

SONY®

MULTI PORT AV STORAGE UNIT

PWS-4500

OPERATION MANUAL

English

1st Edition (Revised 1)

Table of Contents

Chapter 1	Overview	
	Features	4

Chapter 2	Names and Functions of Parts	
	Front Panel	5
	Connector Panel	6

Chapter 3	Setup	
	Connecting External Devices	9
	Using the unit as a recorder	9
	Using the unit as a player	10
	Displaying the Web Menu	11
	Configuring the Network	11
	Setting the System and Boards	12
	Maximum Recording Time of Memory	13

Chapter 4	Web Menu	
	Title Bar	14
	Home Screen	14
	Status Screen	18
	System Screen	19
	Board tab	19
	Setup tab	20
	Remote tab	23
	Network tab	25
	Share Play tab	26
	Bank tab	27
	Power tab	28
	Port Screen	29
	For input ports	29
	For output ports	32
	File Screen	35
	Storage Screen	36

Info tab.....	36
Setup tab	37
Loop tab	38

Appendix

SDI Connector Input/Output Specifications.....	39
File Operations via FTP.....	42
Directory structure	42
Setting Up	42
Connecting via FTP	42
Command list.....	43
Usage Precautions	46
Troubleshooting	46
Salvaging memory when recording ends abnormally	46
Error Messages	47
Warning Messages.....	48
Displaying the error log	51
Recording Format.....	52
Specifications	55



Overview

Chapter

1

Features

The PWS-4500 is a multi-channel recorder that supports 4K to HD resolutions.

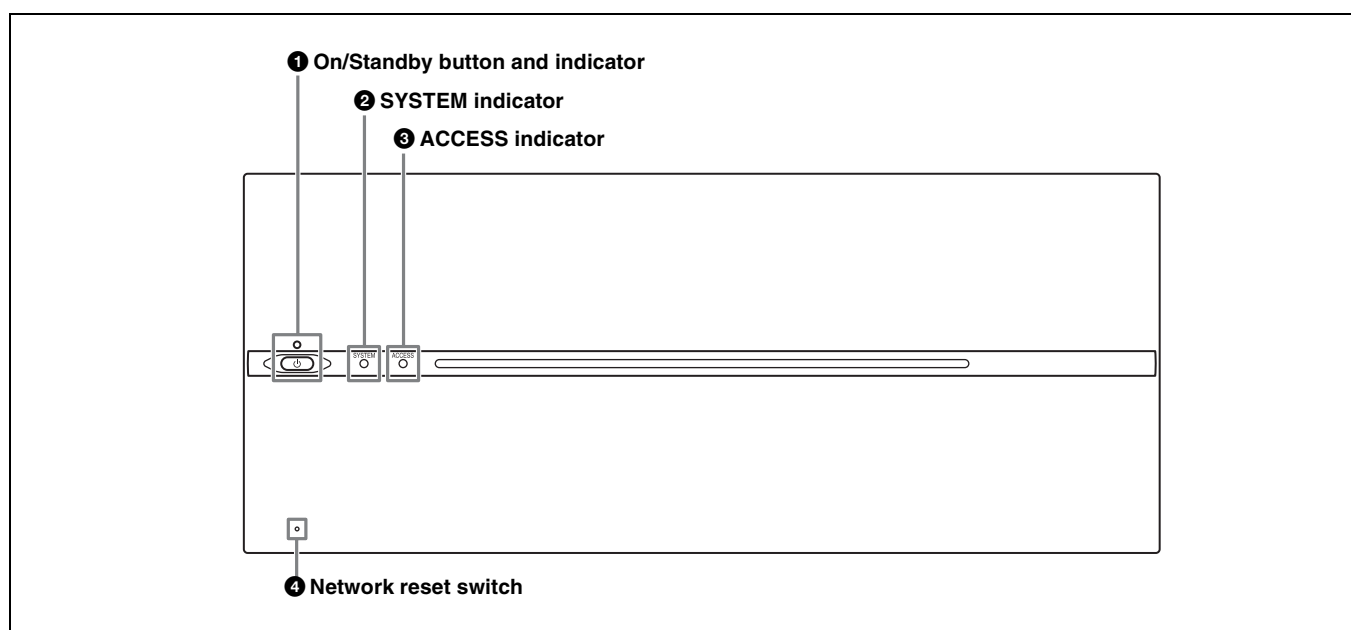
The unit features high-speed, high-capacity memory storage and supports transfers over IP, giving it a high degree of affinity in a network infrastructure.

Names and Functions of Parts

Chapter

2

Front Panel



❶ On/Standby button and indicator

Switches the unit on/off (standby state). Connecting the power cord places the unit in standby state, and the indicator turns on red. Pressing the On/Standby button while in standby state turns on the unit and the indicator turns on green. Pressing and holding the On/Standby button for two seconds switches the unit to standby state, and the indicator changes to red. To turn the unit on again after switching from On state to standby state, when the indicator is red, press and hold the On/Standby switch for three seconds or longer. The indicator goes out when the power cord is disconnected.

❷ SYSTEM indicator

Displays the status of the unit.

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.

❸ ACCESS indicator

Displays the access status of storage.

Off: Not being accessed

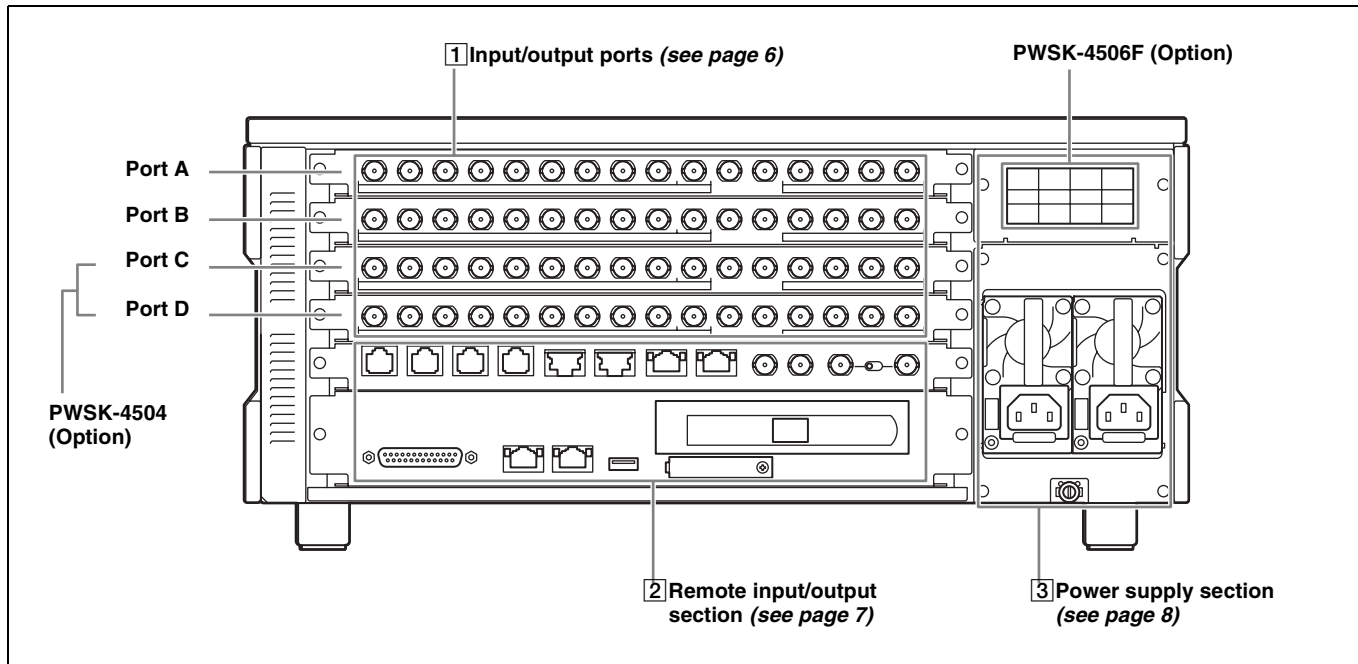
Blue: Accessing

Blue (flashing): Formatting or deleting files

❹ 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.

Connector Panel

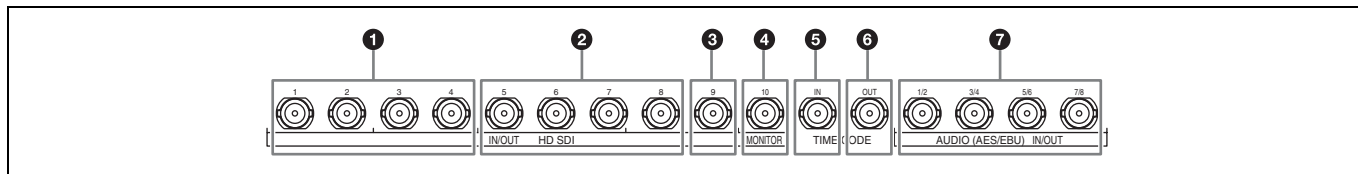


1 Input/output ports

The unit is equipped with two ports (A, B) as standard, and up to four ports are supported. Each port has the following 16 connectors. The ports can be configured as inputs or outputs using the web menu.

Note

The input/output signal on the SDI IN/OUT connectors varies with the port setting (input or output) and the SDI signal format. For details, see “SDI Connector Input/Output Specifications” (page 39).



For input ports

1 SDI IN/OUT 1 to 4 connectors

Inputs HD SDI signals (up to four cables).

2 SDI IN/OUT 5 to 8 connectors

Outputs the same signals input as connectors SDI IN/OUT 1 to 4 for monitors (up to four cables).

3 SDI IN/OUT 9 connector

Outputs an HD SDI signal with superimposed text information for a monitor. To superimpose text information, set [Character On/Off] to “On” on the Port screen of the web menu. The output signal format can be set to Interlace, Progressive, or PsF in [Port Configuration] on the [Port] screen of the web menu. When the playback file format is 4K, the output is down-converted to HD.

The audio signal is not output.

Also, you can use this connector as an HD standard-speed signal input connector during HD high frame rate recording.

4 SDI IN/OUT 10 connector

This outputs the same signal as the SDI IN/OUT 9 connector. When “HD Multi-Input” (dual-system input) is configured in the port settings, the x-1 (main port) monitor signal is output from the SDI IN/OUT 9 connector and the x-2 (sub port) monitor signal is output from the SDI IN/OUT 10 connector.

5 TIME CODE IN connector

Inputs a time code generated by an external device.

⑥ 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.

⑦ AUDIO (AES/EBU) connector

Inputs the audio signals in AES/EBU format for channels 1 to 8.

For output ports**① SDI IN/OUT 1 to 4 connectors**

Outputs HD SDI signals (up to four cables).

When [Output Port SDI-1,2,3,4] is set to [Off] on the [Setup] tab of the [System] screen in the web menu, no signal is output.

② SDI IN/OUT 5 to 8 connectors

Outputs the same signals as connectors SDI IN/OUT 1 to 4 (up to four cables).

③ SDI IN/OUT 9 connector**④ SDI IN/OUT 10 connector**

Outputs an HD SDI signal with superimposed text information for a monitor. To superimpose text information, set [Character On/Off] to “On” on the Port screen of the web menu. The output signal format can be set to Interlace, Progressive, or PsF in [Port Configuration] on the [Port] screen of the web menu. When the playback file format is 4K, the output is down-converted to HD. When “HD Multi-Output” (dual-system output) is selected in the port settings, the x-1 (main port) monitor signal is output from the SDI IN/OUT 9 connector and the x-2 (sub port) monitor signal is output from the SDI IN/OUT 10 connector.

