

# Portable Memory Recorder

*PMW-50*

## Operating Instructions

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

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**XDCAM**<sup>™</sup>

**MPEG HD422**

**SXS**

**i**

**HDMI**

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## Overview

# Features

The PMW-50 is a portable-type memory recorder, with battery-drive support, that records images to SxS memory cards using the MPEG2 HD422 50Mbps codec. Either the UDF or FAT file system can be used with recording media.

### Multiple-format support

- Interlaced (1080/59.94i or 1080/50i)
- Progressive (1080/29.97P, 1080/23.98P, 720/59.94P, 720/29.97P, 720/23.98P, 1080/25P, 720/50P, or 720/25P)
- SD signal IMX50/DVCAM format
- HD signal to SD signal down-convert output

### A new generation HD recording system

- HD recording using the “MPEG-2 Long GOP” codec and SD recording in IMX50/DVCAM format  
Resolution: 1920 × 1080, 1440 × 1080, 1280 × 720 (HD images)  
Bit rate: 50 Mbps (HD422 mode), 35 Mbps (HQ mode) with UDF  
35 Mbps (HQ mode), 25 Mbps (SP mode) with FAT  
Recording time: Approximately 120 minutes in 50 Mbps (HD422 mode)  
Approximately 180 minutes in 35 Mbps (HQ mode) (when recording to 64 GB SxS memory cards with UDF)  
SD signal recording/playback in DVCAM 25Mbps format  
Recording/playback in MPEG IMX 50Mbps format
- High-quality uncompressed audio recording
- File-based workflow support
- Instant-access thumbnail display with “Expand” function

### A variety of functions and designs for high operability

- In-point to out-point partial playback
- Repeat mode playback
- Raw SDI input signal output during editing
- i.LINK input signal SDI output
- 3.5-inch color LCD monitor

- Two assignable buttons for assigning functions
- Long operating time with a battery pack
- Wide array of interfaces, including USB, i.LINK, and HDMI
- High-speed picture search: ×4, ×15, ×24
- IR Remote Commander supplied
- Planning metadata function

### Software Downloads

When the unit is used with a PC connection, download device drivers, plug-ins, and application software, where applicable, from the Sony Professional products web site.

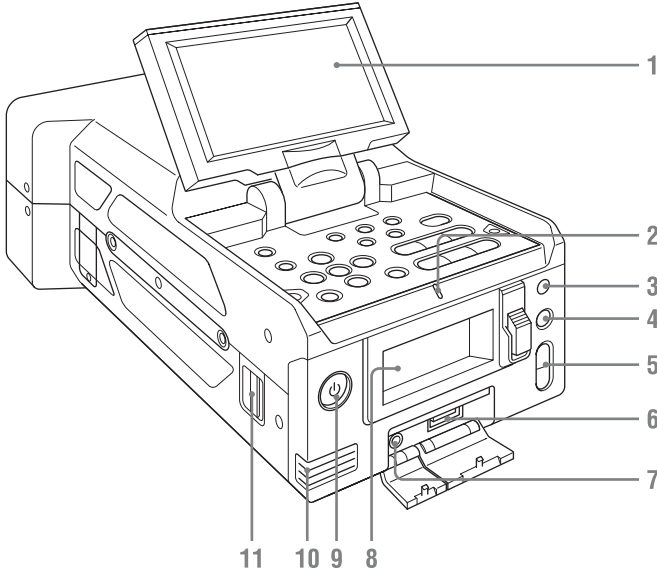
Sony Professional products web site homepage:

U.S.A.	<a href="http://pro.sony.com">http://pro.sony.com</a>
Canada	<a href="http://www.sonybiz.ca">http://www.sonybiz.ca</a>
Latin America	<a href="http://sonypro-latin.com">http://sonypro-latin.com</a>
Europe, Middle East and Africa	<a href="http://www.pro.sony.eu">http://www.pro.sony.eu</a>
Japan	<a href="http://www.sonybsc.com">http://www.sonybsc.com</a>
Asia Pacific	<a href="http://pro.sony-asia.com">http://pro.sony-asia.com</a>
Korea	<a href="http://bp.sony.co.kr">http://bp.sony.co.kr</a>
China	<a href="http://pro.sony.com.cn">http://pro.sony.com.cn</a>

# Part Identification

For functions and usage, see the pages in parentheses.

## Front View



### 1. LCD monitor

The LCD monitor LCD can be rotated 180° in the clockwise direction and 90° in the counterclockwise direction when it is open. It can also be stowed on the top surface of the recorder with the screen facing up.

To rotate the LCD monitor, tilt it toward you (approximately 80°) and then turn it sideways.

### 2. TALLY lamp

### 3. Infrared light receiver sensor

### 4. SLOT SELECT button

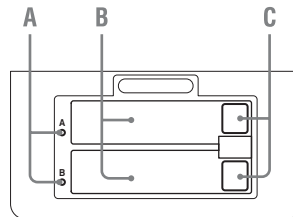
### 5. VOLUME buttons

### 6. OPTION connector

### 7. Headphone connector

### 8. Memory card slots

### Cover open



A. ACCESS lamps (page 12)

B. SxS memory card slots (page 12)

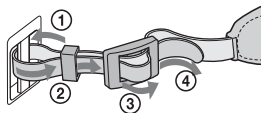
C. EJECT (SxS memory card) buttons (page 12)

9. Power button/lamp (page 11)

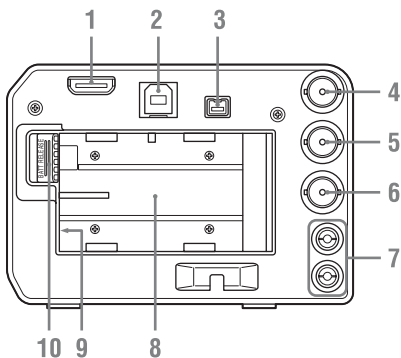
10. Built-in speaker

11. Shoulder strap mounting points

The supplied shoulder straps mount as shown in the following diagram.

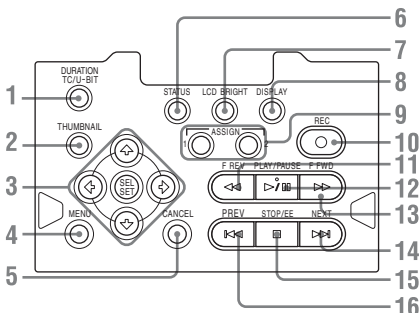


## Rear View



1. HDMI OUT connector (page 55)
2. USB connector (Type B)
3. i.LINK (HDV/DV) connector (4-pin, IEEE1394 S400-compliant) (page 55)
4. SDI IN (serial digital input) connector (BNC type) (page 55)
5. SDI OUT (serial digital output) connector (BNC type) (page 55)
6. VIDEO OUT (analog video output) connector (BNC type) (page 55)
7. AUDIO OUT (analog audio output) connector (CH-1/CH-2) (page 55)
8. Battery pack receptacle (page 10)
9. DC IN (DC power supply input) connector (page 11)
10. BATT RELEASE (battery release) button (page 10)

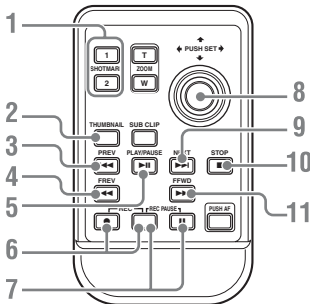
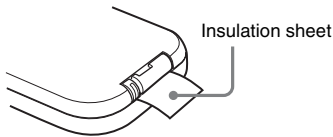
## Top Panel



1. DURATION/TC/U-BIT (time data selection) button (page 19)
2. THUMBNAIL (thumbnail display) button (page 27)
3. Up/Down/Left/Right buttons, SEL/SET (select/set) button (page 41)  
Press the left/right buttons during playback/pause to play in slow motion.
4. MENU (menu display ON/OFF) button (page 41)
5. CANCEL button (page 41)
6. STATUS (status display selection) button (page 38)
7. LCD BRIGHT (LCD monitor brightness adjustment) button
8. DISPLAY button (page 9)
9. ASSIGN 1/2 (assignable) buttons (page 22)
10. REC (record) button (page 20)
11. F REV (fast reverse playback) button (page 30)
12. PLAY/PAUSE button (page 29)
13. F FWD (fast forward playback) button (page 30)
14. NEXT (next clip) button (page 30)
15. STOP/EE (button) (pages 20 and 27)
16. PREV (previous clip) button (page 30)

## IR Remote Commander (Supplied)

Before use, pull out the insulation sheet from the battery holder.



**1. SHOTMARK 1 and 2 buttons** (page 21)

**2. THUMBNAIL button**

**3. PREV (previous clip jump) button**

**4. F REV (fast reverse) button**

**5. PLAY/PAUSE button**

**6. REC (record) buttons**

Press the ● button together with the unmarked button (safety button) to start recording.

**7. REC PAUSE buttons**

Press the ■ button together with the unmarked button (safety button) to pause recording.

**8. PUSH SET button (four-way arrow key)**

It functions the same as the SEL/SET button on the recorder.

**9. NEXT button**

**10. STOP button**

**11. F FWD (fast forward) button**

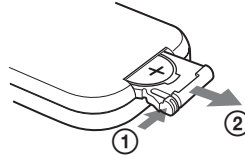
### Notes

- The ZOOM T/W, SUB CLIP, and PUSH AF buttons have no function.
- To avoid malfunctions, the remote control function is automatically deactivated when the recorder is turned off. Activate the function each time when required after you turn the recorder on.

## Replacing the battery in the IR Remote Commander

Use a commercially available CR2025 lithium battery. Do not use any battery other than a CR2025.

- 1 Hold down the lock lever ①, pull out the battery holder ②, and remove the battery.**



- 2 Place a new battery in the battery holder with the + symbol facing upward, then push the battery holder into the IR Remote Commander until it clicks.**

### WARNING

- Battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.
- Batteries shall not be exposed to excessive heat such as sunshine, fire or the like.

### CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

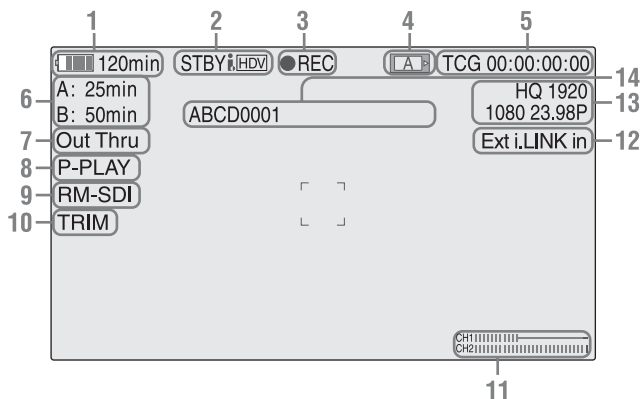
When you dispose of the battery, you must obey the law in the relative area or country.

## On-Screen Indications

While recording or in standby mode, pressing the DISPLAY button displays the status and settings of this unit on the LCD monitor.

### Remarks

**[M]** The indication of the items named with this suffix can be independently turned on/off with “Display On/Off” in the LCD SET menu (page 44).



#### 1. Battery remaining/DC IN voltage indication **[M]** (page 10)

#### 2. i.LINK status indication (page 57)

Only when an external device is connected to the i.LINK connector, the status of the device is displayed.

#### 3. Special recording/operation status indication

●REC	Recording in progress
STBY	Standby for recording
CONT (lit)	When using Clip Continuous Recording, indicates that a clip is being continued.
CONT (flashing)	When using Clip Continuous Recording, indicates there is no continuing clip.

#### 4. Media status indication

Displays the active memory card slots.

#### 5. Time data indication **[M]** (page 19)

#### 6. Media remaining indication **[M]** (page 13)

#### 7. Output mode indication (page 19)

Displays “Out Thru” when the output mode is set to “THROUGH,” or “Out Auto” when the output mode is set to “AUTO.”

#### 8. In-point to out-point partial playback indication (page 29)

Displays “P-PLAY” when playing the interval from the in-point to the out-point.

#### 9. Synchronous recording display **[M]**

Displayed when “SDI Rec Control” in the VIDEO SET menu is set to “On.”

#### 10. Trim indication (page 30)

#### 11. Audio level meters **[M]**

#### 12. Input signal indication

Displayed when a signal is input from the input source selected by “Input Source Select” in the VIDEO SET menu.

Ext SDI in	Input from the SDI IN connector
Ext i.LINK in	HDV/DVCAM input from the i.LINK connector
SG	Color bar output

#### 13. Video Format indication **[M]** (page 18)

#### 14. Clip name indication **[M]** (page 20)

You can use a battery pack or AC power via an AC adaptor.

For safety, use only the Sony battery packs and AC adaptor listed below:

### Lithium-ion Battery Pack

BP-U30/BP-U60/BP-U90

### Battery Charger/AC Adaptor

BC-U1/BC-U2

#### WARNING

Batteries shall not be exposed to excessive heat such as sunshine, fire or the like.

#### Note

The AC adaptor cannot be connected to the recorder while the battery pack is inserted.

## Using a Battery Pack

Fully insert the battery pack into the battery pack receptacle (*page 7*), then slide it to the right to lock it.







To remove the battery pack, press and hold the BATT RELEASE button (*page 7*), slide the battery pack to the left to unlock it, then pull it out.

#### Notes

- Before use, charge the battery pack with the supplied BC-U1 or BC-U2 Battery Charger.
- A warm battery pack immediately after use may not be able to be fully recharged.
- The high-capacity BP-U90 Battery Pack is large, and protrudes from the recorder when attached.

## Checking battery charge remaining

When recording or playback is in progress on the battery pack, an icon to show the current battery charge level and usage time remaining are displayed on the LCD monitor (*page 9*).

Icon	Remaining
	100% to 91%
	90% to 71%
	70% to 51%
	50% to 31%
	30% to 11%
	10% to 0%

The recorder indicates the remaining usage time in minutes if operation is continued at the current rate of power consumption.

## If the battery charge remaining becomes low

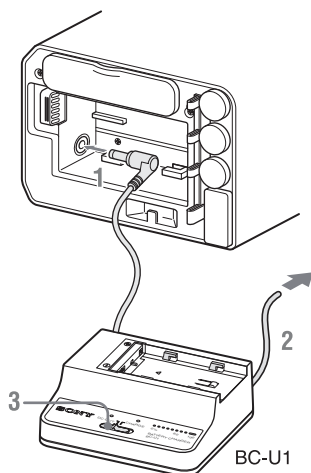
If the battery charge remaining decreases to a certain level during operation (Low BATT status), a low-battery message, flashing of the tally lamps, and a beep sound will warn you. If the remaining further decreases to a level at which operation cannot be continued (BATT Empty status), a battery-empty message appears. Replace the battery pack with one that is fully charged.

### To change the message levels

The Low BATT level is set to 10% of full charge, and the BATT Empty level is set to 3% of full charge at the factory. These settings can be changed with “Battery Alarm” (*page 48*) in the OTHERS menu.

## Using AC Power (DC IN Power)

Connection example: when connecting BC-U1



- 1 Connect the DC power output cable of the BC-U1 to the DC IN connector of the recorder.
- 2 Connect the power cord of the BC-U1 to an AC power source.
- 3 Set the mode switch of the BC-U1 to the DC OUT position.

## Turning the Power On/Off

To turn on the power supply, press the power button (page 6). The power supply lamp lights up. To turn off the power supply, press the power button again.

### Notes

- This recorder uses a little standby power even when the power button is set to OFF. Remove the battery pack if the recorder will not be used for a prolonged period.
- When removing the battery pack or the DC IN power, be sure to first set the power button to the OFF position. Removing the battery pack or the DC IN power while the recorder is ON may cause damage to the recorder or the SxS memory card.

## Setting the Clock

When you turn the recorder on for the first time after purchasing or replacing the backup battery (page 66), the Initial Setting display appears on the LCD monitor.

### Time Zone

The value shows the time difference from UTC (Coordinated Universal Time). Change the setting if needed.

### Setting the time and date

Move the cursor, then press the SEL/SET button to set each menu item. When you press the SEL/SET button when the cursor is on “Finish,” the Initial Setting display disappears, and the clock setting is completed.

After the Initial Setting display disappears, “Time Zone” (page 46) and “Clock Set” (page 47) in the OTHERS menu can be used to set “Time Zone” and “Date/Time.”

### Notes

- If the clock setting is cleared because of exhaustion of the backup battery while no operation power was being supplied (no battery pack and no DC IN connection), the Initial Setting display will be displayed when you turn the recorder on at the next opportunity.
- While the Initial Setting display is shown, no other operation except turning the power off is permitted until you finish the setting for this display.

## Using Memory Cards

This recorder records audio and video on memory cards (sold separately) inserted in the card slots.

### Supported memory cards

Use the following Sony-made memory cards. Operations are not guaranteed with memory cards other than the following cards.

#### SxS PRO series

#### SxS-1 series

#### XQD memory cards series

#### “Memory Stick PRO-HG Duo” HX series

#### SDHC cards (Class 10) series

SxS PRO and SxS-1 series cards comply with the ExpressCard standard.

The optional QDA-EX1 XQD ExpressCard adapter is required to use XQD memory cards. The optional MEAD-MS01 or MEAD-SD01 media adapter is required to use “Memory Stick” and SDHC cards. Using these adapters allows the recorder to record and playback in the same way as for an SxS memory card.

#### Notes

- XQD memory cards, “Memory Stick,” and SDHC cards may not operate correctly when using fast forward playback (*page 7*).
- The operation of all XQD memory cards is not guaranteed. Consult your dealer for information about memory cards that have been tested and confirmed to work with the recorder.
- The recorder cannot record in UDF to “Memory Stick” or SDHC cards.

### Inserting a memory card

- 1 **Open the cover of the card slot block** (*page 6*).
- 2 **Insert the memory card in the card slot with the label facing up, and close the cover.**

### Status indications by the ACCESS lamps

Lamp	Slot statuses
Lights red	Accessing the loaded memory card (writing/reading data)
Lights green	Standby (ready for recording or playback using the loaded memory card)
Off	<ul style="list-style-type: none"> <li>• No memory card is loaded.</li> <li>• The loaded card is invalid.</li> <li>• A memory card in another slot is active.</li> </ul>

### Removing a memory card

- 1 **Open the cover of the card slot block, press the EJECT button** (*page 6*), **then pull the button out.**
- 2 **Press the EJECT button again to remove the card.**

#### Note

Data are not guaranteed if the power is turned off or a memory card is removed while the card is being accessed. All data on the card may be destroyed. Be sure that the ACCESS lamps are lit in green or off when you turn off the power or remove memory cards.

### Switching between memory cards

Press the SLOT SELECT button (*page 6*). If a card becomes full during recording, switching to the other card is automatically executed.

#### Note

The SLOT SELECT button is disabled while playback is in progress. Switching is not executed even if you press the button. The button is enabled while the thumbnail screen is displayed (*page 27*).

### Formatting a memory card

For a memory card that is not formatted or that was formatted with another system, the message “Unsupported File System” is displayed on the LCD monitor.

Memory cards for use in this recorder should be formatted using this recorder.

#### To execute formatting

Using “Format Media” (*page 51*) in the OTHERS menu, specify the slot and then select “Execute.” On a confirmation message, select “Execute” again.

When formatting is completed, the completion message is displayed for three seconds.



## Recording/playback during formatting

You can perform recording or playback using the memory card in the other card slot while formatting is in progress.

### If formatting fails

A write-protected memory card or memory card that cannot be used with this recorder will not be formatted. Replace the card with an appropriate SxS memory card, as per the instructions in the message.

#### Note

All the data, including recorded pictures and setup files, are erased when a memory card is formatted.

### Recorder and computer connection

Connect the recorder to a computer using a USB cable, and insert a memory card recorded on an XDCAM/XDCAM EX series device in the recorder's memory card slot.


## Checking the remaining time available for recording

While recording or in standby mode, you can check the time remaining for the memory cards loaded in the card slots on the LCD monitor (*page 9*).

The available time for recording with the current video format (recording bit rate) is displayed in time units of minutes.

The remaining can also be checked in a meter format on the Battery/Media status screen (*page 39*).

#### Note

A  icon appears if the memory card is write-protected.

## Replacing a memory card

- If the available time on two cards in total becomes less than 5 minutes, a message “Media Near Full,” flashing of the tally lamps, and a beep sound will warn you. Replace the cards with those with sufficient space.
- If you continue recording until the total remaining time reaches zero, the message changes to “Media Full,” and recording stops.

