Panasonic

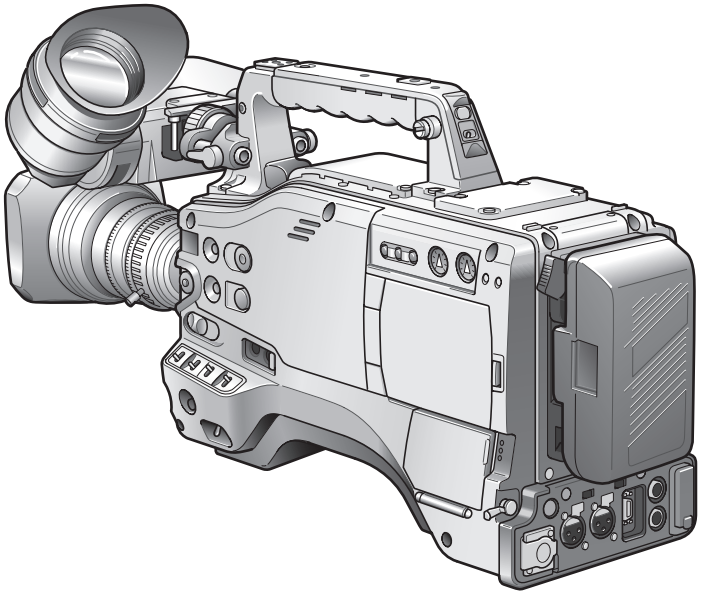
Operating Instructions

Memory Card Camera Recorder

P2HD

Model No. **AG-HPX500P**

Model No. **AG-HPX500E**



DEUTSCH	**Für Erlauterungen in Deutsch, konsultieren Sie bitte die mitgelieferte CD-ROM.**
FRANÇAIS	**Pour des explications on français, veuillez vous reporter au CD-ROM fourni.**
ITALIANO	**Per le istruzioni in italiano, vedere il CD-ROM in dotazione.**
ESPAÑOL	**Para la explicacion en español, consulte el CD-ROM uministrado.**

SD

DVCPRO HD DVCPRO 50 DVCPRO DV

Before operating this product, please read the instructions carefully and save this manual for future use.

0000000000-0
Printed in Japan

ENGLISH

VQT1G18-0

Read this first!

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:

- **TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.**
- **TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, KEEP THIS EQUIPMENT AWAY FROM ALL LIQUIDS. USE AND STORE ONLY IN LOCATIONS WHICH ARE NOT EXPOSED TO THE RISK OF DRIPPING OR SPLASHING LIQUIDS, AND DO NOT PLACE ANY LIQUID CONTAINERS ON TOP OF THE EQUIPMENT.**

CAUTIONS:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

CAUTION:

In order to maintain adequate ventilation, do not install or place this unit in a bookcase, built-in cabinet or any other confined space. To prevent risk of electric shock or fire hazard due to overheating, ensure that curtains and any other materials do not obstruct the ventilation.

FCC Note:

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning:

To assure continued FCC emission limit compliance, the user must use only shielded interface cables when connecting to external units. Also, any unauthorized changes or modifications to this equipment could void the user's authority to operate it.

Caution:

- **The interior of this product contains high-voltage components. Do not disassemble the product.**
- **Do not point the eyepiece directly at the sun.**

▭ indicates safety information.

Read this first!

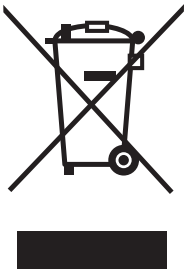
<For USA and Canada>
A rechargeable battery that is recyclable powers the product you have purchased.

<For USA-California Only>
This product contains a CR Coin Cell Lithium Battery which contains Perchlorate Material — special handling may apply.
See www.dtsc.ca/gov/hazardouswaste.perchlorate.

Attention/Attentie

ENGLISH

- Batteries are used for the main power source and memory back-up in the product. At the end of their useful life, you should not throw them away. Instead, hand them in as small chemical waste.



NETHERLANDS

- Voor de primaire voeding en het reservegeheugen van het apparaat wordt gebruikgemaakt van een batterij. Wanneer de batterij is uitgeput, mag u deze niet gewoon weggooien, maar dient u deze als klein chemisch afval weg te doen.

TO REMOVE BATTERY

Main Power Battery (Ni-Cd / Ni-MH / Li-ion Battery)

- To detach the battery, please proceed in the reverse order of the installation method described in this manual.
- If a battery made by any other manufacturer is to be used, check the Operating Instructions accompanying the battery.

Back-up Battery (Lithium Battery)

- For the removal of the battery for disposal at the end of its service life, please consult your dealer.

Precautions for Use

Caution regarding laser beams

The CCD may be damaged if it is subjected to light from a laser beam.
When using the camera-recorder in locations where laser irradiation equipment is used, be careful not to allow the laser beam to shine directly on the lens.

PLEASE NOTE:

- When preparing to record important images, always shoot some advance test footage, to verify that both pictures and sound are being recorded normally.
- Should video or audio recording fail due to a malfunction of this camera-recorder or the P2 cards used, we will not assume liability for such failure.

Disposing and transferring ownership of memory card devices

Formatting or deleting a memory card device in this camera or a PC will only change file management data and leave data on the card intact. It is recommended that the card either be physically destroyed or that commercially sold software be used to completely delete any data on the card. Note that managing card data is the owner's responsibility.

Information on software for this product

1. Included with this product is software licensed under the GNU General Public License (GPL) and GNU Lesser General Public License (LGPL), and users are hereby informed that they have the right to obtain, change and redistribute the source codes of this software.
   Details on GPL and LGPL can be found on the installation CD provided with the unit. Refer to the folder called "LDOC".
   (Details are given in the original (English-language) text.)
   To obtain the source codes, go to the following home page:
   http://panasonic.biz/sav/.
   The manufacturer asks users to refrain from directing inquiries concerning the source codes they have obtained and other details to its representatives.
2. Included with this product is software which is licensed under MIT-License.
   Details on MIT-License can be found on the installation CD provided with the unit. Refer to the folder called "LDOC".
   (Details are given in the original (English-language) text.)

Trademarks

- SD logo is a trademark.
- Unislot is a trademark of Ikegami Tsushinki Co., Ltd.
- Apple, Macintosh, Mac OS are registered trademarks or trademarks of Apple, Inc. in the United States and/or other countries.
- Windows is a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.
- Other names of companies and products are trademarks or registered trademarks of the respective companies.

Contents

Chapter 1 Introduction

The AG-HPX500P/E P2 memory card camera-recorder is equipped with a 2/3-inch lens mount system that enables use of high-performance interchangeable lenses, and comes with a 50 Hz/59.94 Hz selector function to permit use of a multitude of HD and SD formats. Also equipped with a variable frame rate feature for cinematic expression and effects. All these features make possible recording of high-quality image content.
Four P2 card slots enable extended HD recording and deliver the reliability, speed and IT functionality that only P2 media is capable of revolutionizing the workflow of recording and editing.

Camera Unit Features

■2/3-inch interchangeable lens system

The 2/3-inch bayonet mount for interchangeable lenses provides access to a broad lineup of broadcast and industrial 2/3-inch zoom lenses from a number of manufacturers.

■Progressive 3CCD

The 2/3-inch progressive 3CCD combines a large light-receiving area with high sensitivity. 3CCD pixel-shift technology (1/2 pixel) and advanced digital processing produce a high-resolution CCD. The camera unit provides high resolution and high rate scanning at 1080/60p (or 50p) at all times. This high-resolution native progressive video is used as a source to produce a vertical resolution with a superior HD/SD image quality that an interlace CCD simply cannot match.

■14-bit digital circuit

The high-performance DSP (Digital Signal Processor) in the camera uses 14-bit A/D conversion and 19-bit inner processing to adjust the gamma settings for each of the R, G and B channels of 1080/60p (50p) video, and convert to a variety of HD and SD formats (P/I conversion, line conversion and down conversion). This produces high-quality images in all video formats.

■Multiple HD/SD formats

The camera supports recording in 20 HD and SD image formats making it ready for news gathering, program production, film making and other applications anywhere in the world. 1080i/720p HD recording uses the DVCPRO HD codec for broadcast use while SD recording is performed in DVCPRO50/DVCPRO DV multi-codec.

■Variable frame rate makes speed effects possible (when 720P format is selected)

This camera comes with the variable frame rate feature developed for the VariCam HD Cinema camera. In 720p mode*, the camera enables selection between 11 frame rates between 12P to 60p (50p). This puts features such as undercranking (dropping frames) and overcranking (high frame rate) for quick motion and slow motion cine-like effects at the disposal of the camera crew.

* In 1080 and 480 mode, the camera records at a fixed frame rate of 24p/30p (25p in 1086 and 576 mode, at 50 Hz mode).

■Native mode/Over 60p (50p) mode selectable

- ●720PN (native) mode*: Recording is performed at the frame rate set in the camera. Playing back a recording made at a frame rate set in the camera at the normal rate provides speed effects without using a frame rate converter. Native mode also extends the recording time.
- ●720/P over 60p (or 50p) mode: This lets you produce a backup copy by recording the DVCPRO HD stream output from the IEEE1394 connector on a hard disk recorder such as the AJ-HD1400 DVCPRO HD recorder or the FOCUS FS-100 HDD recorder.

* In 720PN (native) mode, the IEEE1394 connector cannot output a DVCPRO HD stream.

■1080/480 24p advance mode

In 59.94Hz mode, recording at 1080/24p or 480/24p allows you to select 24pA (advance) mode. Using 2:3:3:2 pulldown, the 24pA mode performs 60i conversion to enable nonlinear editing* maintaining an image quality that is better than normal 24p (2:3 pulldown). Recording at 30p or 25p (50 Hz mode) applies a 2:2 pulldown.

* For details on compatible systems, visit our website at:
http://panasonic.biz/sav/ieee1394

* 24p, 30p and 60p/60i indicate recording at 23.98p, 29.97p and 59.94i, respectively.

■Eight gamma curves, including cine-like gamma

The DSP provides Panasonic's proprietary selectable gamma feature. To expand camera capabilities, the camera offers eight gamma modes including cine-like gamma to give the characteristic warm tone of film recordings and a news gamma curve for newsgathering.

■Slow, synchro and high speed shutter

The shutter speed can be set in a range between 1/12 s to a maximum speed of 1/2000 s. Combined with the variable frame rate functions, this function allows you to create a blurring effect or an undercranking effect. The camera also features a synchro scan function for capturing screen shots from a computer monitor.

■Scene file dial

This dial allows you to instantly retrieve settings that suit shooting conditions. Six preset files are provided, and you can change the file names and their settings as desired. You can also save up to 4 files to an SD memory card and load the files from the card.

■Shooting assist functions

- User buttons: Three user buttons each of which can be assigned a frequently used function for immediate access.
- Focus assist: Displays a frequency distribution graph of the video signal as an aid in focusing.
- Eight files for correcting lens aberration and four files for correcting shading for interchangeable lenses are provided.
- Variable color temperature: Fine adjustment is possible after setting the white balance.
- REC review: Quick check of recorded results.
- 4-position optical ND filter provided.

■Chromatic aberration compensation (CAC)

This function automatically corrects the slight chromatic aberration that the lens cannot compensate for to minimize color bleeding into surrounding image areas.

■Remote control support

The camera supports the AJ-RC10G (optional accessory) remote control unit. The remote control allows you to adjust camera image and recording controls at a distance while viewing what you are shooting.

Recording and Playback Features

■A variety of interfaces

The AG-HPX500P/E can record 48 kHz/16-bit uncompressed high-quality digital audio in all formats. The 4-channel audio capability makes both microphone and line input possible on up to four channels. HD-SDI output, time code input and output, GEN lock input and USB 2.0 connector are also provided. Also part of standard equipment is an IEEE1394 interface (6-pin) for transfer of all HD/SD signal formats without degradation. This interface allows you to transfer video data for nonlinear editing on a Windows® PC or Macintosh® with DVCPRO HD compliant software or for backing up on a connected DVCPRO HD digital VTR (AJ-HD1400) or FOCUS FS-100 HDD recorder.

■P2 cards for high capacity, high speed and high reliability

Comprising four SD memory cards, a P2 card is a broadcast industry standard memory card with four times the capacity and transfer rate of a conventional SD memory card in a compact and lightweight (45 g) design. In addition to exceptional resistance to shock, vibration and temperature fluctuations, this semiconductor memory has a reliability that guarantees long-term repeated recording/initialization that a tape or hard disk system with their moving parts could never match. The connectors are professional grade to withstand long-term continual insertion and removal.

AV data is recorded on a P2 card as a single file that is immediately accessible for nonlinear editing or transfer over a network without digitizing. Transfer speeds far surpassing those of hard disks also help to speed up production processes. The P2 card complies with PCMCIA standards and can be directly plugged into the P2 card slot on a notebook P2*.

The four P2 card slots allow continuous recording on four P2 cards and also offer the following recording capabilities in a memory card camera-recorder.

- ●Card selection: A card in any slot can be instantly selected (switched to) in standby mode. Recorded content can be quickly passed on to editing or transferred to minimize interruptions in recording making it far more efficient than systems where tapes or disks have to be exchanged.
- ●Hot-swap recording: Cards can be replaced during recording. A full memory card can be replaced while recording is made on another card. Successively swapping cards in this way gives you virtually unlimited recording capacity.
- ●Loop recording: Setting the camera for consecutive overwriting, you can repeatedly rerecord on the inserted P2 cards, always maintaining a recording of the most recent, specific period of time.

* This requires the installation of a P2 card driver (provided with each device). The P2 card driver runs under Windows® Vista, Windows® XP or Windows® 2000.

■Immediate startup and reliable data protection

When you press the REC button in standby mode, the camera instantly finds a blank area on the P2 card and begins recording. Unlike a VTR system, there is no need to locate a blank section before recording. It can begin recording immediately even when you are using it to preview video. In normal use, there is no chance of accidentally deleting a recording. Recordings will not be erased unless you intentionally delete a file or initialize the card.

■Other features

- ●Pre-rec: This function provides a way to capture moments you otherwise would have missed. In the standby mode, the camera will record video and audio for up to 3 seconds in HD and 7 seconds in SD. Starting the recording operation will record the preset duration of video and audio already memorized in standby.
- ●One-shot REC: Convenient for producing animation, this mode records for a set time (from 1 frame to 1 second) each time you press the START button.
- ●Interval REC: Recording one frame at a time at set intervals (from 2 frames to 10 minutes), this mode is useful for monitoring, supervision and special ultra undercranking effects.

■Clip thumbnail preview

The camera records each cut as a clip (file) and automatically attaches a thumbnail image and file information to it. To preview a clip on the LCD monitor or to check clip data, simply choose the clip you want from the list of thumbnails. These thumbnails and the file data can be viewed on a PC (P2 Viewer *) or processed in a nonlinear editing program *.

* "P2 Viewer" is a Windows® PC viewing software that can be downloaded free of charge by P2 card users.

■Shot marker and text memo

If desired, you can add a simple OK/reject shot marker to each clip either during or after recording. When a P2 card is mounted in a PC (P2 Viewer), the PC will display only marked clips.

A text memo function is also provided. Pressing the USER button to which the text memo function has been assigned anywhere in a clip during recording or in preview mode allows you to attach empty post-it like text memos (up to 100) that can later be filled with text on a PC (P2 Viewer).

■SD memory card slot

The camera provides an SD memory card slot for saving and loading scene files and user settings. A metadata upload file (created using P2 Viewer) containing the name of the person who shot the video, the name of the reporter, the shooting location or a text memo and other information can be saved to an SD memory card. This data file can be loaded as clip metadata.

■HD/SD SDI output and downconverter supported

Video line outputs (both BNC) are provided as standard. These outputs can flexibly handle both monitor and line recording. A down-converter is also built-in. Aspect mode can also be selected.

- ●SDI OUT (HD/SD): The HD-SDI output allows you to make backups on an external VTR (with HD-SDI input) in synch with REC START/STOP button operation. SD-SDI can also down convert and output HD content.
- ●VIDEO OUT: Outputs down converted SD video (composite video).

■Fine adjustment of sound recording level

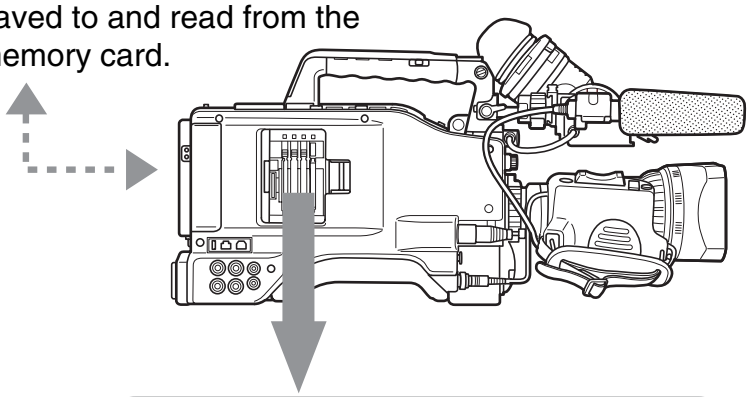
The camera features a front-mounted control for fine adjustment of the sound recording level. This control is particularly useful for adjusting the sound level when you have to control both video and audio recording. The control can be disabled.

Outline of operations

This unit is compatible with P2 (Professional Plug-in) cards. Excelling at high transfer speeds, the P2 card enables high vision recording and smooth editing and dubbing.

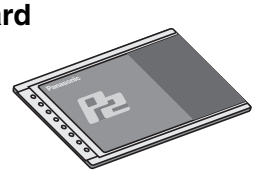
Flow of shooting, playing and saving

The setting values such as the user file are saved to and read from the SD memory card.