⑤ TIME CODE IN connector

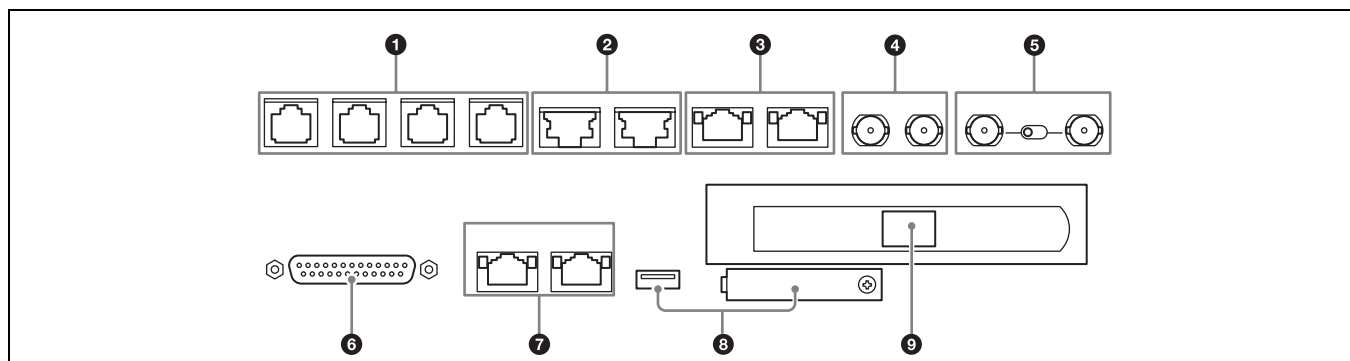
Not used.

⑥ TIME CODE OUT connector

Outputs the playback time code.

⑦ AUDIO (AES/EBU) connector

Outputs the audio signals in AES/EBU format for channels 1 to 8.

② Remote input/output section**① REMOTE 1/2 to 7/8 connectors**

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. The REMOTE 5/6 and 7/8 connectors are not used with this version.

② SHARE PLAY 1 to 2 connectors

Connects to another PWS-4500 via a network switch to share material between multiple PWS-4500 units.

③ NMI MONITOR 1 to 2 connectors

Outputs four port A to D, HD monitor signals using a network media interface.

④ MONITOR 1 to 2 connectors

Port A to H signals output in multi-monitor HD SDI signal format via SDI cable connection.

⑤ REF. INPUT connector and 75 Ω termination switch

Inputs the reference video signal of the selected field frequency. Input an HD tri-level SYNC signal or SD black burst signal.

A bridge connection is also supported. Set the 75 Ω termination switch to OFF if using a bridge connection, or set it to ON if not using a bridge connection. Use a 5C-FB cable for the connection.

⑥ GPIO (25-pin) connector

Parallel I/O connector.

For details, refer to the Maintenance Manual or Interface Manual.

⑦ NETWORK 1 to 2 connectors

Connects to a network cable for monitoring the unit by SNMP, configuring or checking the unit via HTTP, transferring files via FTP, etc.

Notes

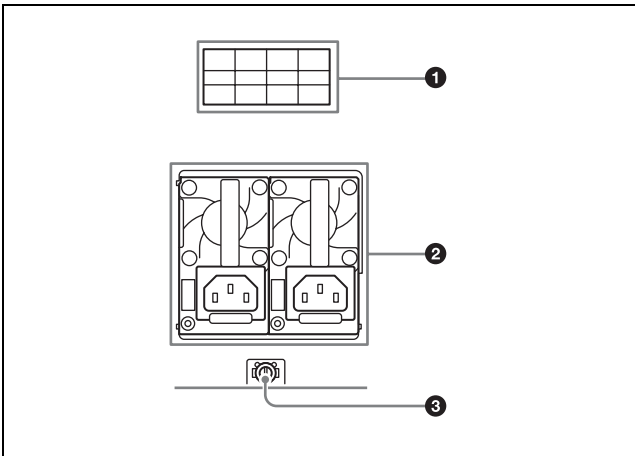
- For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to this port.
Follow the instructions for this port.
- When connecting a network cable, use a shielded-type cable to prevent malfunction due to radiation noise.

⑧ MAINTENANCE connector

For use by service personnel. Not used for normal operation.

⑨ 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.

③ Power supply section**① NMI LAN connector (option: PWSK-4506F)**

Transfers audio/video stream over an NMI.

② 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.

③ ⚡ Ground terminal

Connect to ground as required.

Connecting External Devices

This section describes how to connect the unit to external devices to record or play back data. This section describes the configuration with ports A and C used for inputs and ports B and D used for outputs.

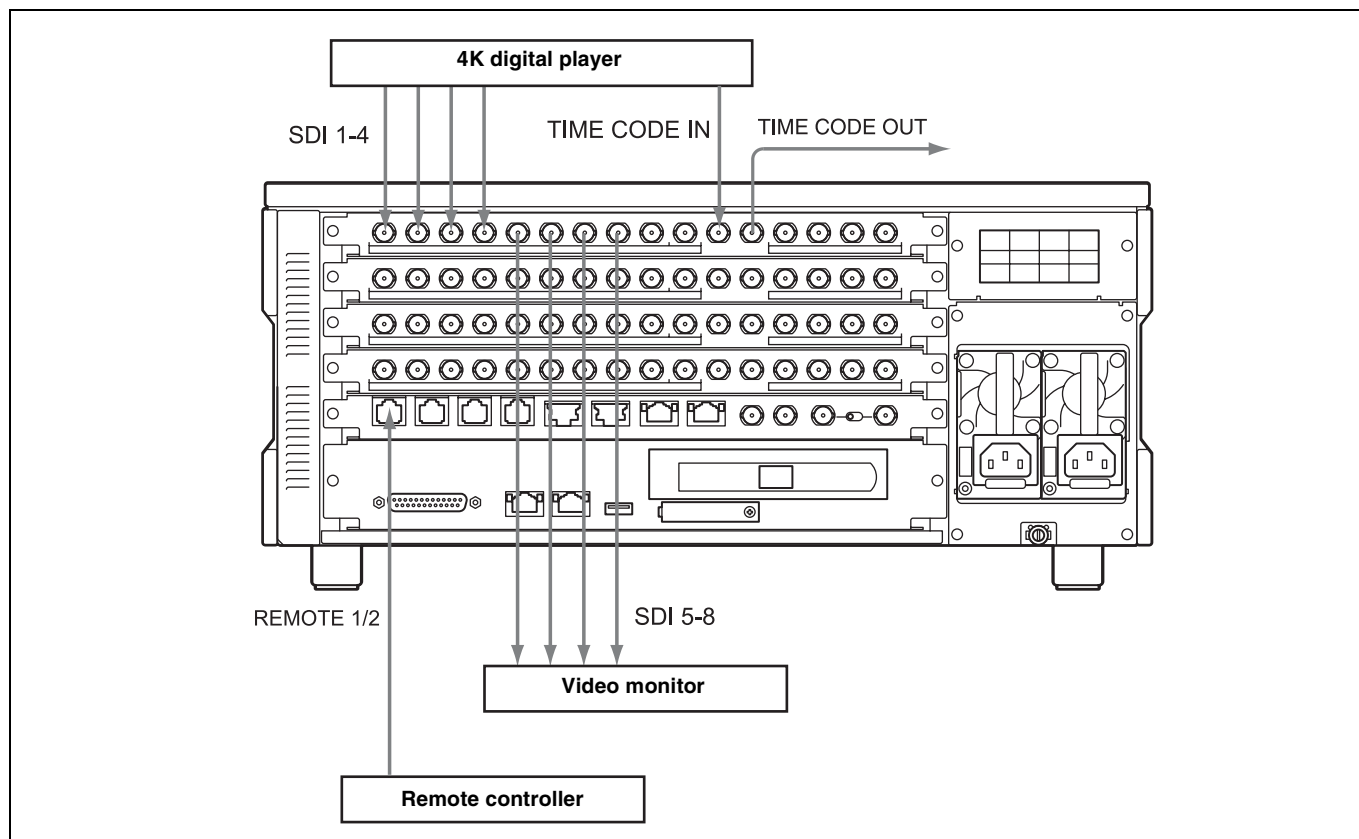
Using the unit as a recorder

The following shows an example of connecting a 4K digital player or other devices to the input ports and using the unit as a recorder.

Using a common time code

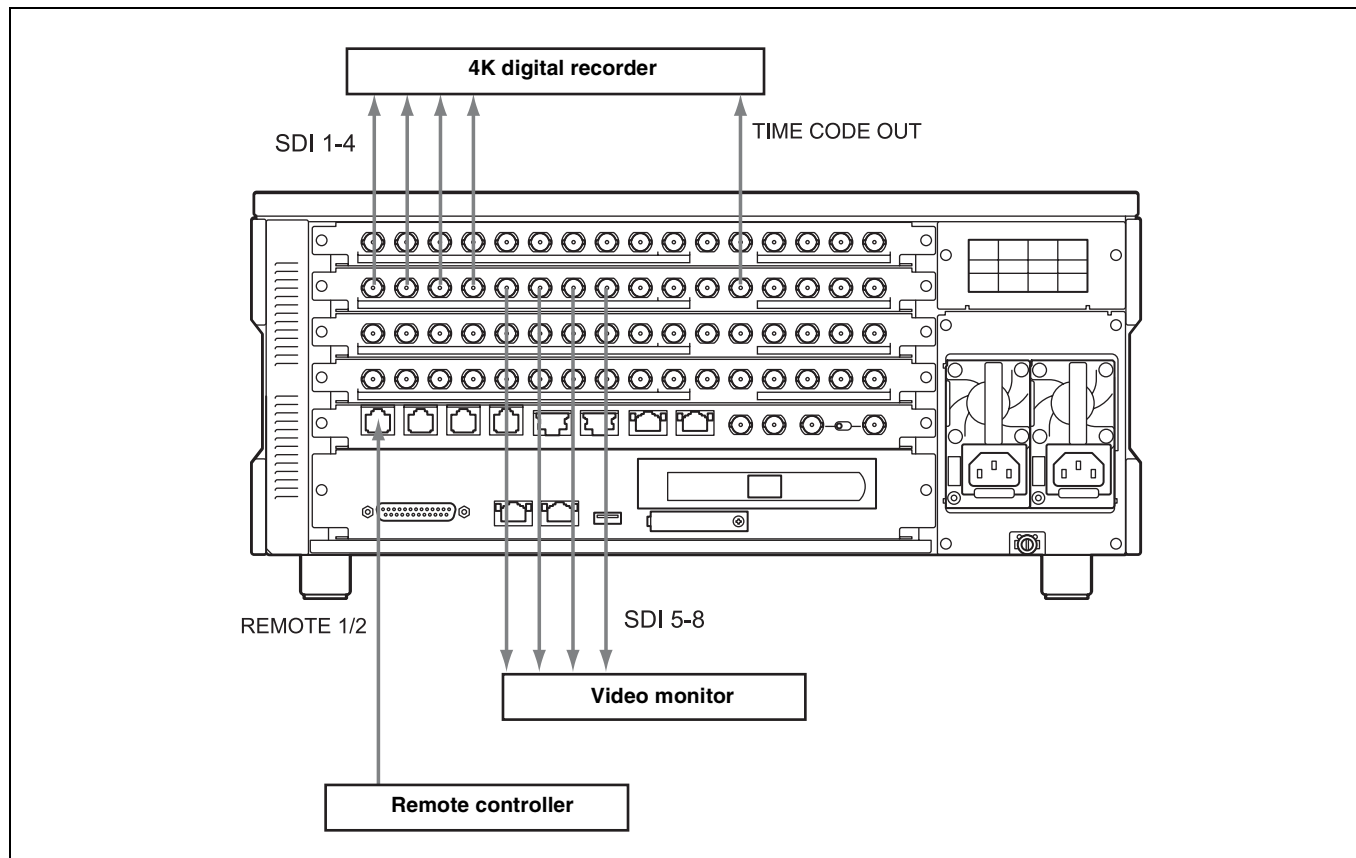
On this unit, a common time code can be used for multiple input ports.

To use a common time code, set the master time code in Master TC (*page 21*) on the Setup tab of the web menu, then set “Master TC” in TCG Source (*page 30*) for each input port on the Port screen.



Using the unit as a player

The following shows an example of connecting a 4K digital recorder or other devices to the output ports and using the unit as a player.



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 51, Firefox 46, Opera 37, Safari 5
- Mac: 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 25).

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 SDI input/output has priority, the transfer rate over the network may decrease depending on input/output port usage.

Setting the System and Boards

You set the system frequency and 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** Select the system frequency, input/output mode, and the number of input/output boards installed, then click the [Next] button.