#### Note

Approximately 600 clips can be recorded on one memory card at maximum. If the number of recorded clips reaches the limit, the remaining time indication becomes “0,” and the message “Media Full” is displayed.

## Restoring a memory card

If an error occurs with data in a memory card for some reason, the card must be restored.

If a memory card that needs to be restored is loaded, a message that prompts you to execute a restore operation is displayed on the LCD monitor.

### To restore a card

Select “Execute”, then push the SEL/SET button. When restoration is completed, the completion message is displayed for three seconds.

### If restoration fails

- A write-protected memory card or one on which an error occurred cannot be restored. For such a card, a warning message is displayed. Release the write protection or replace the card, as per the instructions in the message.
- A memory card on which an error occurred may become usable again through repeated formatting.
- In some cases, only parts of clips cannot be restored. Playback of the restored clips becomes possible again.
- The following operation may restore a memory card for which the message “Could not Restore Some Clips” is repeatedly displayed each time you try the restoration process:

- 1 Copy necessary clips to another memory card, using the copy function (*page 34*) of the recorder or the dedicated application software (*page 5*).
- 2 Format the problem memory card, using the format function of this recorder.
- 3 Copy the necessary clips back to the memory card.

### Recording/playback during restoration

You can perform recording or playback using the memory card in the other card slot while restoration is in progress.

#### Note

For restoration of media recorded with this unit, be sure to use this unit. Media recorded with a device other than this unit or with another unit of different version (even of the same model) may not be restored using this unit.

## Using a Hard Disk Unit

You can use an optional PHU-220R Professional Hard Disk Unit with this recorder.

### Notes

- High-speed playback (*page 7*) may not be properly achieved with a hard disk unit.
- The Hard Disk Unit does not support recording with UDF.

### Attaching/removing the PHU-220R

Recording/playback can be made using the PHU-220R in the same manner as with SxS memory cards if you connect the PHU connection cable of the PHU-220R to an SxS memory card slot of the recorder.

- 1 Set the power button to the ON position.**
- 2 Open the cover of the card slot block (*page 6*) and plug the PHU connection cable into a slot.**
- 3 Turn on the PHU-220R.**

The POWER indicator of the PHU-220R lights in green.

Subsequently, the ACCESS lamp of the recorder lights in red then changes to green once the unit is ready for use.

### Notes

- The cover of the card slot block cannot be closed with the PHU-220R connected.
- Bundle the cable so that it will not accidentally get on nearby objects.

### To disconnect the PHU connection cable

Operate in the same manner as when you remove an SxS memory card from the slot.

### Formatting the PHU-220R

For a PHU-220R that is not formatted or is formatted in a different format, the message “Unsupported File System” is displayed on the LCD monitor.

*Format the unit in the same way as for memory cards (*page 12*).*

### Notes

- A format of the PHU-220R on this recorder is performed as a quick format, in which only managerial

data are erased. To erase the recording data completely, connect the PHU-220R to a PC and perform a full format.

- The PHU-220R to be used with this recorder must be formatted using the format function of this recorder.

### Checking the remaining time available for recording

The remaining recording capacity for a PHU-220R is displayed on the LCD monitor in the same way as for a memory card (*page 13*).

### Restoring the PHU-220R

If an error occurs with data on the PHU-220R for some reason, the hard disk must be restored (*page 13*).

## Using a Wi-Fi Adapter

Mounting an optional CBK-WA01 Wi-Fi Adapter on this recorder allows a Wi-Fi connection between a computer and the recorder. Making a Wi-Fi connection between a computer and the recorder enables you to do the following.

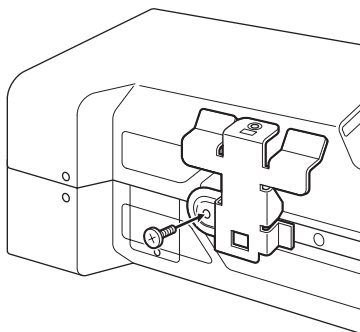
- Send planning metadata created on a computer to the recorder, and set names of clips and shot marks.
- Send files including clips from the recorder to a computer, and edit them at the shooting location.

### Attaching the CBK-WA01

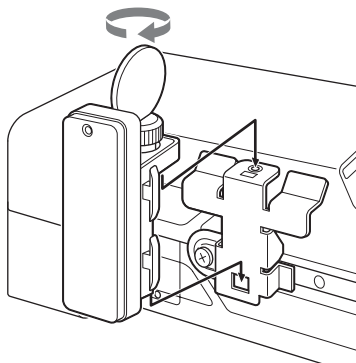
#### Note

Before attaching or removing the CBK-WA01, turn the power of the recorder off.

- 1 **Attach the Wi-Fi adapter mounting bracket, aligning the screw holes, to the side of the recorder.**



- 2 **Insert the protrusion on the back of the CBK-WA01 into the hole on the Wi-Fi adapter mounting bracket, and tighten the screw to fix the CBK-WA01 to the bracket.**



- 3 **Connect the CBK-WA01 cable to the OPTION connector.**

#### Note

Remove the Wi-Fi adapter when transporting the unit to avoid damaging the Wi-Fi adapter mounting bracket.

### Making a Wi-Fi Connection

Two types of Wi-Fi connections are available. In “ad-hoc mode”, you can make a peer-to-peer Wi-Fi connection between a computer and the recorder. In “infrastructure mode”, you can make Wi-Fi connections between a computer and multiple recorders via a wireless LAN access point (building a LAN).

#### To make a network setting

Change settings under OTHERS >Network (page 52) in the setup menu as required.

Item	Setting
DHCP	Specifies whether to acquire the IP address automatically from a DHCP server <b>Enable:</b> Acquire automatically. <b>Disable:</b> Do not acquire automatically (factory default setting).
IP Address	IP address <sup>a)</sup> (factory default setting: 192.168.1.10)
Subnet Mask	Subnet mask (factory default setting: 255.255.255.0)
Default Gateway	Default gateway (factory default setting: 0.0.0.0)
User Name	User name for log-in (factory default setting: admin)

Item	Setting
Password	Password for log-in (factory default setting: model name “pmw-50”)

a) IP address determined by the DHCP server.

### When you have changed a setting

Set the Set item to [Execute]. When a confirmation message appears, select “Execute” and press the SEL/SET button.

## To make a connection in ad hoc mode

**1 Refer to “Settings on the Computer” under “Making a Wi-Fi Connection to Your Computer (Ad hoc Mode)” in the Operating Instructions supplied with the CBK-WA01 to make settings on the computer.**

**2 Start a connection on the computer.**

**3 Set OTHERS >Wi-Fi >Wi-Fi to [Enable] in the setup menu.**

**4 Set OTHERS >Wi-Fi >Scan Networks to [Execute] and press the SEL/SET button.**

When networks are detected, the NETWORK SCAN list appears.

**5 Select a network and press the SEL/SET button.**

**6 Confirm that the settings for the Wi-Fi item conform to the network setting on the computer.**

**SSID (network name):** Selected network name

**Network Type (connection mode):** Adhoc

**CH (channel):** 1

**Authentication (network authentication):**

Depending the settings on the computer, Open, Shared or WPA

**Encryption (data encryption):** Depending the settings on the computer, Disable, WEP, TKIP or AES

**WEP Key Index (key index):** 1 when Encryption is set to [WEP]

**Input Select (key input format):** Depending the network key (or security key), ASCII5, ASCII13, HEX10 or HEX26 when

Encryption is set to [WEP], ASCII8-63 or HEX64 Encryption is set to [TKIP] or [AES]

**7 Set the Key item to the network key (or security key) set on the computer and press the SEL/SET button.**

**8 Set the Set item to [Execute] and press the SEL/SET button.**

If the connection to the computer is complete, then the message changes to “Wi-Fi Setting OK”.

Black squares appear in the Wi-Fi Status column to show the connection status. (The number of squares shows the level of connection status.) In the Wireless Mode column, the IEEE802.11 standard of the established connection appears (802.11b, 802.11g or 802.11n).

### Tip

It is also possible to make a connection by accessing a network connection started on the recorder from the computer.

### To terminate the connection

Terminate the connection on the computer.

### To revert to the default settings (reset)

If you have trouble making a connection, or you want to start over, you can reset your Wi-Fi connection settings to their defaults.

Set OTHERS >Network >Net Config Reset in the setup menu to “Execute” and press the SEL/SET button.

If the reset is executed, the message “Net Config Reset Done” appears.

The recorder attempts to connect to the network using a MAC address as the SSID.

## To make a connection in infrastructure mode

### Setting up the wireless LAN access point

The following settings are required.

- Network ID (SSID)
- Encryption method
- Network key (Key)

### To find and connect to a wireless LAN from the recorder

Perform the same procedure in “To make a connection in ad hoc mode” (page 16) excluding the following.

- Do not perform steps 1 and 2.

- The settings made in step 7 change as follows.
  - SSID (network name):** Selected network connection name
  - Network Type (connection mode):** Infra
  - Ch (channel):** Auto
  - Authentication (network authentication):** Depending on the settings on the computer, Open, Shared, WPA or WPA2
  - Encryption (data encryption):** Depending on the settings on the computer, Disable, WEP, TKIP or AES
  - WEP Key Index (key index):** 1 when Encryption is set to [WEP]
  - Input Select (key input format):** Depending on the network key (or security key), ASCII5, ASCII13, HEX10 or HEX26 when Encryption is set to [WEP], ASCII8-63 or HEX64 Encryption is set to [TKIP] or [AES]

## Using the Web Menu

You can operate the Web menu built in the recorder from a computer when it is connected to the recorder via a Wi-Fi connection.

Using the Web menu, you can check the recorder information and operation settings, and upload planning metadata files.

### Note

The Web menu cannot be accessed during recording or playback. (Files cannot be transferred over a Wi-Fi connection.)

## Example Web menu

### Product Information

- Model name
- Serial No.

### Network

- MAC Address
- IP Address
- Subnet Mask

### Wi-Fi Status

- Wireless Mode
- SSID
- Type
- Channel
- Authentication (network authentication)
- Data Encryption (data encryption)

### Planning Metadata

Clicking “Upload” allows you to upload a planning metadata file (*page 17*).

### Note

The configuration of items displayed in the Web menu varies depending on the browser you are using.

## To display the Web menu

- 1 **Launch a browser on the computer, and navigate to “http://<recorder’s IP address>/”.**
- 2 **Enter the user name and password, and click [OK].**
  - User name: admin
  - Password: pmw-50

## To upload a planning metadata file

- 1 **Insert a media such as an SxS memory card.**
- 2 **Click “Upload” in the Web menu.**
- 3 **Click “Select” to show Choose File dialog.**
- 4 **Select the planning metadata file you want to upload, and then click “Open”.**
- 5 **Click “Execute”.**

The planning metadata file is loaded into the recorder’s memory and stored in the media. “OK” appears in the Status field when the transfer is complete.

# Changing Basic Settings

## Selecting an Input Signal

To record or output a signal, either SDI or i.LINK must be selected as the input signal source. The setting is made in “Input Source Select” in the VIDEO SET menu.

If i.LINK is selected, output to i.LINK is not possible.

For UDF format, i.LINK cannot be selected.

## Video Formats

### Switching between UDF/FAT

Switch by setting “UDF”/“FAT” in “System” (page 49) in the OTHERS menu.

After switching this setting, the recorder will automatically restart.

### Switching between HD Mode/SD Mode

For HD/SD switching, use “System” (page 49) in the OTHERS menu.

When you change the menu setting, the recorder automatically restarts, executing the switching.

#### Note

UDF/FAT and HD/SD switching is disabled during recording and playback.

### Changing the format

The format of the input signal connected to the SDI IN connector must match the video format set in “Rec Format” (page 49) in the OTHERS menu.

The format of the signals output from the SDI OUT, VIDEO OUT, and HDMI OUT connectors changes according to the video format setting. Selectable formats vary depending on the UDF/FAT, HD/SD, and usage region (NTSC/PAL) settings (page 49).

The supported video format settings and corresponding supported input formats are shown below.

For details about the output signal format, see “Formats and Limitations of Outputs” (page 62).

## For NTSC

### UDF/HD

Rec Format setting	Input signal format
HD422 50/1080/59.94i	1080/59.94i, 1080/29.97PsF
HD420 HQ/1080/59.94i	1080/59.94i, 1080/29.97PsF
HD422 50/1080/29.97P	1080/59.94i, 1080/29.97PsF
HD420 HQ/1080/29.97P	1080/59.94i, 1080/29.97PsF
HD422 50/1080/23.98P	1080/23.98PsF
HD420 HQ/1080/23.98P	1080/23.98PsF
HD422 50/720/59.94P	720/59.94P
HD420 HQ/720/59.94P	720/59.94P

### FAT/HD

Rec Format setting	Input signal format
HQ 1920/59.94i	1080/59.94i, 1080/29.97PsF
HQ 1440/59.94i	1080/59.94i, 1080/29.97PsF
SP 1440/59.94i	1080/59.94i, 1080/29.97PsF
HQ 1920/29.97P	1080/59.94i, 1080/29.97PsF
HQ 1440/29.97P	1080/59.94i, 1080/29.97PsF
HQ 1920/23.98P	1080/23.98PsF
HQ 1440/23.98P	1080/23.98PsF
HQ 1280/59.94P	720/59.94P

### UDF/SD

Rec Format setting	Input signal format
DVCAM 59.94i	480/59.94i
IMX50 59.94i	486/59.94i

### FAT/SD

Rec Format setting	Input signal format
DVCAM 59.94i	480/59.94i

## For PAL

### UDF/HD

Rec Format setting	Input signal format
HD422 50/1080/50i	1080/50i, 1080/25PsF
HD420 HQ/1080/50i	1080/50i, 1080/25PsF

Rec Format setting	Input signal format
HD422 50/1080/25P	1080/50i, 1080/25PsF
HD420 HQ/1080/25P	1080/50i, 1080/25PsF
HD422 50/720/50P	720/50P
HD420 HQ/720/50P	720/50P

## FAT/HD

Rec Format setting	Input signal format
HQ 1920/50i	1080/50i, 1080/25PsF
HQ 1440/50i	1080/50i, 1080/25PsF
SP 1440/50i	1080/50i, 1080/25PsF
HQ 1920/25P	1080/50i, 1080/25PsF
HQ 1440/25P	1080/50i, 1080/25PsF
HQ 1280/50P	720/50P

## UDF/SD

Rec Format setting	Input signal format
DVCAM 50i	576/50i
IMX50 50i	576/50i

## FAT/SD

Rec Format setting	Input signal format
DVCAM 50i	576/50i

## Time Data

### Setting the Timecode

Specify the timecode to be recorded with “Timecode” and “TC Format” in the TC/UB SET menu (*page 45*). The following methods are available for recording the timecode.

#### Preset mode (Preset)

Records an internally generated timecode with a preset initial value. You can select one of the following run modes.

- **Free Run:** Timecode is always running.
- **Rec Run:** Timecode runs only when recording.

#### Regeneration mode (Regen)

Records an internally generated timecode that continues from the timecode of the last recorded clip.

#### External regeneration mode (ExtRegen)

Records an internally generated timecode that is synchronized to the timecode superimposed on an external input signal. If a timecode is not superimposed on an input SDI signal, the value of the internal timecode generator is used as the initial value.

### Setting the Users Bit

You can add a hexadecimal number of 8 digits for pictures as the user bits.

The user bits can also be set to the current date. Use “Users Bit” (*page 45*) in the TC/UB SET menu.

### Displaying the Time Data

Pressing the DISPLAY button displays the time data on the screen (*page 9*). The indication is switched among the timecode, user bits, and recording duration by pressing the DURATION/TC/U-BIT button (*page 7*).

Display	Contents
TCG **: **: **: **: **	Timecode
TCR **: **: **: **: **	Timecode superimposed on the input signal
CLK **: **: **: **: **	Timecode (Clock mode)
UBG * * * * *	User bits
UGR * * * * *	User bits superimposed on the input signal
DUR **: **: **: **	Duration from the beginning of recording

### Setting the Output Mode

The output mode of the video signal output on the SDI OUT connector can be selected when editing while simultaneously outputting video. The setting is made in “Output Mode Select” in the VIDEO SET menu. The image on the LCD monitor is output on the HDMI, VIDEO OUT, and i.LINK connectors.

**Normal mode:** The same video as that displayed on the LCD monitor is output.

**Through mode:** The SDI IN input signal is always output, regardless of the operating state.

**Auto mode:** The playback video is output during playback operations on the recorder (PLAY/PAUSE, F FWD, F REV). In all other cases, the SDI IN input signal is output.

In Auto mode, “SDI/HDMI/Video Out Super” (*page 43*) in the VIDEO SET menu is set to “Off,” and no character information is output.

## Recording

- 1 **Select the input signal to record in “Input Source Select” in the VIDEO SET menu.**
- 2 **Press and hold the REC button, then press the PLAY/PAUSE.**

The “●REC” indication flashes if normal recording does not occur, for example, if the specified video format is different to the input signal format or if there is no input signal.

### To stop recording

Press the STOP/EE button.

Recording stops, and the recorder switches to E-E mode.

### To delete clips

You can delete the last recorded clip by using the Last Clip DEL function (*page 23*). Use the All Clips DEL function (*page 23*) to delete all recorded clips from an SxS memory card. To specify a clip to be deleted, operate the recorder from the thumbnail screen (*page 27*).

### Clip (recording data)

When you stop recording, video, audio and subsidiary data from the start to end of the recording are recorded as a single clip on an SxS memory card.

#### Clip name

For each clip recorded with this recorder, a clip name is automatically generated according to the method selected with “Auto Naming” in “Clip” (*page 50*) in the OTHERS menu.

The default setting of “Auto Naming” is “Plan.” With this setting, a clip name defined in planning metadata is applied if a planning metadata file is loaded into the recorder.

Change the “Auto Naming” setting to “Title” to apply a clip name composed of 4 to 46 alphanumerics and 4 numerics.

#### Example: ABCD0001

The block of 4 to 46 alphanumerics can be specified as desired using “Clip” in the OTHERS menu before you start recording. (It cannot be changed after recording.)

The value of the 4 numerics is automatically counted up in sequence.

### Notes on Clips

The maximum file size for a clip is 43 GB for UDF, 4 GB for FAT in HD Mode, and 2 GB for FAT in SD Mode. If you continue recording for an extended period, recorded materials may be segmented into multiple files, depending on the file size (the maximum number of partitions is 99). The recorder regards continuous recording as one clip even if it has been segmented into multiple files.

A long clip can be recorded crossing over two memory cards in slot A and B.

When you copy recorded clips to a hard disk drive, etc. using a computer, it is recommended to download and use the dedicated application software (*page 5*).

### Note

If copying is done using Explorer (Windows) or Finder (MAC), the continuity and relationships of recorded materials may not be maintained.

### Maximum duration of a clip

The maximum clip length is 24 hours for FAT (MP4 or AVI) and 6 hours for UDF (MXF).

If you exceed the maximum clip length, a new clip will be automatically created. You can check the new clip on the thumbnail screen.



## Useful Functions

### Color Bars/Reference Tone

By setting “Color Bars On/Off” (*page 42*) in the VIDEO SET menu to “On,” you can output a color-bar signal in place of the camera picture. When this item is set to “Off,” the output returns to the camera picture.

A 1 kHz reference tone is output with the color bar signal if “1KHz Tone” in “Audio Input” (*page 42*) in the AUDIO SET menu is set to “On.”

The color-bar signal and reference-tone signal are also fed out from the SDI OUT, HDMI OUT, i.LINK, VIDEO OUT (color bars only), and AUDIO OUT connectors (reference audio signal only).

You can select the type of color bars with “Color Bars Type” in the VIDEO SET menu.

### Shot Marks (UDF, FAT/HD mode)

Shot marks can be recorded at important audio/video scenes for clips recorded in UDF or FAT/HD mode. Using shot marks enables the target scenes to be quickly and easily cued up on the Shot Mark screen (*page 36*).

The recorder permits you to record two types of shot marks: shot mark 1 and shot mark 2.

Shot marks can be inserted as needed during recording or can be added after recording while checking the playback pictures on the thumbnail screen.

The recorder can use shot mark 1 and shot mark 2 as the in-point and out-point, respectively, for in-point to out-point partial playback (*page 29*).