P2 mode shooting and playback (Pages XX and XX)

P2 card



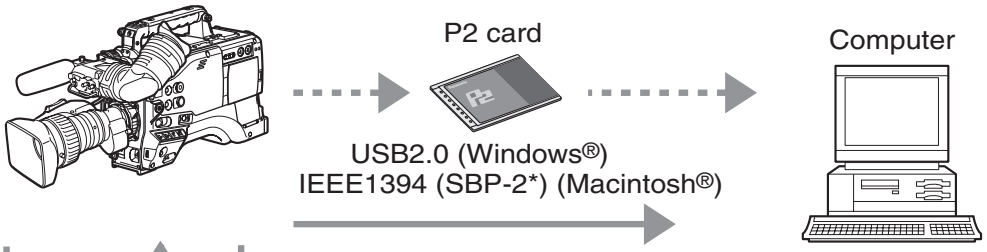
You can use the following features:

- **HD (High Definition) recording**
- **Multi format recording**
- **Variable frame rates**
  Slow & quick motion recording
- **Maximum 4 channel uncompressed digital audio recording**

Saving and editing on external devices

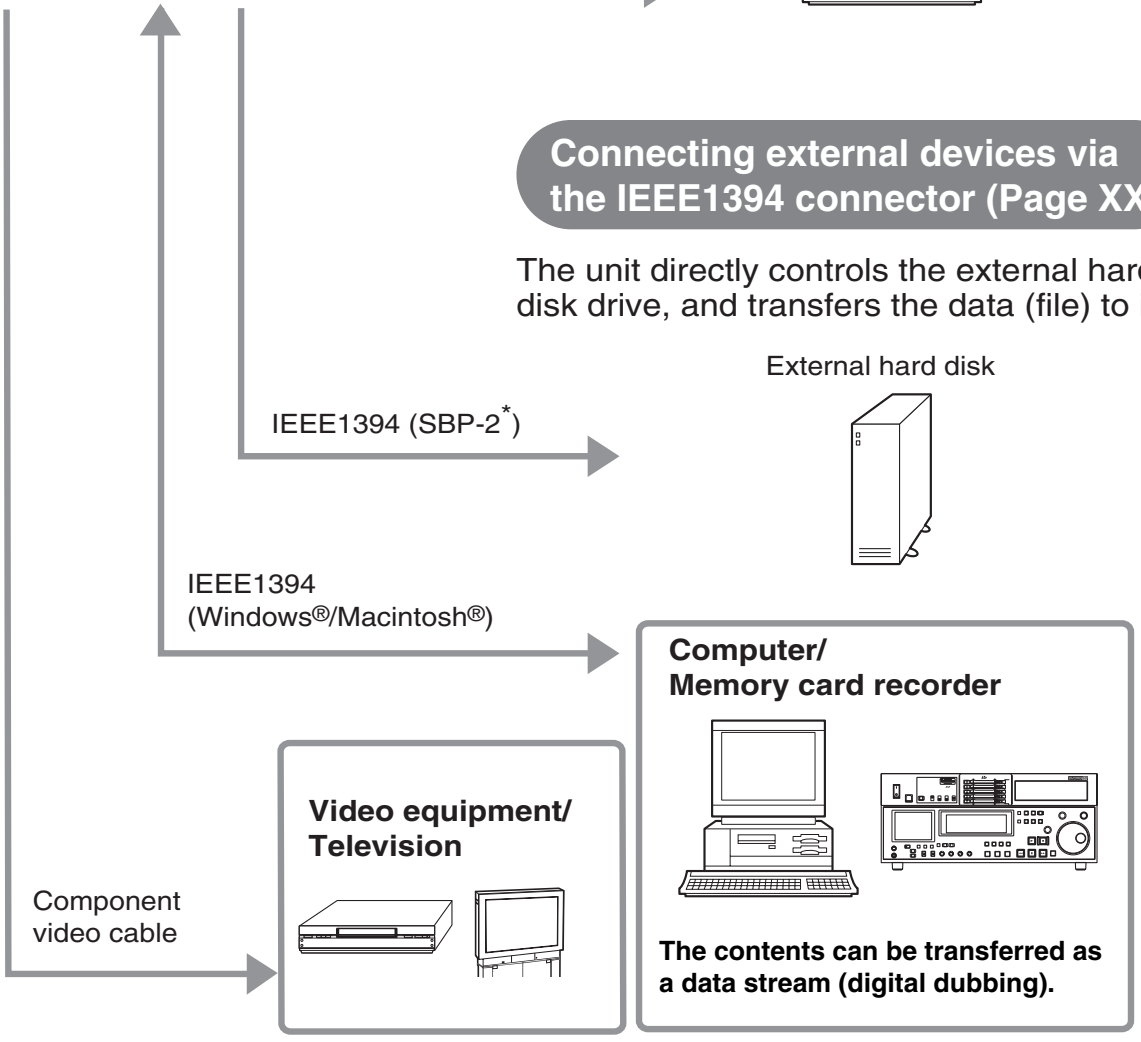
Connecting external devices via the USB connector (Page XX)

The data (file) is transferred for nonlinear editing on your computer or other unit.



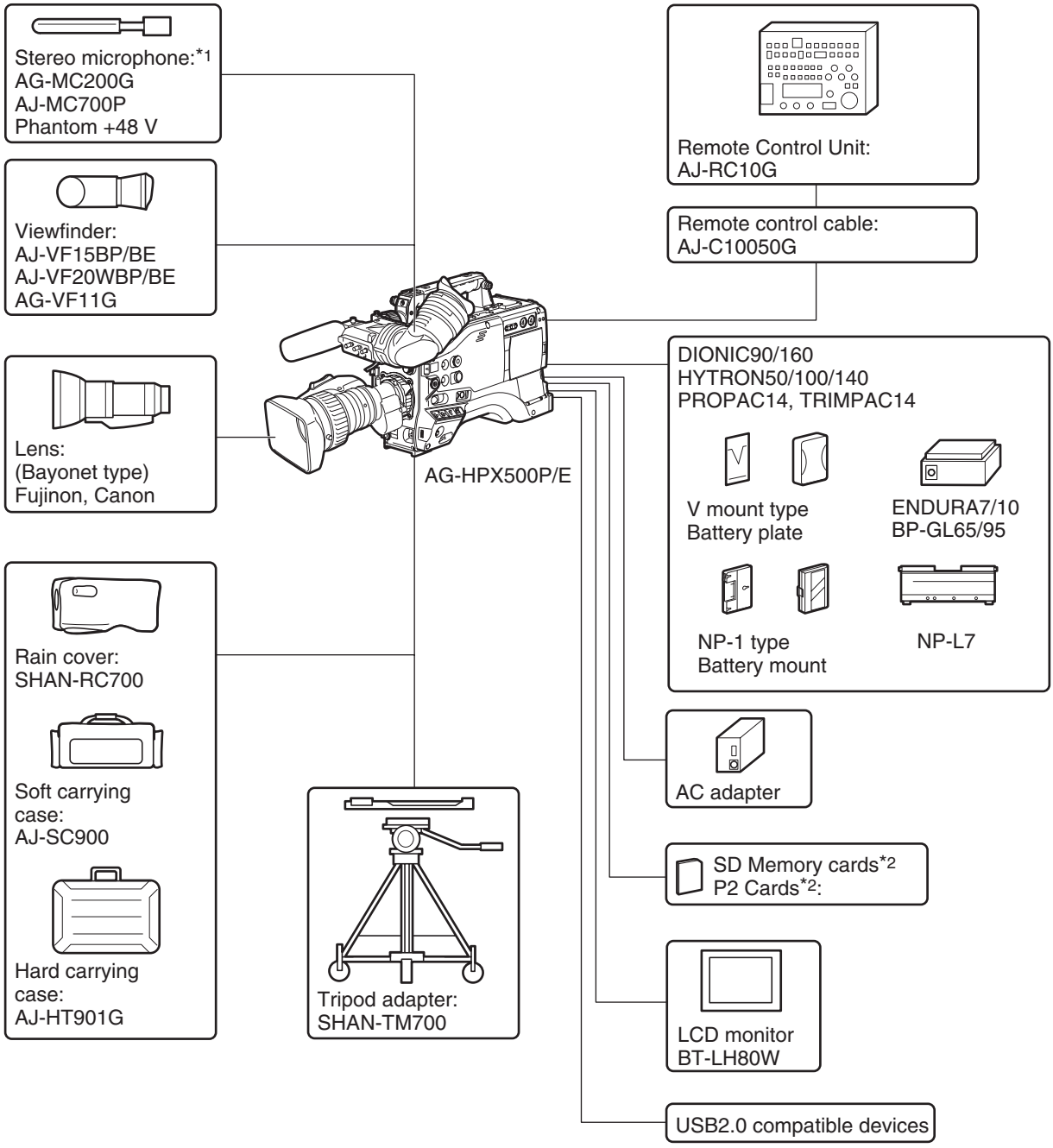
Connecting external devices via the IEEE1394 connector (Page XX)

The unit directly controls the external hard disk drive, and transfers the data (file) to it.



*Serial Bus Protocol-2

System Configuration

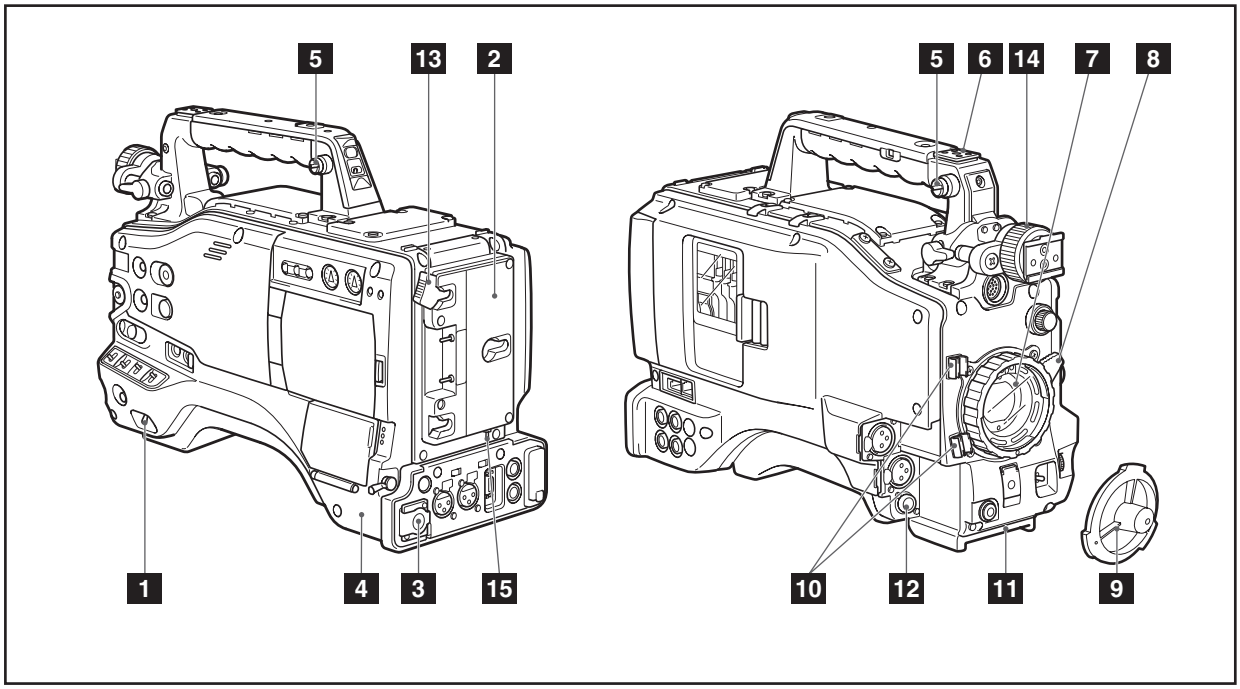


*1 To install a stereo microphone, an extra modification is required. For more information, contact your distributor or designated service provider.

*2 For the latest information on P2 cards and SD memory cards not available in the operating Instructions, visit the P2 Support Desk at the following Web sites.
https://eww.pavc.panasonic.co.jp/pro-av/

Chapter 2 Parts and their Functions

Power Supply and Accessory Mounting Section



1 POWER switch
Used to turn on/off the power.

2 Battery mount
A battery pack from Anton/Bauer is mounted here.

3 DC IN (external power input) socket (XLR, 4P)
This unit is connected to an external DC power supply (DC12 V).

4 BREAKER switch
When an excessive amount of current is fed through the video camera-recorder, due to any abnormal event, the breaker automatically turns off the power in order to protect the device. After the interior of the video camera-recorder has been checked and/or repaired, this button must be depressed. If there is no unusual reaction, the unit can be powered-up.

5 Light shoe
A video light or similar accessory can be attached here.

6 Shoulder strap fittings
The shoulder strap is attached here.

7 Lens mount (bayonet type)
The lens is attached here.

8 Lens lever
Lower this lever to lock the lens to the lens mount.

9 Lens mount cap
To remove the cap, raise the lens lever. When the lens is not mounted, replace the cap.

10 Lens cable/microphone cable clamp
This clamp secures the lens and microphone cables.

11 Tripod mount
When you want to mount the AG-HPX500P/E on a tripod, the optional tripod adapter (SHAN-TM700) is attached here.

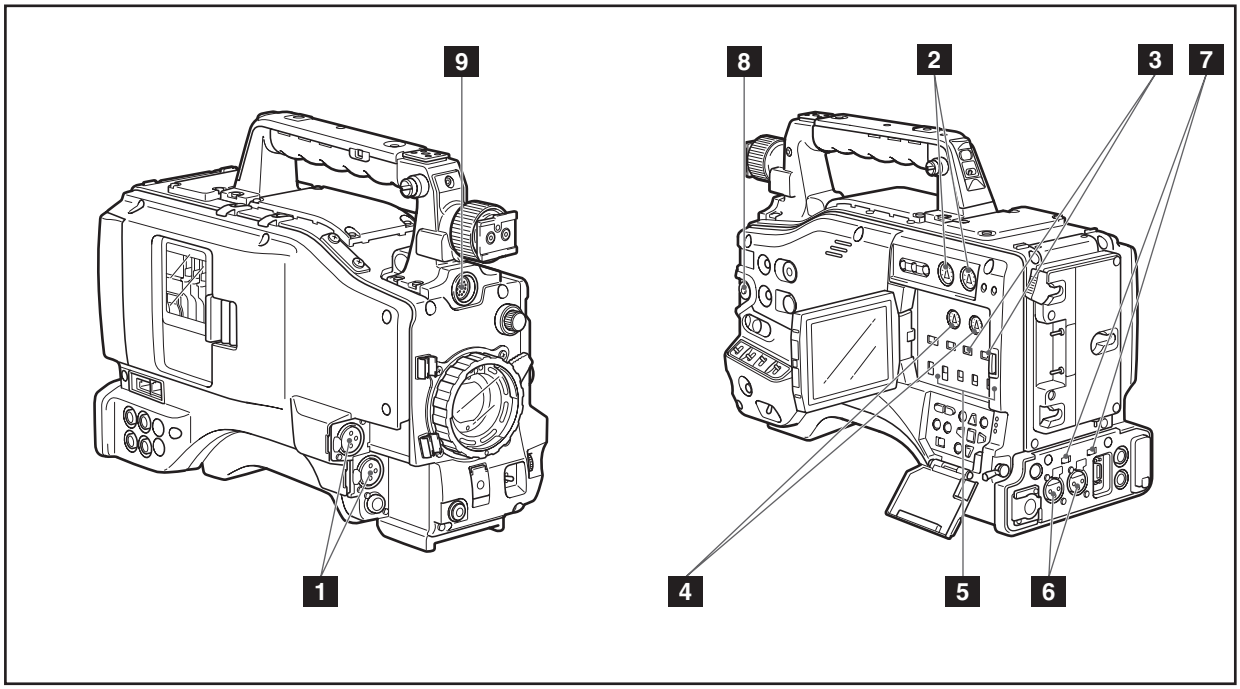
12 LENS jack (12-pin)
The lens connection cord is connected here. For a detailed description of your lens, see the relevant manufacturer's instruction manual.

13 Release lever
Pull down the release lever to release the battery pack.

14 Viewfinder left-right positioning ring
For details, see [Adjusting Viewfinder Right-Left Position].

15 Light control switch
For details, refer to [Power Supply].

Audio (input) Function Section



1 MIC IN (microphone input) jacks FRONT1/FRONT2 (XLR, 3-pin)
Connect microphones (optional accessories) to these jacks. Power for the microphone comes from this jack.
A phantom-powered microphone may be connected. To use a phantom-powered microphone, set the menu option F.MIC POWER1/F.MIC POWER2 to ON in the <AUDIO SETUP> screen.

2 AUDIO LEVEL CH1/CH2 (audio channel 1 & 2 recording level adjustment) controls
With the AUDIO SELECT CH1/CH2 switch positioned to [MAN], these controls can be used to adjust the recording levels for Audio Channels 1/2.
Note that the controls are designed to be locked. For adjustment, each control must be depressed while turning.

3 AUDIO SELECT CH1/CH2 (audio channel 1 & 2 automatic/manual level adjustment selector) switch
Use this switch to select recording level control mode for Audio Channels 1 and 2.
AUTO: Recording level automatically controlled.
MAN: Recording level manually controlled.

4 AUDIO LEVEL CH3/CH 4 (audio channel 3 & 4 recording level adjustment) controls
Set the menu option AUTO LEVEL CH3/AUTO LEVEL CH4 to OFF in the <AUDIO SETUP> screen to use these controls to adjust the recording level of audio channels 3 and 4.

5 AUDIO IN (audio input selector) switch
Use this switch to select the signals recorded through Audio Channels 1 - 4.
FRONT: Signal from the microphone connected to the MIC IN jack is recorded.
REAR: Signal from the audio device connected to the REAR 1/REAR 2 connector is recorded.

CH1	Input	CH2	Input
FRONT1	FRONT1 jack	FRONT	FRONT2 jack
FRONT2	FRONT2 jack	REAR	REAR2 jack
REAR	REAR1 jack	—	—

CH2	Input	CH4	Input
FRONT	FRONT1 jack	FRONT	FRONT2 jack
REAR	REAR1 jack	REAR	REAR2 jack

6 REAR 1/REAR 2 (audio input channel 1 & 2) connectors (XLR, 3-pin)
Audio devices or a microphone may be connected here.

7 LINE/MIC/+48V (line input/mic input/mic input + 48V) selector switch

Used to select the audio signal input from the AUDIO IN CH1/CH2 connectors.

LINE: Audio signal line-input from the audio device is input.

MIC: Audio signal from a self-powered (active) microphone is input. (The main unit does not supply power to the remote microphone).

+ 48V: Audio signal from a passive microphone is input. (The unit supplies power to the remote microphone).