System frequency

- 23.98 Hz
- 24 Hz
- 25 Hz
- 29.97 Hz

Input/output mode

- SDI Mode
- NMI Mode

Number of input/output boards

- 2 Boards
- 4 Boards

Notes

- The input/output mode sets whether the NMI or SDI signal input/output is used as a reference for the whole unit. The input/output mode cannot be set independently for each port.
- When the input/output mode is set to “SDI,” signals output from NMI lag by one frame. When the input/output mode is set to “NMI,” signals output from SDI lead by one frame. In either case, the phase of the audio signal and TC signal are offset.
- Input signals can use either SDI or NMI only.
- When the input/output mode is set to “NMI,” the video signal format can be set to QFHD (3840:2160) only.

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

- 4** Select the input/output type of each port, and click the [Next] button.
 - Input (single-system input)
 - HD Multi-Input (dual-system input)
 - Input with 2 Boards (using two boards)

- Output (single-system output)
 - HD Multi-Output (dual-system output)
 - HD Cut Out (for 4K/QFHD video HD cutout)
- For high frame rate recording (HD 300i/359i/400i/479i/300p/359p/400p/479p, 4K 100p/119p), two boards are used.
No audio signal is recorded if high frame rate recording is selected.

Click the [Next] button to display the [Step 3] screen.

- 5** Select the video codec of each port, and click the [Next] button.

The [Step 4] screen appears.

- 6** Select the video signal format of each port, and click the [Next] button.

For each port, select the video signal format group from the matrix.
The [Step 5] screen appears.

- 7** Select the port grouping to operate in sync, and click the [Next] button.

The [Step 6] screen appears, displaying the selections made on the [Step 1] to [Step 5] screens.

- 8** Check the selected items, and click the [Submit] button. A confirmation message appears. Click [OK].

The unit restarts automatically and the settings are enabled.

To set each port individually, see “*Port Screen*” (page 29) of the web menu.

Note

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

Maximum Recording Time of Memory

The following is a guide to the maximum recording time when recording to internal memory.

Format		2 TB	4 TB	6 TB	8 TB
XAVC Class480	4K 23.98p	9.7	19.5	29.3	39
	4K 29.97p	7.8	15.6	23.4	31.2
	4K 50p	4.8	9.6	14.4	19.2
	4K 59.94p	4	8	12	16
XAVC Class300	4K 23.98p	14.8	29.7	44.6	59.4
	4K 29.97p	11.8	23.7	35.6	47.5
	4K 50p	7.3	14.7	22.1	29.5
	4K 59.94p	6.1	12.3	18.4	24.6
XAVC Class100	HD 50i	27.5	55.1	82.7	110.3
	HD 59.94i	27.6	55.2	82.9	110.5
	HD 50p	14.9	29.9	44.9	59.9
	HD 59.94p	15.2	30.5	45.8	61.1
Avid DNxHD 45	HD 25p	55.6	111.3	166.9	222.5
	HD 29.97p	46.3	92.7	139.1	185.5
Avid DNxHD 145	HD 50i	27.5	55.1	82.7	110.3
	HD 59.94i	22.9	45.9	68.9	91.9
	HD 50p	14.9	29.9	44.9	59.9
	HD 59.94p	12.4	24.9	37.4	49.9
Avid DNxHD 220x	HD 50i	19.4	38.8	58.2	77.7
	HD 59.94i	16.1	32.3	48.5	64.7
	HD 50p	10.2	20.5	30.8	41.1
	HD 59.94p	8.5	17.1	25.7	34.3
Apple ProRes 422	HD 50i	23.6	47.2	70.8	94.5
	HD 59.94i	19.6	39.3	59	78.7
	HD 50p	12.6	25.3	38	50.7
	HD 59.94p	10.5	21.1	31.6	42.2
Apple ProRes 422 HQ	HD 50i	17.3	34.7	52.1	69.5
	HD 59.94i	14.4	28.9	43.4	57.9
	HD 50p	9.1	18.2	27.4	36.5
	HD 59.94p	7.6	15.2	22.8	30.4

Unit: Hours (approx.)

The maximum recording time varies depending on the recording format.

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.

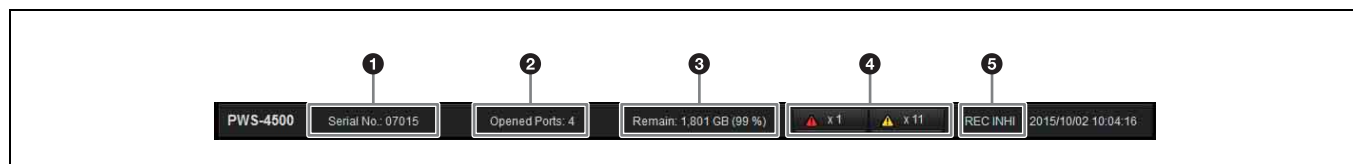
For details about this screen, refer to the Maintenance Manual.

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.



① Serial number

Displays the serial number of the unit.

② Number of open ports

③ Storage capacity

④ Error/warning indicators

Displays the number of errors and warnings that have occurred.

Clicking the indicator displays detailed information about the error/warning.

⑤ REC INHI indicator


Indicates when recording is inhibited (red).

The indicator is white when recording is supported.

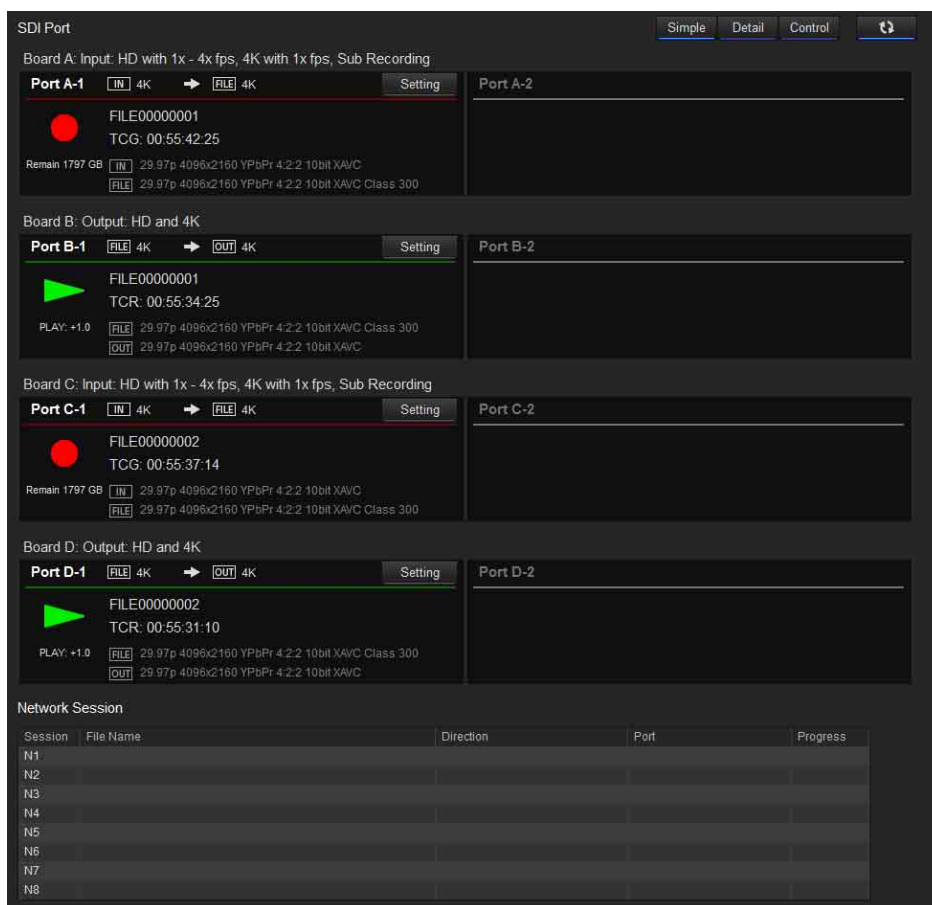
Home Screen

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.



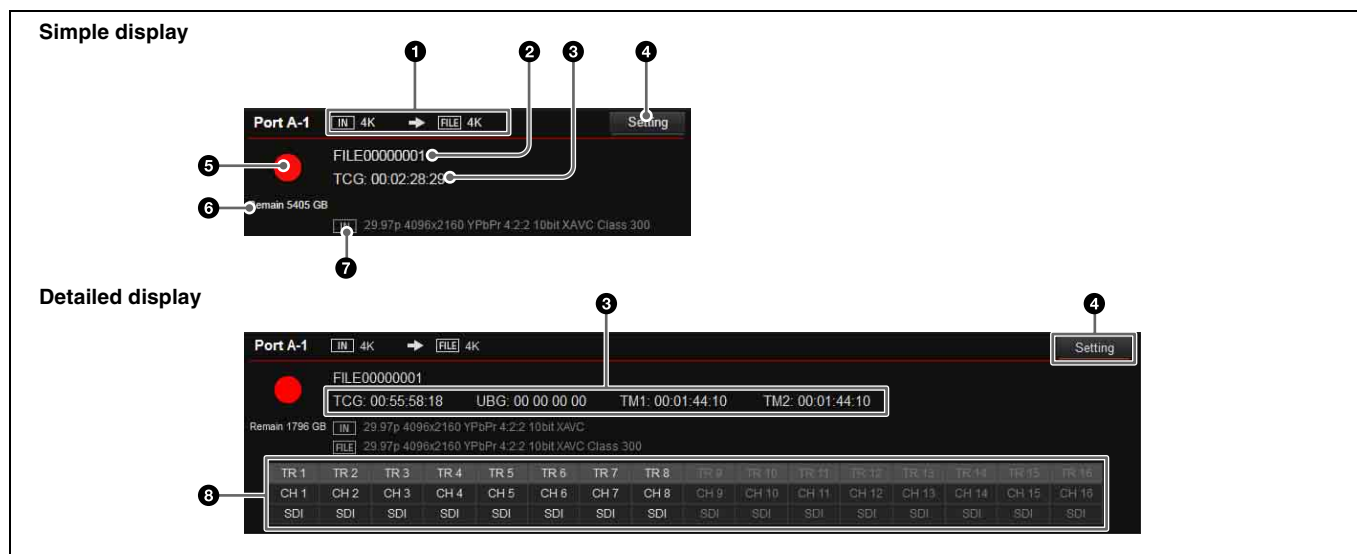
HD-SDI Port

Displays the status of each port.

The port settings vary depending on whether the port is used for input or for output.

For inputs

The following information is displayed.



❶ Input/recording format

[IN] displays the video format (HD/QFHD/4K) of the input signal, and [FILE] displays the video format of the recording.

❷ File name

Displays the name of the file being recorded. “File: NEXT” 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 29) 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 [IN]

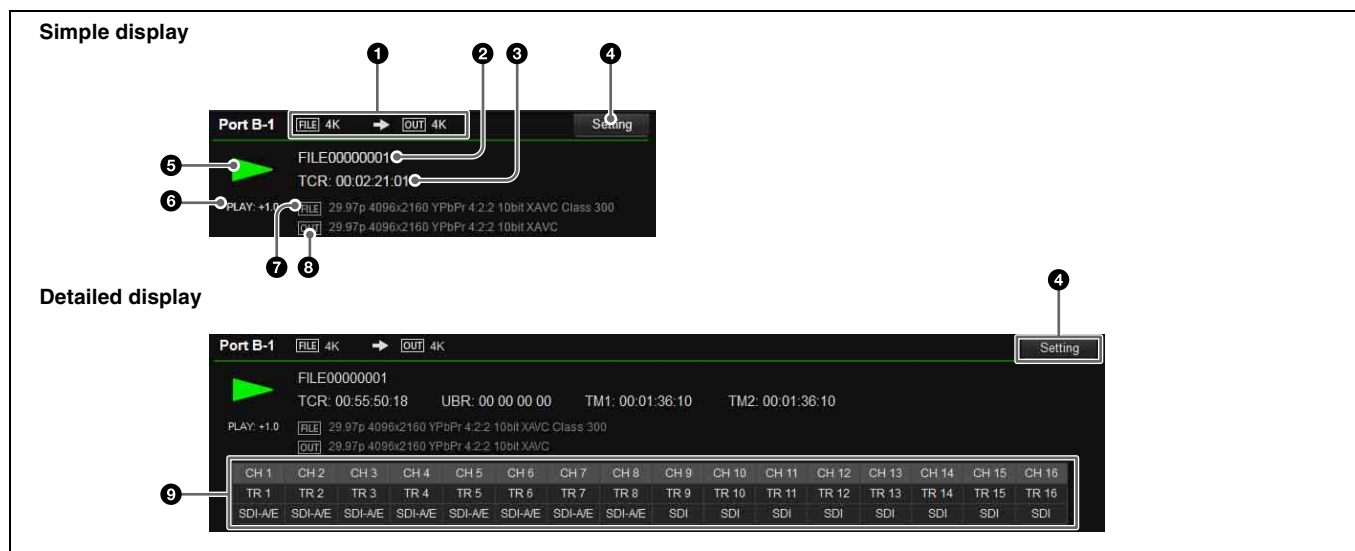
Displays the video format of the input signal.