#### Inserting a shot mark during recording

Activate the IR Remote Commander (*page 47*), and press the SHOTMARK 1 or SHOTMARK 2 button where you want to insert a shot mark. If the Shot Mark 1 or Shot Mark 2 function is assigned to an assignable button (*page 22*), you can also use that button.

#### Inserting a shot mark during playback

During playback, press the assignable button assigned with the Shot Mark 1 or Shot Mark 2 function, or press the SHOTMARK 1 or 2 button

on the remote controller, at the location where you want to insert the shot mark.

#### Note

Shot marks cannot be recorded onto write-protected SxS memory cards. Also, shot marks cannot be inserted at the start or end of a clip.

Shot marks can also be added and deleted using the Shot Mark screen (*page 36*).

*For operation to apply a name to a shot mark, see “Defining Shot Mark names in Planning Metadata” on [page 25](#).*

### OK/NG/KP Flags (for UDF Only)

You can add OK/NG/KP flags to clips recorded with UDF. By adding flags, you can set the recorder to display only clips with certain flag settings on the thumbnail screen (OK/NG/KP/None-Clip thumbnail screen) (*page 28*).

#### Note

Use the “Lock Clip” setting (*page 32*) to protect clips.

#### Adding a flag

During recording or playback, press the assignable button to which you assigned the Clip Flag OK/Clip Flag NG/Clip Flag Keep function.

#### Deleting a flag

Press the assignable button, twice in succession, to which you assigned the Clip Flag OK/Clip Flag NG/Clip Flag Keep function.

*OK/NG/KP flags can also be added and deleted from the thumbnail screen. For details, see “OK/NG/KP Flag (UDF Only)” ([page 34](#)).*

### OK Mark (for FAT HD Mode Only)

By adding the OK mark to a clip recorded in FAT HD Mode, you can prevent the clip from being deleted or divided inadvertently. You can also set the recorder to display only clips with the OK mark on the thumbnail screen (OK-Clip thumbnail screen) (*page 28*).

#### Adding the OK mark

When recording of a clip ends, press the assignable button to which you assigned the OK Mark function.

While standing by to record, you can also add an OK mark to the last-recorded clip (“Last Clip”) on the selected memory card.

## Deleting the OK mark

Press the assignable button to which you assigned the OK Mark function, and select “Execute.”

While standing by to record, you can also delete the OK mark from the clip with the last-added OK mark.

## Adding or deleting the OK mark to or from clips before the last one

Make changes via the thumbnail screen (*page 34*).

## Assignable Buttons

The recorder has two assignable buttons (*page 7*) to which you can assign various functions for convenience.

### To change functions

Use “Assign Button” (*page 47*) in the OTHERS menu.

The assigned functions can be viewed on the Button/Remote status screen (*page 39*).

## Clip Continuous Recording (UDF Only)

Clips are normally created individually for each time you start and stop recording, but you can also continue recording to a single clip regardless of the number of times you start and stop recording by using the Clip Continuous Recording function, which will add recordings to the same clip until the function is disabled or turned off.

This is convenient for when you do not want to create a large number of short clips, or when you do not want to be restricted by a maximum number of clips.

A recording start mark is added to each point at which you resume recording, making it easy to search for each point.

## Preparatory settings

Set “Clip Cont. Rec Setting” (*page 44*) in the VIDEO SET menu to “On.”

When you set “Setting” to “On,” the Clip Continuous Recording function is enabled, and “CONT” appears on the screen (*page 9*).

You can also assign “Clip Continuous Rec” to an assignable button (*page 22*), and set to “On”/“Off” by pressing the button.

## Notes

- Clip Continuous Recording cannot be used while recording.
- This function cannot be used with FAT.

## Performing clip continuous recording

### Press and hold the REC button, then press the PLAY/PAUSE.

When recording starts, the “CONT” indication on the screen changes to “●REC” (with ● in red).

To pause recording, press the PLAY/PAUSE button. To resume, press and hold the REC button, then press the PLAY/PAUSE button.

Pressing the STOP/EE button closes the clip. In clip continuous mode, the “CONT” indicator flashes if there is no continuous clip.

If using the infrared remote controller, press the REC button to start recording, then press either the REC PAUSE or PLAY/PAUSE button to pause recording. To resume, press the REC button again. Pressing the STOP button closes the clip.

## Notes

- If you remove the SxS memory card or the battery while recording or standing by to record (the “CONT” indication appears), the SxS memory card must be restored. Only remove the SxS memory card after Clip Continuous Recording is complete. If “CONT” is flashing (1 time per second), you can remove the SxS memory card.
- Record for at least 2 seconds before you stop recording.

### To disable Clip Continuous Recording mode

While standing by to record, set “Clip Cont. Rec Setting” (*page 44*) in the VIDEO SET menu to “Off.”

### Restricted Operations

If you perform any of the following operations while recording or standing by to record, 1 continuous clip will not be created. The next time you start recording, a new clip will be created.

- Performing clip operations (locking, deleting, or changing the names of clips).
- Switching the memory card slot.
- Changing the recording format.
- Setting the power button to OFF.
- Displaying the thumbnail screen.
- Playing clips.

## Deleting Clips

While standing by to record, the Last Clip DEL function for deleting the last recorded clip and the All Clips DEL function for deleting all clips from an SxS memory card are available.

*For clip deletion on the thumbnail screen, see “Deleting Clips” on page 34.*

### To delete using the assignable button

Assign the Last Clip DEL function to one of the assignable buttons (page 22) in advance. Press the assignable button to which you have assigned “Last Clip DEL,” and select “Execute” to delete the last recorded clip from the SxS memory card.

### To delete using the Setup menu

Select “Last Clip DEL” in “Clip” (page 50) in the OTHERS menu, select “Execute,” then select “Execute” again to delete the last recorded clip from the SxS memory card.

#### Note

When Clip Continuous Recording is set to “On,” “Last Clip DEL” cannot be selected.

### Deleting clips collectively

Select “All Clips DEL” in “Clip” (page 50) in the OTHERS menu, select “Execute,” then select “Execute” again to delete all the clips from the SxS memory card.

#### Notes

- If the SxS memory card contains clips of both of HD Mode and SD Mode, only the clips of the currently selected mode are deleted.
- Clips with the OK mark (page 21) cannot be deleted in FAT mode. In UDF mode, clips set to “Lock Clip” (page 32) cannot be deleted.

## Storing/Retrieving the Setting Data

You can store all the menu settings as a setup file on an SxS memory card or a USB flash drive. By retrieving the stored setup file, the proper setup condition can be immediately obtained.

#### Note

Values for “Clock Set” and “Hours Meter” in the OTHERS menu are not stored.

### Storing the Setup file

#### To use an SxS memory card

Only one setup file—designated with the file name “SETUP.SUF”—can be stored on one SxS memory card.

- 1 Insert a memory card on which you wish to store the setup file to a card slot.**  
Check that the inserted card is selected.
- 2 Select “Store(SxS)” in “Setup Data” (page 46) in the OTHERS menu, then select “EXECUTE.”**

#### Note

If a setup file already exists on the memory card you specified in Step 1, a message to confirm whether to overwrite the file is displayed.

#### To use a USB flash drive (UDF mode)

Connect the formatted USB flash drive to the OPTION connector.

Select Store(USB) >Execute in step 2.

### Retrieving the Setup file

#### To use an SxS memory card

When you retrieve the stored setup file, the recorder settings are changed according to the file.

- 1 Insert the memory card on which you stored the setup file into a card slot.**  
Check that the inserted card is selected.
- 2 Select “Recall(SxS)” in “Setup Data” (page 46) in the OTHERS menu, then select “EXECUTE.”**

#### To use a USB flash drive (UDF mode)

Connect the formatted USB flash drive to the OPTION connector.

Select Recall(USB) >Execute in step 2.

### Resetting to the standard values

The current recorder settings you made through various menu and button operations can be collectively returned to the standard statuses

(factory settings) by executing “All Reset” in the OTHERS menu.

## Planning Metadata

Planning metadata is information about shooting and recording plans, recorded in an XML file.

You can shoot using clip names and shot mark names defined in advance in a planning metadata file.

This recorder can display clip names and shot mark names defined in the following languages:

English/Chinese/German/French/Italian/  
Spanish/Dutch/Portuguese/Swedish/  
Norwegian/Danish/Finnish

### Notes

- If you define clip and shot mark names in languages other than those listed above, they may not be displayed on the LCD monitor.
- If you define clip and shot mark names in French, Dutch, or Finnish, some characters are displayed in a different but similar font.

## Loading a Planning Metadata file

To record planning metadata together with clips, it is necessary to load a planning metadata file into the recorder’s memory in advance.

### To use an SxS memory card

Insert the SxS memory card with the planning metadata file (.xml) saved to the directory below into the recorder’s card slot, then select and load the file via “Load / Slot(A)” or “Load / Slot(B)” in “Plan.Metadata” (page 51) in the OTHERS menu.

UDF: General/Sony/Planning

FAT: BPAV/General/Sony/Planning

### To use a USB flash drive (UDF mode)

## 1 Connect a USB flash drive formatted with the FAT32 file system to the OPTION connector.

A file list appears.

### Note

The file list displays up to 64 files. Even if the total number of planning metadata files is 64 or less, all of the planning metadata files may not appear if the directory where they are located on the USB flash drive (General/Sony/Planning) contains 512 or more files.

## 2 Select the file which you want to load in the file list, then press the SEL/SET button.

### Confirming the detailed information in planning metadata

After loading a planning metadata file into memory of the recorder, you can check the details of the file, such as the filename, time and date of file creation, and the titles specified in the file.

Select “Properties” in “Plan.Metadata” (page 51) in the OTHERS menu, then select “Execute.”

### Using the Wi-Fi connection

When connecting the unit with a computer via Wi-Fi, the file transmission can be done accessing the unit’s Web menu from a computer.

## 1 Launch the browser and input http://<recorder’s IP address> (page 52) in the address bar.

## 2 Input the user name and password, then click OK.

User name: admin

Password: pmw-50

### Clearing the loaded planning metadata

To clear the planning data loaded in the recorder’s memory, proceed as follows:

Select “Clear” > “Execute” in “Plan.Metadata” (page 51) in the OTHERS menu.”

## Defining a clip name in Planning Metadata

The following two types of clip name strings can be written in a planning metadata file.

- ASCII-format name, which is displayed on the LCD monitor
- UTF-8-format name, which is actually registered as the clip name

You can select the type for displaying the clip name with “Clip Name Disp” in “Plan.Metadata” (page 51) in the OTHERS menu.

When you specify a clip name in planning metadata, the name is displayed under the operation status indication on the LCD monitor.

### Example of clip name strings

Use a text editor to modify the description for the <Title> tag.

The shaded fields in the example are clip name strings. “Typhoon” is described in ASCII format (up to 44 characters).

“Typhoon\_Strikes\_Tokyo” is described in UTF-8 format (up to 44 bytes).

Here, “sp” indicates a space, and ↵ indicates a carriage return.

```
<?xmlspversion="1.0"spencoding="UTF-8"?>↵
<PlanningMetadataspxmlns="http://xmlns.sony.net/pro/metadata/planningmetadata"spassignId="P0001"spcreationDate="2011-08-20T17:00:00+09:00"splastUpdate="2011-09-28T10:30:00+09:00"spversion="1.00">↵
  <PropertiessppropertyId="assignment"spupdate="2011-09-28T10:30:00+09:00"spmodifiedBy="Chris">↵
    <TitlespusAscii="Typhoon"spxml:lang="en">Typhoon_Strikes_Tokyo
  </Title>↵
</Properties>↵
</PlanningMetadata>↵
```

#### Notes

- When you create a file, enter each statement as a single line by breaking a line with a CRLF only after the last character of the line, and do not enter spaces except where specified with “sp.”
- A string of up to 44 bytes (or 44 characters) is valid as a clip name. If a UTF-8-format string exceeds 44 bytes, the string up to the 44th byte is used as the clip name. If only a string in ASCII format is specified, the ASCII-format name up to the 44th characters is used as the clip name. When neither the ASCII-format name string nor UTF-8-format name string is valid, a clip name in the standard format is used.

#### Using a clip name defined in planning metadata

Load a planning metadata file that contains the clip name into memory of the recorder, then select “Plan” in “Auto Naming” in “Clip” (page 50) in the OTHERS menu.

Clip names are generated by adding an underscore ( \_ ) and a 5-digit serial number (00001 to 99999).

**Example:** Typhoon\_Strikes\_Tokyo\_00001,  
Typhoon\_Strikes\_Tokyo\_00002, ...

#### Notes

- If the serial number reaches 99999, it returns to 00001 upon the next recording.

- When you load another planning metadata file, the 5-digit serial number returns to 00001.

## Defining Shot Mark names in Planning Metadata

When you record shot mark 1 or shot mark 2, you can apply a name to the shot mark, using a string defined in planning metadata.

#### Example of shot mark name strings

Use a text editor to modify the description for the <Meta name> tag.

The shaded fields in the example are shot mark name strings.

Names can be either in ASCII format (up to 32 characters) or UTF-8 format (up to 16 characters). Here, “sp” indicates a space and ↵ indicates a carriage return.

#### Note

If a name string contains even one non-ASCII character, the maximum length of that string is limited to 16 characters.

```
<?xmlspversion="1.0"spencoding="UTF-8"?>↵
<PlanningMetadata xmlns="http://xmlns.sony.net/pro/metadata/planningmetadata"spassignId="H00123"spcreationDate="2011-04-15T08:00:00Z"splastUpdate="2011-04-15T15:00:00Z"spversion="1.00">↵
  <PropertiessppropertyId="assignment"spclass="original"spupdate="2011-04-15T15:00:00Z"spmodifiedBy="Chris">↵
    <TitlespusAscii="Football Game"spxml:lang="en">Football Game 15/04/2011
  </Title>↵
    <Metaspname="_ShotMark1"spcontent="Goal"/>↵
    <Metaspname="_ShotMark2"spcontent="Shoot"/>↵
  </Properties>↵
</PlanningMetadata>↵
```

#### Note

When you create a file, enter each statement as a single line by breaking a line with a CRLF only after the last character of the line, and do not enter spaces except where specified with “sp,” except within shot mark name strings.

---

## Copying Planning Metadata files collectively

---

You can copy planning metadata files stored in the General folder on an SxS memory card collectively to another SxS memory card. Select “General Files” in “Copy All” (*page 51*) in the OTHERS menu.

---

## USB flash drives

---

The following Sony USB flash drives are recommended for use with this recorder.

### Pocket Bit Hi-Speed Q Series and M Series

#### Notes

- Use USB flash drives with a capacity of 4 GB to 32 GB.
- USB flash drives other than those listed above may not be recognized if connected to the OPTION connector.

### To format a USB flash drive

USB flash drives must be formatted with the FAT32 file system.

#### 1 Connect a USB flash drive to the OPTION connector.

If the drive is unformatted or is formatted in an unsupported format, a message to confirm whether formatting is to be executed appears on the LCD monitor.

#### 2 Select “Execute,” then press the SEL/SET button.

When formatting is completed, the message “Format USB Memory Done” is displayed. The \MSSONY\PROXDCAM\MEMDISC folder and \General\Sony\Planning folder are automatically created in the drive.

### To restore a USB flash drive

When you load a USB flash drive that cannot be mounted normally because the file system is destroyed, a message appears on the LCD monitor to ask whether you want to restore it. Select “Execute,” then press the SEL/SET button. When formatting is completed, the message “Restore USB Memory Done” is displayed.

# Thumbnail Screens

When you press the THUMBNAIL button (page 7), clips recorded on the SxS memory card are displayed as thumbnails on the screen.

You can start playback from the clip selected on the thumbnail screen. The playback picture can be seen on the LCD monitor and external monitors.

Press the STOP/EE button (page 7) to exit the thumbnail screen and return to the recording standby screen.

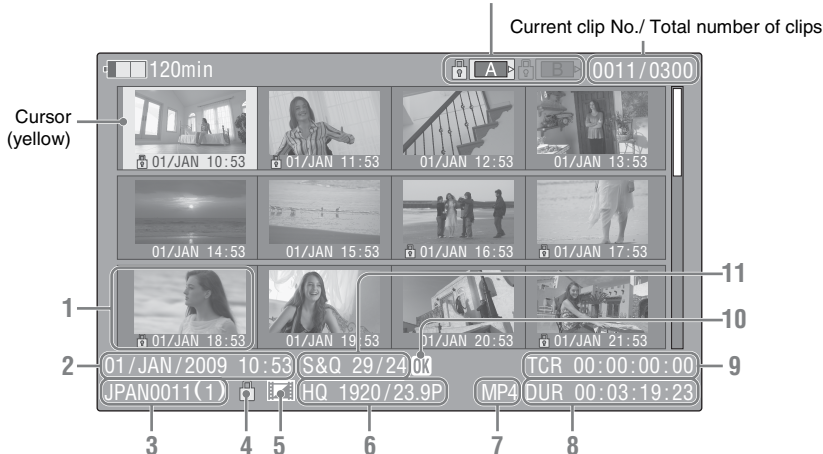
**Note**

Even if the SxS memory card contains a mixture of HD and SD clips, the normal thumbnail screen shows only clips of the mode selected in "HD/SD" in "System" (page 49) in the OTHERS menu. To display all recorded clips regardless of the HD/SD Mode, switch the screen to the All-Clip thumbnail screen (page 28).

## Configuration of the Thumbnail Screen

Data for the clip selected with the cursor are displayed at the bottom of the screen.

The icon of the current SxS memory card is highlighted, shading the nonselected one. (If the card is write-protected, a lock icon is displayed to the left.)



### 1. Thumbnail

In UDF and FAT HD Mode: The thumbnail image for each clip is an index frame from the clip. When recording, the first frame of a clip is automatically set as the index frame. This frame can be adjusted (page 36). Below each thumbnail, the recording date and recording start time are displayed. If the clip is locked or is set with an OK mark, the lock mark is displayed.

In FAT SD mode: The thumbnail image for each clip is the first frame of the clip. Below each

thumbnail, the recording date and recording start time are displayed. If the file was split into multiple parts because its file size exceeded 2 GB, the take mark is displayed. Split files can be viewed via the EXPAND CLIP screen (page 34).

### 2. Date and starting time of recording

### 3. Clip name

In FAT SD Mode, if the file was split into multiple parts because its file size exceeded 2 GB, the segment number is displayed after the name, separated with a slash.

#### 4. Lock mark (UDF and FAT HD Mode only)

UDF: A lock mark appears if the selected clip is locked.

FAT HD Mode: A lock mark appears if the selected clip has an OK mark.

#### 5. AV independent file icon (UDF and FAT HD Mode only)

Displayed only if the selected clip is an AV independent file. This indicates that not all operations and indications may be available, because the clip may have been added manually to the SxS file via a computer, etc., and there is no management file for it.

#### 6. Recording video format

#### 7. File format

The file format (MXF, MP4, AVI) of the selected clip is displayed. (This item is not indicated when the recording mode is UDF-HD mode.)

#### 8. Duration of the clip

#### 9. Timecode

The timecode of the index frame is displayed.

#### 10. OK/NG/KP mark (UDF and FAT HD Mode only)

UDF: The mark is displayed if the selected clip has an OK/NG/KP flag.

FAT HD Mode: The OK mark is displayed if the selected clip has an OK mark.

#### 11. Special recording information (UDF and FAT HD Mode only)

If the selected clip was recorded in a special recording mode (Slow & Quick Motion, Interval Recording, or Frame Recording), the mode is displayed.

Clips recorded in Slow & Quick Motion display the “Recording frame rate/playback frame rate fps” to the right.

## Changing the Type of Thumbnail Screen

The type of thumbnail screen can be changed as follows by pressing the THUMBNAIL button (*page 7*).

### UDF

The normal thumbnail screen, OK/NG/KP/None clip thumbnail screen, and All-Clip thumbnail screen are cyclically displayed.

### FAT HD Mode

The normal thumbnail screen, OK clip thumbnail screen, and All-Clip thumbnail screen are cyclically displayed.

### FAT SD Mode

The normal thumbnail screen and All-Clip thumbnail screen are alternately displayed.

---

### OK/NG/KP/None-Clip thumbnail screen

---

Only the clips flagged OK/NG/KP—or clips with no flag (“None”)—among the clips on the current SxS memory card are displayed.