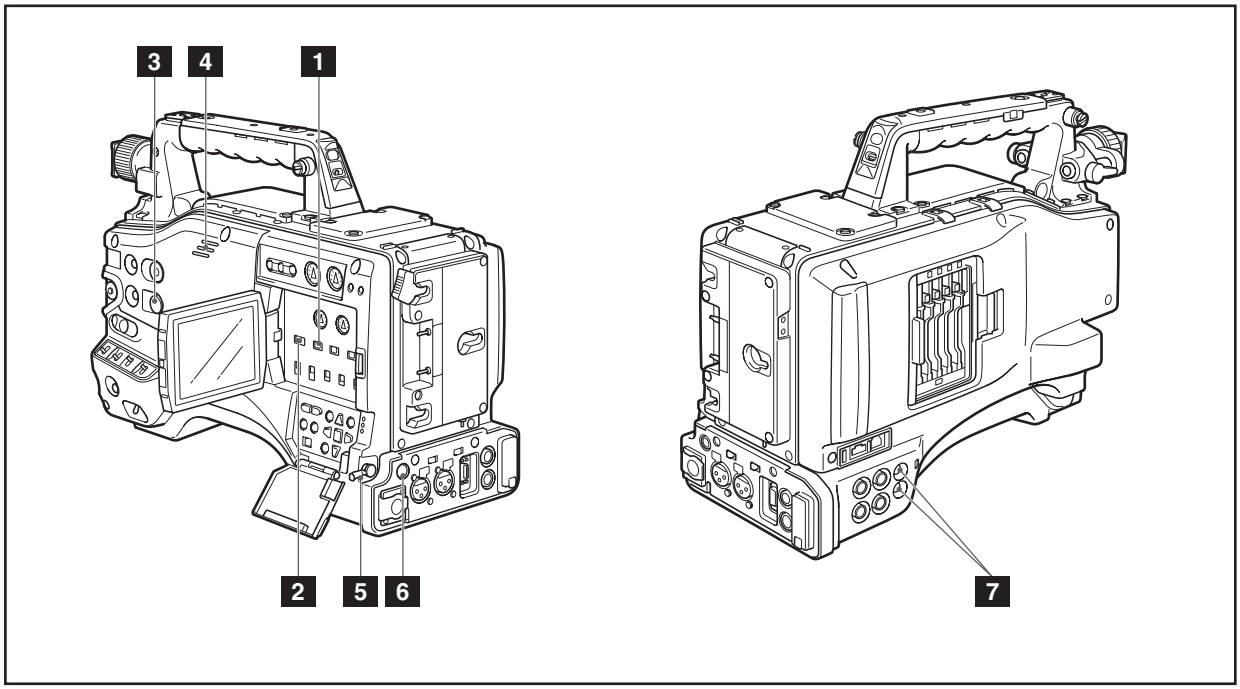
8 F. AUDIO LEVEL (audio recording level adjustment) control

This control adjusts the recording level of Audio Channels 1 and 2. Level adjustment does not depend on the position of the AUDIO SELECT switch.

Use the menu options FRONT VR CH1 and FRONT VR CH2 in the <AUDIO SETUP> screen to select whether this control will be used for controlling input from AUDIO CHANNEL 1 or 2.

9 Viewfinder connector

Audio (output) Function Section



1 MONITOR SELECT (audio channel) CH1/2 / CH3/4 selector switch

Use this switch to select the audio channel whose signals are output to the speakers, earphones or AUDIO OUT connector.

CH1/2: Signals on Audio Channels 1 and 2 are output.

CH3/4: Signals on Audio Channels 3 and 4 are output.

The channel indications on the display window and on the audio level meter in the viewfinder are synchronised with this selector switch.

2 MONITOR SELECT (audio selection) CH1/3 / ST / CH2/4 selector switch

The MONITOR SELECT switch is synchronised with the audio signal output to the speakers and earphones, and from the AUDIO OUT connector.

MONITOR SELECT SWITCH (Left)		MONITOR SELECT SWITCH (Right)	
		CH1/2	CH3/4
MONITOR SELECT	CH1/3	Audio Channel 1	Audio Channel 3
	ST	Stereo signals from Audio Channels 1 and 2	Stereo signals from Audio Channels 3 and 4
	CH2/4	Audio Channel 2	Audio Channel 4

3 MONITOR/ALARM (volume) control

Used to control the volume of sound output from the monitor speakers and earphones.
It also adjusts the alarm sound volume.

4 Speakers

The speakers output EE sound during recording, and reproduced sound during playback. The speakers emit an alarm sound when the warning lamp blinks and/or the indicator activates. EE sound and playback sound are not output during alarm sound output.
When the PHONES jack is connected with earphones, sound from the speaker is automatically muted.

5 PHONES (earphones) jack (mini jack)

This connector is designed for audio monitoring (stereo) earphones. When earphones are connected, sound from the speakers is automatically muted.

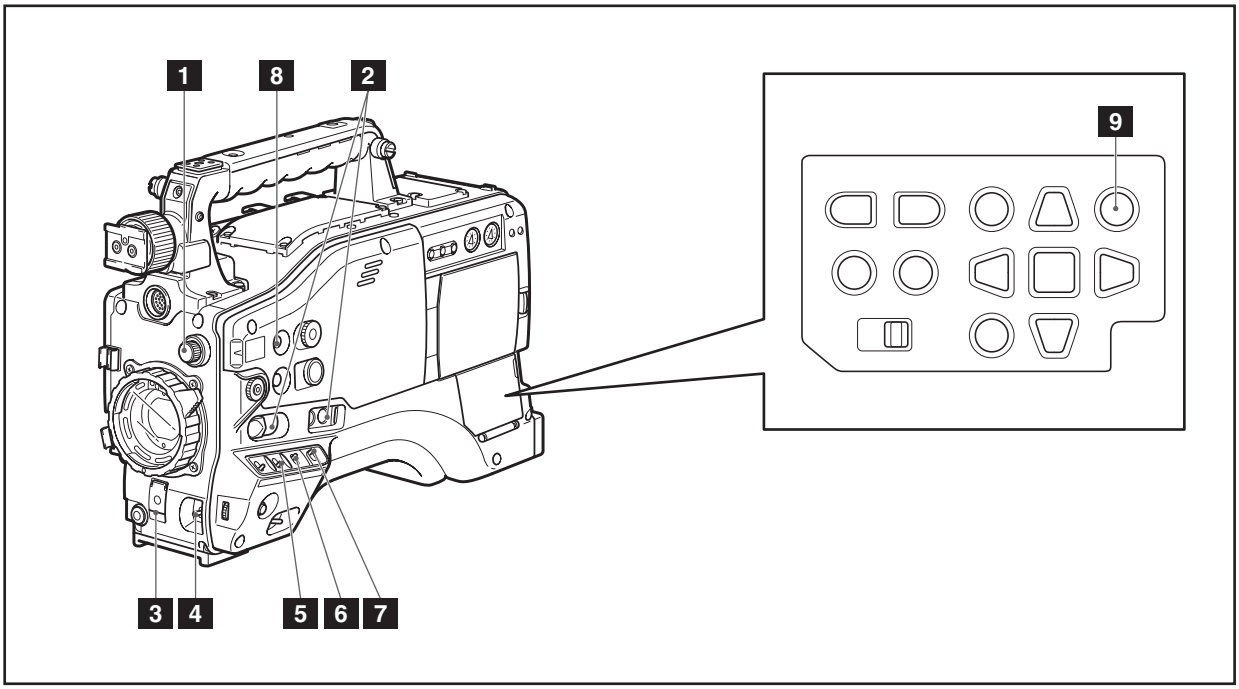
6 DC OUT (DC power supply) output socket

This output socket is designed for 12-VDC. It provides a maximum current of 1.5 A.

7 AUDIO OUT connector

This connector outputs audio signals recorded on Channels 1/2 or 3/4.
Output signals are selected with the MONITOR SELECT CH1/2 / CH3/4 selector switch.

Shooting and Recording/Playback Functions Section



Shooting and Recording (camera unit)

1 ND FILTER (filter switching) control

This control adjusts the amount of light entering the CCD. Use this control in strong outdoor lighting.

Control position	Setting	Description
1	OFF	Do not use the ND filter.
2	1/4	Reduces the amount of light entering the CCD to 1/4.
3	1/16	Reduces the amount of light entering the CCD to 1/16.
4	1/64	Reduces the amount of light entering the CCD to 1/64.

2 USER MAIN, USER 1 and USER 2 buttons

These buttons can be assigned user-selected functions, using a menu option. Each button, when pressed, performs the assigned function.
For more information, see [Assigning Functions to USER MAIN, USER1 and USER2 Buttons].

3 SHUTTER switch

Used to enable or disable the electronic shutter.
OFF: Electronic shutter disabled.
ON: Electronic shutter enabled.
SEL: Used to change the speed of the electronic shutter.
This dial switch returns to its original position. Each turn of the switch alters the shutter speed.
For more information, see [Setting the Electronic Shutter].

4 AUTO W/B (white/black) BAL switch

AWB	Automatically adjusts the white balance. Set the WHITE BAL switch on the side to [A] or [B] and use this switch to adjust the white balance, which takes a few seconds. The adjusted value is stored in memory. Note that auto white balance adjustment is not available when the WHITE BAL switch is set to [PRST].
ABB	Back balance is automatically adjusted.

5 GAIN selector switch

This switch adjusts video amplifier gain to suit ambient lighting conditions at the time of the shooting.
Use the menu options MID GAIN and HIGH GAIN in the <SW MODE> screen to set the M/H position gain values.
The factory settings for L, M and H are 0 dB, 6 dB, and 12 dB, respectively.
<Note>
The camera is locked to 0 dB gain regardless of GAIN switch position and setting when the FRAME RATE is 22 fps (59.94 Hz) or less than 23 fps (50 Hz) and the slow shutter is set to 1/15 (59.94 Hz) or 1/12 (50 Hz/59.94 Hz).

6 OUTPUT/AUTO KNEE selector switch

This switch selects the video signals sent from the camera unit to the memory card recorder unit, viewfinder and video monitor.

CAM. AUTO KNEE ON	Video being recorded through the camera is output with the AUTO KNEE circuit activated. The compression level (KNEE point) of the video signal is automatically changed according to the received signal.
CAM. AUTO KNEE OFF	Video being recorded through the camera is output with the AUTO KNEE circuit turned off. The KNEE point is locked to the level set in the menu.
BARS	Color bar signals are output with the AUTO KNEE circuit turned off.

<Note>
This switch does not work in the MCR mode.
■AUTO KNEE function
Usually, when you adjust levels to shoot people or scenery against a strongly lit background, the background will be totally whited-out, with buildings and other objects blurred.
In this case, the AUTO KNEE function reproduces the background clearly.
This function is effective when:
- **The subject is a person positioned in the shade under a clear sky.**
- **The subject is a person inside a car or building, and you also want to capture the background visible through a window.**
- **The subject is a high-contrast scene.**

7 WHITE BAL (white balance memory selector) switch

Used to select the white balance adjustment method.

PRST: Use this when you have no time to adjust the white balance.
- The value for the white balance is factory-set to 3200 K.
- It can be changed to any color temperature using a menu option. For more information, see [Setting Color Temperature Manually].

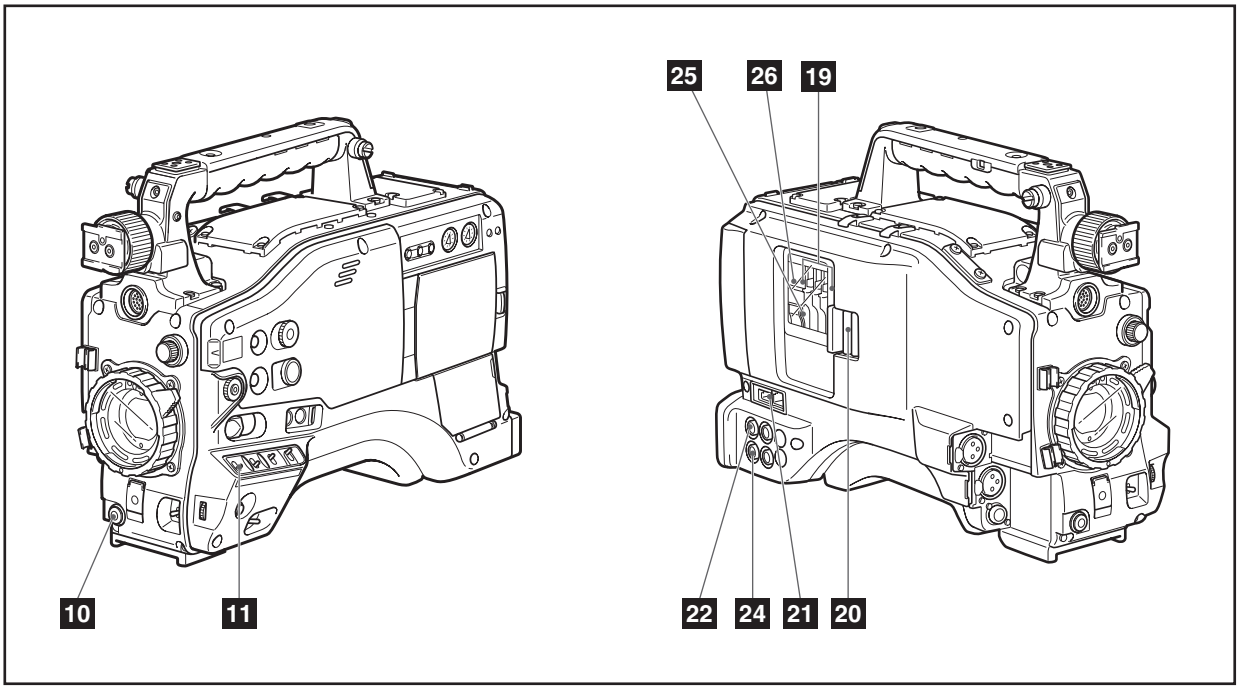
A or B: Pressing the AUTO W/B BAL Switch toward [AWB] automatically adjusts the white balance, saving the adjusted value in Memory A or B. For more information, see [Adjusting the White Balance].

8 DISP/MODE CHECK button

Press this button to turn off the LCD monitor and viewfinder display. (The time code indication stays on.)
A second press of the button turns the display back on and holding it down displays shooting conditions and functions assigned to USER switches.
It also serves to turn off the alarm sound.

9 MODE button

This button toggles between the CAMERA mode and MCR mode at each press.
Holding down this button for 2 seconds or longer in the MCR mode will engage the PC mode.
Since this button does not work in the PC mode, power off the camera to exit the PC mode and switch to another mode. The camera will start up in the CAMERA mode when powered up next time.
Use the mode LED (Page XX) to check current mode.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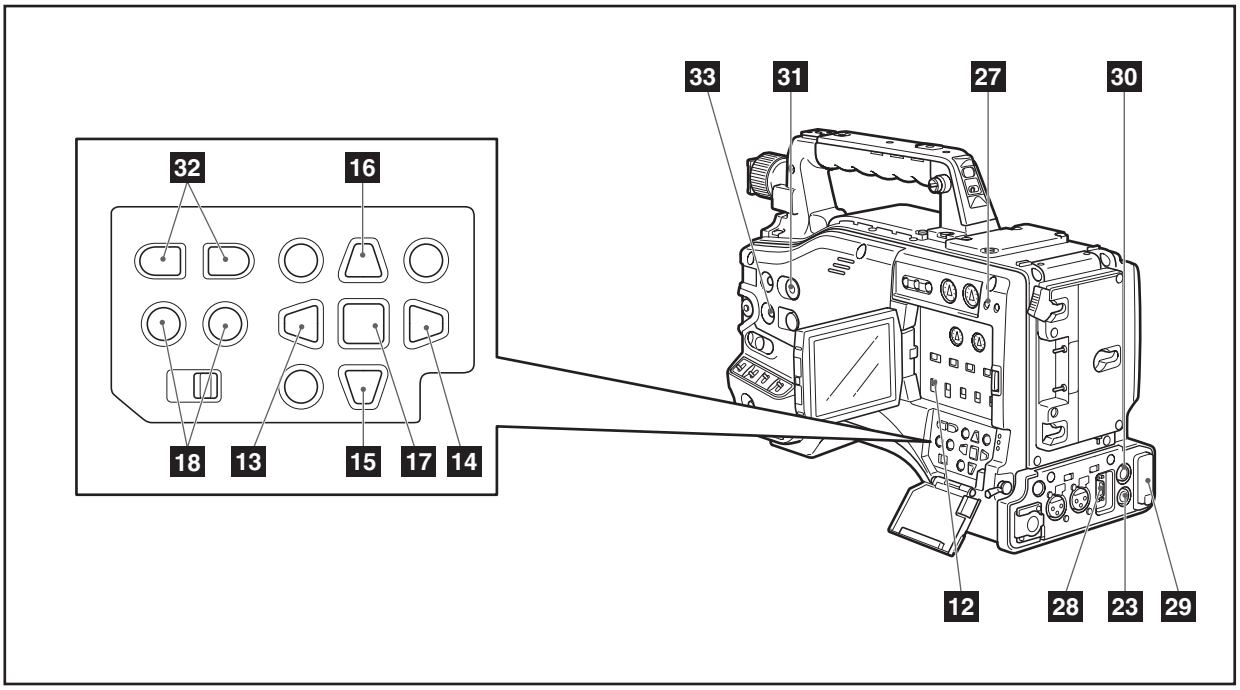
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Shooting and Recording/Playback Function Section (recording)

10 REC START/STOP button
Pressing this button starts recording, pressing again stops recording.
This button has the same function as the REC button on the handle and the VTR button at the lens.
When pressed in the MCR mode, the camera automatically switches to the CAMERA mode and starts recording.

11 SAVE switch
This switch selects the power saving mode.
ON: Forcibly turns off the LCD.
OFF: LCD is on.
The operating status display goes off when the SAVE switch is set to ON.
But it remains on during special recording.

12 OUT PUT CHARACTER switch
This switch controls the superimposition of characters onto the video output (VIDEO OUT, COMPONENT OUT and SDI OUT) from the VIDEO OUT connector to indicate status or menus.
ON: Superimposes characters.
OFF: Does not superimpose characters.

13 ◀◀ REW (fast-reverse) button
During pause, this button performs fast-reverse playback. (MCR mode)
During playback, it fast-reverses playback at about 4× normal speed.
If this button is pressed when playback is paused, the beginning of the clip being played is located in pause mode (cue-up mode).

14 ▶▶ FF (fast forward) button
During pause, this button performs fast playback. (MCR mode)
During playback, it performs fast playback at about 4× normal speed.
If this button is pressed when playback is paused, the beginning of the next clip is located in pause mode (cue-up mode).

15 ■STOP button
This button stops playback. (MCR mode)
The menu cursor moves in the thumbnail display.