❽ Audio track (detail display mode only)

Displays the signal (SDI, NMI, or AES/EBU) used for each audio track.

For outputs

The following information is displayed.

**❶ File/output format**

[FILE] displays the video format (HD/QFHD/4K) 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 29) for the corresponding port to configure port settings.

5 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

6 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

7 [FILE]

Displays the video format of the file being played back.

8 [OUT]

Displays the video format of the video signal being output.

9 Audio track (detail display mode only)

Displays which external channel is used for each audio track, and the signal (SDI, NMI, or AES/EBU) used.

Network Session

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

Session

Displays the session name (N1 to N8).

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 transfer speed (1G/10G) of the network.


Progress

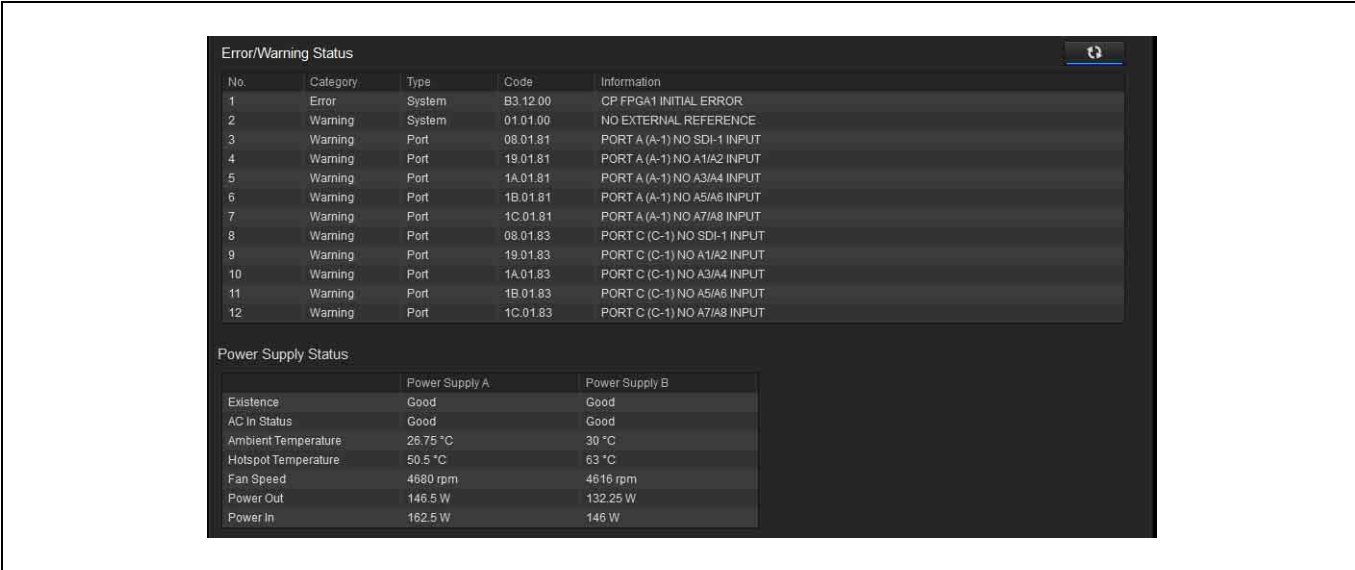
Displays the transfer progress.

Abort

Clicking the button displayed for each session forcibly terminates network transfer.

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.

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 12).

Step 1

Sets the system frequency, input/output mode, and the number of input/output boards for the unit.

Step 2

Sets the input/output type of ports A to D.

Step 3

Sets the video codec of each port.

Select the codec using the radio buttons.

Step 4

Sets the video signal format of each port.

Select the format to use from the matrix.

Step 5

Select the port grouping to operate in sync.

You can set up multiple combinations of input ports or output ports.

Step 6

Check the settings made in steps 1 to 5, and submit the settings.

Setup tab

Makes basic operating mode settings of the unit.

The screenshot displays the 'Setup tab' web interface, which is organized into several sections for configuring system parameters. The background is dark gray, and the text and controls are in white or light gray.

- System Parameters:** This section contains a list of settings, each with a label, a current value, and a dropdown menu to change it.
 - Reference Source: External HD
 - Preroll Time: 5 sec [0 to 5 default to 30]
 - Rec Inhibit: Off
 - Frame PB Mode: Field
 - Freeze PB Mode: Field1
 - Record File Naming: FILE + Sequential
 - File Delete Mode: Inhibit
 - Front LED Mode: On
 - QFHD/4K SDI with TC: SDI-1 Only
 - Time Shifted Play: Shortest Delay
 - Output Port SDI-1,2,3,4: On
 - No Video Output Signal: Gray
 - Control Inhibit: Off
 - Automatic Start: Off
- Master TC:** This section includes settings for timecode and timer.
 - TCG Source: Internal-Preset
 - REGENE Source: TC & UB
 - DF Mode: NDF
 - Timer Set TC: A digital display showing 00 h, 00 m, 00 s, 00 f, with Set and Reset buttons.
 - Timer Set UB: A digital display showing 00, 00, 00, 00, with Set and Reset buttons.
- Multi Monitor:** This section allows for configuring multiple monitors.
 - Port Order: Vertical
 - Black Frame: Off
 - Rec Tally: Off
 - PB Tally: Off
 - Buttons: Submit, Cancel
- MONITOR 2:** This section configures the second monitor.
 - MONITOR 2 Direction: Output
 - MONITOR 2 Position: Port A-1/2
 - Buttons: Submit, Cancel
- NMI-Monitor:** This section configures NMI monitors.
 - Stream 1: Port A-1
 - Stream 2: Port B-1
 - Stream 3: Port C-1
 - Stream 4: Port D-1
 - Buttons: Submit, Cancel

System Parameter

Reference Source

Selects the reference signal for operation of the unit. In NMI mode, only [External HD] and [External SD] can be selected.

- **External HD:** Tri-level SYNC signal input on the REF. INPUT connector
- **External SD:** SD signal input on the REF. INPUT connector
- **Input Board A-1, Input Board A-2 to Input Board D-1, Input Board D-2:** Signal input to the HD SDI INPUT signal on the corresponding board

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 the front panel, REMOTE 1 to 4 (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.

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.

Front LED Mode

Selects whether the front panel indicators are enabled/disabled.

- Off: Indicators are always off.
- On: Indicators are enabled to indicate the status of the unit.

QFHD/4K SDI with TC

Selects whether to superimpose the time code on the output from the SDI 1 connector only or on all SDI signals, if QFHD or 4K 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

Output Port SDI-1, 2, 3, 4

When using each port as an output port, this selects whether to output the signal from the SDI 1 to 4 connectors. When set to Off, signals are output from the SDI 5 to 8 connectors only.

- Off
- On

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.

Automatic Start

When enabled, the unit turns on automatically when power is connected using the power cord.

Master TC

Makes master time code settings.

The master time code can be used as common time code generator for each input port.

TCG Source

Selects the source signal for synchronizing the internal time code generator. You can select a signal input on ports A to D.

- Internal-Preset
- External-LTC: A
- External-LTC: B
- External-LTC: C
- External-LTC: D

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.

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 Set: TC

This sets the time code when [TCG Source] is set to “Internal-Preset” or REGENE Source is set to UB Only. Enter a numeric value and click the [Set] button to change the time code. Clicking the [Reset] button resets the counter.

Timer Set: UB

This sets the user bits when [TCG Source] is set to “Internal-Preset” or REGENE Source is set to TC Only. Enter a numeric value and click the [Set] button to change the user bits. Clicking the [Reset] button resets the counter.

Multi Monitor

Makes settings for the multi-monitor signal output from the MONITOR connector.

Port Order

Specifies the ordering of ports.

- Vertical
- Horizontal

Black Frame

Selects whether to display a black frame around the screen for each port.

- Off
- On

Rec Tally

Sets whether to add a tally indicator for the monitor signal from the input port.

- Off
- Auto

PB Tally

Sets whether to add a tally indicator for the monitor signal from the output port.

- Off
- Auto

MONITOR 2 Direction

Sets the input/output direction of the MONITOR 2 connector of the multi monitor.

- Output
- Input

MONITOR 2 Position

If the MONITOR 2 connector of the multi monitor is used as an input, this sets the position on the MONITOR 1 connector output to place the input video signal.

- Port A-1/2
- Port B-1/2
- Port C-1/2
- Port D-1/2

When changing the Multi Monitor settings, click the [Submit] button to apply the settings. Click the [Cancel] button to return to the current settings.

NMI-Monitor**Stream 1**

Sets the output port for NMI Monitor stream 1.

- Port A-1
- Port A-2

Stream 2

Sets the output port for NMI Monitor stream 2.

- Port B-1
- Port B-2

Stream 3

Sets the output port for NMI Monitor stream 3.

- Port C-1
- Port C-2

Stream 4

Sets the output port for NMI Monitor stream 4.

- Port D-1
- Port D-2

Remote tab

Makes settings related to remote control.

[illegible]

Remote Protocol

Selects the protocol used on the REMOTE 1 to 4 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 to 4 connectors.

- All: Information about all files
- Port A Playable: Information about playable files on port A
- Port A Editable: Information about files that can be switched seamlessly during playback on port A
- Port B Playable: Information about playable files on port B
- Port B Editable: Information about files that can be switched seamlessly during playback on port B
- Port C Playable: Information about playable files on port C
- Port C Editable: Information about files that can be switched seamlessly during playback on port C
- Port D Playable: Information about playable files on port D
- Port D Editable: Information about files that can be switched seamlessly during playback on port D

Remote - SDI Port

Selects the port to operate remotely on the REMOTE 1 to 4 connectors.

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.

Gang Mode

Input Port

Selects the port grouping to control using input port syncing.

Output Port

Selects the port grouping to control using output port syncing.

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.

Network tab

Makes network settings.

The screenshot displays the Network tab configuration interface. It includes sections for Network 1 (1GbE), Network 2 (1GbE), and Network 3 (10GbE), each with fields for IP Address, Subnet Mask, and Default Gateway. Below these are the FTP Server settings (Activation, Importing File Naming, Import Clips with Odd Frames), PRCM Setting (Port Number, PRCM 1 Connection, PRCM 1 IP Address), IP Live System Manager (IP Address 1, IP Address 2), and NMI Networked Media Interface (Activate DHCP). Each section has Submit and Cancel buttons.

Network 1 (1GbE)

Sets the IP address, subnet mask, and default gateway 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

Network 2 (1GbE)

Sets the IP address and subnet mask of the NETWORK 2 connector. The default gateway setting for Network 1 is displayed.

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.

The following values are the factory default values.

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.

IP Live System Manager

Sets the IP address of the connected IP Live System Manager using [IP Address 1]. [IP Address 2] is set automatically by the IP Live System Manager.

NMI: Network Media Interface

Configures network settings when using Share Play. In this version, DHCP can only be set to Off. Set the IP address, subnet mask, and default gateway parameters.

Share Play tab

Makes Share Play settings.