You can select the type of flag to display with “Filter Clips” in “Clip” (*page 50*) in the OTHERS menu.

---

### OK-Clip thumbnail screen

---

Only the clips marked OK among the clips on the current SxS memory card are displayed.

---

### All-Clip thumbnail screen

---

The All-Clip thumbnail screen shows all clips on the current SxS memory card regardless of the HD or SD Mode, permitting you to check whether the card contains any clips of another mode than that currently selected.

#### Note

You cannot start playback from the All-Clip thumbnail screen.

Press the THUMBNAIL button again to return to the normal thumbnail screen, and playback and clip operations are enabled.

---

### Switching the SxS memory cards

---

When two memory cards are loaded, press the SLOT SELECT button (*page 6*) to switch memory cards.

#### Note

Card switching is enabled only when the thumbnail screen is displayed or when an external input picture is displayed by pressing the STOP/EE button.

You cannot switch memory cards during playback. Continuous playback of cards in slots A and B is not possible.



## Playing Clips

For playback operations, use the playback control buttons on the top panel (page 7). When the IR Remote Commander is enabled, you can use its playback control buttons instead (page 47).

### Playing the Selected and Subsequent Clips in Sequence

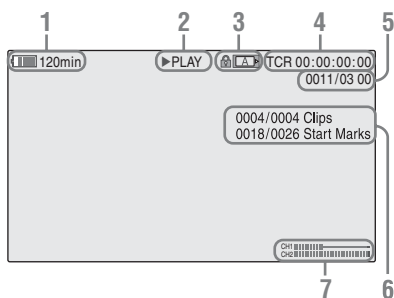
- 1 Move the cursor to the thumbnail image of the clip with which you wish to start playback.
- 2 Press the PLAY/PAUSE button.  
Playback starts from the beginning of the selected clip.

#### Notes

- The playback picture may be momentarily distorted or frozen between clips. The playback control buttons and THUMBNAIL button do not function during this condition.
- When you select a clip on the thumbnail screen and start playback, the playback picture at the beginning of the clip may be distorted. To start playback without distortion, once pause playback after starting it, press the PREV button to return to the top of the clip, then restart playback.


### Information displayed on the playback screen

The following information is superimposed on the playback picture.



1. Battery remaining/DC IN voltage
2. Playback mode

### 3. SxS memory card

A  mark appears to the left if the SxS memory card is write-protected.

### 4. Time data

Each time you press the DURATION/TC/UBIT button, the indication is switched between timecode (TCR) and user-bit (UB) data.

### 5. Clip no./total number of clips

This is displayed for FAT. It is also displayed for UDF if “Find Mode” in “Clip” (page 50) in the OTHERS menu is set to “Clip.”

### 6. Clip no./total number of clips, essence mark no./total number of essence marks

This is displayed for UDF if “Find Mode” in “Clip” (page 50) in the OTHERS menu is set to “Rec Start.”

### 7. Audio levels

The audio levels for the recording are displayed.

### Playing between In-point and Out-point

The recorder can play a section between start and stop points specified in advance. The recorder plays continuously between the in-point and out-point for the clips after the selected clip.

#### Note

In FAT/SD mode, playback between in-point and out-point is not supported because shot marks cannot be inserted in clips.

### Specifying the In-point and Out-point

Specifying shot mark 1 and shot mark 2 for a clip allows the shot marks to be used as an in-point and out-point, respectively.

When the recorder plays a clip with shot marks recorded on another device, the recorder can play the interval between shot marks 1 and 2 in the same way as for clips recorded on this recorder. When a clip with shot marks recorded on this recorder is played on another device, the shot marks are not treated as an in-point and out-point.

### Selecting the Clip to Play

Only clips with an attached OK flag or OK mark support partial playback between in-point and out-point.

To select a clip for partial playback, attach an OK flag or OK mark to the clip on the thumbnail screen.

### Playing between In-point and Out-point

Select “PARTIAL PLAYBACK” from the clip operation menus.  
Playback starts from the first clip in the OK-Clip thumbnail screen.

When playback of the first clip ends, playback continues with the next clip that has an attached OK flag or OK mark.

If shot mark 1 only is specified, the clip plays from shot mark 1 until the end of the clip. If shot mark 2 only is specified, the clip plays from the start of the clip up to shot mark 2.

#### Note

When playing between In-point and Out-point, the signal cannot be output on i.LINK (DVCAM/HDV).

### Trim: Adjusting the In-point and Out-point

Trimming provides fine control of the playback start point and stop point.

- 1 Display the SHOT MARK screen (page 36).**
- 2 Select the shot mark point you want to trim, then select “TRIM SHOT MARK1/2” in the clip operation menus.**  
A still image for the selected frame is displayed.
- 3 Use fast-forward/reverse, play/pause, or slow-motion play (left/right buttons) to move to the frame for which you want to set the shot mark.**
- 4 Press the SEL/SET button.**  
The shot mark selected in step 3 is set at the current point, and the display returns to the OK-Clip thumbnail screen.

### Playing Clips in Repeat Mode

- 1 Select the thumbnail for the clip you want to play on the thumbnail screen.**

- 2 Select “CLIP REPEAT” in the clip operation menus.**

The selected clip starts playing, loops back to the start of the clip when it reaches the end, and continues playing.

#### To stop repeat play

Press the STOP/EE button or the THUMBNAIL button.

### Monitoring Audio

In Normal playback mode, you can monitor the recorded audio signals through the built-in speaker (page 6) or connected headphones.

With the headphones connected to the headphone connector (page 6), the built-in speaker is turned off.

Press the VOLUME buttons (page 6) to adjust the sound volume.

You can select audio channel(s) to be monitored with “Audio Output” (page 42) in the AUDIO SET menu.

### Cueing Up

#### To start playback from the top of the first clip

Press the PREV button and F REV button simultaneously.

#### To start playback from the top of the last clip

Press the F FWD button and NEXT button simultaneously.

# Clip Operations

During thumbnail screen playback, etc., you can operate the clips or confirm and change the subsidiary data for clips using the Clip Operation menus.

The corresponding Clip Operation menu pops up on the screens as shown below when you press the SET/SEL button.

## Clip Operation Menus

### Thumbnail screen (page 32)

- CANCEL
- DISP CLIP INFO
- OK MARK ADD (FAT only)
- OK MARK DELETE (FAT only)
- OK FLAG ADD (UDF only)
- NG FLAG ADD (UDF only)
- KEEP FLAG ADD (UDF only)
- CLIP FLAG DELETE (UDF only)
- LOCK CLIP (UDF only)
- UNLOCK CLIP (UDF only)
- COPY CLIP
- DELETE CLIP
- ALL MARKS
- SHOT MARK1
- SHOT MARK2
- REC START MARK (UDF only)
- EXPAND CLIP
- CLIP REPEAT

### Expand Clip screen (page 35)

- CANCEL
- EXPAND (COARSE)
- EXPAND (FINE)
- PAUSE
- SET INDEX PIC
- SHOT MARK1 ADD
- SHOT MARK2 ADD
- SHOT MARK1 DEL
- SHOT MARK2 DEL
- DIVIDE CLIP (FAT only)
- CLIP REPEAT

### Shot Mark screen (page 36)

- CANCEL
- PAUSE
- SET INDEX PIC
- SHOT MARK1 DEL
- SHOT MARK2 DEL
- DIVIDE CLIP (FAT only)
- CLIP REPEAT
- TRIM SHOT MARK1
- TRIM SHOT MARK2
- EXPAND (FINEST)

#### Note

Selectable menu items are limited in SD Mode.

## Basic Operations of the Clip Operation Menus

Select a menu item, then press the SEL/SET button. Pressing the CANCEL button restores the previous condition.

Selecting “CANCEL” from a Clip Operation menu turns the Clip Operation menu off.

#### Notes

- When the SxS memory card is write-protected, some operations are unavailable.
- There may be items that cannot be selected depending on the status when the menu is displayed.

## Clip Operation menu on the thumbnail screen

Item	Function
DISP CLIP INFO	Displays the clip's information screen ( <i>page 33</i> ).
OK MARK ADD <sup>1)</sup>	Adds an OK mark ( <i>page 34</i> ).
OK MARK DELETE <sup>1)</sup>	Deletes the OK mark ( <i>page 34</i> ).
OK FLAG ADD <sup>2)</sup>	Adds an OK flag ( <i>page 34</i> ).
NG FLAG ADD <sup>2)</sup>	Adds a NG flag ( <i>page 34</i> ).
KEEP FLAG ADD <sup>2)</sup>	Adds a KP flag ( <i>page 34</i> ).
CLIP FLAG DELETE <sup>2)</sup>	Deletes the flag ( <i>page 34</i> ).
LOCK CLIP <sup>2)</sup>	Locks and protects a clip ( <i>page 34</i> ).
UNLOCK CLIP <sup>2)</sup>	Unlocks a protected clip ( <i>page 34</i> ).
COPY CLIP	Copies the clip to another SxS memory card ( <i>page 34</i> ).
DELETE CLIP	Deletes the clip ( <i>page 34</i> ).
ALL MARKS <sup>3)</sup>	Displays thumbnails of all frames with an essence mark recorded ( <i>page 36</i> ).
SHOT MARK1 <sup>3)</sup>	Displays only thumbnails of frames with shot mark 1 recorded ( <i>page 36</i> ).
SHOT MARK2 <sup>3)</sup>	Displays only thumbnails of frames with shot mark 2 recorded ( <i>page 36</i> ).
REC START MARK	Displays thumbnails of frames with a Recording Start mark and the first frames of clips without Recording Start marks ( <i>page 36</i> ).
EXPAND CLIP	Displays the EXPAND CLIP screen ( <i>page 34</i> ).
CLIP REPEAT	Plays the selected clip repeatedly ( <i>page 30</i> ).

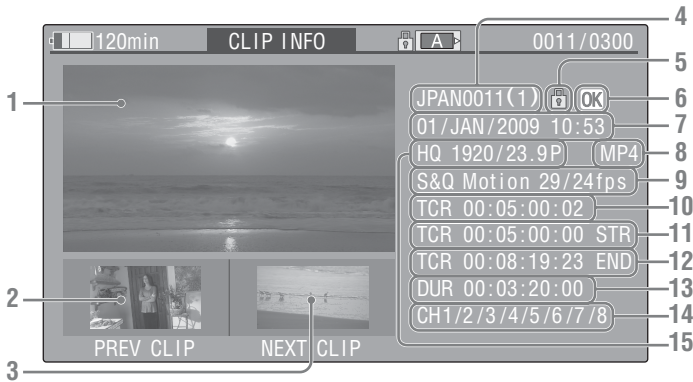
**1)** Effective with FAT HD Mode only.

**2)** Effective with UDF only.

**3)** Effective with UDF and FAT HD Mode.

## Displaying the Detailed Information of a Clip

Select “DISP CLIP INFO” from a Clip Operation menu.



### 1. Image of the current clip

### 2. Image of the previous clip

Press the PREV button to switch to the clip info screen of the previous clip.

In FAT SD Mode, the previous segment of a segmented clip is displayed.

### 3. Image of the next clip

Press the NEXT button to switch to the clip info screen of the next clip.

In FAT SD Mode, the next segment of a segmented clip is displayed.

### 4. Clip name

For a clip name of 12 characters or longer, only the first 5 and last 5 characters of the name are displayed. To check the non-displayed block of the name, press the SEL/SET button to display the entire clip name (Long-Display mode). Press the SEL/SET button again to cancel Long-Display mode. Long-Display mode is also canceled by switching to the previous or next clip with the PREV or NEXT button.

In FAT SD Mode, if the file was split into multiple parts because its file size exceeded 2 GB, the segment number is displayed after the name, separated with a slash.

### 5. Lock mark (UDF and FAT HD Mode only)

UDF: A lock mark appears if the selected clip is locked.

FAT HD Mode: A lock mark appears if the selected clip has an OK mark.

### 6. OK/NG/KP mark (UDF and FAT HD Mode only)

UDF: The mark is displayed if the selected clip has an OK/NG/KP flag.

FAT HD Mode: The OK mark is displayed if the selected clip has an OK mark.

### 7. Date and starting time of recording

### 8. File format

The file format (MXF, MP4, AVI) of the selected clip is displayed.

### 9. Special recording information (UDF and FAT HD Mode only)

If the selected clip was recorded in a special recording mode (Slow & Quick Motion, Interval Recording, or Frame Recording), the mode is displayed.

Clips recorded in Slow & Quick Motion display the “Recording frame rate/playback frame rate fps” to the right.

### 10. Timecode of the displayed frame

### 11. Timecode at the recording starting point

### 12. Timecode at the recording ending point

### 13. Duration of the clip

### 14. Recorded audio channels

### 15. Recorded video format

## OK/NG/KP Flag (UDF Only)

When adding a flag, you can select from OK FLAG ADD, NG FLAG ADD, and KEEP FLAG ADD in the Clip Operation menu (page 32) on the thumbnail screen. When deleting a flag, select CLIP FLAG DELETE.

### Note

Flagged clips are not protected. To protect clips from deletion, select LOCK CLIP in the Clip Operation menu (page 32) on the thumbnail screen. To remove the protection, select UNLOCK CLIP.

## OK Mark (FAT HD Mode Only)

Select “OK MARK ADD” from the Clip Operation menu to add the OK mark, or select “OK MARK DELETE” from the Clip Operation menu to delete it.

## Copying Clips

You can copy clips on an SxS memory card to another SxS memory card. Each clip is copied with the same name to the destination SxS memory card.

### Notes

- If there is another clip having the same name on the destination SxS memory card, the clip is copied under a name adding a single-digit number in parentheses to the end of the original clip name. The parenthetical number is the minimum value that does not exist in the destination memory card.  
**Examples:**  
ABCD0002(1) if ABCD0002 exists  
ABCD0002(2) if ABCD0002(1) exists  
ABCD0005(4) if ABCD0005(3) exists
- When using FAT, you cannot copy a file 10 times or more if clips with the same clip name followed by parenthetical numbers (1) to (9) already exist on the card.
- When using UDF, you cannot copy a file 1000 times or more if clips with the same clip name followed by parenthetical numbers (1) to (999) already exist on the card.
- A warning message is displayed if there is not sufficient space on the destination SxS memory card. Replace the SxS memory card with one with sufficient space.
- When copying an SxS memory card on which multiple clips have been recorded, copying all clips to the end may not be achieved, even if the destination card has the same capacity as the source card, depending on usage conditions, memory characteristics, etc.

## Copying a specified clip

Select a clip on a thumbnail screen, then select “COPY CLIP” from the Clip Operation menu.

## Copying clips collectively

Select “Clips” in “Copy All” (page 51) in the OTHERS menu to copy clips on an SxS memory card collectively to another SxS memory card. If the memory card contains clips of both HD and SD Mode, only the clips of the currently selected mode are copied. This is convenient when you wish to extract clips of the same mode only.

## Deleting Clips

Select “DELETE CLIP” from the Clip Operation menu.

### Note

Clips with an OK mark and flagged clips set to LOCK CLIP cannot be deleted. To delete them, release the OK mark or the LOCK CLIP setting before performing the delete operation.

## Deleting clips collectively

Select “All Clips DEL” in “Clip” (page 50) in the OTHERS menu.

### Notes

- If the memory card contains clips of both HD and SD Mode, only the clips of the currently selected mode are deleted.
- Clips with an OK mark and flagged clips set to LOCK CLIP cannot be deleted.

## EXPAND CLIP Screen

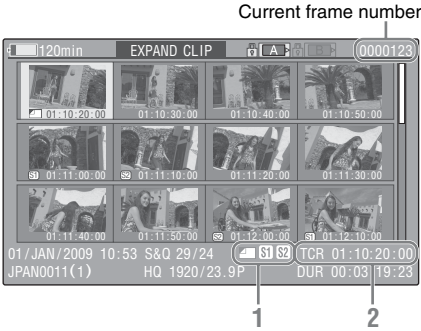
In UDF and FAT HD Mode, the EXPAND CLIP screen permits you to divide a clip into 12 blocks of equal duration and show a thumbnail image of the first frame of each block on the screen. In FAT SD Mode, the EXPAND CLIP screen shows the thumbnail images of the first frames of the segment files only for a clip segmented because its file size exceeded 2 GB. This helps you to quickly cue up to a desired scene in a clip of long duration. You can display the EXPAND CLIP screen by selecting the clip on the thumbnail screen.

- 1 **Select a clip on the thumbnail screen, then press the SEL/SET button.**

## 2 Select “EXPAND CLIP” from the Clip Operation menu.

The EXPAND CLIP screen appears for the clip that you selected on the thumbnail screen.

### EXPAND CLIP screen in UDF and FAT HD Mode



Detailed information for the clip is displayed at the bottom of the screen. The items other than the following are the same as those on the normal thumbnail screen (page 27):

#### 1. Frame information

The following icons show the marking for the frame at the cursor.

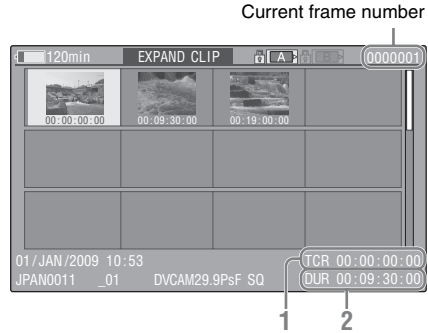
	Index frame
	Frame with shot mark 1 added
	Frame with shot mark 2 added

The same icons may also be displayed below the thumbnail image of each frame. If the frame has multiple markings, one of the icons is displayed, in the priority order of index frame, shot mark 1, and shot mark 2.

#### 2. Timecode indication

The timecode of the frame at the cursor is displayed.

### EXPAND CLIP screen in FAT SD Mode



Detailed information for the clip is displayed at the bottom of the screen.

The items other than the following are the same as those on the normal thumbnail screen (page 27):

#### 1. Timecode indication

The timecode of the segmentation file at the cursor is displayed.

#### 2. Duration

The duration of the segmentation file at the cursor is displayed.

### Clip Operation menu on the EXPAND CLIP screen

Item	Function
EXPAND (COARSE) <sup>1)</sup>	To decrease the number of partitions of the clip
EXPAND (FINE) <sup>1)</sup>	To increase the number of partitions of the clip
PAUSE	To set to Pause mode at the selected frame
SET INDEX PIC <sup>1)</sup>	To specify the selected frame for the index frame of the clip (page 36)
SHOT MARK1 ADD <sup>1)</sup>	To add shot mark 1 to the selected frame (page 36)
SHOT MARK2 ADD <sup>1)</sup>	To add shot mark 2 to the selected frame (page 36)
SHOT MARK1 DEL <sup>1)</sup>	To delete shot mark 1 from the selected frame (page 36)
SHOT MARK2 DEL <sup>1)</sup>	To delete shot mark 2 from the selected frame (page 36)
DIVIDE CLIP <sup>1)</sup>	To divide the clip into two clips at the selected frame (page 37)
CLIP REPEAT <sup>1)</sup>	Plays the selected clip repeatedly (page 30).

<sup>1)</sup> Enabled in UDF and FAT/HD mode.

## SHOT MARK Screen (UDF and FAT HD Mode)

You can display only those frames with shot marks or recording start marks as thumbnail images on the screen.

- 1 Select a clip on the thumbnail screen, then press the SEL/SET button.
- 2 Select ALL MARK, SHOT MARK1, SHOT MARK2, or REC START MARK from the Clip Operation menu.

### SHOT MARK screen example (when ALL MARKS is selected)



The detailed information of the clip is displayed at the bottom of the screen.

The items other than the following are the same as those on the EXPAND CLIP screen (page 35) in UDF and FAT HD mode:

#### 1. Timecode indication

The timecode of the frame at the cursor on the SHOT MARK screen is displayed.

#### Move the cursor to the first/last frame

First frame: When the cursor is at a user-designated position, press the F REV and PREV buttons simultaneously.

Last frame: Press the F FWD and NEXT buttons simultaneously.

#### Switch to the clip shot mark screen for a different clip

Previous clip: When the cursor is at the first frame for a clip, press the PREV or up button.

Next clip: When the cursor is at the last frame for a clip, press the NEXT or down button.