16 ▶ PLAY button
This button is used to view playback using the viewfinder screen or a color video monitor. (MCR mode)

17 ❚❚ STILL (pause) button
Press to pause playback. (MCR mode)

18 REC buttons (red and white)
Press the red and white buttons simultaneously to start recording the 1394 input signal and press the STOP button to stop recording. This function is available only in the MCR mode.

19 P2 CARD ACCESS LED
This LED indicates the recording and playback status of each card.

20 Slide lock button
Used to open the slide-out door for inserting P2 cards. While depressing this button, slide the door to the left.

21 USB 2.0 connector
Connect a USB 2.0 cable to this connector. Select USB DEVICE under the menu option PC MODE in the <OTHER FUNCTIONS> screen to send data via the USB 2.0 connector. The camera cannot be used for recording, playback or clip operations when this function is used. For details, see [Connecting to External Devices Using USB2.0 Port].

22 GENLOCK IN connector
This connector inputs a reference signal when the camera unit is gen-locked, or when the time code is externally locked.
<Note>
The reference input signal must be an HD3 SYNC (at 1080/60i, 720/60p, 1080/50i or 720/50p) or an SD2 SYNC (at 480/60i or 576/50i).

23 REMOTE (remote control) connector
The extension control unit AJ-RC10G (optional accessory) is connected here.

24 VIDEO OUT (video signal output) connector
This connector outputs video signals. The video signals linked to the setting of the OUTPUT SEL switch are output from here.

25 SD memory card insertion slot
Insert an SD memory card (optional accessory) in this slot. It is used for uploading meta data as well as for reading and writing USER files and SCENE files.
<Note>
■SD memory card precautions
- **Use only cards that conform to the SD card standard or the SDHC standard in this camera.**
- **Multimedia cards cannot be used. (Use of such cards may prevent recording.)**
- **Be sure to use mini SD and mini SDHC card adapters only when using mini SD and mini SDHC cards. Note that this camera will not operate normally when a mini SD or mini SDHC adapter is installed without also inserting a card. Be sure to insert a card when an adapter is installed.)**
- **Use of Panasonic SD memory cards and mini SD/mini SDHC cards is recommended. Be sure to format such cards in this camera.**
- **To format a memory card on a PC, use the following software that can be downloaded from the support site listed below.**
  https://eww.pavc.panasonic.co.jp/pro-av/
- **This camera supports 8 MB, 16 MB, 32 MB, 64 MB, 128 MB, 256 MB, 512 MB, 1 GB and 2 GB SD memory cards and 4 GB SDHC memory cards.**
- **For the latest information not available in the Operating Instructions, visit the P2 Support site at the above Web site.**

■About SD and SDHC memory cards
- **SD logo is a trademark.**
- **The SDHC (SD High Capacity) card is a new standard, established by the SD Card Association in 2006, for large-scale memory cards with capacities above 2 GB.**
- **Multi Media Card (MMC) is a registered trademark of Infineon Technologies AG.**

26 BUSY (operation mode display) lamp

This lamp indicates the active status of the SD memory card.
It stays illuminated when the card is active.

<Note>

While the lamp is on, do not insert or remove the card.

27 R-SIDE P2 card access LED

This LED indicates access status for all four P2 card slots. It blinks when any of the inserted P2 cards is accessed and lights when a card is inserted.

28 COMPONENT OUT connector (D4 connector)

This connector outputs component video signals. Use the menu option CMPNT/SDI SEL in the setting menu <OUTPUT SEL> screen to select 720P, 1080i, 480i, or 576i. This connector does not support up-conversion.

29 1394 connector

Connect an IEEE1394 cable to this connector. Select 1394 DEVICE or 1394 HOST under the menu option PC MODE in the <OTHER FUNCTIONS> screen to send data via the 1394 connector. For details, see [Connecting to External Devices Using USB2.0 Port].

30 SDI OUT connector

This connector outputs SDI signals.
Use the menu option CMPNT/SDI SEL in the setting menu <OUTPUT SEL> screen to select 720P, 1080i, 480i, or 576i. This connector does not support up-conversion.

31 SCENE FILE dial

This dial allows you to load and set the shooting conditions for a scene file already recorded with the conditions corresponding to the dial position.

<Note>

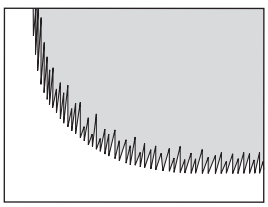
During recording, selecting a position with a different frame rate will not change the frame rate until the camera is set to recording standby mode.

32 PAGE/VAR button

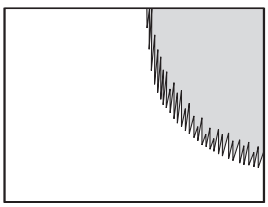
In the thumbnail display, press this button to turn pages; during variable speed playback press it to change playback speed and in still mode, press it to start frame-by-frame playback.

33 FOCUS ASSIST button

This button turns focus assist on and off.
Turning on the focus assist function displays a frequency distribution graph in the top right corner of the viewfinder and LCD display.
Turn the focus ring on the lens to place the graph further to the right.

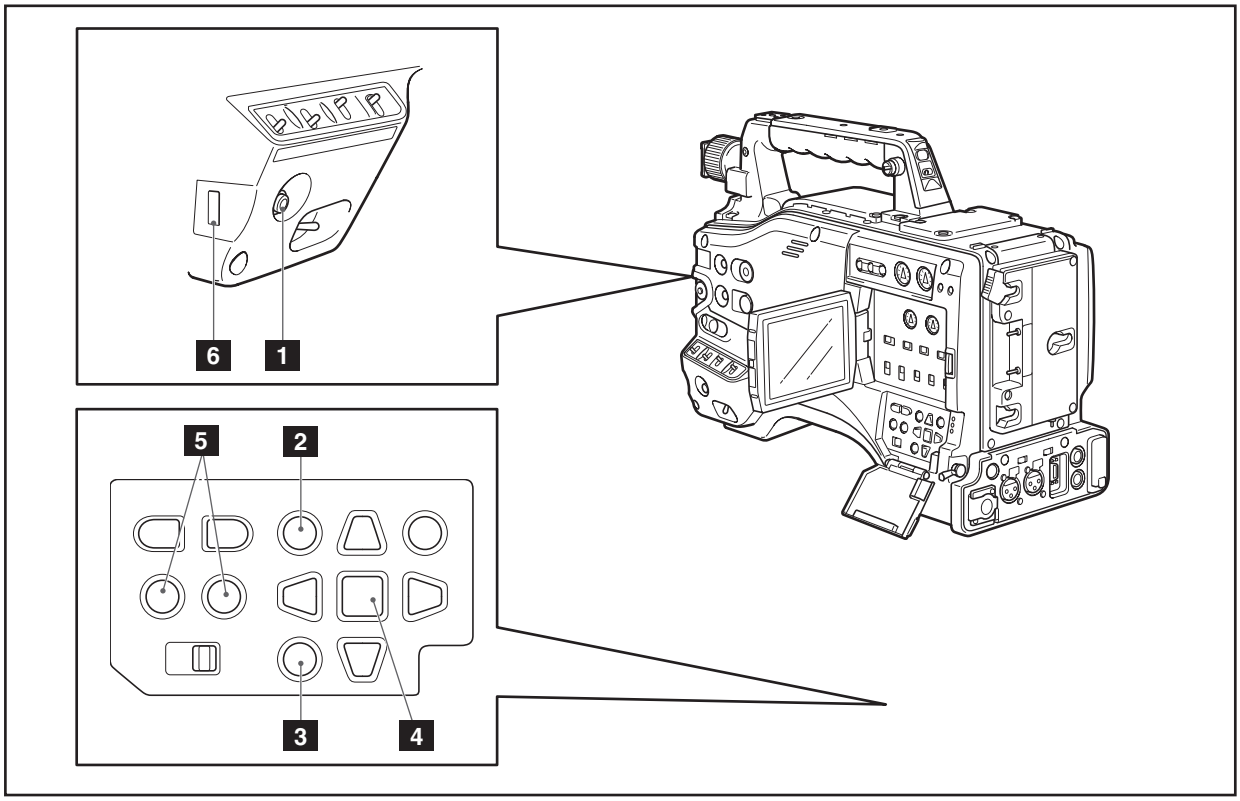


When the image is out of focus



The white area moves to the right as the image comes into focus.

Menu Operation Section



1 MENU button

Press this button to display the setting menu and press it again to return to the previous image. This button is not available in the thumbnail display.

<NOTE>

Use the SET button or the JOG dial button to go between menus and select items. For details, see section [Viewfinder and LCD menus].

2 Thumbnail button

In MCR mode, press this button to open the thumbnail screen.

Note that this switchover is not performed during recording or playback.

3 Thumbnail menu button

In thumbnail display mode, use this button to access thumbnail menu functions to delete clips, for example.

Pressing this button when thumbnail is not shown in camera mode or MCR mode displays the camera menu or MCR menu.

<Note>

Use the CURSOR and SET buttons to select thumbnails and access menu functions. For details, see [Manipulating Clips with Thumbnails].

4 CURSOR and SET buttons

Use these buttons to manipulate menus, the menu bar and thumbnails.

The four triangular buttons are CURSOR buttons and the square center button is the SET button.

5 PAGE/VAR button

Pressing this button during thumbnail display scrolls thumbnail pages forwards and backwards in page units.

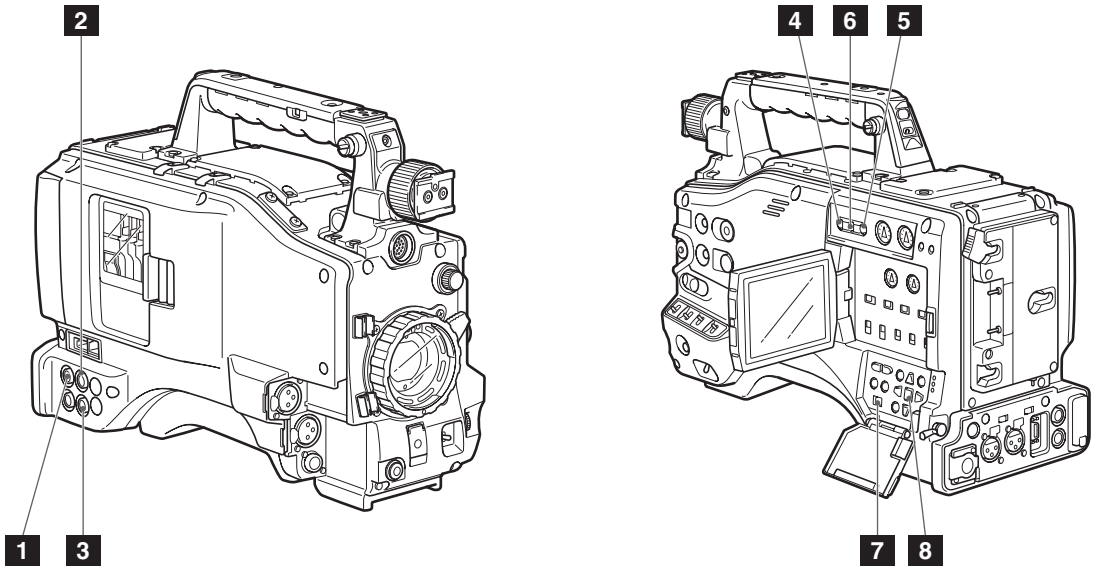
6 JOG dial button

Use this button to go between menu pages and to select and set items in open setting menus (camera menu or MCR menu).

In a setting menu, turning the JOG dial downwards moves the menu cursor downwards and turning it upwards moves the menu cursor upwards.

Press the JOG dial button to confirm made settings.

Time Code Section



1 GENLOCK IN connector (BNC)
This connector is used to input a reference signal before the camera unit is gen-locked, or before the time code is externally locked.

2 TC IN connector (BNC)
This connector is used to input a reference time code when you externally lock the time code.

3 TC OUT connector (BNC)
When you inter-lock the time code of the AG-HPX500P/E with that of an external device this must be connected with the time code input (TC IN) connector of the external device.

4 HOLD button
Pressing this button freezes the time data indication on the counter. Note that time code generation continues. Pressing the button again reactivates the counter.
This function is used to ascertain the time code or CTL count of a particular recorded scene.

5 RESET button
Use this button to reset the counter value on the time code display to 00:00:00.
When the TCG switch is positioned at [SET] and the setting menus TC PRESET screen and UB PRESET screen are open, press this button to reset all set values to 0 and press the SET button to preset.

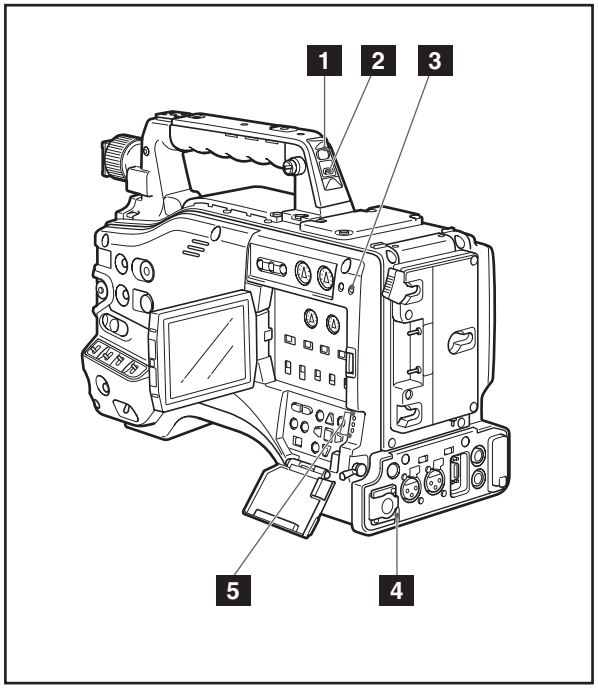
6 COUNTER (counter display selector) button
The LCD monitor and the viewfinder show the counter value, time code, user bit and frame rate data depending on how this switch and the TCG switch are set.

7 TCG (time code selector) switch
This switch is used to specify the stepping mode for the built-in time code generator.

F-RUN	Select this position to continuously advance the time code independently of the P2 card recording status. Use this mode to synchronise the time code with the time of day, or to externally lock the time code.
SET	Select this position to set the time code and/or user bits.
R-RUN	Select this position to advance the time code only during recording. The time code is continuously recorded during normal recording. But deleting clips and continue recording of clips at a frame rate of 24P or 24PA that have been recorded at any other frame rate may break the sequence of time code recording.

8 CURSOR and SET buttons
Use these buttons to set the time code and user bits.
The four triangular buttons are the CURSOR buttons, and the center rectangular one is the SET button.
For guidance in setting the time code and user bits, see [Setting Time Data].

Warning and Status Display Functions



1 **Back tally lamp**
When the BACK TALLY switch is set to [ON], the lamp behaves in the same way as the front tally lamp at the viewfinder.

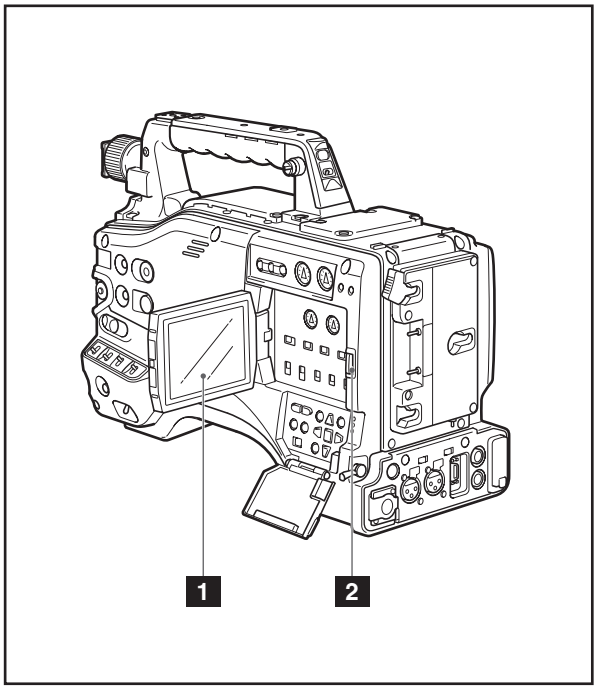
2 **BACK TALLY switch**
This switch controls the action of the back and rear tally lamps.
ON: Back and rear tally lamps enabled.
OFF: Back and rear tally lamps disabled.

3 **WARNING lamp**
This lamp starts blinking or lights up if something unusual occurs in the memory.

4 **Rear tally lamp**
When the BACK TALLY switch is set on [ON], the rear tally lamp behaves in the same way as the back tally lamp.

5 **Mode LED**
Shows the camera unit mode.
CAM: Lights in CAMERA mode.
MCR: Lights in MCR mode.
PC: Lights in PC mode.

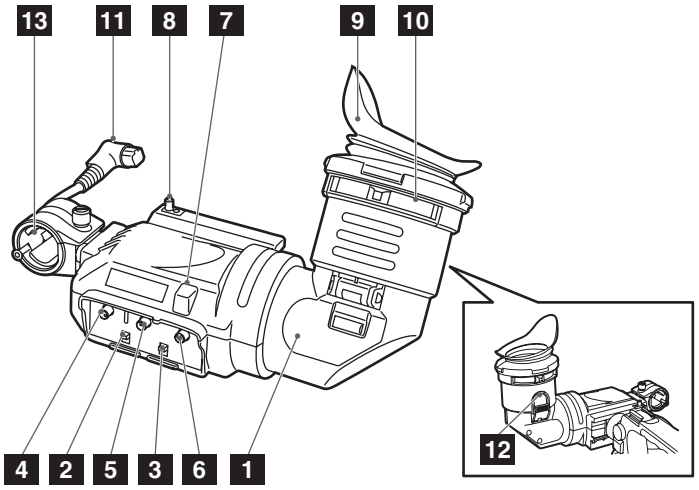
LCD Monitor



1 **LCD monitor**
The LCD monitor displays the video in the viewfinder.
Alternatively, it can show clips on the P2 card in a thumbnail format.
In thumbnail display mode, you can use the thumbnail menu buttons, CURSOR and SET buttons to manipulate or delete clips, or format P2 cards.

2 **OPEN button**
Used to open the LCD monitor.

Viewfinder



1 Viewfinder (supplied accessory)
During recording or playback, the viewfinder displays the video image in monochrome. It also displays warnings, messages, zebra patterns, markers (safety zone and center markers), etc.

2 ZEBRA (zebra pattern) switch
This switch is used to display the zebra pattern in the viewfinder.
ON: Zebra pattern displayed.
OFF: No zebra pattern displayed.