Chapter 4 Web Menu

Share Play Network Setting

DHCP

Off

Off

Primary

IP Address

192

168

0

100

192

168

0

100

Subnet Mask

255

255

255

0

255

255

255

0

Default Gateway

0

0

0

0

0

0

0

0

Share Play Video Format

Current

59.94i HD: 1920 x 1080 YPbPr 4:2:2 10bit Apple ProRes 422

XAVC	HD: 1280 x 720 YPbPr 4:2:2 10bit	HD: 1920 x 1080 YPbPr 4:2:2 10bit	QFHD: 3840 x 2160 YPbPr 4:2:2 10bit	4K: 4096 x 2160 YPbPr 4:2:2 10bit
59.94i	Class 100	Class 100	Class 300	Class 480
29.97p				
59.94p				

	HD: 1280 x 720 YPbPr 4:2:2	HD: 1920 x 1080 YPbPr 4:2:2
59.94i	Avid DNxHD(R) 145	Avid DNxHD(R) 220x
29.97p		
59.94p		

	HD: 1280 x 720 YPbPr 4:2:2	HD: 1920 x 1080 YPbPr 4:2:2
59.94i	Apple ProRes 422	Apple ProRes 422 HQ
29.97p		
59.94p		

Next

59.94i HD: 1920 x 1080 YPbPr 4:2:2 10bit Apple ProRes 422

Maximum Tx Number

2

2

Tx: Rx

2: 2

2: 2

Change Current Setting

This setting has the following restrictions.

- We need to reboot the server.

- All ports will be closed automatically.

Submit

Cancel

Share Play Network Setting

Configures network settings when using Share Play.

DHCP

In this version, DHCP can only be set to Off. Set the IP address, subnet mask, and default gateway parameters.

Share Play Video Format

Selects the video format for Share Play from the matrix.

Bank tab

Makes settings for user banks of saving settings.

The screenshot shows the 'Bank' tab in a web interface. At the top, there are navigation tabs: Board, Setup, Remote, Network, Bank (selected), and Power. Below the tabs is a 'CAUTION' section with the following text: '[User Bank Recall], [Factory Setting Recall], [Import Setup File] and [All Reset] have the following restrictions. - We need to reboot the server. - All ports will be closed automatically. - If current ports which used the Loop Recording Area change these configuration, then this area will not be able to be used for recording at all input ports.' Below this, there are several sections: 'User Bank Save' with three rows for Bank 1, Bank 2, and Bank 3, each with text input fields and 'Cancel', 'Rename', and 'Save' buttons; 'User Bank Recall' with three rows for Bank 1, Bank 2, and Bank 3, each with a text input field and a 'Recall' button; 'Power on Bank Recall' with a dropdown menu currently set to 'Disabled'; 'Factory Setting Recall' with a 'Submit' button; 'Export Setup File' with a 'Create' button and a text input field; 'Import Setup File' with a 'Browse' button and an 'Import' button; and 'All Reset' with a 'Submit' button.

User Bank Save

Saves the settings on the System screen to user banks. Click the [Save] button for the bank (Bank 1 to 3) you want to save. To save named settings, enter a name in the text box on the right and then click the [Save] button. To rename saved settings, enter a new name in the text box on the right and then click the [Rename] button.

User Bank Recall

Recalls settings from the user banks. Click the [Recall] button for the bank (Bank 1 to 3) you want to recall.

Power On Bank Recall

Specifies the user bank to recall when the power to the unit is turned on.

- Disabled
- BANK1
- BANK2
- BANK3

Factory Setting Recall

Click the [Submit] button to restore the settings on the System screen to the factory default status.

Export Setup File

Click the [Create] button to create a setup file that stores all settings of the PWS-4500. The file name is displayed after the setup file is successfully created. You can right-click the file name to save the data file on the computer.

Import Setup File

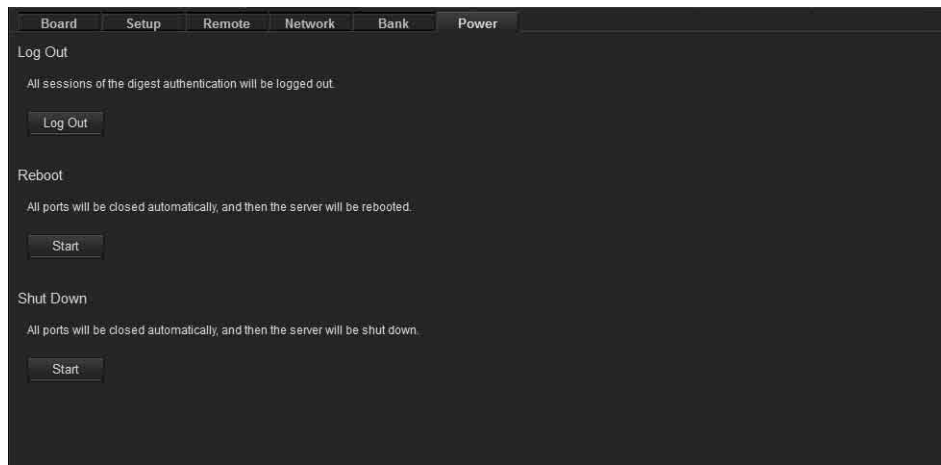
Loads the settings from a setup file (.dat) stored on the computer, and configures the PWS-4500.

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.

Shut Down

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

Port Screen

Makes settings for each port of the unit.

The settings vary depending on whether the port is for input or for output.

For input ports

Common Port A-1 Port B-1 Port C-1 Port D-1

Board A: Input: HD with 1x - 4x fps, 4K with 1x fps, Sub Recording

Port A-1 **IN** 4K → **FILE** 4K

Next: FILE

CLOSE **IN** 29.97p 4096x2160 YPbPr 4:2:2 10bit XAVC
FILE 29.97p 4096x2160 YPbPr 4:2:2 10bit XAVC Class 300

TR 1	TR 2	TR 3	TR 4	TR 5	TR 6	TR 7	TR 8	TR 9	TR 10	TR 11	TR 12	TR 13	TR 14	TR 15	TR 16
CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8	CH 9	CH 10	CH 11	CH 12	CH 13	CH 14	CH 15	CH 16
SDI	SDI	SDI	SDI	SDI	SDI	SDI	SDI	SDI	SDI	SDI	SDI	SDI	SDI	SDI	SDI

Option

Remote 9pin **Off** **Off** ▼

Remote 25pin **Off** **Off** ▼

Chunk File **24H** **24H** ▼

User Specified Name **usrA** **usrA** ~Template ▼ **Submit** **Cancel**

TC

TC Setup

TCG Source **Internal-Preset** **Internal-Preset** ▼

REGENE Source **TC & UB** **TC & UB** ▼

RUN Mode **Free Run** **Free Run** ▼

DF Mode **NDF** **NDF** ▼

TC OUT **Regene** **Regene** ▼

Timer Select **TC** **TC** ▼

Timer Set TCG **00** h **00** m **00** s **00** f **Set** **Reset**

Character

Character On/Off **Off** **Off** ▼

Character Size **Medium** **Medium** ▼

Vertical Position **22** **22** [0 ~ 22; default = 255]

Horizontal Position **128** **128** [0 ~ 128; default = 255]

Character Info. **Timedata Only** **Timedata Only** ▼

Background **with BG** **with BG** ▼

Sub Status **Off** **Off** ▼

Warning Display **Off** **Off** ▼

Submit **Cancel**

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 to 4 (9-pin) connector.

- Off
- On

Remote 25pin

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

- Off
- On

Chunk File

When recording continuously, this sets the number of hours before splitting the recording into separate files. When split into separate files, each file is appended with an incrementing suffix (_01, _02, and so on).

- 6H
- 24H

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.

TC

Makes time code settings.

TCG Source

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

- Internal-Preset
- External-LTC
- SDI-LTC or NMI-LTC
- SDI-VITC or NMI-VITC
- Master TC

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.

TC OUT

Sets the output time code from the TIME CODE OUT connector when recording.

- Through
- Regene

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.

Character

Character On/Off

Selects whether to display superimposed character information, such as the time code, on the monitor signal.

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 & 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

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

META Data Input

Sets from which lines to acquire uncompressed metadata.

META Line 1

- 9H to 16H
- 18H to 20H (up to 25H for 720p, up to 41H for 3G-SDI Level A)

META Line 2

- 9H to 16H
- 18H to 19H to 20H (up to 25H for 720p, up to 41H for 3G-SDI Level A)

META Line 3

- 9H to 16H
- 18H to 20H (up to 25H for 720p, up to 41H for 3G-SDI Level A)

Video

Port Configuration

Selects the video format of each port from the matrix.

Internal SG

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

- Off
- CB100
- CB75
- SMPTE
- ARIB
- MB1
- MB2
- 10STEP
- PBAR
- RAMP
- Black
- White

QFHD & 4K Color Space

Sets the color space of the input signal when QFHD or 4K video format is selected.

- VPID
- ITU-R BT.709
- ITU-R BT.2020

Audio

Audio Input Select

Selects the external channel to record for each audio file track. Also selects the type of each signal (SDI or AES/EBU) to record.

Not displayed in NMI mode.

Track Number

Selects the number of audio tracks for recording.

- 8 track
- 16 track

AES/EBU Input Mode

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

- Auto: Use converter. In this case, there are no limitations on input signals.
- Vlock: Do not use converter. In this case, the input signals need to be locked to the video signal at 48 kHz. Noise will occur if this condition is not met.

SDI Source Port

For dual-system input per board, this selects whether the audio signal is input on the main port or the sub-port.

- x-1: Selects the main port audio signal.
 - x-2: Selects the sub-port audio signal.
- “x” represents the port (A to D).

Non-Audio Input Select

Selects whether to input non-audio data.

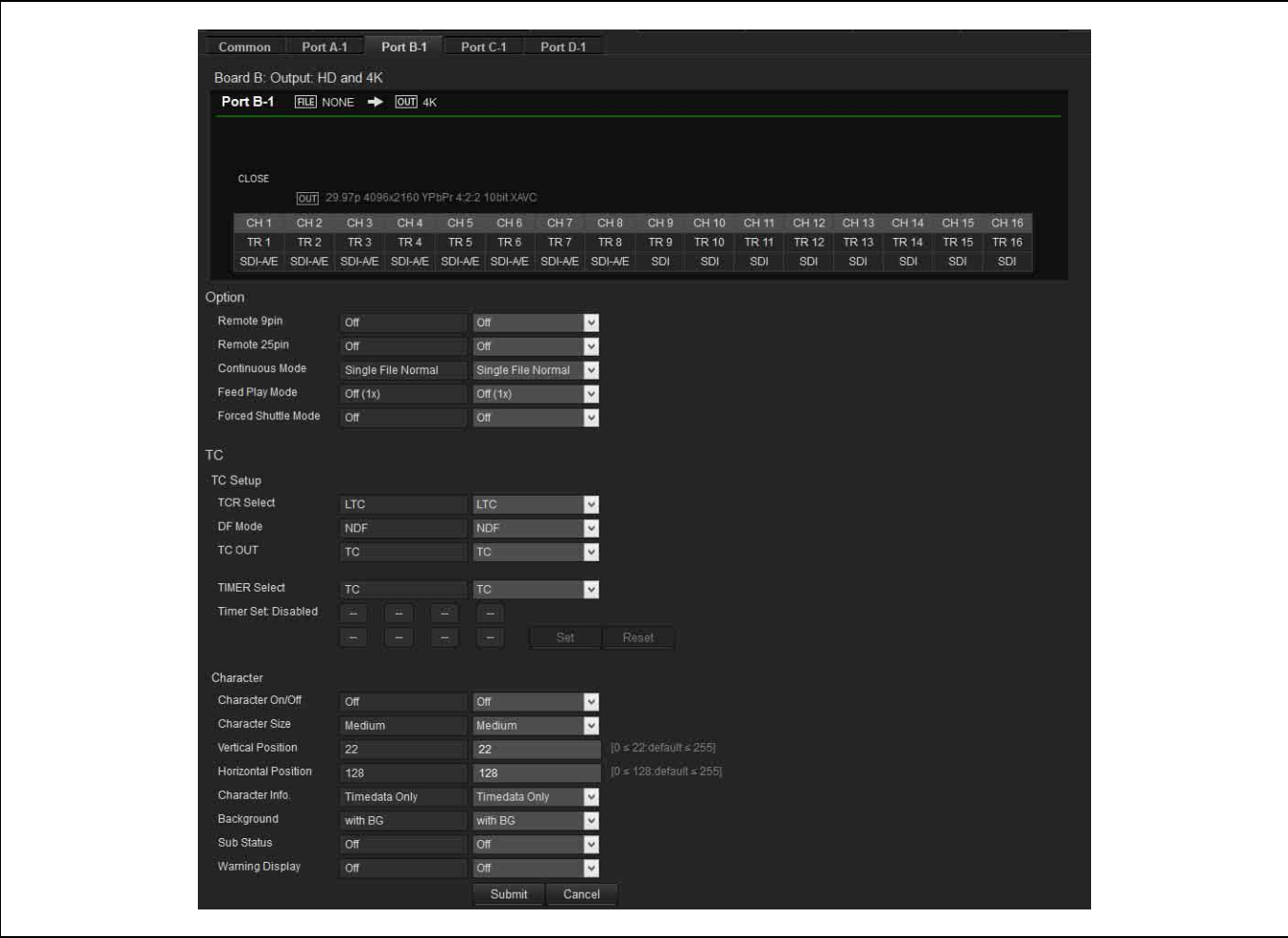
- Invalid
- SDI-Data
- NMI-Data
- A/E-Data

Internal SG

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

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

For output ports



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 to 4 (9-pin) connector.