## Clip Operation menu on the SHOT MARK screen

Item	Function
PAUSE	To set to Pause mode at the selected frame
SET INDEX PIC	To specify the selected frame for the index frame of the clip (page 36)
SHOT MARK1 DEL	To delete the shot mark 1 from the selected frame (page 36)
SHOT MARK2 DEL	To delete the shot mark 2 from the selected frame (page 36)
DIVIDE CLIP	To divide the clip into two clips at the selected frame (page 37) (FAT HD mode Only)
CLIP REPEAT	Plays the selected clip repeatedly (page 30).
TRIM SHOT MARK1	Trims the set position of the specified shot mark 1 (page 30).
TRIM SHOT MARK2	Trims the set position of the specified shot mark 2 (page 30).
EXPAND (FINEST)	Displays the CLIP EXPAND screen, showing the smallest segment of the clip, and displays the selected frame in the center of the screen.

## Adding/Deleting Shot Marks

### Adding a shot mark in Pause mode

Select "SHOT MARK1 ADD" or "SHOT MARK2 ADD" from the Clip Operation menu.

### Adding a shot mark on the EXPAND CLIP screen

Select "SHOT MARK1 ADD" or "SHOT MARK2 ADD" from the Clip Operation menu.

### Deleting a shot mark

Select "SHOT MARK1 DEL" or "SHOT MARK2 DEL" from the Clip Operation menu on the EXPAND CLIP screen (page 34) or on the SHOT MARK screen (page 36).

## Changing the Index Frame (UDF and FAT HD Mode)

You can change the index frame to another frame you selected on the EXPAND CLIP screen (page 34) or the SHOT MARK screen (page 36).

Select "SET INDEX PIC" from the Clip Operation menu.



### Note

Even if you specify a frame other than the top frame for the index frame, playback always begins from the top frame when you start it from the thumbnail screen.

## Dividing a Clip (FAT HD Mode Only)

You can divide a clip into two different clips at the frame you select on the EXPAND CLIP screen (*page 34*) or the SHOT MARK screen (*page 36*).

Select “DIVIDE CLIP” from the Clip Operation menu.

The first 4 characters of the original clip name are carried on, continuing to the last number on the memory card by the second 4 numerics.

**Example:** If you divide a clip named ABCD0002 into two clips under the condition where a new clip will be named EFGH0100, clip ABCD0100 and clip ABCD0101 are created.

### Note

If the remaining space on the memory card is insufficient for divided clips, a message informing you of it appears.

# Showing the Status Screens

Press the STATUS button (*page 7*) to display status screens on the LCD monitor/external video monitor.

Use the up/down buttons (*page 7*) to perform operations and switch the screens in sequence. When you press the STATUS button again, the status screen display is canceled.

*For connections of an external monitor, see “Connecting External Monitors and Camcorders” on page 55.*

## Audio Status Screen

### Output CH: External output/headphone output

Depending on the setting of “Output CH” in “Audio Output” in the AUDIO SET menu and the setting of “Monitor CH,” the audio channel(s) external output and headphones output is displayed as follows.

- CH-1: When left/right are CH-1
- CH-2: When left/right are CH-2
- CH-3: When left/right are CH-3
- CH-4: When left/right are CH-4
- CH-1/CH-2: When left is CH-1 and right is CH-2 (stereo)
- CH-3/CH-4: When left is CH-3 and right is CH-4 (stereo)
- CH-1+CH-2: When both left and right are CH-1 and CH-2 (monaural)
- CH-3+CH-4: When both left and right are CH-3 and CH-4 (monaural)

### Speaker: Speaker output

The audio channel(s) output to the internal speaker is displayed.

As the speaker is monaural, CH-1+CH2 or CH-3+CH-4 is displayed when “Monitor CH” is set to stereo. With non-stereo settings, the setting of “Monitor CH” in “Audio Output” in the AUDIO SET menu is displayed as it is.

### CH-1/CH-2/CH-3/CH-4: Audio level meters

The 4-channel audio level meters (2 meters when using 2-channel settings) are displayed.

While recording or in standby mode, the level of the audio inputs (EE audio levels) are displayed. During playback, the audio playback level is

displayed according to the setting of “Output CH” in “Audio Output” in the AUDIO SET menu.

If audio is input from the i.LINK connector while displaying thumbnails, while playback is stopped, or while recording an external signal, the audio input level is displayed. In this case, the leftmost channels that are displayed are CH-1 and CH-2, regardless of the setting of “Output CH” in “Audio Output” in the AUDIO SET menu.

## Video Status Screen

### Video Format: Video format setting

The number of vertical lines, frame rate, scan format (i/P), and file system (UDF/FAT) of the video format set in “Rec Format” in “System” in the OTHERS menu are displayed.

### Rec Mode: Recording bit rate (HD Mode only)

The recording bit rate of the video format set in “Rec Format” in “System” in the OTHERS menu is displayed.

### SDI Output: Output for SDI

The “SDI” setting in “SDI/HDMI/i.LINK I/O Select” in the VIDEO SET menu is displayed.

### HDMI Output: Output for HDMI

The “HDMI” setting in “SDI/HDMI/i.LINK I/O Select” in the VIDEO SET menu is displayed.

### i.LINK I/O: Input and output for i.LINK

The “i.LINK” setting in “SDI/HDMI/i.LINK I/O Select” in the VIDEO SET menu is displayed.

### Input Setting: Recording source

The input source or SG output setting in “Input Source Select” in the VIDEO SET menu is displayed.

### Down Converter: SD output down-converter setting

The “Down Converter” setting (Squeeze, Letterbox, Edge Crop) in the VIDEO SET menu is displayed.

### 23.98P Output: 23.98P output mode

The “23.98P Output” setting (23.98PsF, 59.94i (2-3 Pull Down)) in the VIDEO SET menu is displayed.

**Output Mode: Output mode setting**

The output mode setting for the SDI OUT connector in “Output Mode Select” in the VIDEO SET menu is displayed.

**Button/Remote Status Screen****Assign Button: Assignable button statuses**

The functions assigned with the “Assign Button” in the OTHERS menu to the respective assignable buttons are displayed.

**IR Remote: IR Remote Commander status**

The “IR Remote” setting in the OTHERS menu is displayed.

**Battery/Media Status Screen****Battery: Battery charge remaining**

The remaining charge level of the mounted battery pack is displayed.

**Charge Count: Repeated charge times**

The number of times that the mounted battery pack has been charged is displayed.

**HDD A/HDD B: Battery remaining of PHU-220R units**


When professional hard disk units are connected, the remaining power levels of the batteries of the professional hard disk units connected via the respective card slots are displayed.

**Media A/Media B: Remaining space, available recording time, and estimated service life (rewriting limit)**

The remaining space of the SxS memory cards in the respective card slots is indicated on the meters.

At the right, the available time for recording if done at the current bit rate is displayed, in minutes.

The time indication will be “ - min” if no SxS memory card or an invalid card is in the slot.

If the card is write-protected, a  icon is shown to the right of the time indication.

The Life value is displayed only for an SxS memory card which supports the life value indication. It indicates the estimated remaining usable period of the card (virgin status as 100%). If an alarm is generated, make a backup of the card as soon as possible and replace it with a new card.

# Overview of the Setup Menus

Press the MENU button to display setup menus on the LCD monitor with settings necessary for recording and playback. (You can also display setup menus on an external monitor.) Set items by selecting them from the following menus.

**AUDIO SET menu:** For setting audio-related items.

**VIDEO SET menu:** For setting video output-related items.

**LCD SET menu:** For setting items related to the LCD monitor.

**TC/UB SET menu:** For setting items related to timecodes and user bits.

**OTHERS menu:** For setting other items.

└ OTHERS

- └ All Reset
- └ Setup Data
- └ Time Zone
- └ Clock Set
- └ Language
- └ Assign Button
- └ Tally
- └ Hours Meter
- └ IR Remote
- └ Battery Alarm
- └ Battery INFO
- └ Trigger Mode
- └ System
- └ Clip
- └ Copy All
- └ Format Media
- └ Plan.Metadata
- └ Network
- └ Wi-Fi
- └ Version
- └ Version Up
- └ Menu Scroll

## Setup Menu Layers

MENU

- └ AUDIO SET
  - └ Audio Input
  - └ Audio Output
  
- └ VIDEO SET
  - └ Input Source Select
  - └ Color Bars On/Off
  - └ Color Bars Type
  - └ SDI/HDMI/i.LINK I/O Select
  - └ SDI/HDMI/Video Out Super
  - └ Down Converter
  - └ 23.98P Output
  - └ SDI Rec Control
  - └ Clip Cont. Rec Setting
  - └ Output Mode Select
  
- └ LCD SET
  - └ LCD
  - └ Display On/Off
  
- └ TC/UB SET
  - └ Timecode
  - └ Users Bit
  - └ TC Format

# Basic Menu Operations

## Menu controls

### **MENU button (page 7)**

To turn Menu mode to use Setup menus on/off.

### **Up/Down/Left/Right buttons, SEL/SET button (page 7)**

Press the up/down/left/right buttons to move the cursor the corresponding direction to select menu items or setting values.

Press the SEL/SET button to enter the highlighted item.

### **CANCEL button (page 7)**

To return to the previous layer of the menu. An uncompleted change is canceled.

## Setting the Setup menus

Move the cursor to the icon of the menu you wish to set, then push the SEL/SET button to select that menu.

- The menu item selection area can show 7 lines at maximum. When all the selectable items cannot be displayed at one time, you can scroll the display up or down by moving the cursor. A triangle appears at the upper or lower right corner of the menu item selection area to indicate that scrolling is enabled.
- For items having a wide range of available values (example: -99 to +99), the available value area is not displayed. The current setting is highlighted instead, indicating that the setting is ready for change.
- When you select “Execute” for an execution item, the corresponding function is executed.
- When you select an item that you must confirm before execution, the menu display temporarily disappears, and a confirmation message is displayed. Following the instructions of the message, and specify whether to execute or cancel.

## Entering a character string

When you select an item for which a character string, such as a time value or filename, is to be specified, the input area for the character string is highlighted, and “SET” appears at the right end.

### **1 Select characters, then press the SEL/SET button to proceed.**

The cursor moves to the next column.

To return to the previous column, press the left button.

### **2 Perform setting in the same manner up to the last column/digit.**

The cursor moves to “SET.”

### **3 Press the SEL/SET button.**

The setting is completed.

# Setup Menu List

The functions and available settings of menus are listed below.

The default settings set at the factory are shown in bold face (example: **Speed**). The items marked with **M** in the Menu items column cannot be set while displaying the thumbnail screen or during playback operations.

## AUDIO SET Menu

AUDIO SET		
Menu items	Subitems and setting values	Contents
<b>Audio Input</b> Setting for audio inputs <b>M</b>	1KHz Tone On / <b>Off</b>	Turn the 1-kHz reference tone signal on/off.
<b>Audio Output</b> Setting for audio outputs	Monitor CH <b>CH-1/CH-2 (CH-3/CH-4)</b> CH-1+CH-2 (CH-3+CH-4) CH-1 (CH-3) CH-2 (CH-4)	Select the audio channel(s) to be fed to the headphones and the built-in speaker. CH-1/CH-2 (CH-3/CH-4): Stereo CH-1+CH-2 (CH-3+CH-4): Mix CH-1 (CH-3): CH-1 (CH-3) only CH-2 (CH-4): CH-2 (CH-4) only ( ) : with Output CH set to "CH-3/CH-4"
	Output CH <b>CH-1/CH-2</b> CH-3/CH-4	Select audio output channels from either channels 1 and 2 or channels 3 and 4.
	Alarm Level 0 to 7 ( <b>4</b> )	Set the alarm sound volume.


## VIDEO SET Menu

VIDEO SET		
Menu items	Setting values	Contents
<b>Input Source Select</b> Setting the input source	<b>SDI</b> / i.LINK	Select video and audio signal for the input source. SDI: Input from SDI IN connector i.LINK: HDV/DVCAM input via the i.LINK connector <b>Notes</b> • i.LINK is unavailable when using UDF. • DVCAM is for display only and cannot be recorded.
<b>Color Bars On/Off</b> Setting the Color Bars	On / <b>Off</b>	Turn color bars output on/off when Input Source Select is set to SDI.

VIDEO SET		
Menu items	Setting values	Contents
<b>Color Bars Type</b> Selecting the type of color bars	<b>Multi / 75% / 100% / SMPTE</b>	Select the type of color bars to be output when Color Bars On/Off is set to "On." Multi: Multiformat color bars are output. 75%: To output 75% color bars 100%: To output 100% color bars SMPTE: To output SMPTE color bars.
<b>SDI/HDMI/i.LINK I/O Select</b> Selecting input/output signals for the connectors	In UDF/HD mode <b>HD</b> SD SD P Off In FAT/HD mode (HQ) <b>HD</b> SD & DVCAM SD P Off In FAT/HD mode (SP) <b>HD &amp; HDV</b> SD & HDV SD P & HDV SD & DVCAM Off In UDF/SD mode <b>SD</b> Off In FAT/SD mode <b>SD &amp; DVCAM</b> Off	HD: Output an HD SDI signal from the SDI OUT connector, and an HD HDMI signal from the HDMI OUT connector. SD: Output an SD SDI signal from the SDI OUT connector, and an SD HDMI interlaced signal from the HDMI OUT connector. HD & HDV: Output an HD SDI signal from the SDI OUT connector, and an HD HDMI signal from the HDMI OUT connector. Input/output an HDV stream on the i.LINK connector. SD & HDV: Output an SD SDI signal from the SDI OUT connector, and an SD HDMI interlaced signal from the HDMI OUT connector. Input/output an HDV stream on the i.LINK connector. SD P & HDV: Output an SD HDMI progressive signal from the HDMI OUT connector. Input/output an HDV stream on the i.LINK connector. No signal is output from the SDI OUT and VIDEO OUT connectors. SD & DVCAM: Output an SD SDI signal from the SDI OUT connector, and an SD HDMI interlaced signal from the HDMI OUT connector. Input/output a DVCAM stream on the i.LINK connector. SD P: Output an SD HDMI progressive signal on the HDMI OUT connector. No signal is output from the SDI OUT and VIDEO OUT connectors. Off: No output from each of the SDI/HDMI/i.LINK connectors. A composite signal is output when composite signal output from the VIDEO OUT connector is enabled.
<b>SDI/HDMI/Video Out Super</b> Setting the character information for each output	<b>On / Off</b>	Set whether to add the menus and status indications of the LCD monitor to the output of the SDI OUT, HDMI OUT, and VIDEO OUT connectors. <div style="border: 1px solid black; padding: 2px; width: fit-content;"><b>Note</b></div> On the thumbnail, EXPAND CLIP and SHOT MARK screens, the menus and status indications on the LCD monitor are displayed regardless of the setting of this item.
<b>Down Converter</b> Selecting the operation mode of the down converter	<b>Squeeze / Letterbox / Edge Crop</b>	Set the output mode (aspect) for SD signals Squeeze: To horizontally reduce a 16:9 picture to output a 4:3 picture Letterbox: To mask the upper and lower areas of a 4:3 picture to display a 16:9 picture in the center of the screen Edge Crop: To cut the both sides of a 16:9 picture to output a 4:3 picture
<b>23.98P Output</b> Selecting Output mode	<b>59.94i (2-3PD) / 23.98PsF</b>	Select the video output format when the video format for UDF HD Mode is HD422 50/1080/23.98P, HD420 HQ/1080/23.98P or the video format for FAT HD Mode is HQ 1920/23.98P or HQ 1440/23.98P.

VIDEO SET		
Menu items	Setting values	Contents
<b>SDI Rec Control</b> Setting the synchronized recording	<b>Off / On</b>	Select whether to start/stop recording in synchronization with an REC trigger signal sent from the device connected to the SDI IN connector.
<b>Clip Cont. Rec Setting</b> Setting the Clip Continuous Recording function	<b>On / Off</b>	Turn the Clip Continuous Recording function on/off.
<b>Output Mode Select</b> Setting the output mode	<b>Normal / Through / Auto</b>	Set the video signal output mode for the SDI OUT connector. Normal: Output the same video on the LCD monitor. Through: Always output the SDI IN input signal (bypass). Auto: Output the playback video when playing a clip, and output the SDI IN input signal at all other times.

## LCD SET Menu

LCD SET		
Menu items	Subitems and setting values	Contents
<b>LCD</b> Adjusting the LCD monitor	Color -99 to +99 ( $\pm 0$ )	Adjust the color of pictures on the LCD monitor.
	Contrast -99 to +99 ( $\pm 0$ )	Adjust the contrast of pictures on the LCD monitor.
	Brightness -99 to +99 ( $\pm 0$ )	Adjust the brightness of pictures on the LCD monitor.
<b>Display On/Off</b> Selecting the items to be displayed on the LCD monitor 	Audio Level Meter <b>On / Off</b>	Turn the audio level meter indication on/off.
	Timecode <b>On / Off</b>	Turn the time data (timecode, user bits, duration) indication on/off.
	Battery Remain <b>On / Off</b>	Turn the battery remaining/DC input voltage indication on/off.
	Media Remain <b>On / Off</b>	Turn the media remaining indication on/off.
	Rec Mode <b>On / Off</b>	Turn the special recording mode (Frame Rec, Interval Rec, S&Q Motion) indication on/off.
	Video Format <b>On / Off</b>	Turn the video format indication on/off.
	Clip Name <b>On / Off</b>	Turn the clip name display on/off.
	ClipNumber (PB) <b>On / Off</b>	Turn the clip number display on/off.
	SDI Rec Control <b>On / Off</b>	Turn the synchronous recording display (the Rec2 display) on/off.
	Input Signal I/F <b>On / Off</b>	Turn the input signal display ON/OFF.



## TC/UB SET Menu

TC/UB SET		
Menu items	Subitems and setting values	Contents
<b>Timecode</b> Setting the timecode	Mode	Set the timecode mode.
	<b>Preset</b> / Regen / Ext Regen / Clock	Preset: To start the timecode from the specified value Regen (regeneration): To continue the timecode during recording only. When you insert another SxS memory card, the recorder starts next recording so that the timecode continues from the last recorded timecode on the card. ExtRegen (external regeneration): To synchronize to the timecode superimposed on the internal input signal. Clock: To use the current clock time as the timecode
	Run	Set the running mode when the timecode mode is set to "Preset."
	<b>Rec Run</b> / Free Run	Rec Run: To advance the timecode during recording only. The continuity of the timecode is maintained between clips in the sequence of recording as long as the SxS memory card is not changed. If you remove the memory card and record on another card, the timecode will not continue when you return the first card to the slot again. Free Run: The timecode keeps advancing regardless of the state of recording to the SxS memory card. Always select "Free Run" when "Mode" is set to "ExtRegen."
	Setting	Set the timecode to a desired value.
	Reset Execute / Cancel	Select "Execute" to reset the timecode to 00:00:00:00.
<b>Users Bit</b> Setting the user bits	Mode	Set the user bit mode.
	<b>Fix</b> / Date	Fix: To use a desired fixed value as the user bits Date: To use the current date
	Setting	Set the user bits to a desired value.

TC/UB SET		
Menu items	Subitems and setting values	Contents
<b>TC Format</b> Setting the time code format	DF / NDF	Set the timecode format. DF: Drop frame NDF: Non drop frame
<b>Note</b>		
The current video format/frame frequency determines whether the mode is fixed either to DF or NDF (see below), regardless of the TC Format setting.		
<b>Video formats</b>	<b>Frame setting</b>	<b>TC Format</b>
59.94i 59.94P 29.97P	00 to 29	DF/NDF switchable (Fixed to DF in Clock mode)
23.98P	00 to 23 <sup>1)</sup>	Fixed to NDF <sup>2)</sup>
50i 50P 25P	00 to 24	Fixed to NDF

1) The frame digits in “Setting” is limited to 00, 04, 08, 12, 16, and 20.

The frame at the beginning of recording is limited to 00, 04, 08, 12, 16, or 20.

As “23.98P Output” (page 43) in the VIDEO SET menu becomes 2-3 pull-down 59.94i when recording (or standing by to record) HQ 1920/23.98P other than when “23.98PsF” is selected, the overlapping timecodes of frames output from the SDI OUT connector are renumbered from 00 to 29.

2) Even in Clock mode, the timecode is gradually shifted, because it is counted by NDF.


As output from the SDI OUT connector becomes 2-3 pulled-down video when recording (or standing by to record) HQ 1920/23.98P and other than “23.98PsF” is selected for “23.98P Output” (page 43) in the VIDEO SET menu, fields are created in which overlapping timecodes are displayed on the screen.