3 TALLY switch
Used to control the front tally lamp.
ON: Tally lamp goes on.
OFF: Tally lamp goes out.

4 PEAKING control
Used to adjust the outlines of the video image in the viewfinder for easier focusing. Recorded video and output camera signals are not affected.

5 CONTRAST control
Used to adjust the contrast of the video image in the viewfinder. Recorded video and output camera signals are not affected.

6 BRIGHT control
Used to adjust the brightness of the video image in the viewfinder. Recorded video and output camera signals are not affected.

7 Front tally lamp
This lamp goes on during recording when the TALLY switch is set to [ON]. It also blinks in synchronisation with the REC lamp in the viewfinder, and provides alerts.

8 Viewfinder securing screw
Used to attach or remove the viewfinder.

9 Eyepiece

10 Diopter adjustment lever
Use this to make adjustments in line with your diopter, in order to obtain optimum clarity in the viewfinder image.

11 Connecting plug

12 Locking button

13 Microphone holder

Chapter 3 Recording and Playback

Setting Date and Time of Internal Clock

The CLOCK SET value is recorded in the contents (clip), and affects the sequence of playback of the thumbnails. Before carrying out recording, be sure to check and set CLOCK SET and TIME ZONE.

• This shows you how to adjust the calendar to 5:20 PM on December 25, 2007.

1 **Set the POWER switch to ON.**

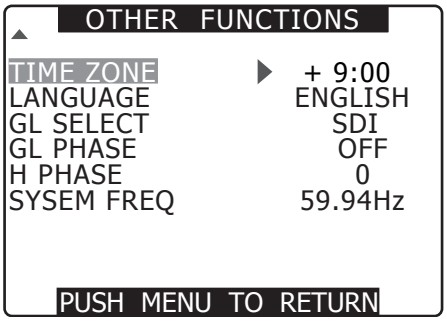
2 **Press the MENU button.**

3 **Use the JOG dial button to select setting menu OTHER FUNCTIONS, then press the JOG dial button to open the OTHER FUNCTIONS screen.**

4 **Use the JOG dial button to select TIME ZONE, then press the JOG dial button.**

5 **In the setup menus, OTHER FUNCTIONS screen, TIME ZONE, set the time difference from Greenwich Mean Time using the JOG dial button.**

• Check what time zone you are in and set accordingly.



■Time zone

Time difference	Area	Time difference	Area
-00:00	Greenwich	-00:30	
-01:00	Azores Islands	-01:30	
-02:00	Mid-Atlantic	-02:30	
-03:00	Buenos Aires	-03:30	Newfoundland Island
-04:00	Halifax	-04:30	
-05:00	New York	-05:30	
-06:00	Chicago	-06:30	
-07:00	Denver	-07:30	
-08:00	Los Angeles	-08:30	
-09:00	Alaska	-09:30	Marquesas Islands
-10:00	Hawaii	-10:30	
-11:00	Midway Island	-11:30	
-12:00	Kwajalein	+11:30	Norfolk Island
+13:00		+10:30	Lord Howe Island
+12:00	New Zealand	+09:30	Darwin
+11:00	Solomon Islands	+08:30	
+10:00	Guam	+07:30	
+09:00	Tokyo	+06:30	Rangoon
+08:00	Beijing	+05:30	Bombay
+07:00	Bangkok	+04:30	Kabul
+06:00	Dacca	+03:30	Tehran
+05:00	Islamabad	+02:30	
+04:00	Abu Dhabi	+01:30	
+03:00	Moscow	+00:30	
+02:00	Eastern Europe	+12:45	Chatham Islands
+01:00	Central Europe		

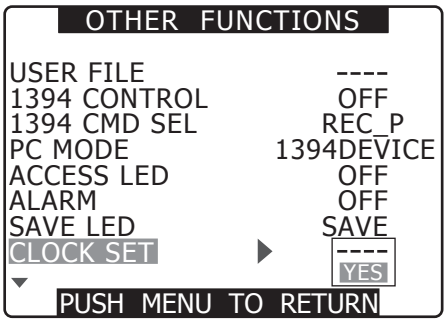
<NOTE>

• The clock is accurate to within about ±30 seconds a month with the power turned off.

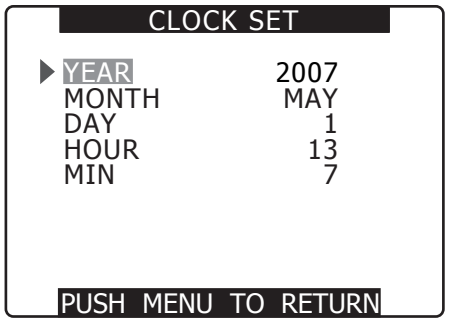
• Check and set the time when accurate time is required. After setting the time, change the setting menu TIME ZONE item and the display and the recorded local time will be reset accordingly.

6 **In the setup menus, OTHER FUNCTIONS screen, CLOCK SET, select YES.**

• The CLOCK SET screen appears.



7 **Turn the JOG dial button to select YEAR, then press the JOG dial.**

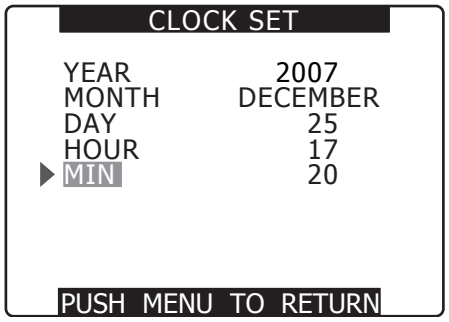


8 **Turn the JOG dial button to set YEAR to 2007, then press the JOG dial button.**
• A year between 2000 to 2030 can be set.

9 **Turn the JOG dial button to select MONTH, then press the JOG dial button.**

10 **Turn the JOG dial button to set MONTH to DEC, then press the JOG dial button.**

11 **Set DAY, HOUR and MIN in the same way as setting YEAR and MONTH.**
• This is a 24-hour clock.



12 **Press the setting menu button to exit the menu mode.**

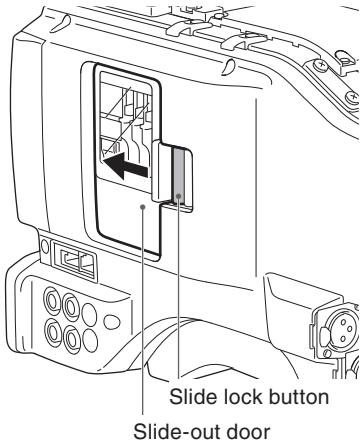
P2 Cards

Inserting P2 Cards

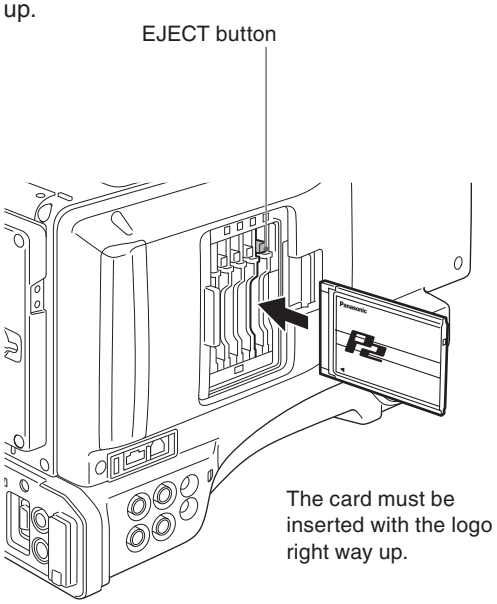
<Note>
When using the camera-recorder for the first time, be sure to set the time data beforehand. On how the time data is set, see [Setting Date and Time of Internal Clock].

1 **Turn on the POWER switch.**

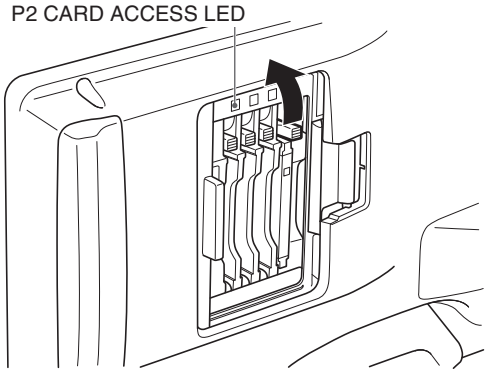
2 **While pressing the slide lock button, move the slide-out door to the left.**
• The door opens.



3 **Insert a P2 card in a P2 card slot.**
• Press in the card until the eject button pops up.



4 **Tilt up the popped-up EJECT button.**



5 **Insert a P2 card into the AG-HPX500P/E. The P2 CARD ACCESS LED for the appropriate slot indicates the status of the P2 card.**
For how the P2 card status is indicated, see [P2 CARD ACCESS LED and status of P2 cards].

6 **Close the slide-out door.**

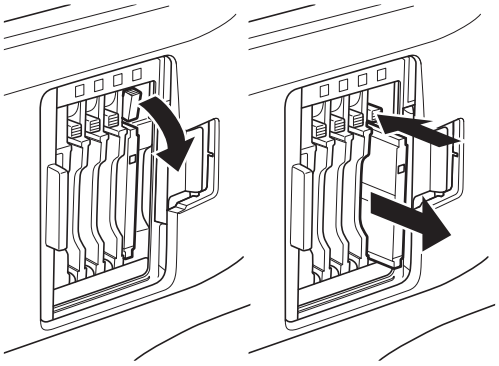
<Note>
- **To prevent cards from falling out, dust from entering and reduce the risk of exposure to static electricity, do not move the AG-HPX500/PE with the slide-out door open.**
- **Format P2 cards on a P2 device or on a PC using P2 Viewer software (Ver.000 or later).**

Removing P2 Cards

1 **While pressing the slide lock button, move the slide-out door to the left.**
- The door opens.

2 **Tilt down the EJECT button.**

3 **Then depress the eject button to release the P2 card.**



Tilt down the EJECT button.

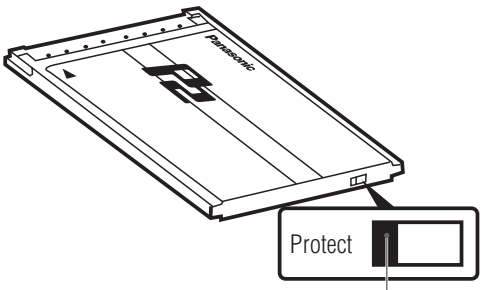
Depress the tilted-down EJECT button to release the P2 card.

<Note>
- **When a P2 card is being accessed or it is being recognised after insertion (P2 CARD ACCESS LED blinks in orange), do not remove the P2 card. Removing a P2 card during access could damage it.**
- **When the camera is used with the P2 CARD ACCESS LED off, be sure to wait a sufficient amount of time before removing a P2 card after completion of recording and playback.**
- **If a P2 card being accessed is removed, the viewfinder displays "TURN POWER OFF" and the AG-HPX500P/E gives a warning using an alarm and the WARNING LED. In addition, all P2 CARD ACCESS LEDs blink rapidly in orange. If this is the case, turn the power off. For more information on warning indications, see [Warning System].**
- **Removing a P2 card during access may corrupt clip data. Check the clips and restore them if required. For more information about how to restore clips, see [Restoring Clips].**
- **If a P2 card being formatted is removed, it may be not be formatted properly. In this case, the viewfinder displays "TURN POWER OFF". If this message appears, turn off the power, then restart the AG-HPX500P/E to reformat the card.**
- **If a P2 card is inserted while another P2 card is being played back, the inserted P2 card is not recognised and the P2 CARD ACCESS LED for that card does not come on. Card recognition starts when the playback ends.**
- **A P2 card inserted in an empty slot during recording may not be immediately recognized during the following events.**
  - **Immediately following PRE REC operation**
  - **Immediately before or after a recording that bridges P2 cards in two slots (hot swap recording, etc.)**
- **The P2 CARD ACCESS LED can be set to stay off in the setup menus, OTHER FUNCTIONS screen, ACCESS LED.**
- **A P2 card inserted in an empty card slot is not recognized during Interval recording and one-shot recording.**

To Prevent Accidental Erasure of P2 Card Content

To prevent the content of a P2 card being accidentally erased, position the write-protect switch on the P2 card at [Protect].

<Note>
Write-protect switchover can be performed while the card is being accessed (during recording or playback), but does not take effect until access to the card ceases.



Write-protect switch

P2 CARD ACCESS LED and status of P2 cards

P2 CARD ACCESS LED	Status of P2 Card	
Stays on in green	Recording enabled	Writing and reading enabled.
Stays on in orange	Selected for recording	Writing and reading enabled. The card is recordable (loop recording also enabled).
Blinks in orange	Being accessed	Writing or reading being performed.
Quickly blinks in orange	Being recognized	The P2 card is being recognised.
Blinks in green	Card full	The P2 card has no free space. Only reading is enabled.
	Write-protected	The write-protect switch on the P2 card is positioned at [PROTECT]. Only reading is enabled.
Stays off	Card not supported	The card is not supported by your AG-HPX500P/E. Replace the card.
	Incorrect format	The P2 card is not properly formatted. Reformat the card.
	Card not inserted	No P2 card is inserted. Card recognition standby.

<Note>
The ACCESS LED in the LCD monitor blinks when any of the cards in slots 1 to 4 is being recorded or read, and lights to indicate that the camera is ready to record. The ACCESS LED is off when none of the inserted P2 cards is available for recording.

Basic Procedures

This section describes the basic procedure for shooting and recording.
Before you embark on a shoot, pre-inspect your system to ensure that it works properly.
For directions on inspecting your memory card camera-recorder, see [Inspections Before Shooting].

Battery Set-up to P2 card Insertion

1 **Insert a charged battery pack.**

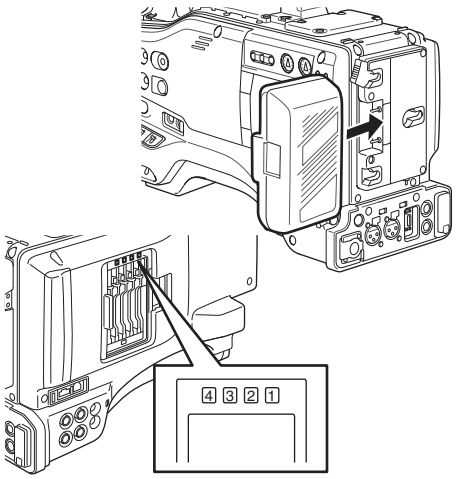
2 **Turn the POWER switch to ON to check the battery remaining level in the viewfinder.**

- When battery level drops, first check the battery setting, and if the battery setting is correct, replace the battery with a fully charged battery.

3 **Insert a P2 card and ensure that the P2 CARD ACCESS LED stays on in orange or green. Then, close the slide-out door.**

- When more than one P2 card slot contains a P2 card, the card in the slot with the lowest number is used first. However, regardless of slot number, a P2 card inserted later will not be accessed until the other cards have been used.

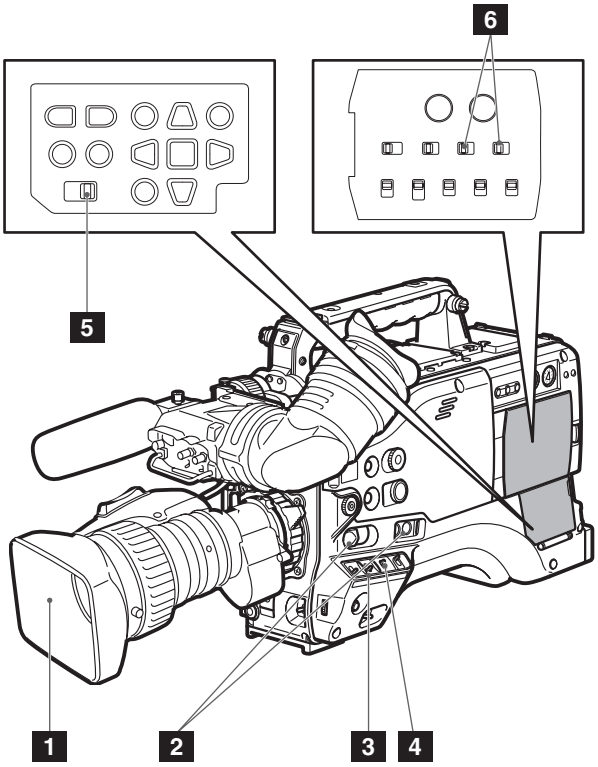
  Example: If all four slots contain P2 cards, the cards are used in order of slot numbers 1→2→3→4. However, if the P2 card in Slot 1 is removed and then re-inserted, the cards will be used in the following order: 2→3→4→1.



Note that the recording order is retained even if the power is turned off. When the power is next turned on, the last card written before powering-down will be the target card.

Setting the switches before shooting and recording

When a battery and P2 cards are installed, set the switches as detailed below, before starting to use your AG-HPX500P/E.



1 Iris
This function is automatically set.

2 USER MAIN/USER1/USER2
Assigning the SLOT SEL function to a USER button allows you to select a P2 card among multiple P2 cards for recording.
When a P2 card selected for recording is switched, the ACCESS LED for the P2 card selected for recording will light in orange. The slot number of the card to be recorded appears in green in the LCD monitor and the viewfinder.
For more information on viewfinder displays, see [Viewfinder Status Indication Layout].

3 GAIN
Normally, this should be set to 0 dB. If conditions are too dark, an appropriate gain level should be set.

4 AUTO KNEE
Set to ON or OFF.

5 TCG
F-RUN or R-RUN

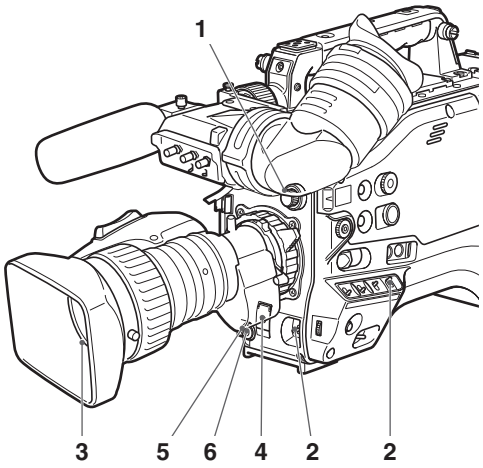
6 AUDIO SELECT CH 1/CH 2
Set to AUTO.