- 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 (2x)
- On (4x)
- On (6x)
- On (8x)

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.

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

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

META Data Output

Sets the lines on which to output uncompressed metadata.

Fixed Line

When enabled, uncompressed metadata is output on the lines set by the following options. When disabled, metadata is output according to the line number information recorded in clip data.

META Line 1

- 9H to 16H
- 18H to 20H (up to 25H for 720p, up to 41H for 3G-SDI Level A)

META Line 2

- 9H to 16H
- 18H to 19H to 20H (up to 25H for 720p, up to 41H for 3G-SDI Level A)

META Line 3

- 9H to 16H
- 18H to 20H (up to 25H for 720p, up to 41H for 3G-SDI Level A)

Video

Port Configuration

Selects the video format of each port from the matrix.

SDI Sync Phase

Sets the sync phase of the video signal output on the SDI connector.

Sync

Coarse adjustment of the sync phase.

–64 to 0 to 127

Fine

Fine adjustment of the sync phase.

0 to 1024

QFHD & 4K Color Space

Sets the color space of the output signal when QFHD or 4K video format is selected.

- Clip Data
- ITU-R BT.709
- ITU-R BT.2020

Others

VIDEO OUT BLANK

Turns on/off vertical interval blanking processing of the video signal output.

- Through: Does not perform blanking processing.
- Blank: Performs blanking processing.

Y ADD

Selects whether to forcibly turn off “Y add.”

- Auto
- Off

Audio

Audio Output Select

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

Shuttle Muting

Sets whether to output the audio signal during shuttle playback.

- Off: Audio is output.
- On: No output

VAR Muting

Sets whether to output the audio signal during variable-speed playback (not using PLAY).

- Off: Audio is output.
- On: Do not output

Audio Output Phase

Adjusts the audio output phase.

- 0 to 128 to 255 samples

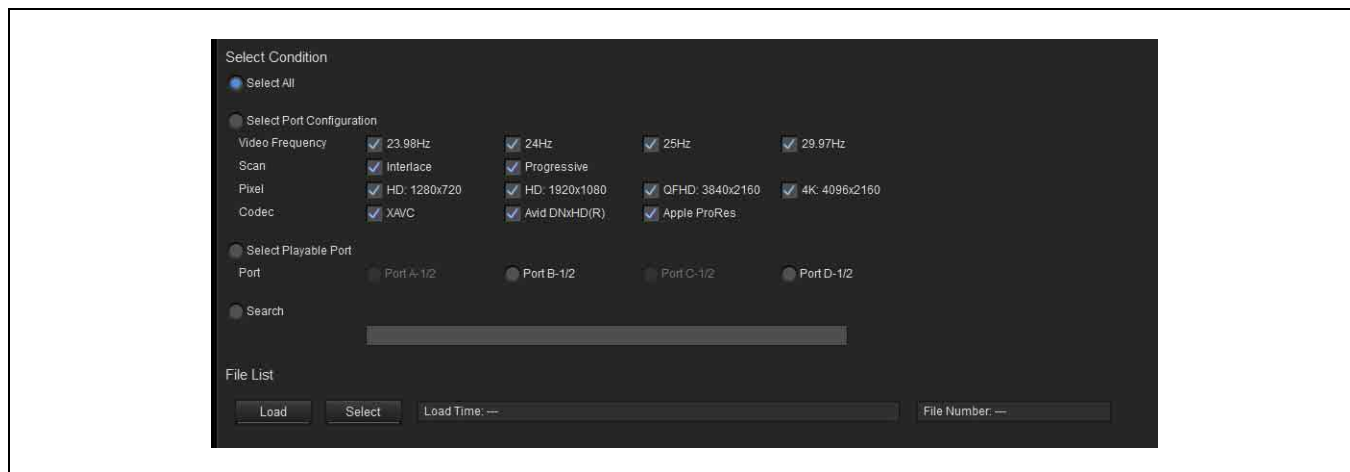
AES/EBU Source Port

Selects whether to output the AES/EBU signal on the main port or sub-port when the port is set to “HD Output Multi.”

- x-1: Output on main port.
 - x-2: Output on sub-port.
- “x” represents the port (A to D).

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.

Select Playable Port

Displays files for the specified playable port.

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.

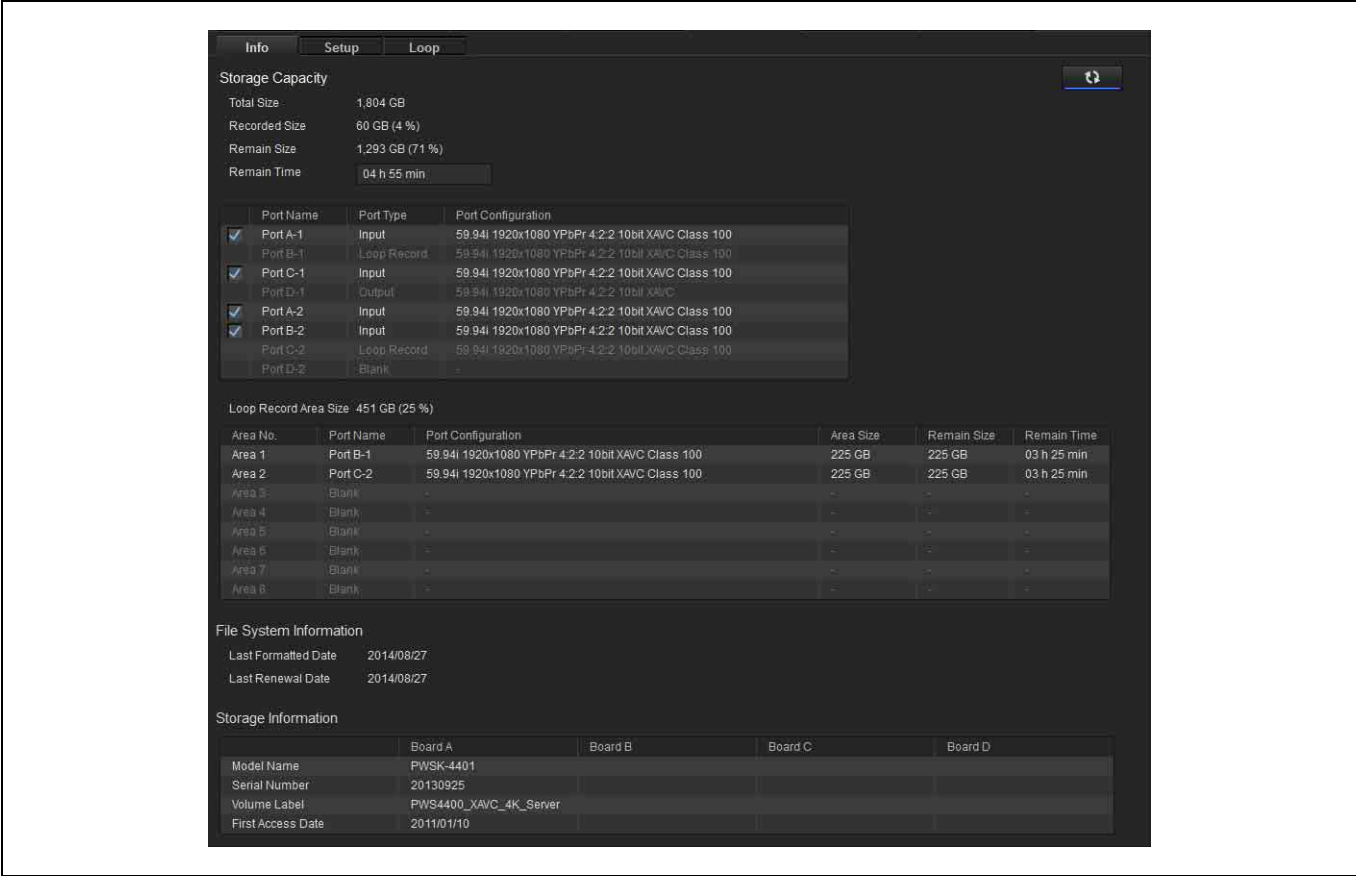
To filter the currently displayed files using different search criteria, change the setting in [Select Condition] and click the [Select] button.

Storage Screen

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

Info tab

Displays the status of internal memory and boards A to D.



Storage Capacity

Total Size

Displays the total capacity of internal memory.

Recorded Size


Displays the size of internal memory usage (excluding Loop Recording Area) containing recordings.

Remain Size

Displays the remaining capacity (excluding Loop Recording Area) of internal memory.

Remain Time

Displays the remaining recording time to internal memory when simultaneously recording all ports with enabled checkboxes in the port name display.

Click the  button, turning it on, to update the display automatically. When the button is off, clicking the [Calculate] displays the latest values.

Port name display

Displays the name, type, and settings of the ports in the unit.

Loop Recording Area Size

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

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

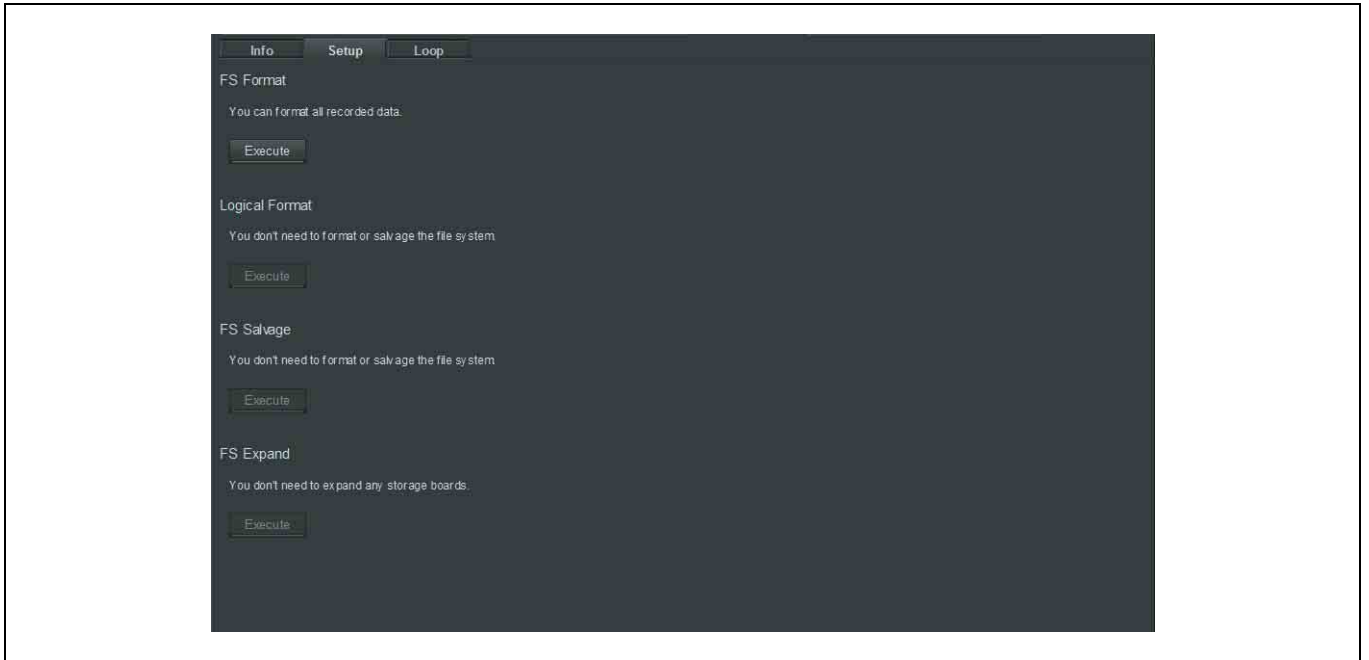
Displays the serial number of the memory board.