## OTHERS Menu

OTHERS		
Menu items	Subitems and setting values	Contents
<b>All Reset</b> Resetting to the factory status	Execute/Cancel	Select “Execute” to reset the recorder to the factory status.
<b>Setup Data</b> Storing/recalling the menu settings on SxS memory cards or USB flash drive	Store(SxS)/(USB) Execute/Cancel	When you select “Execute” to store the setting values, the setup file is stored to one of the following directories. For UDF: /General/Sony/PRO/CAMERA/XDCAM/PMW_50/ For FAT: /SONY/PRO/CAMERA/XDCAM_EX/PMW_50/
	Recall(SxS)/(USB) Execute/Cancel	Select “Execute” to retrieve the setting values from an SxS memory card.
<b>Time Zone</b> Setting the time difference	UTC -12:00 to +13:30	Set the time-zone difference from UTC in steps of 30 minutes.
<b>Note</b>		
The default setting is different among the sales areas. United States and Canada: -5:00 Europe area: 0:00 Oceania: +10:00		

OTHERS		
Menu items	Subitems and setting values	Contents
<b>Clock Set</b> Setting the built-in clock	Date/Time	Set the current time and date.
	12H/24H 12H / <b>24H</b>	Select the display mode of time. 12H: 12-hour mode 24H: 24-hour mode
	Date Mode <b>YYMMDD</b> / MMDDYY / DDMMYY	Select the display mode of the date. YYMMDD: In sequence of year, month, day MMDDYY: In sequence of month, day, year DDMMYY: In sequence of day, month, year
<b>Language</b> Selecting the language for menus and messages	<b>English</b> / Japanese / Chinese	English: To display in English Japanese: To display in Japanese Chinese: To display in Chinese  <b>Note</b> "Japanese" is effective only on messages for warning and caution. The menus and status indications do not change.
<b>Assign Button</b> Assigning functions to the assignable buttons	<1>, <2> Off / Last Clip DEL / IR Remote / Shot Mark1 / Shot Mark2 / OK Mark / Clip Flag OK / Clip Flag NG / Clip Flag Keep / Clip Continuous Rec / LCD Adjust / Color Bars On/ Off <1> <b>On</b> <2> <b>Off</b>	Assign a function to the ASSIGN buttons 1/2. (The selectable functions are shared.) Off: No function Last Clip DEL: Execute the last clip delete (retake) function IR Remote: Enable/disable the IR Remote Commander Shot Mark1: Add shot mark 1 (HD Mode only) Shot Mark2: Add shot mark 2 (HD Mode only) OK Mark: For adding or removing an OK mark (HD Mode only, not valid via the thumbnail screen) Clip Flag OK: Enable/disable OK flags for clips during recording and playback (UDF only) Clip Flag NG: Enable/disable NG flags for clips during recording and playback (UDF only) Clip Flag Keep: Enable/disable Keep flags for clips during recording and playback (UDF only) Clip Continuous Rec: Switch the Clip Continuous Recording function on/off LCD Adjust: Switch the LCD Adjust function level bar indication (brightness adjustment → contrast adjustment → off ) Color Bars On/Off: Switch the color bars output on/off.
<b>Tally</b> Setting the tally lamps	Front <b>High</b> / Low / Off	Set the brightness of the tally lamp.
<b>Hours Meter</b> Displaying the hours meter	Hours (Sys)	The non-resettable accumulated time of use is displayed.
	Hours (Reset) Reset Execute/Cancel	The resettable accumulated time of use is displayed. Select "Execute" to reset the Hours (Reset) value to 0.
<b>IR Remote</b> Activating/deactivating the Remote Commander	On / <b>Off</b>	Set to "On" to activate remote control operations from the supplied IR Remote Commander.  <b>Note</b> The setting automatically returns to "Off" when the recorder is turned off.

## OTHERS

Menu items	Subitems and setting values	Contents
<b>Battery Alarm</b> Setting the low power alarm	Low BATT 5% / <b>10%</b> / 15% / ... / 45% / 50%	Set the battery level at which the Low BATT warning is generated (in steps of 5%).
	BATT Empty 3% to 7% ( <b>3%</b> )	Set the battery level at which the BATT Empty warning is generated.
	DC Low Volt1 11.5 V to 17.0 V ( <b>11.5 V</b> )	Set the DC IN voltage at which the DC Low Volt1 warning is generated.
	DC Low Volt2 11.0 V to 14.0 V ( <b>11.0 V</b> )	Set the DC IN voltage at which the DC Low Volt2 warning is generated.
	<b>Battery INFO</b>	Type
Showing information regarding the battery pack (display only)	MFG Date	The date of manufacture is displayed.
	Charge Count	The accumulated number of times of charge/discharge is displayed.
	Capacity	The estimated total capacity of full charge is displayed.
	Voltage	The current output voltage is displayed.
	Remaining	The current remaining level is displayed.
<b>Trigger Mode</b> Setting for operating an external recording device connected via the i.LINK connector (FAT only)	Internal / <b>Both</b> / External	Internal: To activate recording start/stop operations only for an SxS memory card in a built-in slot.
		Both: To activate recording start/stop operations both for an SxS memory card in a built-in slot and the external recording device connected via the i.LINK connector.
		External: To activate recording start/stop operations only for the external recording device connected via the i.LINK connector.
		

**OTHERS**

Menu items	Subitems and setting values	Contents	
<b>System</b>	Country <b>NTSC Area</b> / NTSC(J) Area / PAL Area	Select the area of use and setup ON/OFF setting. NTSC Area: Setup ON NTSC(J) Area: Setup OFF PAL Area: Setup OFF	
	<p style="text-align: center;"><b>Note</b></p> <p>The default setting is different among the sales areas. United States and Canada: NTSC Area Other areas: PAL Area</p>		
	UDF/FAT <b>UDF</b> / FAT	Switch the file system between UDF/FAT.	
	HD/SD <b>HD</b> / SD	Switch between HD Mode and SD Mode for recording/ playback.	
	Rec Format	Select the video format for recording.	
	<ul style="list-style-type: none"> <li>• UDF HD Mode</li> <li>Country: NTSC Area/NTSC(J) Area <b>HD422 50/1080/59.94i</b> HD420 HQ/1080/59.94i HD422 50/1080/29.97P HD420 HQ/1080/29.97P HD422 50/1080/23.98P HD420 HQ/1080/23.98P HD422 50/720/59.94P HD420 HQ/720/59.94P</li> <li>Country: PAL Area <b>HD422 50/1080/50i</b> HD420 HQ/1080/50i HD422 50/1080/25P HD420 HQ/1080/25P HD422 50/720/50P HD420 HQ/720/50P</li> <li>• UDF SD Mode</li> <li>Country: NTSC Area/NTSC(J) Area <b>DVCAM59.94i</b> IMX50 59.94i</li> <li>Country: PAL Area <b>DVCAM50i</b> IMX50 50i</li> </ul>	<ul style="list-style-type: none"> <li>• FAT HD Mode</li> <li>Country: NTSC Area/NTSC(J) Area <b>HQ 1920/59.94i</b> HQ 1440/59.94i SP 1440/59.94i HQ 1920/29.97P HQ 1440/29.97P HQ 1920/23.98P HQ 1440/23.98P HQ 1280/59.94P</li> <li>Country: PAL Area <b>HQ 1920/50i</b> HQ 1440/50i SP 1440/50i HQ 1920/25P HQ 1440/25P HQ 1280/50P</li> <li>• FAT SD Mode</li> <li>Country: NTSC Area/NTSC(J) Area <b>DVCAM59.94i</b></li> <li>Country: PAL Area <b>DVCAM50i</b></li> </ul>	<ul style="list-style-type: none"> <li><b>HD Mode</b></li> <li>• Bit rate UDF: HD422 50 or HD420 HQ FAT: HQ or SP</li> <li>• Horizontal resolution 1920, 1440, or 1280</li> <li>• Frame rate 23.98, 25, 29.97, 50, or 59.94</li> <li>• Scan system i (interlace) or P (progressive)</li> <li><b>SD Mode</b></li> <li>• Frame rate 50 or 59.94</li> <li>• Scan system i (interlace)</li> </ul>
	Wide Mode <b>Auto</b> / 16:9	Set wide video processing when the input signal is an SD SDI signal. Auto: To set the up-converter to squeeze mode when the input signal is wide video or set to edge crop mode when the input signal is not wide video. 16:9: To set the up-converter to edge crop mode to always treat the input signal as wide video.	
	Audio (IMX) <b>16bit</b> / 24bit	Set the number of audio quantization bits when the video format is IMX.	

**OTHERS**

Menu items	Subitems and setting values	Contents
<b>Clip</b> Setting for clip name or deletion	Auto Naming C**** / Title / <b>Plan</b>	Select the method to specify clip names. C****: UDF only Title: To specify as desired by “Title Prefix” Plan: To use a name specified in planning metadata (if no name is specified in planning metadata, the name specified by “Title Prefix” is used.)
	Title Prefix nnn_ (nnn=least three digits of the serial number) (Max. 7 characters displayed)	Call the Character Set screen to set the title part (4 to 46 characters) of the clip names. <b>Configuration of the Character Set screen</b> Character selection area (3 lines): To select a character to insert in the cursor position of the Title Prefix area. !#\$%()+,-.=@[^\_~0123456789 abcdefghijklmnopqrstuvwxyz ABCDEFGHIJKLMNPOQRSTUVWXYZ Cursor operation area (1 line): Space: To change the character in the cursor position to a space INS: To insert a space in the cursor position DEL: To delete a character in the cursor position ←: To move the cursor to the left →: To move the cursor to the right ESC: To cancel the change and exit the Character Set screen END: To validate the change and exit the Character Set screen Title Prefix area (1 line): For entering the title <b>To set the title</b> <b>1</b> Select (highlight) a character in the character selection area to be entered in the cursor position of the Title Prefix area. Then press the SEL/SET button. <b>2</b> Repeat Step 1 for setting the title. (Use Space, INS, and DEL as required.) <b>3</b> When the title setting is completed, select END to exit the Character Set screen.
	Number Set <b>0001</b> to 9999	Set the second 4-numeric part of the clip name.
	Update <b>Media(A)</b> / Media(B)	To update the managerial file on the SxS memory card in the selected slot. <sup>1)</sup>
	Last Clip DEL Execute / Cancel	Select “Execute” to delete the last recorded clip.
	All Clips DEL Execute / Cancel	Select “Execute” to delete all clips on the active SxS memory card.
		<b>Note</b> Clips to which you applied OK mark and clips that are locked cannot be deleted.
	Filter Clips <b>OK</b> / NG / KP / None	Select from among OK (the OK flag), NG (the not good flag), KP (the keep flag), or None (for no flag) to filter displayed clips. (UDF only)
	Lock All Clips Execute/Cancel	Select “Execute” to protect all clips. (UDF only)

OTHERS		
Menu items	Subitems and setting values	Contents
	Unlock All Clips Execute/Cancel	Select "Execute" to remove protection from all clips. (UDF only)
	Index Picture Pos 0sec to 10sec ( <b>0sec</b> )	Set the image for viewing thumbnails. This selects the time difference from the start of the clip.
	Find Mode <b>Clip</b> / Rec Start	Set the action for when you press the PREV button/NEXT button. (UDF only) Clip: Move to the start of the current clip/next clip. (Pressing the PREV button from the start of a clip will move to the start of the previous clip.) Rec Start: Move to the previous Rec Start Essence Mark/the next Rec Start Essence Mark.
<b>Copy All</b> <sup>2)</sup> Setting for collective copy of clips and/or General files	Clips	To copy all clips on an SxS memory card to the other.
	General Files	To copy all files in the General folder on an SxS memory card to the other.
	Clips&General	To copy all clips and files in the General folder on an SxS memory card to the other.
<b>Format Media</b> Formatting SxS memory cards	Media(A) Execute / Cancel	Select "Execute" to format the SxS memory card in slot A with the selected file system (UDF/FAT).
	Media(B) Execute / Cancel	Select "Execute" to format the SxS memory card in slot B with the selected file system (UDF/FAT).
<b>Plan.Metadata</b> Setting planning metadata	Load/Slot(A) or Load/Slot(B) Execute / Cancel	To load planning metadata from the SxS memory card in slot A or B. Selecting "Execute" displays the list of the planning metadata files stored on the SxS memory card in slot A or B. Specify a file, select "Load" then "Execute" for loading.
	Load/USB (UDF mode only) Execute/Cancel	Loads planning metadata from the USB flash drive connected to the OPTION connector. Select "Execute" to show the list of the planning metadata files stored in the USB flash drive and select a file to be loaded.

**Notes**

- The file list displays up to 64 files. Even if the total number of planning metadata files is 64 or less, all of the planning metadata files may not appear if the directory where they are located in the SxS memory card (General/Sony/Planning) contains 512 or more files.
- After you start loading, do not remove the SxS memory card until the completion message is displayed.

**OTHERS**

Menu items	Subitems and setting values	Contents
	Properties Execute / Cancel	Select "Execute" to display the detailed information of the planning metadata loaded in the recorder. File Name: Filename Assign ID: Assignment ID Created: Time and date of creation Modified: Time and date of most recent modification Modified by: Name of person who modified the file Title1: Title1 specified in file (clip name in ASCII format) Title2: Title2 specified in file (clip name in UTF-8 format) Material Gp: Number of material groups (groups of clips recorded using the same planning metadata) Shot Mark1: Name defined for Shot Mark 1 Shot Mark2: Name defined for Shot Mark 2 When you select "File Name," "Assign ID," "Title1," or "Title2" on the Planning Metadata Properties screen and then press the SEL/SET button, the selected item is displayed on the full screen, permitting you to check a long file or clip name at a glance.
		<b>Note</b> Names of shot marks cannot be displayed on the full screen even if you select Shot Mark 1 or Shot Mark 2.
	Clear Execute / Cancel	Select "Execute" to clear the planning metadata loaded in the recorder.
	Clip Name Disp <b>Title1 (ASCII) / Title2 (UTF-8)</b>	Select the display mode of the clip name specified in planning metadata.
		<b>Note</b> When both an ASCII format name and a UTF-8 format name are specified in planning metadata, the UTF-8 format string is used as the clip name. If only either ASCII-format name or UTF-8 format name is specified in planning metadata, the specified name is displayed regardless of the menu setting.
<b>Network</b> Setting for network connections	DHCP Enable / <b>Disable</b>	Select whether to acquire the IP address automatically from a DHCP server (Enable) or not (Disable).
	IP Address 0.0.0.0 to 255.255.255.255 <b>(192.168.1.10)</b>	Set the IP address when "DHCP" is set to "Disable."
	Subnet Mask 0.0.0.0 to 255.255.255.255 <b>(255.255.255.0)</b>	Set the subnet mask when "DHCP" is set to "Disable."
	Default Gateway 0.0.0.0 to 255.255.255.255 <b>(0.0.0.0)</b>	Set the default gateway when "DHCP" is set to "Disable."
	User Name <b>(admin)</b>	Set a desired user name in 1 to 31 alphanumeric characters.
	Password <b>(pmw-50)</b>	Sets a password in 0 to 31 alphanumeric characters.
		<b>Note</b> Each password character is displayed as "*" .
	Set Execute / Cancel	Confirms the "Network" settings. Select "Execute" to confirm.



OTHERS		
Menu items	Subitems and setting values	Contents
	MAC Address	Display the MAC address.
	Net Config Reset Execute / Cancel	Reset the “Network” settings to the preset values. Select “Execute” to reset.
<b>Wi-Fi</b> Setting for Wi-Fi connection	Scan Networks Execute / Cancel	Scan the available network connections when “Wi-Fi” is set to “Enable.”
	SSID (Network connection name display) Reset	Reset the network connection name to the default settings.
<b>Note</b> The CBK-WA01 Wi-Fi Adapter is required.	Network Type Infra / <b>Adhoc</b>	Select the connection mode. Infra: Infrastructure mode Adhoc: Ad hoc mode
	Ch 1 to 11	Set the wireless channel when “Network Type” is “Adhoc.”
	Authentication	Select the network authentication. Open: Open system authentication Shared: Shared key authentication
	When “Network Type” is “Infra” <b>Open</b> / Shared / WPA / WPA2	WPA: WPA (Wi-Fi Protected Access) authentication
	When “Network Type” is “Adhoc” <b>Open</b> / Shared	WPA2: WPA2 (Wi-Fi Protected Access 2) authentication
	Encryption	Select the type of data encryption. Disable: Do not apply data encryption.
	When “Authentication” is “Open” or “Shared” <b>Disable</b> / WEP	WEP: WEP (Wired Equivalent Privacy) TKIP: TKIP (Temporal Key Integrity Protocol)
	When “Authentication” is “WPA” or “WPA2” <b>Disable</b> / TKIP / AES	AES: AES (Advanced Encryption Standard)
	WEP Key Index 1 / 2 / 3 / 4	Select the key index when “Encryption” is “WEP.”
	Input Select	Select the input format depending on the network key (or security key).
When “Encryption” is “WEP” <b>ASCII5</b> / ASCII13 / HEX10 / HEX26	ASCII5: Five characters ASCII format ASCII13: 13 characters ASCII format HEX10: 10 hexadecimal digits	
When “Encryption” is “TKIP” or “AES” ASCII8-63 / HEX64	HEX26: 26 hexadecimal digits ASCII8-63: 8 to 63 characters ASCII 8-bit format HEX64: 64 hexadecimal digits (characters)	
Key (network key)	Set the network key (or security key).	
Set Execute / Cancel	Confirm the “Wi-Fi” settings when “Wi-Fi” is set to “Enable.” Select “Execute” to confirm.	
Wi-Fi Status ■ ■ ■ Connecting (display only)	Display “Connecting” while connection is being attempted. Display black squares to show the connection status by the number of squares during communication.	
Wireless Mode 802.11b / 802.11g / 802.11n	Display an IEEE802.11 standard.	
Wi-Fi Enable / <b>Disable</b>	Select whether to enable or disable Wi-Fi connection.	
<b>Version</b> Showing the version of this unit	Vx.xx	The current software version of the recorder is displayed.

**OTHERS**

<b>Menu items</b>	<b>Subitems and setting values</b>	<b>Contents</b>
<b>Version Up</b> Updating this unit	Execute / Cancel	Select "Execute" to update the recorder. Use when updating is required.  <b>Note</b> This item cannot be selected when no SxS memory card has been loaded.
<b>Menu Scroll</b> Setting the menu scroll operation	<b>Normal</b> / Loop	Select the method for menu scrolling. Normal: The cursor moves and stops at the top or the bottom. Loop: The cursor continues moving up (jumping from the top to the bottom) or down (jumping from the bottom to the top).

1) If recording/playback cannot be made with an SxS memory card because it has been operated with a device other than this recorder, or for some other reason, updating the managerial file on the card may improve the situation.

2) When you copy an SxS memory card including multiple clips and files to another card with the same capacity, all the clips and files may not be copied completely to the end, depending on the usage conditions or memory properties.

# Connecting External Monitors and Camcorders

To display recording/playback pictures on an external monitor, select the output signal and use an appropriate cable for the monitor to be connected.

Regardless of whether the signal is HD or SD, the same status information and menus can be displayed on the external monitor as those on the LCD monitor. Set “SDI/HDMI/Video Out Super” (page 43) in the VIDEO SET menu to “On.”

When outputting SD signals in HD Mode, select the output mode in advance using “Down Converter” (page 43) in the VIDEO SET menu.

### Note

When down-converted SD signals are output, images of 50P/50i/25P are output as PAL signals, images of 59.94P/59.94i/29.97P are output as NTSC signals, and images of 23.98P are output as 2-3 pulled-down NTSC signals.

---

## SDI OUT connector (BNC type)

An HD SDI (factory default setting) or SD SDI signal is output, depending on the HD/SD setting of the recorder.

Set “SDI/HDMI/i.LINK I/O Select” (page 43) in the VIDEO SET menu to output down-converted SD SDI signals for monitoring, even in HD Mode.

If an HDV or DVCAM stream is being input from the device connected to the i.LINK connector, you can output the input signal on the i.LINK connector from the SDI OUT connector.

Use a commercially available 75-ohm coaxial cable for connection.

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## HDMI OUT connector (Type A connector)

Signal output from this connector is enabled by setting “SDI/HDMI/i.LINK I/O Select” (page 43) in the VIDEO SET menu.