<Note>
- **The slot selected for recording cannot be changed when recording has started.**
- **Use the USER MAIN item in setting menu SW MODE screen to assign functions to the USER MAIN button.**

Shooting

White/Black Balance Adjustment to Recording Completion

For shooting, follow the steps below.



1 Use the ND FILTER control to select a filter according to light conditions.

2

■When the white balance is saved:
- Position the WHITE BAL switch to [A] or [B].

■When the white or black balance is not saved and you have no time to adjust the white balance:
- Position the WHITE BAL switch to [PRST].
- This adjusts the white balance against the filter according to the position of the ND FILTER control.

■If the white balance is adjusted on the spot:
- Select a filter according to light conditions. Then, position the WHITE BAL switch to [A] or [B] and shoot a white test subject so that it appears at the center of the screen. Then, follow the steps below to adjust the white balance.
  1. Turn the AUTO W/B BAL switch toward [AWB] to adjust the white balance.
  2. Turn the AUTO W/B BAL switch toward [ABB] to adjust the black balance.
  3. Turn the AUTO W/B BAL switch toward [AWB] to adjust the white balance again.

  For directions on making adjustments, see [Adjusting the White Balance] and [Adjusting the Black Balance].

3 Point the camera at your subject to adjust the focus, and zoom.

4 **To use the electronic shutter, set the shutter speed and shutter mode.**
For more information, see [Setting the Electronic Shutter].

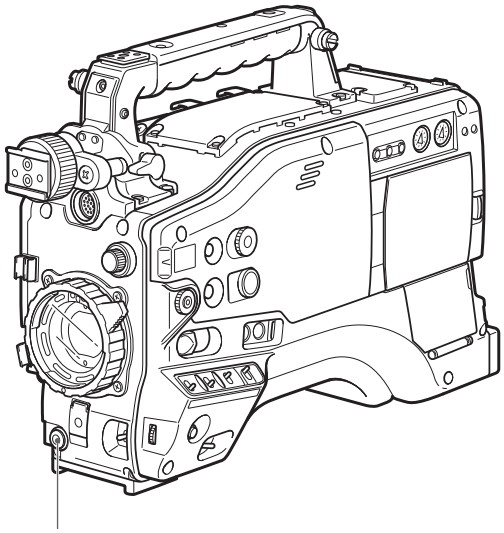
5 **Press the REC START/STOP button to start recording.**
- During recording, the REC lamp in the viewfinder stays illuminated.

6 **To stop recording, press the REC START/STOP button.**
- The REC lamp in the viewfinder goes out.

<Note>
■Operation Buttons
In CAMERA mode, all operation buttons (REW, FF, PLAY, STILL, STOP) are disabled.

Normal Recording

- Pressing the REC START/STOP button starts recording of video and sound on the P2 card.
- The video and audio (including additional information) recorded in one session is referred to as a clip.



REC START/STOP button

Variable Frame Rate (VFR) Recording

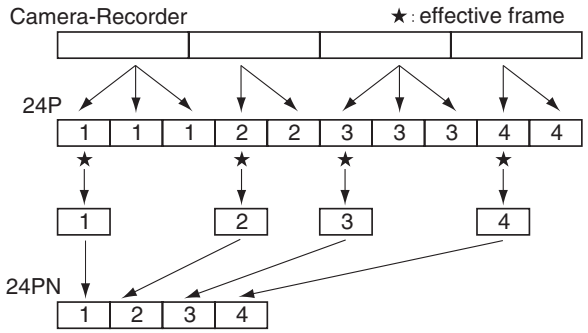
This camera takes full advantage of P2 card characteristics by providing frame skipping (undercranking) recording and high-speed (overcranking) recording without the use of a frame rate converter. (The camera must be set to 30PN, 25PN or 24PN to use these functions.) Since the camera records only the effective frames (native recording), recording time is 2 to 2.5 times longer than in the 24P, 30P and 60P modes (25P or 50PN at 50 Hz) (standard recording). Like VARICAM (the AJ-HDC27 series), it also provides a recording format that can accommodate the frame rate conversion required for nonlinear editing. (The camera must be set to 30P, 25P or 24P).

<Note>

Variable frame rate (VFR) recording is available only in the 720P mode.

24PN mode:

The camera-recorder shoots in the 24 fps native mode. The video signals delivering images at a rate of 24 fps are recorded in 24 frames. The signals are recorded only in the effective frames so recording is possible for 2.5 times as long.



- Before Variable Frame Rate (VFR) shooting, you must set the recording frame rate and the recording format.
- You cannot change the frame rates while recording.
- Variable Frame Rate (VFR) recording is available only in progressive shooting at 720 vertical lines.

You can select any of 11 recording frame rates ranging from 12 frames per second (fps) to 60 fps.
The list of formats that allow recording by the camera-recorder (Page XX)
There may be slight discrepancies between the recording frame rate displayed and the frame rate at which the images are actually recorded. Refer to the table below.

59.94 Hz		50 Hz	
Recording frame rate displayed	Frame rate at which images are actually recorded	Recording frame rate displayed	Frame rate at which images are actually recorded
60	59.94	50	50.00
48	48.17	48	48.08
36	35.68	37	36.75
32	32.11	32	32.14
30	29.97	30	29.76
26	26.44	27	27.17
24	23.98	25	25.00
22	22.48	23	23.15
20	19.55	20	19.74
18	17.98	18	17.86
12	12.26	12	12.50

Native recording

1 **Select the 720P/30PN or 720P/24PN (720P/25PN at 50 Hz) recording format in the REC FORMAT item in the RECORDING SETUP screen.**

2 **Select the appropriate scene file using the SCENE FILE dial.**

- If necessary, before doing this, perform the camera settings from the setting menu, and register the scene file.
  See [Saving scene files and other settings on SD memory cards].

3 **Using the OPERATION TYPE function on the SCENE FILE screen, select FILM CAM, and set the desired recording frame rate using the FRAME RATE function.**

4 **Press the REC START/STOP button.**

- Pressing the REC START/STOP button starts native recording in the VFR mode.

• No signals are output from the 1394 terminal during recording or recording standby in the native mode.
• Sound is not recorded. However, sound will be recorded when the same frame rate is used for both recording and playback.
• When a recorded clip lasting a long time is to be played back and imported using a nonlinear editing system that supports Varicams, the UB MODE option on the RECORDING SETUP screen must be set to FRM.RATE.

Standard recording

1 **Select the 720P/60P, 720P/30P, or 720P/24P (720P/50P, or 720P/25P at 50 Hz) recording format in the REC FORMAT item in the RECORDING SETUP screen.**

2 **Select the appropriate scene file using the SCENE FILE dial.**
• If necessary, before doing this, perform the camera settings from the setting menu, and register the scene file.

3 **Using the OPERATION TYPE function on the SCENE FILE screen, select FILM CAM, and set the desired recording frame rate using the FRAME RATE function.**
• When the 720P/30P, 720P/24P, or 720P/25P recording is selected, the following indications appear depending on the settings made in the FRAME RATE item in the SCENE FILE screen.

①PULL DOWN information displayed in PROPERTY-CLIP PROPERTY-VIDEO
With the default setting: 2:2
With any other settings: other
②Format information in the bottom left of the screen when thumbnails are displayed
With the default setting: 720P/30P, 720P/24P, 72P/25P, or 720P/50P
With any other settings: 720P/60P
(The default setting is 30FRAME at a recording frame rate of 30P and 24FRAME (25FRAME at 25P) at a recording frame rate of 24P.)

4 **Press the REC START/STOP button.**
• Pressing the REC START/STOP button starts standard recording in the VFR mode, the sound is also recorded.

<Note>
• In the case of a nonlinear editing system that supports Varicams equipped with an effective frame extraction function, you can upload even undercrank or overcrank shooting materials as is. (The UB MODE option on the RECORDING SETUP screen must be set to FRM.RATE.)
• After editing, materials are output from the nonlinear editing system in 1080i/24P or 720P/60P (24P over 60P) format.
• The 24P format is used for 2:3 pull-down recording and the 30P (25P at 50 Hz) is used for 2:2 pull-down recording.

Using variable frame rates (VFR)

Standard speed shooting for making commercials and dramas

When producing commercials and dramas to be shown on a TV screen, as in the case of HDTV/ SDTV and other broadcasts, a frame rate of 24 fps (frames per second) is the norm (1× speed).
If you use the settings below, the same kind of playback as when the programs are broadcast can be obtained. 720P progressive mode and cine-like gamma produce video that looks like it was shot on a film camera.

Recording format (REC FORMAT)	Recording frame rate (FRAME RATE)
720P/24P (2:3 pull-down)	24 fps*
720P/24PN (native recording)	

* One of 11 recording frame rates (FRAME RATE) can be selected.

Shooting at standard speed for producing commercials and TV programs

Production aimed at HDTV and SDTV broadcasts for TV audiences must use the full frame rate (×1) of 30 fps (30 frames/sec.) (25 fps at 50 Hz). Use the following settings to obtain the playback speed used for broadcasts. This permits film-like video recording of commercials and music clips that also provide a frame rate suitable for broadcasting.

Recording format (REC FORMAT)		Recording frame rate (FRAME RATE)
59.94 Hz	720P/30P (2:2 pull-down)	30 fps*
	720P/30PN (native recording)	
50 Hz	720P/25P (2:2 pull-down)	25 fps*
	720P/25PN (native recording)	

* One of 11 recording frame rates (FRAME RATE) can be selected.

Undercrank shooting

This way of shooting provides quick motion effects used to present such scenes as the movement of clouds, someone standing among crowd of people, and moves made by martial artists. If, for instance, you have shot scenes using the 24P recording format for specifying the playback frames, you can double the speed of the quick motion effects by setting the VFR recording frame rate to 12 fps.

Recording format (REC FORMAT)	Recording frame rate (FRAME RATE)
720P/24P, 720P/24PN	Set to 22 fps or lower.*
720P/30P, 720P/30PN	Set to 26 fps or lower.*
720P/25P, 720P/25PN	Set to 23 fps or lower.*

* One of 11 recording frame rates (FRAME RATE) can be selected.
• The 720P/24P, 720P/30P and 720P/25P formats provide a quick motion effect when processed using a nonlinear editing system.

Overcrank shooting

This way of shooting provides slow motion effects used to show car chases as well as action scenes, climax scenes and other dramatic presentations.
If, for instance, you have shot scenes using the 30P recording format for specifying the playback frames, you can obtain slow motion effects with the speed halved by setting the recording frame rate to 60 fps. Images in the 720P progressive format will create smoothly flowing slow motion sequences with a high picture quality.

Recording format (REC FORMAT)	Recording frame rate (FRAME RATE)
720P/24P, 720P/24PN	Set to 26 fps or higher.*
720P/30P, 720P/30PN	Set to 32 fps or higher.*
720P/25P, 720P/25PN	Set to 27 fps or higher.*

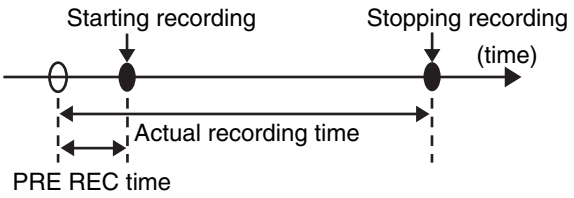
* One of 11 recording frame rates (FRAME RATE) can be selected.
• The 720P/24P, 720P/30P and 720P/25P formats provide a slow motion effect when processed using a nonlinear editing system.

Special Recording Modes

During P2 card recording, setting items in the menu option RECORDING SETUP screen provides the following special recording modes: pre-recording, interval recording, one-shot recording, and loop recording.
These recording modes are available only with the following settings.
•OPERATION TYPE item:
VIDEO CAM
• Recording format:
They are available at 1080i/60i (50i), 720P/60P (50P), or in SD at 60i (50i), 30P/25P.

Pre-recording (PRE REC)

This function is used to start recording a certain number of seconds (approx. 3 seconds for HD recordings or approx. 7 seconds for 480i recordings) before actual recording starts.



1 Check that the OPERATION TYPE item in the menu option RECORDING SETUP screen and the recording format are set as described below.
•OPERATION TYPE item:
VIDEO CAM
• Recording format:
They are available at 1080i/60i (50i), 720P/60P (50P), or in SD at 60i (50i), 30P/25P.

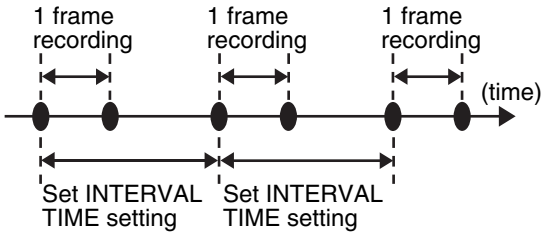
2 Select ON in the PREREC MODE item in the menu option RECORDING SETUP screen.

3 Press the START/STOP button.
This setting will record audio and video a time period prior to start of recording.
•The following recording modes will disable the pre-recording function and start respective recording function when selected.
- Recording of video input via the IEEE1394 connector
- After a change from playback to recording
- When changing recording formats
- During interval recording
- During one-shot recording
- During loop recording

• Audio and video recording for the pre-recording time interval stated above may not be possible when recording is started immediately after the following changes in operating mode: after a changeover from MCR mode to CAMERA mode, after power-on, and after a change in the PREREC MODE item.

Interval recording (INTERVAL REC)

This function is used to record 1 frame (1/30 s) at the time interval set in the INTERVAL TIME item.



1 Check that the OPERATION TYPE item in the menu option RECORDING SETUP screen and the recording format are set as described below.
•OPERATION TYPE item:
VIDEO CAM
• Recording format:
They are available at 1080i/60i (50i), 720P/60P (50P), or in SD at 60i (50i), 30P/25P.

2 **Select INTERVAL in the REC FUNCTION item in the menu option RECORDING SETUP screen.**

3 **Set the time in the INTERVAL TIME item in the menu option RECORDING SETUP screen.**

4 **Press the START/STOP button.**

- The camera will repeat 1-frame recording for the time interval set in the INTERVAL TIME item.
- Press the STOP button to stop recording.
- To cancel this function, turn the camera off or select NORMAL in the REC FUNCTION item.
- The following indications appear to the left of the operation status display.
  - During recording: “I-REC” stays lit.
  - During a pause: “I-PAUSE” stays lit.
  - When a setting of less than 2 seconds is made in step 3, “I-REC” blinks according to time setting during recording.
  - When stopped:”I-“ in “I-PAUSE” blinks.

<Note>

- **The pre-recording function is not available.**
- **Sound is not recorded.**
- **Data recorded (until the STOP button is pressed) in this mode is recorded as a single file.**
- **The 1394 connector does not output any signals.**
- **This function is not available if a DIR ENTRY NG CARD is inserted.**
- **A card inserted during recording is recognized after recording stops.**

One-shot recording (ONE-SHOT REC)

This function records a single shot at each unit of time which has been set.

1 **Check that the OPERATION TYPE item in the menu option RECORDING SETUP screen and the recording format are set as described below.**

- OPERATION TYPE item:
  VIDEO CAM
- Recording format:
  They are available at 1080i/60i (50i), 720P/60P (50P), or in SD at 60i (50i), 30P/25P.

2 **Select ONE SHOT in the REC FUNCTION item in the menu option RECORDING SETUP screen.**

3 **Set the time in the ONE SHOT TIME item in the menu option RECORDING SETUP screen.**

4 **Press the START/STOP button.**

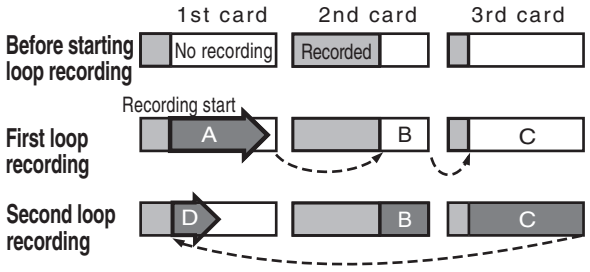
- The camera will pause recording after making a recording that lasts the duration set in step 3.
- Press the STOP button to stop recording.
- To cancel this function, turn the camera off or select NORMAL in the REC FUNCTION item.
- The following indications appear to the left of the operation status display.
  - During recording: “I-REC” stays lit.
  - During a pause: “I-PAUSE” stays lit.
  - When stopped:”I-“ in “I-PAUSE” blinks.

<Note>

- **No other functions are available during operation.**
- **The pre-recording function is not available.**
- **Sound is not recorded.**
- **Data recorded (until the STOP button is pressed) in this mode is recorded as a single file.**
- **Video output via the 1394 connector is not guaranteed.**
- **This function is not available if a DIR ENTRY NG CARD is inserted.**
- **During continuous one-shot recording, recording operation speed may be decreased.**
- **A card inserted during recording is recognized after recording stops.**

Loop recording (LOOP REC)

- When two or more P2 cards are inserted in the P2 card slots, each card is recorded in succession.
- When there is no longer any space left on the cards, recording starts over from the first card by recording new clips over saved old clips.



Recording will be made on the areas with no recording consecutively (A, B, then C). When all areas on all cards are recorded, new recording (D) will be made by overwriting the area A.

1 **Check that the OPERATION TYPE item in the menu option RECORDING SETUP screen and the recording format are set as described below.**

- OPERATION TYPE item:
  VIDEO CAM
- Recording format:
  They are available at 1080i/60i (50i), 720P/60P (50P), or in SD at 60i (50i), 30P/25P.

2 **Select LOOP in the PREREC FUNCTION item in the menu option RECORDING SETUP screen.**

3 **Press the START/STOP button.**

- Recording starts.
- Press the START/STOP button to stop recording.
- To cancel this function, turn the camera off or select NORMAL in the REC FUNCTION item.
- The following indications appear to the left of the operation status display.
  - During recording: “L-REC” stays lit.
  - During a pause: “L-PAUSE” stays lit.
  - When remaining memory is low: “P2 LACK L-“ blinks.

<Note>

- **Use a P2 card with at least one minute of remaining recording time.**
- **Recording of IEEE1394 input is not available.**
- **The pre-recording function is not available.**
- **This function is not available if a DIR ENTRY NG CARD is inserted.**
- **Canceling this function may take some time. The succeeding operations are not available until the P2 CARD ACCESS LED goes from blinking to steady lighting.**
- **A card inserted during recording is not used for recording.**

Recording Check Function

- Pressing the RET button on the lens in the CAMERA mode will automatically play back the last two seconds or so of latest clip.
- Use this function to check that recording is performed normally. The camera returns to recording standby mode after playback. Playback may start from the beginning of a short clip.
- You can use the USER MAIN, USER1 and USER2 items to assign the RET button function to a USER button. Select these items from the setting menu SW MODE screen.

