER SUPPLY B INVALID INPUT VOLTAGE	The input voltage applied to power supply unit B is incorrect. Check the applied power supply voltage.
310100	POWER SUPPLY A MISCELLANEOUS DEFECT	An error was detected in power supply unit A.
310200	POWER SUPPLY B MISCELLANEOUS DEFECT	An error was detected in power supply unit B.
470100	RTC BATTERY LOW LEVEL (RTC BATT LOW)	The lithium battery on the SY-422 board is low on power.
740200	ASYNCHRONOUS SHARE PLAY INTERFACE	SHARE PLAY operation malfunctioned because the phase difference with the reference sync signal exceeded the permitted range.
750191	SHARE PLAY1 INTERFACE DEFECTIVE	External Warning notification if the Share Play Primary is a valid port but the link is down.
750192	SHARE PLAY2 INTERFACE DEFECTIVE	External Warning notification if the Share Play Secondary is a valid port but the link is down.
90XX00	SYS1-APP SHARED MEM ACCESS FAIL 1, etc.	CAMERA APP and SYS1 communication is unstable.
AA0100	SYS1 FTP IF TASK ERROR	An error was detected in the FTP function of CPU (SYS1) on the SY-422 board.
BB01pp	PORT x NMI COMMUNICATION ERROR	There was not response to the NMI command.
D204pp	PORT x DATA READ ERROR IN SHARE PLAY	An access error to target storage occurred during SHARE PLAY execution.
D40201	SLOT MX AV READ ERROR2	A video playback error attributable to memory was detected.
D901pp	TRANSCODE PROC FAILED	An error occurred on the device during transcoding.
E10101	MEMORY FULL, NOT RECORDABLE (M1 FULL)	The recording operation/command was terminated because there was insufficient remaining recording capacity in memory. Deletes files from memory.
E10201	MEMORY COND3 BAD, NOT RECORDABLE (M1 COND3 BAD)	Cannot record because the swap space to replace bad memory cells has been consumed in memory. The recording operation/ command was terminated.
E10301	MEMORY FUNCTION LIMIT (M1 FUNC LIMIT)	The recording/playback operation was terminated due to memory function limits related to recording and playback.
E10501	MEMORY MAXIMUM FILES, NOT RECORDABLE (M1 MAX FILES)	The recording operation/command was terminated because the number of files in memory has reached the upper limit. Deletes files from memory.
E10601	MEMORY FILE SYSTEM STUFFED, NOT RECORDABLE (M1 FS STUFFED)	The recording operation/command was terminated because the memory file system control limits have been reached. Format the memory to use it for recording.
E202pp	PORT x FULL, STOP RECORDING (P-x FULL STOP)	Recording was terminated for the indicated port because the memory is full.
E401pp	PORT x NMI LINK RESOURCE LACK	An error was detected relating to the control from PRCM.

1) The portion in lower case letters in the above codes is one of the following numbers.
pp: Number identifying the corresponding port.
81: HFR Data Record Port
82: Replay Port or HD Cut Out Port
B1: Transcode Port
2) Information in parentheses () indicates short messages for superimposed display.

Memory status messages

The following warning messages appear depending on the wear or usage of the memory. Using memory repeatedly gradually increases the possibility that errors will occur during recording and playback. When any of the following messages appear, it is time to replace with new memory. Specifically, if the “CONDITION x BAD” message appears, it is best to replace with new memory as soon as possible.

Code	Indication	Description
C10101	SLOT Mx CONDITION1 DOUBTFUL (M1 COND1 DBT)	The number of errors when writing/reading is becoming larger. Although all errors can be corrected, it is recommended that you replace with new memory.
C10201	SLOT Mx CONDITION1 BAD (M1 COND1 BAD)	The number of errors when writing/reading has become extremely large. Although all errors can be corrected, it is strongly recommended that you replace with new memory.
C10301	SLOT Mx CONDITION2 DOUBTFUL (M1 COND2 DBT)	The number of memory repetitive operations has become large. Although there is currently no problem, it is recommended that you replace with new memory.
C10401	SLOT Mx CONDITION2 BAD (M1 COND2 BAD)	The number of memory repetitive operations has become extremely large. Although there is currently no problem, it is strongly recommended that you replace with new memory.
C10501	SLOT Mx CONDITION3 DOUBTFUL (M1 COND3 DBT)	The swap space used to replace bad memory cells is becoming smaller. Although there is currently no problem, it is recommended that you replace with new memory.
C10601	SLOT Mx CONDITION3 BAD (M1 COND3 BAD)	The swap space used to replace bad memory cells has been exhausted. Although playback is still available, recording is no longer possible. It is strongly recommended that you replace with new memory.

To clear a warning message

1 Display the Warning tab of the Maintenance screen of the web menu.

2 Select [Warning Cancel].

3 Place a check mark in the messages whose settings you want to change.

4 When finished, click the [OK] button.

For details, refer to the Maintenance Manual.

Displaying the Error Log

You can check up to 99 detected error messages and warning messages on the [Log] tab of the [Maintenance] screen. You can also export the log to a file.
The error and warning messages are displayed in [Error/Warning Table] on the [Maintenance] screen > [Log] tab.

To export the error log to a file

1 Click the [Log] tab on the [Maintenance] screen.

2 Click the [Create Error Log] button.

3 Right-click [Download Log File] and save the file.

Note

The [Create Command Log 1/2] button and [Create Storage Log 1/2] button are for maintenance use.