In HD Mode, you can select HD HDMI, SD HDMI interlace, or SD HDMI Progressive output.

In SD Mode, only an SD HDMI interlace signal can be output.

Use a commercially available HDMI cable for connection.

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## VIDEO OUT connector (BNC type)

By changing the setting of “SDI/HDMI/i.LINK I/O Select” (page 43) in the VIDEO SET menu, you can output HD-Y signals in HD Mode or down-converted SD analog composite signals for monitoring in SD Mode.

Use a commercially available BNC cable for connection.

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## i.LINK connector (IEEE1394, 4-pin)

Input/output of an HDV or DVCAM stream can be enabled by changing “SDI/HDMI/i.LINK I/O Select” (page 43) in the VIDEO SET menu.

To set the input, select “i.LINK” in “Input Source Select” (page 42) in the VIDEO SET menu.

A monitor or VTR that supports i.LINK can be connected (page 57).

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## AUDIO OUT connector (pin jack)

Outputs the recording audio signal during recording or standby mode, and outputs the playback signal during playback.

By changing the setting of “AUDIO OUTPUT” > “Output CH” in the AUDIO SET menu, you can select channels 1 and 2 or channels 3 and 4 for audio output.

Use a commercially available audio cable for connection.

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## SDI IN Connector (BNC type)

The recorder supports the input of SDI signals, from a camcorder or other device for recording or output to another device.

To set an SDI input signal, select “SDI” in “Input Source Select” in the VIDEO SET menu.

Use a commercially available 75-ohm coaxial cable for connection.

### To start recording using a trigger signal from an external device

When recording HD SDI signal input, setting “SDI Rec Control” (page 44) to “On” in the VIDEO SET menu enables the recorder to start recording when a REC trigger signal is received

from the device connected to the SDI IN connector.

**Note**

No operation occurs if the connected external device does not support the REC trigger signal function.

## Connecting a Computer

When you connect the recorder or the SBAC-US10 SxS Memory Card USB Reader/Writer (optional) using the supplied USB cable, the memory card in the slot is acknowledged as an extended drive by the computer.

When two memory cards are mounted in this recorder, they are acknowledged as two independent extended drives by the computer.

**Note**

The recorder and the SBAC-US10 do not work on the bus power from the computer. Supply the operating power independently.

### To check the connection to the recorder

#### 1 Set the power button to ON to turn on the recorder.

A message prompting you to confirm that you wish to enable the USB connection is displayed on the LCD monitor.

**Note**

This message will not be displayed while another confirmation message or in-progress message (e.g., for formatting or restoration of an SxS memory card) is shown on the screen. It appears when formatting or restoration is completed. The message is also not displayed while the CLIP INFO screen is shown on the screen. It appears when an operation on the CLIP INFO screen is completed or you return to the thumbnail screen.

#### 2 Select “Execute.”

#### 3 On Windows, check that the memory card is displayed as a removable disk in My Computer.

**On Macintosh, check that a “NO NAME” or “Untitled” folder was created on the desktop. (The Macintosh folder name can be changed.)**

If the computer is equipped with an ExpressCard/34 or ExpressCard/54 slot, you can directly insert the SxS memory card to access the files.

**Notes**

- The following operations must be eliminated when the access lamp is lit in red.
  - Turning the power off or disconnecting the power cord
  - Removing the SxS memory card
  - Disconnecting the USB cable

- When removing an SxS memory card from a Macintosh, do not select “Card Power Off” from the SxS memory card icon displayed on the menu bar.
- Operation is not guaranteed with all computers.
- Use the supplied USB cable for connection.

## Connecting via i.LINK (FAT only)

Signals can be input/output on the i.LINK connector when an HDV-compatible video format (SP 1440/59.94i, SP 1440/50i) or SD mode is selected.

Set “SDI/HDMI/i.LINK I/O Select” to “HD & HDV,” “SD & HDV,” “SD P & HDV,” or “SD & DVCAM” in the VIDEO SET menu.

You can record the same images as those recorded in this recorder on an external device connected to the i.LINK connector, or record playback pictures (HDV streams) from the external device on the recorder.

For playback, DVCAM streams of 16-bit 2-channel lock audio are acceptable.

Nonlinear editing conforming to the HDV format is also enabled.

### Notes

- DVCAM streams cannot be recorded with the recorder.
- Use the i.LINK connector only for one-to-one i.LINK connection.
- When you change a setting which affects output signals from the i.LINK connector, such as “System” in the OTHERS menu or “SDI/HDMI/i.LINK I/O Select” and “Down Converter” in the VIDEO SET menu, disconnect the i.LINK cable then change the setting. Changing such a setting with the i.LINK cable connected may cause improper operation of the connected i.LINK device.

## Recording the SDI Signal on an External Device

While recording or in standby mode, the picture being recorded with this recorder is output as an HDV or DVCAM stream via the i.LINK connector. It can be recorded on a connected HDV or DVCAM recorder in synchronization with the recording operation on this recorder.

### 1 Perform the preparatory settings of the recorder.





- “SDI/HDMI/i.LINK I/O Select” (page 43) in the VIDEO SET menu
- “Trigger Mode” (page 48) in the OTHERS menu

## 2 Set the external device to recording standby status.

## 3 Start recording with the recorder.

The external device starts recording in synchronization.

The status of the external device is displayed in the i.LINK status indication area (page 9) on the LCD monitor.

Indication	Status of the external device
STBY 	In HDV recording standby
●REC 	In HDV recording
STBY 	In DV recording standby
●REC 	In DV recording

### Notes

- Operation may be different depending on the type of external device.
- There is some time lag from when you start recording until the i.LINK status indication changes. Recording does not start on the connected i.LINK device before it enters synchronization even if “Trigger Mode” is set to “Both.”
- While you can insert shot marks on the memory card during recording, they are not added to the pictures recorded on the external device.

## Nonlinear Editing

When the recorder is in playback mode, you can transfer an HDV stream to a nonlinear editing system connected via the i.LINK connector.

### Notes

- The i.LINK connector of this recorder is a 4-pin connector. Check the number of pins of the i.LINK connector on your computer and use an appropriate i.LINK cable.
- In searching pictures of this recorder on the computer, it may take some time until the display is reflected on the computer.
- If the playback clip is short or the playback starting point is near the end of the clip, the i.LINK signal may be interrupted between the clip and the next clip. When you try to capture such a signal using the nonlinear editing system, a malfunction may occur, depending on the nonlinear editing software in use.
- If you specify a search speed other than 4, 15, or 24 times normal with the nonlinear editing system, no i.LINK signal is fed out. In such a case, the picture on the LCD monitor may stay frozen.
- High-speed playback picture may not be displayed on the computer screen, depending on the nonlinear editing software in use.

## Setting on this recorder

Set “SDI/HDMI/i.LINK I/O Select” (page 43) in the VIDEO SET menu to “HD & HDV,” “SD & HDV,” “SD P & HDV,” or “SD & DVCAM.”

## Recording and SDI Output of External Input Signals

The recorder supports HDV or DVCAM stream input from a device connected to the i.LINK connector, and output to a device connected to the SDI OUT connector. HDV streams can be recorded on SxS memory cards in the recorder. The timecode superimposed on the i.LINK input is recorded.

### Note

DVCAM streams cannot be recorded.

## 1 Set the external signal to a format supported by the recorder.

1440 × 1080/59.94i, 1440 × 1080/50i, and DVCAM input formats are supported.

## 2 Set “SDI/HDMI/i.LINK I/O Select” (page 43) to “HD & HDV,” “SD & HDV,” “SD P & HDV,” or “SD & DVCAM” in the VIDEO SET menu.

### Note

Recording is not supported when set to “DVCAM.”

## 3 Set “Input Source Select” (page 42) to “i.LINK” in the VIDEO SET menu.

The input signal is output from the SDI OUT connector.

The video signal is output on the VIDEO OUT connector and the LCD monitor. The audio signal is output on the AUDIO OUT connector, headphone connector, and built-in speaker.

## 4 To record, press and hold the REC button, then press the PLAY/PAUSE button.

### Notes

- An error is displayed if any of the following conditions occur during recording. When an error is displayed, press the STOP/EE button to stop recording.
  - The video format of the input signal is different to the recorder format setting.
  - A copy-prohibited stream is input.

- If the input signal to the recorder during recording is lost, the tally lamp and the “●REC” i.LINK status indication on the LCD monitor start flashing, indicating that nothing is being recorded on the SxS memory card.  
Recording resumes when the signal is restored, but the clip number on the recorder is incremented.

## Important Notes on Operation

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### Use and Storage

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#### Do not subject the unit to severe shock

The internal mechanism may be damaged or the body warped.

#### Do not cover the unit while operating

Putting a cloth, for example, over the unit can cause excessive internal heat build-up.

#### After use

Always turn the power OFF.

#### Before storing the unit for a long period

Remove the battery pack.

#### When carrying

If you carry it by the LCD monitor block, the recorder may drop, causing damage.

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### Shipping

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- Remove the memory cards before transporting the unit.
- If sending the unit by truck, ship, air or other transportation service, pack it in the shipping carton of the unit.

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### Care of the unit

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If the body of the unit is dirty, clean it with a soft, dry cloth. In extreme cases, use a cloth steeped in a little neutral detergent, then wipe dry. Do not use organic solvents such as alcohol or thinner, as these may cause discoloration or other damage to the finish of the unit.

#### In the event of operating problems

If you should experience problems with the unit, contact your Sony dealer.

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### Note about the battery terminal

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The battery terminal of this unit (the connector for battery packs and AC adaptors) is a consumable part.

Power may not be supplied to the unit properly if the pins of the battery terminal are bent or deformed by shock or vibrations, or if they become corroded due to prolonged outdoor use.

Periodic inspections are recommended to keep the unit working properly and to prolong its usable lifetime.

Contact a Sony service or sales representative for more information about inspections.

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### Use and storage locations

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Store in a level, ventilated place. Avoid using or storing the unit in the following places:

- In excessive heat or cold (operating temperature range: 0 °C to 40 °C or 32 °F to 104 °F)  
Remember that in summer in warm climates the temperature inside a car with the windows closed can easily exceed 50 °C (122 °F).
- In damp or dusty locations
- Locations where the unit may be exposed to rain
- Locations subject to violent vibration
- Near strong magnetic fields
- Close to radio or TV transmitters producing strong electromagnetic fields.
- In direct sunlight or close to heaters for extended periods

#### To prevent electromagnetic interference from portable communications devices

The use of portable telephones and other communications devices near this unit can result in malfunctions and interference with audio and video signals.

It is recommended that the portable communications devices near this unit be powered off.

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### About the LCD panels

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The LCD panels are manufactured with extremely high-precision technology that yields effective pixel rates of 99.99% or higher. However, very rarely, one or more pixels may be permanently dark or permanently lit in white, red, blue, or green.

This phenomenon is not a malfunction. Such pixels have no effect on the recorded data, and the unit may be used with confidence even if they are present.



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## Notes about the display

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- Pictures on the LCD monitor may be distorted by the following operations:
  - Changing the video format
  - Starting playback from the Thumbnail screen
  - Reversing the LCD monitor

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## File fragmentation

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If pictures cannot be recorded/reproduced properly, try formatting the recording medium. While repeating picture recording/playback with a certain recording medium for an extended period, files in the medium may be fragmented, disabling proper recording/storage. In such a case, make a backup of clips in the medium then perform formatting of the medium using “Format Media” (*page 51*) in the OTHERS menu.

# Formats and Limitations of Outputs

## SDI OUT Connector Output Formats

### Recording/standby (SDI input)

Input format		Output format		
“Rec Format” in “System” in OTHERS menu	SDI IN	“SDI/HDMI/i.LINK I/O Select” in VIDEO SET menu		
		HD/HD & HDV	SD/SD & HDV/SD & DVCAM	SD P /SD P & HDV
59.94i (HD/HQ/SP)	1920×1080/59.94i	1920×1080/59.94i	SD 59.94i	N/A
29.97P (HD/HQ)				
23.98P (HD/HQ)				
	1920×1080/23.98PsF	1920×1080/59.94i <sup>1)</sup> 1920×1080/ 23.98PsF <sup>2)</sup>		
59.94P (HD/HQ)	1280×720/59.94P	1280×720/59.94P	SD 59.94i <sup>3)</sup>	
59.94i (DVCAM/IMX)	SD/59.94i	N/A	SD 59.94i	
50i (HD/HQ/SP)	1920×1080/50i	1920×1080/50i	SD 50i	
25P (HD/HQ)				
50P (HD/HQ)				
50i (DVCAM/IMX)	SD/50i	N/A	SD 50i	

1) When “23.98P OUTPUT” is set to “2-3PD” in the VIDEO SET menu

2) When “23.98P OUTPUT” is set to “23.98PsF” in the VIDEO SET menu

3) Converted from 59.94P to 59.94i

4) Converted from 50P to 50i

### Recording/standby (i.LINK (HDV) input)

Enabled in FAT mode only (i.LINK disabled in UDF mode).

When “Rec Format” in “System” is set to “SP 1440/59.94i” in the OTHERS menu, the output format is as follows, according to the setting of “SDI/HDMI/i.LINK I/O Select” in the VIDEO SET menu.

HD & HDV: 1920×1080/59.94i

SD & HDV: SD 59.94i

When “Rec Format” in “System” is set to “SP 1440/50i” in the OTHERS menu, the output format is as follows, according to the setting of “SDI/HDMI/i.LINK I/O Select” in the VIDEO SET menu.

HD & HDV: 1920×1080/50i

SD & HDV: SD 50i

In all other cases, a blue screen is output or the setting is disabled.

### Recording/standby (i.LINK (DVCAM) input)

Enabled in FAT mode only (i.LINK disabled in UDF mode).

When “SDI/HDMI/i.LINK I/O Select” is set to “SD & DVCAM” in the VIDEO SET menu, the

output format is set to “SD 59.94i/SD 50i” regardless of the input format.

When “SDI/HDMI/i.LINK I/O Select” is set to other values, a blue screen is output or the setting is disabled.

## Playback

Playback clip format	Output format		
	“SDI/HDMI/i.LINK I/O Select” in VIDEO SET menu		
	HD/HD & HDV	SD/SD & HDV/ SD & DVCAM	SD P/SD P & HDV
59.94i (HD/HQ/SP)	1920×1080/59.94i	SD 59.94i	N/A
29.97P (HD/HQ)	1920×1080/59.94i 1280×720/59.94i <sup>1)</sup>		
23.98P (HD/HQ)	1920×1080/59.94i <sup>2)</sup> 1920×1080/23.98PsF <sup>3)</sup> 1280×720/59.94P <sup>4)</sup>		
59.94P (HD/HQ)	1280×720/59.94P		
59.94i (DVCAM/IMX)	N/A		
50i (HD/HQ/SP)	1920×1080/50i		
50P (HD/HQ)	1280×720/50P		
25P (HD/HQ)	1920×1080/50i 1280×720/50P <sup>1)</sup>	SD 50i	
50i (DVCAM/IMX)	N/A		

1) When the playback clip format is 720

2) When “23.98P OUTPUT” is set to “2-3PD” in the VIDEO SET menu and the playback clip format is 1080

3) When “23.98P OUTPUT” is set to “23.98PsF” in the VIDEO SET menu and the playback clip format is 1080

4) When the playback clip format is 720. Also, pulldown playback occurs automatically when playing a Pure P clip recorded in FAT/HQ1280/23.98P.

5) Converted from 59.94P to 59.94i

6) Converted from 50P to 50i

## On thumbnail screens

“Rec Format” in “System” in OTHERS menu	Output format		
	“SDI/HDMI/i.LINK I/O Select” in VIDEO SET menu		
	HD/HD & HDV	SD/SD & HDV/ SD & DVCAM	SD P/SD P & HDV
59.94i (HD/HQ/SP)	1920×1080/59.94i	SD 59.94i	N/A
29.97P (HD/HQ)			
23.98P (HD/HQ)	1920×1080/59.94i <sup>1)</sup> 1920×1080/23.98PsF <sup>2)</sup>		
59.94P (HD/HQ)	1280×720/59.94P		
59.94i (DVCAM/IMX)	N/A		
50i (HD/HQ/SP)	1920×1080/50i		
25P (HD/HQ)			
50P (HD/HQ)	1280×720/50P	SD 50i <sup>4)</sup>	
50i (DVCAM/IMX)	N/A	SD 50i	

1) When “23.98P OUTPUT” is set to “2-3PD” in the VIDEO SET menu

2) When “23.98P OUTPUT” is set to “23.98PsF” in the VIDEO SET menu

3) Converted from 59.94P to 59.94i

4) Converted from 50P to 50i

## HDMI OUT Connector Output Formats

### Recording/standby (SDI input)

Input format	SDI IN	Output format		
		“SDI/HDMI/i.LINK I/O Select” in VIDEO SET menu		
“Rec Format” in “System” in OTHERS menu		HD/HD & HDV	SD/SD & HDV/ SD & DVCAM	SD P/ SD P & HDV
59.94i (HD/HQ/SP)	1920×1080/59.94i	1920×1080/59.94i	SD 59.94i	SD 59.94P
29.97P (HD/HQ)				
23.98P (HD/HQ)				
59.94P (HD/HQ)	1920×1080/23.98PsF	1920×1080/59.94i <sup>1)</sup>		
59.94P (HD/HQ)	1280×720/59.94P	1280×720/59.94P	SD 59.94i <sup>2)</sup>	
59.94i (DVCAM/IMX)	SD/59.94i	N/A	SD 59.94i	N/A
50i (HD/HQ/SP)	1920×1080/50i	1920×1080/50i	SD 50i	SD 50P
25P (HD/HQ)				
50P (HD/HQ)				
50i (DVCAM/IMX)	1280×720/50P	1280×720/50P	SD 50i <sup>3)</sup>	
50i (DVCAM/IMX)	SD/50i	N/A	SD 50i	N/A

1) When “23.98P OUTPUT” is set to “2-3PD” in the VIDEO SET menu

2) Converted from 59.94P to 59.94i

3) Converted from 50P to 50i

### Recording/standby (i.LINK (HDV) input)

Enabled in FAT mode only (i.LINK disabled in UDF mode).

When “Rec Format” in “System” is set to “SP 1440/59.94i” in the OTHERS menu, the output format is as follows.

HD & HDV: 1920×1080/59.94i

SD & HDV: SD 59.94i

SD P & HDV: SD 59.94P

When “Rec Format” in “System” is set to SP 1440/50i” in the OTHERS menu, the output format is as follows.

HD & HDV: 1920×1080/50i

SD & HDV: SD 50i

SD P & HDV: SD 50P

In all other cases, a blue screen is output or the setting is disabled.

### Recording/standby (i.LINK (DVCAM) input)

Enabled in FAT mode only (i.LINK disabled in UDF mode).

When “SDI/HDMI/i.LINK I/O Select” is set to “SD & DVCAM” in the VIDEO SET menu, the output format is set to “SD 59.94i/SD 50i” regardless of the input format.

When “SDI/HDMI/i.LINK I/O Select” is set to other values, a blue screen is output or the setting is disabled.

### Playback

Playback clip format	Output format		
	“SDI/HDMI/i.LINK I/O Select” in VIDEO SET menu		
	HD/HD & HDV	SD/SD & HDV/ SD & DVCAM	SD P/SD P & HDV
59.94i (HD/HQ/SP)	1920×1080/59.94i	SD 59.94i	SD 59.94P <sup>1)</sup>
29.97P (HD/HQ)	1920×1080/59.94i 1280×720/59.94P <sup>2)</sup>		SD 59.94P
23.98P (HD/HQ)	1920×1080/59.94i <sup>3)</sup> 1280×720/59.94P <sup>4)</sup>		
59.94P (HD/HQ)	1280×720/59.94P	SD 59.94i <sup>5)</sup>	
59.94i (DVCAM/IMX)	N/A	SD 59.94i	N/A
50i (HD/HQ/SP)	1920×1080/50i	SD 50i	SD 50P <sup>1)</sup>

Playback clip format	Output format		
	“SDI/HDMI/i.LINK I/O Select” in VIDEO SET menu		
	HD/HD & HDV	SD/SD & HDV/ SD & DVCAM	SD P/SD P & HDV
50P (HD/HQ)	1280×720/50P	SD 50i <sup>5)</sup>	SD 50P
25P (HD/HQ)	1920×1080/50i 1280×720/50P <sup>2)</sup>	SD 50i	
50i (DVCAM/IMX)	N/A		N/A

1) Converted from interlaced to progressive

2) When the playback clip format is 720

3) When “23.98P OUTPUT” is set to “2-3PD” in the VIDEO SET menu and the playback clip format is 1080

4) When the playback clip format is 720. Also, pulldown playback occurs automatically when playing a clip recorded in Pure P.