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.

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 (2 TB) 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.

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.

Appendix

SDI Connector Input/Output Specifications

The input/output signals and connectors used on each SDI port vary depending on the input port setting, output port, setting, and signal format.

For input ports

Format			SDI	SDI IN/OUT connector									
				1	2	3	4	5	6	7	8	9 ^{a)}	10 ^{a)}
4K	422	23p/PsF to 29p/PsF	1.5G	In1-1	In1-2	In1-3	In1-4	IM1-1	IM1-2	IM1-3	IM1-4	DC/Char	DC/Char
			3G	In1-1	In1-2	—	—	IM1-1	IM1-2	—	—	DC/Char	DC/Char
		50p/59p	3G	In1-1	In1-2	In1-3	In1-4	IM1-1	IM1-2	IM1-3	IM1-4	DC/Char	DC/Char
		100p/119p ^{b)}	3G	In1-1	In1-2	In1-3	In1-4	IM1-1	IM1-2	IM1-3	IM1-4	DC/Char	DC/Char
				In1-5	In1-6	In1-7	In1-8	IM1-5	IM1-6	IM1-7	IM1-8	—	—
HD	422	50i/59i	1.5G	In1	In2	—	—	IM1	IM2	—	—	Char1	Char2
		23p/PsF to 29p/PsF	1.5G	In1	In2	—	—	IM1	IM2	—	—	Char1	Char2
		50p/59p	1.5G	In1-1	In1-2	In2-1	In2-2	IM1-1	IM1-2	IM2-1	IM2-2	Char1	Char2
			3G/1.5G ^{c)}	In1	In2	—	—	IM1	IM2	—	—	Char1	Char2
		100i/119i	1.5G	In1-1	In1-2	—	—	IM1	IM2	—	—	Char	Char
			3G	In1	—	—	—	IM1	—	—	—	Char	Char
		100p/119p	3G/1.5G ^{c)}	In1-1	In1-2	—	—	IM1-1	IM1-2	—	—	Char	Char
		150i/179i	1.5G	In1-1	In1-2	In1-3	—	IM1-1	IM1-2	IM1-3	—	Char	Char
		150p/179p	3G/1.5G ^{c)}	In1-1	In1-2	In1-3	—	IM1-1	IM1-2	IM1-3	—	Char	Char
		200i/239i	1.5G	In1-1	In1-2	In1-3	In1-4	IM1-1	IM1-2	IM1-3	IM1-4	Char	Char
			3G	In1-1	In1-2	—	—	IM1-1	IM1-2	—	—	Char	Char
		200p/239p	3G/1.5G ^{c)}	In1-1	In1-2	In1-3	In1-4	IM1-1	IM1-2	IM1-3	IM1-4	Char	Char
		300i/359i ^{b)}	1.5G	In1-1	In1-2	In1-3	In1-4	IM1-1	IM1-2	IM1-3	IM1-4	In2/Char ^{d)}	Char
				In1-5	In1-6	In1-7	In1-8	IM1-5	IM1-6	IM1-7	IM1-8	—	—
			3G	In1-1	In1-2	—	—	IM1-1	IM1-2	—	—	In2/Char ^{d)}	Char
		300p/359p ^{b)}	3G/1.5G ^{c)}	In1-1	In1-2	In1-3	—	IM1-1	IM1-2	IM1-3	—	In2/Char ^{d)}	Char
				In1-5	In1-6	In1-7	—	IM1-5	IM1-6	IM1-7	—	—	—

Format			SDI	SDI IN/OUT connector									
				1	2	3	4	5	6	7	8	9 ^{a)}	10 ^{a)}
HD	422	400i/479i ^{b)}	1.5G	In1-1	In1-2	In1-3	In1-4	IM1-1	IM1-2	IM1-3	IM1-4	In2/Char ^{d)}	Char
				In1-5	In1-6	In1-7	In1-8	IM1-5	IM1-6	IM1-7	IM1-8	—	—
			3G	In1-1	In1-2	—	—	IM1-1	IM1-2	—	—	In2/Char ^{d)}	Char
				In1-3	In1-4	—	—	IM1-3	IM1-4	—	—	—	—
	400p/479p ^{b)}	3G/1.5G ^{c)}	3G/1.5G ^{c)}	In1-1	In1-2	In1-3	In1-4	IM1-1	IM1-2	IM1-3	IM1-4	In2/Char ^{c)}	Char
				In1-5	In1-6	In1-7	In1-8	IM1-5	IM1-6	IM1-7	IM1-8	—	—

In: SDI signal input. In1 and In2 represent inputs 1 and 2, respectively, of the dual-system input of each port. Input 1 is the main port, and input 2 is the sub-port. For single system signal formats transferred using more than one SDI cable, it is represented by In1-1, In1-2, and so on.

IM (Input Monitor): Input SDI signal output for monitor. IM1 and IM2 represent inputs 1 and 2, respectively, when using dual-system input.

DC: Down-converted 4K to HD signal output for monitor.

Char: Superimposed character information output for monitor. For dual-system input, Char1 and Char2 represent monitor outputs 1 and 2, respectively.

—: Not used.

^{a)} The format of the signals output from the SDI IN/OUT 9 and 10 connectors is set when the video format is specified on the [Board] tab of the [System] screen of the web menu. The supported formats for the SDI IN/OUT 9 and 10 connectors vary depending on the signal format specified for the SDI IN/OUT 1 to 8 connectors.

^{b)} Two input ports are used to input a single system signal.

^{c)} 1280:720p is connected using 1.5G SDI.

^{d)} To simultaneously record a normal-speed HD signal, connect a normal-speed HD signal to the SDI IN/OUT 9 connector.

Notes

- To connect a BPU-4000 for HD 4x speed recording, connect the SDI-1 to SDI-4 connectors of the BPU-4000 to the SDI-1 to SDI-4 connectors of the unit.
- To connect a BPU-4000 for HD 6x or 8x speed recording, connect the SDI-1 to SDI-4 connectors of the BPU-4000 to the SDI-1 to SDI-4 connectors of port A of the unit, and connect the SDI-5 to SDI-8 connectors of the BPU-4000 to the SDI-1 to SDI-4 connectors of port B of the unit.

For output ports

Format			SDI	SDI IN/OUT connector									
				1 ^{a)}	2 ^{a)}	3 ^{a)}	4 ^{a)}	5	6	7	8	9 ^{b)}	10 ^{b)}
4K	422	23p/Psf to 29p/Psf	1.5G	Out1-1	Out1-2	Out1-3	Out1-4	Out1-1	Out1-2	Out1-3	Out1-4	DC/Char	DC/Char
			3G	Out1-1	Out1-2	Out1-1	Out1-2	Out1-1	Out1-2	Out1-1	Out1-2	DC/Char	DC/Char
		50p/59p	3G	Out1-1	Out1-2	Out1-3	Out1-4	Out1-1	Out1-2	Out1-3	Out1-4	DC/Char	DC/Char
			3G	Out1-1	Out1-2	Out1-1	Out1-2	Out1-1	Out1-2	Out1-1	Out1-2	DC/Char	DC/Char
HD	422	50i/59i	1.5G	Out	Out	Out	Out	Out	Out	Out	Out	Char	Char
		23p/Psf to 29p/Psf	1.5G	Out	Out	Out	Out	Out	Out	Out	Out	Char	Char
		50p/59p	1.5G	Out1-1	Out1-2	Out1-1	Out1-2	Out1-1	Out1-2	Out1-1	Out1-2	Char	Char
			3G/1.5G	Out	Out	Out	Out	Out	Out	Out	Out	Char	Char

Out: Represents all SDI IN/OUT 1 to 8 connector outputs. For single system signal formats transferred using more than one SDI cable, it is represented by Out1-1, Out1-2, and so on. 8-system output is supported for formats that are transferred using one SDI cable (Single Link), 4-system output for formats using two cables (Dual Link), and 2-system output for formats using four cables (Quad Link).

DC: Down-converted 4K to HD signal output for monitor.

Char: Superimposed character information output for monitor.

—: Not used.

^{a)} When [Output Port SDI-1,2,3,4] is set to [Off] on the [Setup] tab of the [System] screen in the web menu, no signal is output.

^{b)} The format of the signals output from the SDI IN/OUT 9 and 10 connectors is set when the video format is specified on the [Board] tab of the [System] screen of the web menu. The supported formats for the SDI IN/OUT 9 and 10 connectors vary depending on the signal format specified for the SDI IN/OUT 1 to 8 connectors.

^{c)} 1280:720p is connected using 1.5G SDI.

Note

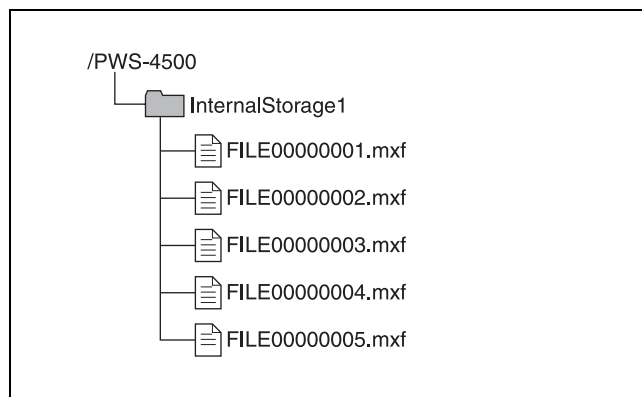
When the input/output mode is set to “NMI,” the video signal format can be set to QFHD (3840:2160) only.

File Operations via FTP

File operations between the unit and the computer are performed using the File Transfer Protocol (FTP).

Directory structure

The following diagram shows the PWS-4500 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 25).

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 (“pws-4500”). 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 45*).

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 pws-4500

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. 1920 × 1080)
 - 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 (11: PWS-4500)
 - 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 8 sessions)

Typical output: 211 45 75 10 25 50 30 15 80

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>

Usage Precautions

Condensation

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.

Troubleshooting

Salvaging memory when recording ends abnormally

When recording ends, press the On/Standby 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 turning off the main power switch on the connector panel, switch the unit to standby mode using the On/Standby 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

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 14xxpp	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	SY CPLD2 INITIAL ERROR, etc.	An error was detected at the device initialization stage. For details, refer to the Maintenance Manual.
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.
B9zz00	SYS1 SOFTWARE TASK ERROR	A software task error in SYS1 CPU was detected. For details, refer to the Maintenance Manual.
D101pp	PORT x DIO DMA1 ERROR, etc.	An error occurred in the input/output board data processing. Recording or playback may not have been performed successfully.
D103pp	PORT x ENC PROC ERROR	An error occurred during encoding. For details, refer to the Maintenance Manual.
D203pp	PORT x DEC PROC ERROR	An error occurred during decoding. For details, refer to the Maintenance Manual.
D3xx01	AV WRITE ERROR1, etc.	An error occurred while writing to memory. For details, refer to the Maintenance Manual.

Code ¹⁾	Indication	Description
D4xx01	AV READ ERROR1, etc.	An error occurred while reading from memory. For details, refer to the Maintenance Manual.
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.
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.

pp: Number identifying the corresponding port.

81: Port A

82: Port B

83: Port C

84: Port D

xx: Number identifying the error location. For details, refer to the Maintenance Manual.

zz: Number identifying the error type. 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
010100	NO EXTERNAL REFERENCE (NO EXT REF)	No reference signal is input to the selected REF. INPUT port. The unit is using the internal reference signal.
020100	LOST LOCK	Synchronization was lost during playback, recording, or editing.
0601pp	PORT x SDI INPUT PHASE NG (P-x PHASE)	The input signals to the SDI 1 to 4 connectors on the indicated port are out of phase.