Specifications

General	
Power requirement	100 V to 127 V/200 V to 240 V AC, 50/60 Hz
Current consumption	4.5 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. 16.5 kg (36 lb 6.0 oz)
Input/output connectors	
CAMERA	Optical fiber connector (1)
CCU	Optical fiber connector (1)
REMOTE (RCP/CNU)	8-pin multi-connector (1)
LAN	8-pin (1)
SHARE PLAY 1/2	SPF+ (2)
REMOTE1/2	RJ-45 (1)
GPIO (25P)	25-pin D-Sub, female (1)
NETWORK1 to 2	RJ-45 (2), 1000BASE-T
MAINTENANCE	USB (1)
NETWORK	SFP+ (1) 10GBASE-SR/LR (Add-in Card)
Input connectors	
AC IN	100 V to 127 V/200 V to 240 V AC (2)
SDI1, SDI2	BNC type (2) 3G-SDI: SMPTE ST424/425 Level-A/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)
TIMECODE INPUT	BNC (1), 0.5 Vp-p to 5 Vp-p, 10 kilohms
DIGITAL AUDIO (AES/EBU) INPUT	BNC (4), CH 1/2 to CH 7/8, AES/EBU format, unbalanced **Note** When connecting devices for AES/EBU signal input/output, use a cable whose length is less than 300 meters (984 feet).

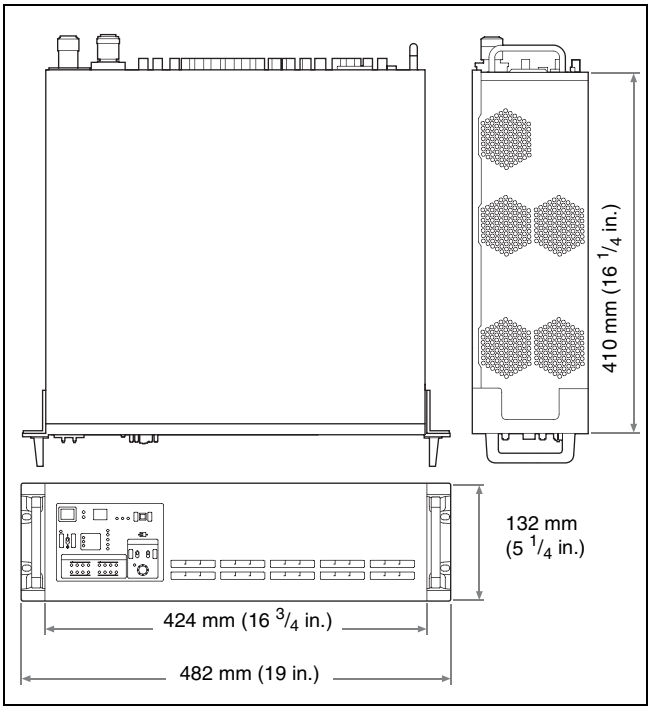
Output connectors	
3G/HD SDI OUTPUT (SLOT1 LIVE)	BNC type (8) 3G-SDI: SMPTE ST424/425 Level-A/B, 0.8 Vp-p, 75 ohms, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps 3G-SDI/HD-SDI selectable
3G/HD SDI OUTPUT (SLOT1 REPLAY)	BNC type (8) 3G-SDI: SMPTE ST424/425 Level-A/B, 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 LIVE)	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
3G/HD SDI OUTPUT (SLOT2 REPLAY)	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 (SLOT3 LIVE)	BNC type (1) HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps
HD SDI OUTPUT (SLOT3 REPLAY)	BNC type (1) HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps
REFERENCE OUT	BNC type (1) HD: SMPTE ST274, tri-level sync, 0.6 Vp-p, 75 ohms SD: Composite sync, 0.3 Vp-p, 75 ohms HD SYNC/SD SYNC selectable
NMI-LAN (SLOT1 LIVE)	SFP+ (2) 10G BASE-** (using SFP+ transceiver module)
NMI-LAN (SLOT1 REPLAY)	
NMI-LAN (SLOT2)	
TIMECODE OUTPUT	BNC (1), 1.5 Vp-p, low impedance
DIGITAL AUDIO (AES/EBU) OUTPUT	BNC (4), CH 1/2 to CH 7/8, AES/EBU format, unbalanced

Supplied accessories
Number plates (1 set)
Before Using this Unit (1)
Operating Instructions (CD-ROM) (1)
Cable, RJ45-DSUB Part No. 1-848-424-12 (SONY) (1)

Optional accessories
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
SZC-4008 HFR Software (4K)
SZC-2016 HFR Software (HD)
SKC-MEM4 Internal Memory Array
OTM-10GSR1 SFP+ Transceiver Module
Maintenance manual

Related equipment
HDC4800 Color Camera

HDCU2000/2500 HD Camera Control Unit
RCP-1000/1500 Remote Control Panel
MSU-1000/1500 Master Setup Unit
CNA-1 Camera Control Network Adaptor
PWS-110PR1 Production Control Station
PWS-110MG1 Media Gateway Station
PWSK-4403 USB Control Device
Dimensions



Design and specifications are subject to change without notice.

Notes

- Always make a test recording, and verify that it was recorded successfully.
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