5) Converted from progressive to interlaced

### On thumbnail screens

Playback clip format	Output format		
	“SDI/HDMI/i.LINK I/O Select” in VIDEO SET menu		
	HD/HD & HDV	SD/SD & HDV/ SD & DVCAM	SD P/SD P & HDV
59.94i (HD/HQ/SP)	1920×1080/59.94i	SD 59.94i	SD 59.94P
29.97P (HD/HQ)			
23.98P (HD/HQ)			
59.94P (HD/HQ)			
59.94i (DVCAM/IMX)	N/A		N/A
50i (HD/HQ/SP)	1920×1080/50i	SD 50i	SD 50P
25P (HD/HQ)			
50P (HD/HQ)			
50i (DVCAM/IMX)	N/A		N/A

1) When “23.98P OUTPUT” is set to “2-3PD” in the VIDEO SET menu

## VIDEO OUT Connector Output Formats

### Recording/standby (SDI input)

In SDI input mode, formats are the same as the SDI OUT connector output formats.

### Recording/standby (i.LINK (HDV) input)

In i.LINK (HDV) input mode, formats are the same as the SDI OUT connector output formats.

### Recording/standby (i.LINK (DVCAM) input)

In i.LINK (DVCAM) input mode, formats are the same as the SDI OUT connector output formats.

### Playback

Formats are the same as the SDI OUT connector output formats.

### On thumbnail screens

In SDI input mode, formats are the same as the SDI OUT connector output formats.

## i.LINK Connector Output Formats

### Recording/standby (SDI input)

Enabled in FAT mode only (i.LINK disabled in UDF mode).

When “Country” is set to “NTSC Area” or “NTSC(J) Area,” and “Rec Format” is set to “SP

1440/59.94i” in “System” in the OTHERS menu, the output format is as follows.

\*\*\* & HDV: HDV 59.94i

\*\*\* & DVCAM: SD 59.94i

When “Country” is set to “NTSC Area” or “NTSC(J) Area,” and “Rec Format” is not set to

“SP 1440/59.94i” in “System” in the OTHERS menu, the output format is as follows.

\*\*\* & HDV: N/A

\*\*\* & DVCAM: SD 59.94i (1920×1080/  
23.98P and 1440×1080/23.98P: N/A)

When “Country” is set to “PAL Area” and “Rec Format” is set to “SP 1440/59.94i” in “System” in the OTHERS menu, the output format is as follows.

\*\*\* & HDV: HDV 50i

\*\*\* & DVCAM: SD 50i

When “Country” is set to “PAL Area” and “Rec Format” is not set to “SP 1440/59.94i” in “System” in the OTHERS menu, the output format is as follows.

\*\*\* & HDV: N/A

\*\*\* & DVCAM: SD 50i

### Playback

Enabled in FAT mode only (i.LINK disabled in UDF mode).

When the playback clip format is set to “SP 1440/59.94i,” with “Country” set to “NTSC Area” or “NTSC(J) Area” and “Rec Format” set to “SP 1440/59.94i” in “System” in the OTHERS menu, the output format is as follows.

\*\*\* & HDV: HDV 59.94i

\*\*\* & DVCAM: DVCAM 59.94i

When a clip with a different format than that above is played, with “Country” set to “NTSC Area” or “NTSC(J) Area,” the output format is as follows.

\*\*\* & HDV: N/A

\*\*\* & DVCAM: DVCAM 59.94i

(1920×1080/23.98P, 1440×1080/23.98P,  
1280×720/23.98P: N/A)

When the playback clip format is set to “SP 1440/50i,” with “Country” set to “PAL Area” and “Rec Format” set to “SP 1440/50i” in “System” in the OTHERS menu, the output format is as follows.

\*\*\* & HDV: HDV 50i

\*\*\* & DVCAM: DVCAM 50i

When a clip with a different format than that above is played, with “Country” set to “PAL Area,” the output format is as follows.

\*\*\* & HDV: N/A

\*\*\* & DVCAM: DVCAM 50i

When “Rec Format” is set to “HQ 1080/23.98P” or “HQ 720/23.98P” (video format recorded in pure 23.98P), the playback video is not output on i.LINK (DVCAM).

## Backup Battery Replacement

This recorder uses a backup battery to retain various setting data.

A lithium battery (CR2032) for backup is mounted in the recorder at the factory.

The backup battery retains the date, time, and timecode in Free Run mode even when no operating power is being supplied.

### Service life of the backup battery

When the backup battery’s voltage falls, the backup battery low-voltage warning appears on the LCD monitor.

If this warning appears, replace the battery as soon as possible.

### WARNING

- Battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.
- Batteries shall not be exposed to excessive heat such as sunshine, fire or the like.

### CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

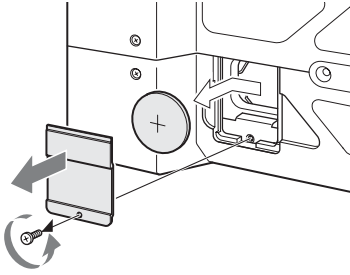
When you dispose of the battery, you must obey the law in the relative area or country.

### Replacing the backup battery

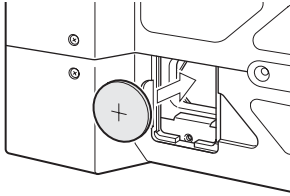
#### Notes

- Be sure to turn the power to OFF when replacing the backup battery.
- Be careful not to drop the removed screw into the recorder.

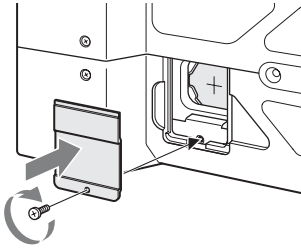
- 1 **Remove the screw of the backup battery holder, then remove the cover. Insert a nonmetallic item, such as a plastic toothpick, to the side of the battery and lever the battery out of its compartment.**



- 2** Insert a new backup battery (CR2032) with the + symbol on the battery facing outside.



- 3** Attach the cover in the original position.



# Troubleshooting

## Power

Symptoms	Cause	Remedy
The recorder does not power on when you set the power button to ON.	No battery pack is mounted and no power is supplied to the DC IN connector.	Mount a battery pack ( <i>page 10</i> ) or connect to AC power using the BC-U1 or BC-U2 ( <i>page 11</i> ).
	The battery pack is completely exhausted.	Replace the battery pack with a fully charged one ( <i>page 10</i> ).
The power supply cuts while operating.	The battery pack becomes exhausted.	Replace the battery pack with a fully charged one ( <i>page 10</i> ).
The battery pack becomes exhausted very quickly.	The ambient temperature is very low.	This owes to the battery characteristics and is not a defect.
	The battery pack is inadequately charged.	Recharge the battery pack ( <i>page 10</i> ). If the battery pack is soon exhausted even after you charged it fully, it may come to the end of its life. Replace it with a new one.

## Recording/playback

Symptoms	Cause	Remedy
Recording does not start when you press the REC + PLAY/PAUSE buttons.	The power is turned OFF.	Set the power button to ON.
	The SxS memory card is write-protected.	Release the write-protection, or replace the card with a non-protected SxS memory card.
	The SxS memory card is full.	Replace the card with one having sufficient space.
	The SxS memory card needs restoration.	Restore the memory card ( <i>page 13</i> ).
Playback does not start when you press the PLAY/PAUSE button.	The power is turned OFF.	Set the power button to ON.
The supplied IR Remote Commander does not work.	Remote control operation is disabled.	Enable remote control operation ( <i>page 47</i> ).
	The battery of the IR Remote Commander is exhausted.	Replace the battery with a new one ( <i>page 8</i> ).

## External devices

Symptoms	Cause	Remedy
The equipment connected to the recorder via an i.LINK connection does not react as expected, for example, no picture appears on its screen.	It sometimes takes time for the connected equipment to recognize the operation.	Wait for about 15 seconds. If the connected equipment still does not react, do the following: <ul style="list-style-type: none"><li>• Check the i.LINK cable, for example, by re-plugging it.</li><li>• Turn the power off, and connect the cable again.</li><li>• Change the i.LINK cable.</li></ul>



## Error indications

The recorder informs you of situations where warning, caution, or an operation check is required, through messages on the LCD monitor, the tally lamps, and a buzzer.

The buzzer is output to the built-in speaker or to the headphones connected via the headphone connector. The buzzer volume can be set with “Alarm Level” in “Audio Output” (page 42) in the AUDIO SET menu. The recorder stops operation after the following indications.

Error indication on LCD	Buzzer	Tally lamps	Cause and measures
E + Error code	Continuous	Rapidly flashing	The recorder may be defective. Recording stops even if ●REC is displayed on the LCD monitor. Turn off the power and check the connected equipment, cables, and media. If they are not defective, turn on the power again. If the error persists, consult Sony service personnel. (If power cannot be turned off by setting the power button to OFF, remove both the battery pack and the DC IN source.)

## Warning indications

When one of the following indications is generated, follow the message to clear the problem.

Warning indication on LCD	Buzzer	Tally lamps	Cause and measures
Media Near Full	Intermittent	Flashing	Free space on the SxS memory card has become insufficient. Replace it with another at the earliest opportunity.
Media Full	Continuous	Rapidly flashing	No space is left on the SxS memory card. Recording, clip copying and clip division cannot be performed. Replace it with another.
Battery Near End	Intermittent	Flashing	The battery power will be exhausted soon. Charge the battery pack at the earliest opportunity.
Battery End	Continuous	Rapidly flashing	The battery pack is exhausted. Recording cannot be performed. Stop operation and change the battery pack.
Temperature High	Intermittent	Flashing	The internal temperature has risen above a safe operation limit. Suspend operation, turn off the power, and wait until the temperature falls.
Voltage Low	Intermittent	Flashing	The DC IN voltage has become low (stage 1). Check the power supply.
Insufficient Voltage	Continuous	Rapidly flashing	The DC IN voltage is too low (stage 2). Recording cannot be performed. Connect other power source.
HDD A <sup>1</sup> Battery Near End	Intermittent	Flashing	The battery power of the connected HDD will be exhausted soon. Change the battery at the earliest opportunity.
HDD A <sup>1</sup> Battery End	Continuous	Rapidly flashing	The battery of the connected HDD is exhausted. Recording cannot be performed. Stop operation to change the battery.
Battery Error Please Change Battery			An error was detected with the battery pack. Replace the battery pack with a normal one.
Backup Battery End Please Change			The remaining power of the backup battery is insufficient. Replace the battery with a new one.

Warning indication on LCD	Buzzer	Tally lamps	Cause and measures
Unknown Media(A) <sup>2</sup> Please Change			A partitioned memory card or one that contains recorded clips exceeding the number permitted with this recorder is loaded. This card cannot be used with this recorder. Remove it and load a compatible card.
Media Error Media(A) <sup>2</sup> Needs to be Restored			An error occurred with the memory card. The card requires restoration. Remove the card, load it again, and restore it.
Media Error Cannot Record to Media(A) <sup>2</sup>			Recording cannot be done, as the memory card is defective. As playback may be possible, it is recommended to replace it with another card after copying the clips, as required.
Media Error Cannot Use Media(A) <sup>2</sup>			Neither recording nor playback can be done, as the memory card is defective. It cannot be operated with this recorder. Replace it with another card.
Will Switch Slots Soon			This is an advanced notice that the recorder will switch from the current memory card to the other memory card for continuous recording.
No Clip			There are no clips in the memory card. Check the selected card.
Cannot Use Media(A) <sup>2</sup> Unsupported File System			A card of a different file system or an unformatted card was inserted. It cannot be used with this recorder. Replace it with another card or format it with this recorder.
Cannot Use Media(A) <sup>2</sup> In UDF Mode			A memory card incompatible with UDF mode is inserted. Replace the card from the respective slot, format it with the recorder, or switch to UDF FAT mode.
Same File Already Exists Change Media(A) <sup>2</sup>			A clip with the same name exists in the memory card to which you want to copy. Replace the card from the respective slot with a different card.
Video Format Mismatch			The external signal input via the i.LINK connection cannot be recorded, as the "Rec Format" setting is different from the signal format of the external input signal. Change "Rec Format" in "System" in the OTHERS menu to match it to that of the external signal.
Copy Protected Input Cannot Record			The external signal input via the i.LINK connection cannot be recorded, as the stream is copy-protected. Check the input signal.
Media Error Playback Halted			An error occurred in reading data from the memory card, and playback cannot be continued. If this frequently occurs, change the memory card after copying the clips, as required.
Media(A) <sup>2</sup> Error			Recording cannot be done, as an error occurred with the memory card. If this frequently occurs, change the memory card.
Media Reached Rewriting Limit Change Media (A) <sup>2</sup>			The memory card comes to the end of its service life. Make a backup copy and replace the card with another one as soon as possible. Recording/playback may not be performed properly if you continue to use the card.
Reached Clip Number Limit Copy Completed to xx/xx			The maximum number of clips for 1 memory card is reached, so copying cannot continue. (xx/xx indicates the completed copy operations.) Replace the card.
Not Enough Capacity Copy Completed to xx/xx			There is not enough capacity for copying. (xx/xx indicates the completed copy operations.) Replace the card.

Warning indication on LCD	Buzzer	Tally lamps	Cause and measures
Reached Duplication Limit Copy Completed to xx/xx			There are already 10 or more clips with the same name as the clip that you want to copy, so copying cannot continue. (xx/xx indicates the completed copy operations.) Replace the card.
Copy Error! (CANCEL:Abort) No Media!			There is no memory card inserted in the slot. Insert a card.
Copy Error! (CANCEL:Abort) Media Write Protected			The memory card is write-protected. Remove the card from the slot and remove the write-protection.
Copy Error! (CANCEL:Abort) Cannot Use Media(A) <sup>2)</sup>			A memory card that cannot be used with the recorder is inserted. Replace the card in the respective slot.
Copy General Files NG: Cannot Copy			Copying of a general file failed. Retry copying.
File System Mismatch			A memory card with an different file system is inserted. Replace the card, format it with the recorder, or switch to UDF FAT mode.

1) B for a HDD connected to slot B

2) (B) for the card in slot B

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# Specifications

## General

### Power supply

DC 12 V

### Power consumption

Approx. 9 W (when recording, LCD On)

Approx. 12 W (when recording, LCD On, OPTION connector in use)

### Inrush current

(1) Maximum possible inrush current at initial switch-on (Voltage changes caused by manual switching):

50 A peak, 9.5 A r.m.s. (240V AC)

(2) Inrush current after a mains interruption of five seconds (Voltage changes caused at zero-crossing):

3 A peak, 0.7 A r.m.s. (240V AC)

### Operating temperature

0 °C to 40 °C (32 °F to 104 °F)

### Storage temperature

-20 °C to +60 °C (-4 °F to +140 °F)

### Mass

Approx. 1 kg (2 lb 3.3 oz) (body)

### Dimensions (width / height / depth)

Approx. 124 mm × 86 mm × 237 mm (5 in × 3 1/2 in × 9 3/8 in) (without protrusions)

### Recording/playback formats (video)

#### UDF

HD422 mode: MPEG-2 422P@HL, 50 Mbps / CBR

HD420 mode: MPEG-2 MP@HL, 35 Mbps / VBR

DVCAM mode: DVCAM

IMX 50 mode: MPEG-2 422P@ML Intra, 50 Mbps/CBR

#### FAT

HQ mode: MPEG-2 MP@HL, 35 Mbps / VBR

SP mode: MPEG-2 MP@H14, 25Mbps / CBR

DVCAM mode: DVCAM

### Recording/playback formats (audio)

#### UDF

HD422 mode: LPCM 24 bits, 48 kHz, 4 channels

IMX 50 mode: LPCM 24/16 bits, 48 kHz, 4 channels

Other modes: LPCM 16 bits, 48 kHz, 4 channels

#### FAT

HD mode: LPCM 16 bits, 48 kHz, 4 channels

SD mode: LPCM 16 bits, 48 kHz, 2 channels

### Recording/playback time (MPEG HD422, IMX)

#### UDF

HD 422 mode, IMX 50 mode:

Approx. 120 min. with SBP-64A / SBS-64G1A (64 GB) memory card

Approx. 60 min. with SBP-32 / SBS-32G1A (32 GB) memory card

Approx. 30 min. with SBP-16 (16 GB) memory card

### Recording/playback time (MPEG HD)

#### UDF

HD 420 mode

Approx. 180 min. with SBP-64A / SBS-64G1A (64 GB) memory card

Approx. 90 min. with SBP-32 / SBS-32G1A (32 GB) memory card

Approx. 45 min. with SBP-16 (16 GB) memory card

#### FAT

HQ 1920/HQ 1440/HQ 1280 mode

Approx. 200 min. with SBP-64A / SBS-64G1A (64 GB) memory card

Approx. 100 min. with SBP-32 / SBS-32G1A (32 GB) memory card

Approx. 50 min. with SBP-16 (16 GB) memory card

SP 1440 mode

Approx. 280 min. with SBP-64A / SBS-64G1A (64 GB) memory card

Approx. 140 min. with SBP-32 / SBS-32G1A (32 GB) memory card

Approx. 70 min. with SBP-16 (16 GB) memory card

### Recording/playback time (DVCAM)

#### UDF

Approx. 220 min. with SBP-64A / SBS-64G1A (64 GB) memory card

Approx. 110 min. with SBP-32 / SBS-32G1A (32 GB) memory card

Approx. 55 min. with SBP-16 (16 GB) memory card

#### FAT

Approx. 260 min. with SBP-64A / SBS-64G1A (64 GB) memory card

Approx. 130 min. with SBP-32 / SBS-32G1A (32 GB) memory card

Approx. 65 min. with SBP-16 (16 GB)  
memory card  
Battery drive time  
Approx. 180 min. with BP-U30 battery pack  
Approx. 360 min. with BP-U60 battery pack  
Approx. 540 min. with BP-U90 battery pack  
(While recording: LCD monitor On)

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## Media drive

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Media type  
ExpressCard/34 slot (2)

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## Inputs/outputs

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SDI input  
BNC (1), HD/SD selectable, SMPTE 292M/  
259M standards  
Analog video output  
BNC (1), NTSC/PAL/HD-Y  
SDI output  
BNC (1), HD/SD selectable, SMPTE 292M/  
259M standards  
HDMI output  
Type A 19-pin (1)  
Analog audio outputs  
Phono jack (CH-1, CH-2), -10 dBu  
(reference level), 47 kilohms  
Headphone output  
Stereo mini jack (1)  
i.LINK  
IEEE 1394, 4-pin (1), HDV stream input/  
output, DVCAM stream output, S400  
USB  
Type B (1)  
DC input (12 V)  
DC jack (12 V)  
OPTION  
4-pin, Type A

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## Miscellaneous functions

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Display  
3.5-inch color LCD monitor: 852 (H) × 3  
(RGB) memory card × 480 (V) pixels, 16:9  
ratio

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## Supplied Accessories

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BC-U1 battery charger/AC adapter (1)  
Infrared remote controller (1)  
USB cable (1)  
Shoulder strap (1)  
Wi-Fi adapter bracket (1)

Side spacer (1)  
Lithium battery (CR2032 for backup) (1)  
Pre-installed in the recorder.  
Lithium battery (CR2025 for remote controller)  
(1)  
Pre-installed in the remote controller.  
Operating Instructions (CD-ROM) (1)  
Before Using this Unit (1)  
Warranty (1)

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## Optional Accessories

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Battery pack  
BP-U30, BP-U60, BP-U90  
Battery charger/AC adapter  
BC-U1, BC-U2  
SxS memory cards  
SxS PRO series  
SxS-I series  
SxS memory card USB reader/writer  
SBAC-US10  
Media adapter  
QDA-EX1 (for XQD memory cards)  
MEAD-MS01 (for “Memory Stick PRO-HG  
Duo” HX)  
MEAD-SD01 (for SDHC cards)  
Wi-Fi adapter  
CBK-WA01  
Hard disk unit  
PHU-220R

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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