<Note>

Note that the playback during recording check will be recorded on a backup device connected to the IEEE1394 or SDI OUT connector.

Shot Marker (SHOT MARK) Recording Function

This function can be used to distinguish a clip from other clips by adding a thumbnail to each clip.
This also makes possible to display or play back the marked clips only.

To add shot marks

1 **In the setting menu SW MODE screen, assign SHOT MARK to a USER button (USER MAIN, USER1 or USER2).**

2 **During recording, press the USER button to which the SHOT MARK function has been assigned.**
- "MARK ON" is displayed as a shot mark is inserted in the currently recorded clip.
- Pressing this key a second time displays "MARK OFF" and the shot mark is deleted.

<Note>
- **Shot marks can be added also in the thumbnail display.**
- **The shot marker function is not available during loop recording. When this function is not available, pressing this button displays "INVALID".**

Text Memo Recording Function

Text memo allows the user to insert a text memo with time code at any point during clip recording and playback.
This makes it possible to display only the thumbnails of the clips with text memos, or to display thumbnails and time codes of the text memo positions in order.

To add text memos

1 **Use the setting menu SW MODE screen to assign the TEXT MEMO function to a USER button.**

2 **During recording or playback, press the USER button to which the TEXT MEMO has been assigned.**
- "TEXT MEMO" is displayed and a text memo is inserted at the point the button is pressed.

<Note>
- **You can insert up to 100 text memos per clip.**
- **The text memo function is not available during loop recording, interval recording and one-shot recording. When this function is not available, pressing this button displays "INVALID".**

Normal and Variable Speed Playback

■Normal speed playback

The PLAY button provides monochrome playback through the viewfinder and colour playback on the LCD monitor. Connecting a color video monitor to the VIDEO OUT connector and SDI OUT connector at the same time will enable viewing of the playback video in color.

■Fast-forward/fast-reverse playback

The FF and REW buttons provide 32× and 4× fast playbacks and fast reverse playbacks. In stop mode, this function will play back video at 32× speed and in playback mode, it will play back video at 4× speed.

■Clip cue up

When playback is paused, the FF button locates the beginning of the next clip while maintaining the pause mode.
When playback is paused, the REW button locates the beginning of the current clip while maintaining the pause mode.

<Notes>

- **When a P2 card has just been removed or inserted or the MCR mode has just been engaged after turning on the power, it may take some time for the camera to read clip information. If this is the case, the viewfinder displays "UPDATING".**
- **If a P2 card is inserted while another P2 card is being played back, the clips on the inserted P2 card will not be played back. A P2 card inserted during playback will be recognised after playback ends.**
- **If you perform variable speed playback on a clip split across more than one P2 card, sound may disappear for a moment. This is not a fault.**
- **To play back a clip in a format that differs from REC FORMAT, set MCR FORMAT and the format of the clip to be played back.**

■Variable speed search

Pressing the PLAY button during playback starts variable playback search at 1× speed.
In this mode, the PAGE/VAR button provides the following playback speeds:

- -24×, -12×, -4×, -2×, -1×, -1/5×, 1/5×, 1×, 2×, 12×, 24×

Pressing the PLAY button returns the camera to normal playback.

■Frame-by-frame playback

In playback pause mode, the PAGE/VAR button provides frame-by-frame playback.
Frame-by-frame playback is performed at the following increments:

- 720P: 1/60 or 1/50 increments
- 720P/24PN, 30PN, 25PN: 1/24, 1/30, 1/25 increments
- 1080i, 480i, 576i: 1/30 or 1/25 increments

Chapter 4 Adjustments and Settings for Recording

Video and recording formats

Multiple HD/SD formats

This unit supports recordings in 20 HD and SD video formats. 1080i/720p HD recording uses the DVCPRO HD codec, while SD recording is performed in DVCPRO50/DVCPRO DV multi-codec.

■Video formats and codecs supported by this camera

Video format *1		Recording time *3	Recording codec
HD 59.94 Hz	1080/60i	64 minutes	DVCPRO HD
	1080/30P (over 60i)		
	1080/24P (over 60i)		
	1080/24PA (over 60i)		
	720/60P		
	720/30P(over 60i)		
	720/24P (over 60i)		
	720/30PN (Native)*2	160 minutes	
	720/24PN (Native)*2	128 minutes	
HD 50 Hz	1080/50i	64 minutes	
	1080/25P (over 50i)		
	720/50P		
	720/25P (over 50i)		
	720/25PN (Native)*2	128 minutes	
SD 59.94 Hz	480/60i	128 minutes (DVCPRO 50) 256 minutes (DVCPRO DV)	
	480/30P (over 60i)		
	480/24P (over 60i)		
	480/24PA (over 60i)		
SD 50 Hz	576/50i		
	576/25P (over50i)		

*1 24P and 30P indicate recording at 23.98P and 29.97P, respectively, while 60P and 60i indicate recording at 59.94P and 59.94i, respectively.

*2 Native mode is a mode that records only effective frames.

*3 The listed recording times are for four 16 GB P2 cards. Using only one 16 GB card will reduce the recording time to 1/4. In addition to the video format and codec, function setup and the number of cuts will affect the recording time.

Selecting recording signals in CAMERA MODE

CAMERA MODE allows you to record video shot with the camera.
Use the setting menus listed below to select recording signals.

Setting menu	Setting
SYSTEM FREQ (OTHER FUNCTIONS screen)	Set system frequency (59.94 Hz, 50 Hz). When this setting is changed, wait for the “TURN POWER OFF” message to appear to turn the power off and then turn it back on again.
REC FORMAT (RECORDING SETUP screen)	●Select formats and frame rates for recording and capture. ●Select combinations of recording formats (1080i, 720P, 480i/576i) and frame rates (60P/50P, 60i/50i, 30P/25P, 24P, 24PA). ●720P/30PN, 24PN and 25PN are native recording formats.
FRAME RATE (SCENE FILE screen)	Setting FILM CAM in the setting menu OPERATION TYPE (SCENE FILE screen) makes it possible to select the 720P mode capture frame rate. For details, see [Variable Frame Rate (VFR) Recording].
480i (576i) REC MODE (RECORDING SETUP screen)	In SD mode (480i, 576i) you can select DVCPRO50, DVCPRO or DV recording mode.
ASPECT CONV (CAMERA SETUP screen)	In SD mode (480i, 576i), select the aspect ratio for video.

Selecting MCR mode recording and playback signals

MCR mode allows you to record signals from the 1394 connector and play back P2 card clips.
Use the setting menus listed below to select recording or playback signals.

Setting menu	Setting
SYSTEM FREQ (OTHER FUNCTIONS screen)	Set system frequency. (59.94 Hz, 50 Hz) When this setting is changed, wait for the “TURN POWER OFF” message to appear to turn the power off and then turn it back on again.
MCR FORMAT (RECORDING SETUP screen)	●Select the format for recording signals input to the 1394 connector or format for playing back P2 card clips. ●Recording and playback of 1080i, 720P and 480i/576i are possible. ●720P/30PN, 720P/24PN and 720P/25PN enable playback of clips recorded at respective native frame rate. ●In a change from CAMERA MODE to MCR mode, the REC FORMAT recording format is retained.
480i (576i) MCR MODE (RECORDING SETUP screen)	●In SD mode (480i, 576i), you can select DVCPRO50, DVCPRO or DV for recording 1394 connector signals or as playback mode to play back P2 card clips. ●In a change from CAMERA MODE to MCR mode, the 480i (576i) REC MODE takes over.

Selecting video output

CAMERA MODE and MCR mode allow you to select video output format.
Use the setting menus listed below to select video output.

Setting menu	Setting
CMPNT/SDI SEL (OUTPUT SEL screen)	Select the signal format (720P, 1080i, 480i/576i) to be output from the COMPONENT OUT connector and SDI OUT connector.
SETUP (CAMERA SETUP screen)	Select the setup level for the 480i video signal. ●7.5%: 7.5% setup level for output only (0% for recording) ●0%: Setup 0% also for output and recording
DOWNCON MODE (DISPLAY SETUP screen)	Select the screen type to be output (COMPONENT OUT, SDI OUT when VIDEO OUT and CMPNT/SDI SEL is down converted to 480i or 576i) and down-converted in HD mode (1080i, 720P).

<Note>
The audio and video may be disturbed when the REC FORMAT and MCR FORMAT is changed in the setting menu SYSTEM FREQ, but this is not a camera malfunction.

List of recording and output formats

CAMERA mode

■SYSTEM FREQ (setting menu): 59.94 Hz

Format setting	Recording status			Output setting	Output status				
REC FORMAT	Capture and recording frame rate	Recording format	Audio recording channels	CMPNT/ SDI SEL	SDI OUT	SDI OUT AUDIO	COMPONENT OUT	VIDEO OUT	1394 output
1080i/ 60i	60i	DVCPRO HD 1080i/59.94i	4ch	720P	1080i/ 59.94i	4ch	1080i/59.94i	525i/ 59.94i	DVCPRO HD 1080i/59.94i
1080i/ 30P	30P over 60i			1080i	1080i/ 59.94i		1080i/59.94i		
1080i/ 24P	24P over 60i			480i	525i/ 59.94i		525i/59.94i		
1080i/ 24PA	24PA over 60i								
720P/ 60P	60P*1	DVCPRO HD 720P/59.94P	4ch	720i	720P/ 59.94P*1	4ch	720P/59.94P*1	525i/ 59.94i	DVCPRO HD 720P/59.94P*1
720P/ 30P	30P over 60i*1			1080i	1080i/ 59.94i		1080i/59.94i		
720P/ 24P	24P over 60i*1			480i	525i/ 59.94i		525i/59.94i		
720P/ 30PN	30P native recording at 30P capture*2	DVCPRO HD 720P/29.97P	4ch*5	720i	720P/ 59.94P*1	4ch*5	720P/59.94P*1	525i/ 59.94i	No output
720P/ 24PN	24P native recording at 24P capture*3	DVCPRO HD 720P/23.98P	4ch*5	1080i	1080i/ 59.94i		1080i/59.94i		
				480i	525i/ 59.94i		525i/59.94i		
480i/ 60i	60i	DVCPRO50, DVCPRO25, DV*4525i/ 59.94i	4CH or 2CH*6	720i	525i/ 59.94i	4ch*6	525i/59.94i	525i/ 59.94i	DVCPRO50, DVCPRO25, DV*4525i/59.94i
480i/ 30P	30P over 60i			1080i					
480i/ 24P	24P over 60i			480i					
480i/ 24PA	24PA over 60i								

■SYSTEM FREQ (setting menu): 50 Hz

Format setting	Recording status			Output setting	Output status				
REC FORMAT	Capture and recording frame rate	Recording format	Audio recording channels	CMPNT/ SDI SEL	SDI OUT	SDI OUT AUDIO	COMPONENT OUT	VIDEO OUT	1394 output
1080i/ 50i	50i	DVCPRO HD 1080i/50i	4ch	720P	1080i/ 50i	4ch	1080i/50i	625i/ 50i	DVCPRO HD 1080i/50i
1080i/ 25P	25P over 50i			1080i	1080i/ 50i		1080i/50i		
				576i	625i/ 50i		625i/50i		
720P/ 50P	50P*7	DVCPRO HD 720P/50P	4ch	720i	720P/ 50P*7	4ch	720P/50P*7	625i/ 50i	DVCPRO HD 720P/50P*7
720P/ 25P	25P over 50P*7			1080i	1080i/ 50i		1080i/50i		
				576i	625i/ 50i		625i/50i		
720P/ 25PN	25P native recording at 25P capture*8	DVCPRO HD 720P/25P	4ch*9	720P	720P/ 50P*7	4ch*9	720P/50P*7	625i/ 50i	No output
				1080i	1080i/ 50i		1080i/50i		
				576i	625i/ 50i		625i/50i		
576i/ 50i	60i	DVCPRO50, DVCPRO25, DV*4625i/50i	4CH or 2CH*6	720P	625i/ 50i	4ch*6	625i/50i	625i/ 50i	DVCPRO50, DVCPRO25, DV*4625i/50i
576i/ 25P	25P over 50i			1080i					
				576i					

*1 In FILM CAM mode, this means 12P to 60P capture over 60P depending on FRAME RATE menu setting.
*2 In FILM CAM mode, this means 30P native recording at 12P to 60P capture depending on FRAME RATE menu setting.
*3 In FILM CAM mode, this means 24P native recording at 12P to 60P capture depending on FRAME RATE menu setting.
*4 Select DVCPRO50, DVCPRO or DV according to 480i (576i) REC MODE.
*5 Audio is not recorded or output for recordings other than 30P native recording at 30P capture and 24P native recording at 24P capture.
*6 In the 25M REC CH SEL menu, select 4CH in DVCPRO50 mode and 2H/4CH in DVCPRO DV mode.
*7 In FILM CAM mode, this means 12P to 50P capture over 50P depending on FRAME RATE menu setting.
*8 In FILM CAM mode, this means 25P native recording at 12P to 50P capture depending on FRAME RATE menu setting.
*9 Audio is not recorded or output for recordings other than 25 native recording at 25P capture.

List of recording, playback and output formats

MCR mode (playback and recording of 1394 input)

■SYSTEM FREQ (setting menu): 59.94 Hz

Format setting	Recording status		Output setting	Output status				
MCR FORMAT	Recording and playback format	Recording and playback audio channel	CMPNT/ SDI SEL	SDI OUT	SDI OUT AUDIO	COMPONENT OUT	VIDEO OUT	Playback of 1394 output
1080i/60i	DVCPRO HD 1080i/59.94i	4ch	720P	1080i/ 59.94i	4ch	1080i/59.94i	525i/ 59.94i	DVCPRO HD 1080i/59.94i
			1080i	1080i/ 59.94i		1080i/59.94i		
			480i	525i/ 59.94i		525i/59.94i		
720P/60P	DVCPRO HD 720P/59.94P	4ch	720P	720P/ 59.94P	4ch	720P/59.94P	525i/ 59.94i	DVCPRO HD 720P/59.94P
			1080i	1080i/ 59.94i		1080i/59.94i		
			480i	525i/ 59.94i		525i/59.94i		
720P/30PN	DVCPRO HD 720P/59.94P*1*2	4ch*5	720P	720P/ 59.94P*1*2	4ch*5	720P/59.94P*1*2	525i/ 59.94i*1	DVCPRO HD 720P/59.94P*2
			1080i	1080i/ 59.94i*1		1080i/59.94i*1		
			480i	525i/ 59.94i*1		525i/59.94i*1		
720P/24PN	DVCPRO HD 720P/59.94P*1*3	4ch*5	720P	720P/ 59.94P*1*3	4ch*5	720P/59.94P*1*3	525i/ 59.94i*1	DVCPRO HD 720P/59.94P*2
			1080i	1080i/ 59.94i*1		1080i/59.94i*1		
			480i	525i/ 59.94i*1		525i/59.94i*1		
480i/60i	DVCPRO50, DVCPRO25, DV*6525i/59.94i	4CH, or 2CH *7	720P	525i/ 59.94i	4ch*7	525i/59.94i	525i/ 59.94i	DVCPRO50, DVCPRO25, DV*6525i/59.94i
			1080i					
			480i					

■SYSTEM FREQ (setting menu): 50 Hz

Format setting	Recording status		Output setting	Output status				
MCR FORMAT	Recording and playback format	Recording and playback audio channel	CMPNT/ SDI SEL	SDI OUT	SDI OUT AUDIO	COMPONENT OUT	VIDEO OUT	Playback of 1394 output
1080i/50i	DVCPRO HD 1080i/50i	4ch	720P	1080i/50i	4ch	1080i/50i	625i/ 50i	DVCPRO HD 1080i/50i
			1080i	1080i/50i		1080i/50i		
			576i	625i/50i		625i/50i		
720P/50P	DVCPRO HD 720P/50P	4ch	720P	720P/50P	4ch	720P/50P	625i/ 50i	DVCPRO HD 720P/50P
			1080i	1080i/50i		1080i/50i		
			576i	625i/50i		625i/50i		
720P/25PN	DVCPRO HD 720P/25P*1*4	4ch*5	720P	720P/50P*1*4	4ch*5	720P/50P*1*4	625i/ 50i*1	DVCPRO HD 720P/50P*4
			1080i	1080i/50i*1		1080i/50i*1		
			576i	625i/50i*1		625i/50i*1		
576i/50i	DVCPRO50, DVCPRO25, DV*6625i/50i	4CH, or 2CH*7	720P	625i/50i	4ch*7	625i/50i	625i/ 50i	DVCPRO50, DVCPRO25, DV*6625i/50i
			1080i					
			576i					

*1 1394 input cannot be recorded and the output produces a black screen.
*2 Playback is converted to over 60P using a 2:2 pulldown.
*3 Playback is converted to over 60P using a 2:3 pulldown.
*4 Playback is converted to over 50P using a 2:2 pulldown.
*5 Clips recorded without sound are played back without sound.
*6 Format will be any of DVCPRO50, DVCPRO or DV, depending on 480i (576i) MCR mode.
*7 4CH for DVCPRO50, and 2CH or 4CH for DVCPRO DV.

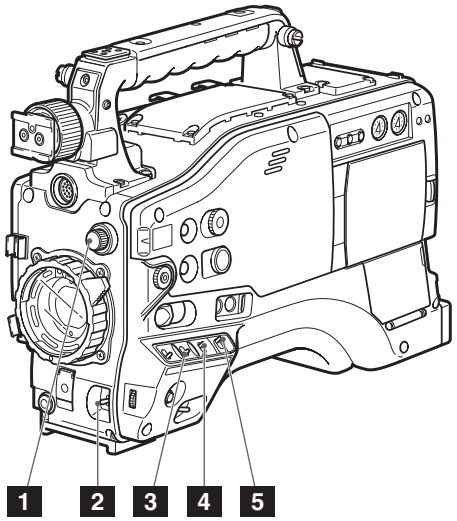
Adjusting the White balance and Black Balance

To record high-quality video with the AG-HPX500P/E, the black and white balances must be adjusted according to conditions.
For higher quality, it is recommended that the adjustments should be made in this order AWB (white balance adjustment) → ABB (black balance adjustment) → AWB (white balance adjustment).

Adjusting the White Balance

Whenever light conditions change, the white balance must be readjusted.
To adjust the white balance, follow the steps below.