Code ¹⁾	Indication ²⁾	Description
0801pp	PORT x NO SDI-1 INPUT (P-x NO SDI-1)	The input signal to the SDI 1 connector on the indicated port cannot be detected.
0802pp	PORT x NO SDI-2 INPUT (P-x NO SDI-2)	The input signal to the SDI 2 connector on the indicated port cannot be detected. This message appears only for signal formats that use the SDI 2 connector.
0803pp	PORT x NO SDI-3 INPUT (P-x NO SDI-3)	The input signal to the SDI 3 connector on the indicated port cannot be detected. This message appears only for signal formats that use the SDI 3 connector.
0804pp	PORT x NO SDI-4 INPUT (P-x NO SDI-4)	The input signal to the SDI 4 connector on the indicated port cannot be detected. This message appears only for signal formats that use the SDI 4 connector.
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.
1901pp	PORT x NO A1/A2 INPUT (P-x NO A1/A2)	No carrier was detected on digital audio channel 1/channel 2 input for the indicated port.
1A01pp	PORT x NO A3/A4 INPUT (P-x NO A3/A4)	No carrier was detected on digital audio channel 3/channel 4 input for the indicated port.
1B01pp	PORT x NO A5/A6 INPUT (P-x NO A5/A6)	No carrier was detected on digital audio channel 5/channel 6 input for the indicated port.
1C01pp	PORT x NO A7/A8 INPUT (P-x NO A7/A8)	No carrier was detected on digital audio channel 7/channel 8 input for the indicated port.
1D01pp	PORT x NO A9/A10 INPUT (P-x NO A9/A10)	No carrier was detected on digital audio channel 9/channel 10 input for the indicated port.
1E01pp	PORT x NO A11/A12 INPUT (P-x NO A11/12)	No carrier was detected on digital audio channel 11/channel 12 input for the indicated port.
1F01pp	PORT x NO A13/A14 INPUT (P-x NO A13/A14)	No carrier was detected on digital audio channel 13/channel 14 input for the indicated port.
2001pp	PORT x NO A15/A16 INPUT (P-x NO A15/A16)	No carrier was detected on digital audio channel 15/channel 16 input for the indicated port.
210101	REC INHIBIT (REC INHBIT)	Cannot record to memory due to a menu setting.
220201	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.
2901pp	PORT x VPID MISMATCH BITDEPTH (P-x VPID B-DP)	The bit length specified in the VPID of the input signal from the indicated port does not match the system bit length.
2A01pp	PORT x VPID MISMATCH COLORSPACE (P-x VPID C-SP)	The color space specified in the VPID of the input signal from the indicated port does not match the system color space.
2B01pp	PORT x VPID MISMATCH LINK INFORMATION (P-x VPID LINK)	The link data specified in the VPID of the input signal from the specified port does not match the data of the connected port.
2C01pp	PORT x 2x ORDER MISMATCH (P-x 2x ORDER)	The order specified in the VPID of the input signal from the indicated port does not match the system order. Note Warning occurs only when 2x is selected using Port Config.
2D01pp	PORT x INVALID SDI DATA (P-x INVLD SDI)	The data of the SDI input signal for the indicated port is not valid.
2E01pp	PORT x SDI INPUT ORDER MISMATCH	There was a mismatch in the input order of SDI 1 to 4 connectors.

Code ¹⁾	Indication ²⁾	Description
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.
470100	RTC BATTERY LOW LEVEL (RTC BATT LOW)	The lithium battery on the SY-422 board is low on power.
7401pp	PORT x ASYNCHRONOUS VIDEO INPUT (P-x ASYNC VIN)	The HD SDI input signal for the indicated port is out of phase by $\pm 5H$ or more from the reference signal.
740200	ASYNCHRONOUS SHARE PLAY INTERFACE	The SHARE PLAY input signal phase is out of phase by $\pm 4H$ or more from the reference sync signal.
B394ii	DHCP TIMEOUT	The cable was disconnected or the DHCP Server was not found on the network.
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.
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: Port A

82: Port B

83: Port C

84: Port D

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.

Code	Indication	Description
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.

Note

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

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.

Recording Format

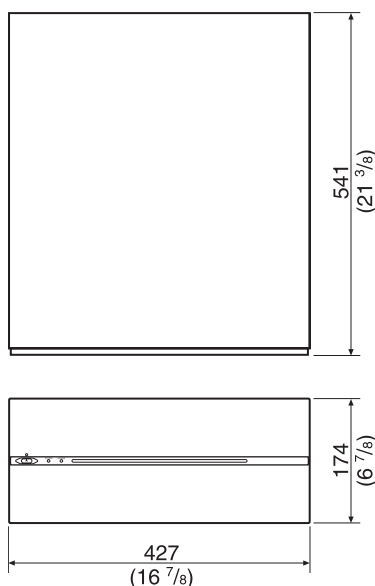
COMPRS	SIGNAL/SIZE	DEPTH	SCAN	FRAME	SDI	Rec Rate	MULTIPLE
XAVC Class100	YPbPr (4:2:2) 1280:720	10	Progressive	50	1.5G	100	1x
				59.94	1.5G	100	
				100	1.5G	200	2x
				119	1.5G	200	
				150	1.5G	300	3x
				179	1.5G	300	
				200	1.5G	400	4x
				239	1.5G	400	
				300	1.5G	600	6x
				359	1.5G	600	
				400	1.5G	800	8x
				479	1.5G	800	
	YPbPr (4:2:2) 1920:1080	10	Interlace	25	1.5G	100	1x
				29.97	1.5G	100	
				50	1.5G/3G	200	2x
				59.94	1.5G/3G	200	
				75	1.5G/3G	300	3x
				89	1.5G/3G	300	
				100	1.5G	400	4x
				119	1.5G	400	
				150	1.5G	600	6x
				179	1.5G	600	
				200	1.5G	800	8x
				239	1.5G	800	
			Progressive	23.98	1.5G	80	1x
				25	1.5G	100	
				29.97	1.5G	100	
				50	1.5G/3G	200	
				59.94	1.5G/3G	200	
				100	3G	400	
				119	3G	400	2x
				150	3G	600	
				179	3G	600	3x
				200	3G	800	
				239	3G	800	4x
				300	3G	1200	
				359	3G	1200	6x
				400	3G	1600	
				479	3G	1600	8x

COMPRS	SIGNAL/SIZE	DEPTH	SCAN	FRAME	SDI	Rec Rate	MULTIPLE
Avid DNxHD 220x	YPbPr (4:2:2) 1280:720	10	Progressive	23.98	1.5G	116	1x
				25	1.5G	121	
				29.97	1.5G	145	
				50	1.5G	175	
				59.94	1.5G	220	
	YPbPr (4:2:2) 1920:1080	10	Interlace	25	1.5G	184	1x
				29.97	1.5G	220	
			Progressive	23.98	1.5G	176	
				25	1.5G	184	
				29.97	1.5G	220	
50				1.5G/3G	367		
59.94				1.5G/3G	440		
Apple ProRes 422	YPbPr (4:2:2) 1280:720	8	Progressive	50	1.5G	122	1x
				59.94	1.5G	147	
	YPbPr (4:2:2) 1920:1080	8	Interlace	25	1.5G	122	1x
				29.97	1.5G	147	
			Progressive	23.98	1.5G	117	
				25	1.5G	122	
				29.97	1.5G	147	
				50	1.5G/3G	245	
				59.94	1.5G/3G	293	
	Apple ProRes 422 HQ	YPbPr (4:2:2) 1280:720	8	Progressive	50	1.5G	184
59.94					1.5G	220	
YPbPr (4:2:2) 1920:1080		8	Interlace	25	1.5G	184	1x
				29.97	1.5G	220	
			Progressive	23.98	1.5G	176	
				25	1.5G	184	
				29.97	1.5G	220	
				50	1.5G/3G	367	
				59.94	1.5G/3G	440	

Specifications

General

Recording format	XAVC, Avid DNxHD(R), Apple ProRes 422
Power requirements	100 V to 127 V AC / 200 V to 240 V AC
Power consumption	Maximum 480 W
Inrush current	
(1) Maximum possible inrush current at initial switch-on (Voltage changes caused by manual switching):	22 A peak, 2.8 A r.m.s. (240 V AC)
(2) Inrush current after a mains interruption of five seconds (Voltage changes caused at zero-crossing):	22 A peak, 2.8 A r.m.s. (240 V AC)
Operating temperature	5 °C to 40 °C (41 °F to 104 °F)
Storage temperature	–20 °C to +60 °C (–4 °F to +140 °F)
Humidity	25% to 90% (non-condensing)
Mass	22 kg (48 lb. 8 oz.) (with all options installed)
Dimensions	427 × 174 × 541 mm (16 ⁷ / ₈ × 6 ⁷ / ₈ × 21 ³ / ₈ in.) (W×H×D)



Video

422 format

Sampling frequency	Y: 74.25 MHz Pb/Pr: 37.125 MHz
Quantization	8/10 bits

Compression	XAVC, Avid DNxHD(R), Apple ProRes 422
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Audio

Digital audio signal format

Sampling frequency	48 kHz (video sync)
Quantization	24 bits
Headroom	20 dB / 18 dB / 16 dB / 15 dB / 12 dB / 9 dB (selectable)

I/O connectors

When ENCODER mode is selected (per board)

SDI INPUT	
1 to 4	BNC (4), HD SDI (1.485 Gbps) SMPTE ST 292-1/ BTA-S004B compliant 3G SDI (2.97 GHz) SMPTE ST 424 Level A, B

SDI OUTPUT

INPUT MONITOR 5 to 8

BNC (4),
HD SDI (1.485 Gbps)
3G SDI (2.97 GHz)

Does not satisfy the SDI signal standard, and should be
used for input signal monitor applications only.

MONITOR BNC (2),
HD SDI (1.485 Gbps) SMPTE ST 292-1/
BTA-S004B compliant

TIMECODE INPUT

BNC (1), 0.5 to 5 V_{pp}, 10 kΩ

TIMECODE OUTPUT

BNC (1), 1.5 V_{pp}, low impedance

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).

When DECODER mode is selected (per board)

SDI OUTPUT	
1 to 8	BNC (8), HD SDI (1.485 Gbps) SMPTE ST 292-1/ BTA-S004B compliant 3G SDI (2.97 GHz) SMPTE ST 424 Level A, B

SDI OUTPUT

MONITOR BNC (2),

HD SDI (1.485 Gbps) SMPTE ST 292-1/
BTA-S004B compliant

TIMECODE OUTPUT
BNC (1), 1.5 Vpp, low impedance

DIGITAL AUDIO (AES/EBU) OUTPUT
BNC (4),
CH 1/2 to CH 7/8, AES/EBU format,
unbalanced

File sharing

SHARE PLAY 1 to 2
RJ-45 (2), Network Interface 10G Copper

Monitoring

NMI MONITOR 1 to 2
RJ-45 (2), Network Interface 1G Copper

MONITOR HD SDI (1.485 Gbps) SMPTE ST 292-1/
BTA-S004B compliant

Reference

REF INPUT BNC (2, including 1 loop through),
75 Ω with terminal switch
HD (tri-level sync)
SD (Black Burst)
NTSC: 0.286 Vpp, 75 Ω
PAL: 0.3 Vpp, 75 Ω

Remote

REMOTE1/2 to REMOTE7/8
RJ-45 (4)

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) ^{1) 2)}
1) Network card connected to the unit
• Intel Ethernet Converged Network Adapter
X520-DA1
For information about network cards, visit the
following site.
<http://www.intel.com/support/go/network/adapter/userguide.htm>
2) Available only when an SFP+ module is
installed.

Supplied accessories

Operation Guide (1)
Installation Manual (1)
Operation Manual (CD-ROM) (1)
Cable, RJ45-DSUB
Part No. 1-848-424-12 (SONY) (4)

Optional accessories

Expansion memory board
PWSK-4401 (2 TB)

SDI input/output board
PWSK-4504

BPU Share Play board
PWSK-4505

Media interface board
PWSK-4506F

SFP+ transceiver module
OTM-10GSR1

4K/HD CUT OUT software
PWSL-HR45

HFR software
PWSL-HF45

Option codec (Avid DNxHD(R))
PWSL-DH45

Option codec (Apple ProRes)
PWSL-PH45

Power cord

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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