1 **Set the switches as illustrated below.**



1 **ND FILTER control**
This control adjusts the amount of light entering the CCD.

2 **AUTO W/B BAL switch**
Use for automatic control of white balance.

3 **GAIN selector switch**
Normally set to 0 dB. If this is too dark, adjust gain as necessary.

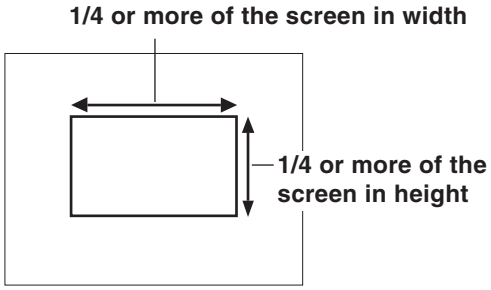
4 **OUTPUT selector switch**
Set to CAM.

5 **WHITE BAL switch**
Set to A or B.

2 **Adjust the ND FILTER control according to the light conditions.**
For examples of ND FILTER adjustments, see [Shooting and Recording/Playback Functions Section].

3 **Place a white pattern at a point where the light conditions match those for the light source of the subject. Then zoom-in on the white pattern so that white colour appears in the screen.**
- A white object (cloth or wall) may be used instead of a white pattern. The illustration below shows the required size for the white space.

<Notes>
- **Do not include a high-intensity spot in the screen.**
- **The white object must appear at the center of the screen.**



4 **Adjust the lens iris.**

5 **Turn the AUTO W/B BAL switch toward [AWB] and release it.**
- The switch returns to the central position with the white balance automatically adjusted.

6 **During an adjustment, the viewfinder displays the following message:**

7 **The adjustment will take effect in a few seconds, and the following message will appear:**

- The adjusted value is automatically stored in the selected memory (A or B).

8 **If the subject's colour temperature is lower than 2300K or higher than 9900K the following message appears:**

- If the arrow points down (↓) the actual colour temperature is lower than the temperature indicated. If the arrow points up (↑) the actual temperature is higher than the temperature indicated.

When you have no time to adjust the white balance

Position the WHITE BAL switch at [PRST].

When the white balance has not been automatically adjusted

When the white balance has not been successfully adjusted, the viewfinder displays an error message. If one of the error messages listed below appears, take the appropriate steps, then adjust the white balance again.
If the error message appears after repeated readjustments, the interior of the unit must be inspected. For more information, contact your distributor.

Error message	Description	Remedies
AWB NG	The colour temperature is too high.	Select an appropriate filter.
AWB NG	The colour temperature is too low.	Select an appropriate filter.
LOW LIGHT	There is insufficient light.	Increase the light level or gain.
LEVEL OVER	There is too much light.	Decrease the light level or gain.
CHECK FILTER	The FILTER control is displaced.	Check the FILTER control.
TIME OVER	AWB was not completed within the time allowed.	Shooting conditions may be unstable. If flicker occurs, press the shutter and readjust the AWB under stable conditions.

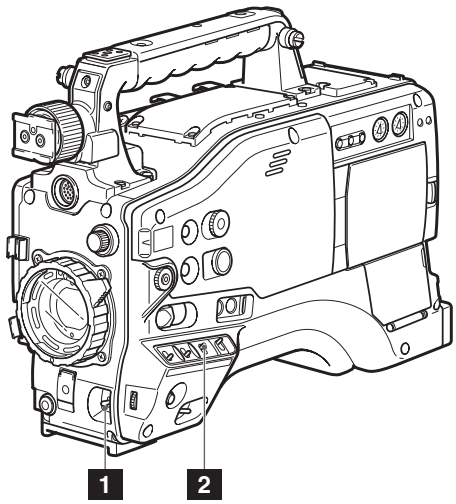
Viewfinder displays related to white balance

See [Viewfinder Screen Status Displays].

Adjusting the Black Balance

The black balance must be adjusted when:
- You use your AG-HPX500P/E the first time.
- Your AG-HPX500P/E has not been used for some time.
- The ambient temperature has changed substantially.
- The gain switchover value has been changed.

1 Set the switches as illustrated below.



1 AUTO W/B BAL switch
Use for automatic control of white balance.

2 OUTPUT selector switch
Set to CAM.

2 Tilt the AUTO W/B BAL switch so that it is positioned at [ABB], then release it.

- The switch returns to the central position with the black balance automatically adjusted.

3 During adjustment, the viewfinder displays the following message:

<Note>
During adjustment, the lens iris automatically becomes CLOSE.

4 The adjustment will take effect in a few seconds and the following message will appear:

- The adjusted value is automatically stored in the memory.

<Notes>
- **Ensure that the lens connector is connected and the lens iris is CLOSE.**
- **During a black balance adjustment, light is automatically cut off.**
- **During a black balance adjustment, the gain switchover circuit is automatically switched. The viewfinder screen may flicker and/or display noise; this is not a failure.**
- **Turning the AUTO W/B BAL switch toward ABB again during automatic adjustment of the black balance ("ABB ACTIVE" is displayed in the viewfinder) will cancel adjustment.**
  If automatic adjustment is cancelled, the value in effect before automatic adjustment will be used.

Retaining black balances

Each value in memory is retained even if the video camera-recorder is turned off.

Setting the Electronic Shutter

Follow the steps below.

Shutter Modes

The table below shows the shutter modes and speeds for the electronic shutter provided in your AG-HPX500P/E.

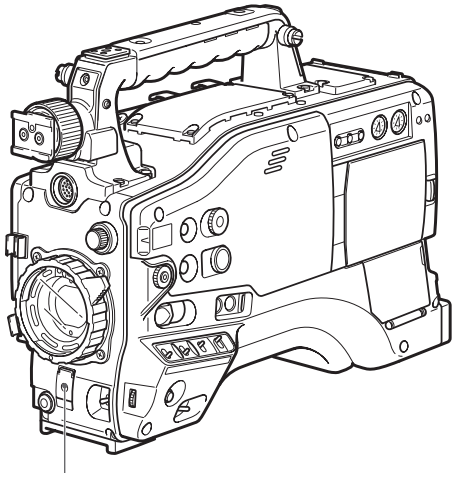
Mode	Shutter speed	Application
Normal	POSITIONS 1-6	Used to capture clear images of a fast-moving subject
SYNCHRO SCAN	Range of 60.0 Hz to 249.8 Hz (60i) Range of 30.0 Hz to 248.8 Hz (30P)	Used to reduce the effect of horizontal lines when shooting a monitor screen that has a vertical scanning frequency of more than 59.94 Hz

<Note>

- **In any mode, the higher the shutter speed the lower the sensitivity of the camera.**
- **When the iris is automatically adjusted, the higher the shutter speed the larger the iris, and the shorter the depth of focus.**

Setting the Shutter Mode and Speed

1 Press the SHUTTER switch, positioned at [ON], towards [SEL].



SHUTTER switch

2 **Once more, press the SHUTTER switch towards [SEL]. Repeat this switchover until the desired mode or speed appears in the viewfinder screen.**

- If all modes and speeds are available, the display changes in the following order:

60 Hz mode

For 60i and 60P recording

S/S → 1/15 → 1/30 → 1/100 → 1/120 → 1/250 → 1/500 → 1/1000 → 1/2000

For 30P recording

S/S → 1/15 → 1/30 → 1/60 → 1/120 → 1/250 → 1/500 → 1/1000

For 24P recording (excluding 720P/24P and 720P/24PN)

S/S → 1/24 → 1/60 → 1/120 → 1/250 → 1/500 → 1/1000

For 24P recording (at 720P/24P or 720P/24PN)

S/S → 1/12 → 1/24 → 1/60 → 1/120 → 1/250 → 1/500 → 1/1000

50 Hz mode

For 50i and 50P recording

S/S → 1/12 → 1/25 → 1/60 → 1/120 → 1/250 → 1/500 → 1/1000 → 1/2000

For 25P recording

S/S → 1/12 → 1/25 → 1/50 → 1/60 → 1/120 → 1/250 → 1/500 → 1/1000

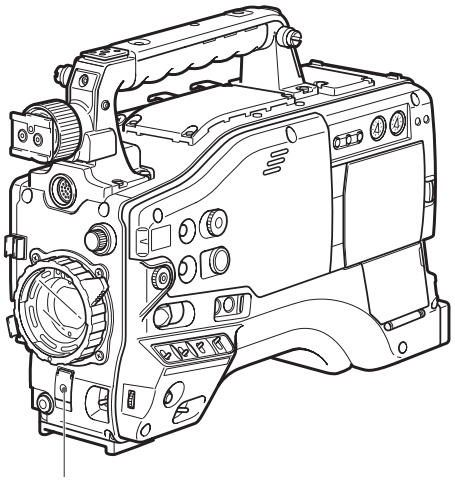
Viewfinder displays relating to the shutter

See [Viewfinder Screen Status Displays].

Placing the Camera-recorder in SYNCHRO SCAN Mode

To place the camera-recorder in SYNCHRO SCAN mode, follow the steps below.

1 **Press the SHUTTER switch positioned at [ON] towards [SEL], to place the camera-recorder in SYNCHRO SCAN (S/S) mode.**



SHUTTER switch

2 **In SYNCHRO SCAN mode, the speed can be switched seamlessly between 1/60.0 and 1/249.8 seconds, using the JOG dial button. (Speed switchover is enabled in 60i mode.)**

Range of variation in each mode

■59.94 Hz mode

- 60P/60i mode: 1/60.0 to 1/249.8
- 30P/30PN mode: 1/30.0 to 1/249.8
- 24P/24PA/24PN mode: 1/24.0 to 1/249.8
- FILM CAM mode*: 10.0d to 350.0d

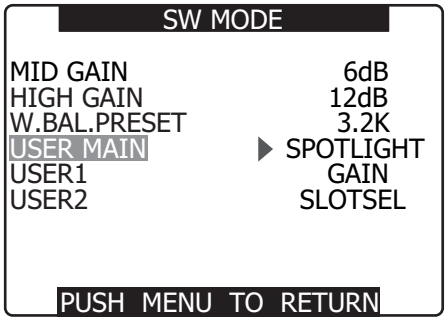
■50 Hz mode

- 50P/50i mode: 1/50.0 to 1/249.9
- 25P/25PN mode: 1/25.0 to 1/248.9
- FILM CAM mode*: 10.0d to 350.0d

* Setting FILM CAM in the OPERATION TYPE item in the setting menu SCENE FILE screen enables setting and display in opening.

Assigning functions to USER buttons

The USER MAIN, USER1, and USER2 buttons can be assigned user-selected functions.
Use the menu options USER MAIN, USER1, and USER2 to assign functions to respective button. Select these items from the setting menu SW MODE screen.



Selectable Functions

- **REC CHECK:** Assigns recording check.
- **SPOTLIGHT:** Assigns auto iris control on/off for spotlight.
- **BACKLIGHT:** Assigns auto iris control for backlight compensation.
- **BLACKFADE:** Assigns blackfade.
- **WHITEFADE:** Assigns whitefade.
- **GAIN 18dB:** Assigns a gain increase of 18 dB.
- **TEXT MEMO:** Assigns text memo recording.
- **SLOT SEL:** Assigns P2 card slot selection.
- **SHOT MARK:** Assigns shot marker function.
- **LVL METER:** Assigns channel level indicator function.
- **MARKER:** Assigns the center marker indicator function.
- **LCD REV:** Assigns the function that flips the LCD image vertically and horizontally.

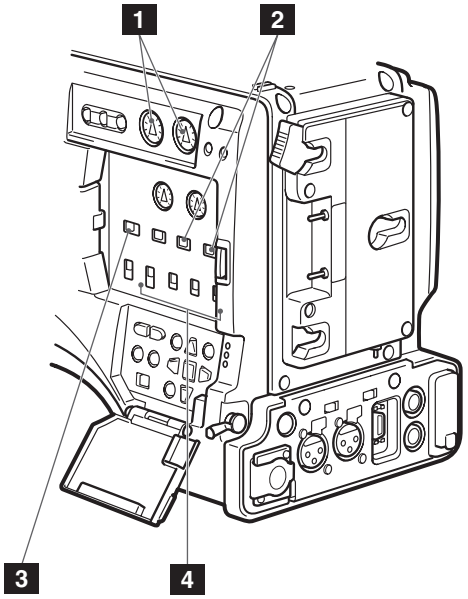
<Note>
The default settings are listed below.
USER MAIN: SHOT MARK
USER1: BACK LIGHT
USER2: LUV METER

Selecting Audio Input Signals and Adjusting Recording Levels

This AG-HPX500P/E supports independent four-channel audio recording in any format (HD or SD). When the AUDIO SELECT CH1/CH2 switch is positioned at [AUTO], the recording levels for Audio Channels 1 and 2 are automatically adjusted. To manually adjust the recording levels, position the switch at [MAN]. Note that the recording levels for Audio Channels 3 and 4 are selected through a menu option.

Selecting Audio Input Signals

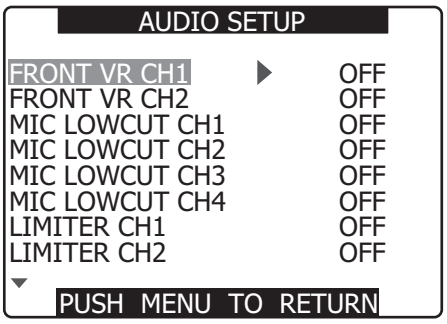
The input signals to be recorded on Audio Channels 1, 2, 3, and 4 are selected with the AUDIO IN switch. For more information, see [Audio (input) Function Section].



1 AUDIO LEVEL CH1/CH2 controls
2 AUDIO SELECT CH1/CH2 switch
3 MONITOR SELECT CH1/3/ST/CH2/4 selector switch
4 AUDIO IN switch

Your AG-HPX500P/E is factory-set to perform no recording on Audio Channels 3 and 4 in the DVCPRO and DV formats. To enable four-channel recording, the menu option 25M REC CH SEL must be set to “4CH”.
<Note>
For details on switch settings and the input system, see [AUDIO IN switches].

Use the AUDIO SETUP screen in the setting menu to make detailed audio settings.



Adjusting Recording Levels

To adjust the recording levels for Audio Channels 1 and 2, follow the steps below.

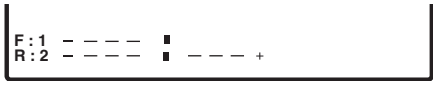
1 Position the MONITOR SELECT CH1/2 / CH3/4-selector switch at CH1/2 so that the audio level meter on the display window will provide CH1 and CH2 indications. Ensure that the channel indications displayed in the window are 1 and 2.

- Whether to enable or disable the F. AUDIO LEVEL control must be preset through menu options FRONT VR CH1 and FRONT VR CH2. Note that this control is factory-disabled. The menu options are found in the MIC/AUDIO1 screen, which is accessible from the MAIN OPERATION page.

2 Position the AUDIO SELECT CH1/CH2 switch at [MAN].

3 While checking the audio channel level meter in the display window or the audio level meter in the viewfinder, adjust the AUDIO LEVEL CH1/CH2 control.

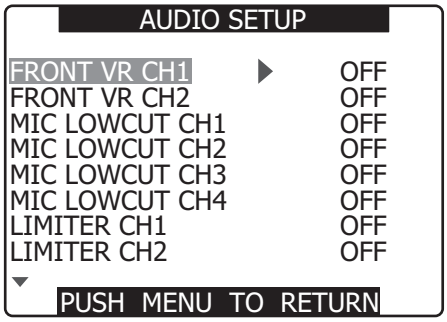
- Note that if the level exceeds the top bar (0 dB), the word OVER illuminates to show that the input level is excessive. The adjustment made in such a way that the maximum level will not reach the 0 dB bar.



When operating the AG-HPX500P/E without a sound recordist, it is recommended that the F. AUDIO LEVEL control should be used to adjust the audio level.
In advance, check the level meter in the viewfinder screen and use the F. AUDIO LEVEL control to adjust the appropriate audio channel so that no excessive audio signals will be admitted.

Selecting Function for the F. AUDIO LEVEL Control

- The F. AUDIO LEVEL control can be assigned the function of adjusting the recording level.
- Use the menu options FRONT VR CH1 and FRONT VR CH2 to determine whether or not to enable control of selected input signals using the F. AUDIO LEVEL control. Select these items from the setting menu AUDIO SETUP screen. →For more information, see [AUDIO SETUP screen].



CH3 and CH4 Recording Levels

Set the menu options AUTO LEVEL CH3 and AUTO LEVEL CH4 in the AUDIO SETUP screen of the setting menu to OFF to adjust the recording level with the AUDIO LEVEL CH3 and CH4 controls.

Setting Time Data

This camera records time data such as the time code, user bits, date and time (real time) data in the subcode area, VIDEO AUX area and in clip meta data files.

Time data overview

Time code

Use the TCG switch to select Rec Run or Free Run mode.

- Free Run: The time code advances constantly whether the camera is on or not just like time itself. Recording using a slave-locked time code input to the TC IN or 1394 connectors is also possible.
- Rec Run: The time code advances only during recording. This will enable continuation of time codes in previously recorded clips and when the power is turned off or new P2 cards are inserted to continue recording.

User bits

- There are two types of user bits. The user bits (UB) that are recorded in the subcode area and the user bits (VITC UB) that are recorded in the VIDEO AUX area.
- The subcode user bits enable the recording of user settings, time, date, time code and similar values, the frame rate data for camera capture, external input values (via TC IN or 1394 connector input).
- VITC user bits record the frame rate data of camera capture.
- The clip meta data user bit records the user bit values in the subcode area at start of recording.

■Date (real time)

- The built-in clock calculates the year, month, day and time from the internal clock to display on video in the LCD, viewfinder and VIDEO OUT and other video output.
- The internal clock is not only used to calculate the free run time code when the power is off and to set the user bit year, date and time, but also to set file creation dates when clips are recorded that determine the order of thumbnails and playback order.
- It is also used to generate clip meta data and UMID in the VIDEO AUX area.
  For details, see [Setting Date and Time of Internal Clock].

■Counter indication

- During recording this counter calculates the total time in hours, minutes and seconds from the last reset. Powering down or swapping a P2 card interrupts but does not stop counter value operation.
- The counter value is not displayed during playback.

Recording time codes and user bits

These values are recorded as listed below depending on system frequency and recording format.

MODE. SYSTEM FREQ	REC MODE/ MCR MODE	FRAME RATE (FILM CAM)	Subcode area time code	VIDEO AUX area time code (VITC)	Recorded time code frames	Output time code frames	Displayed time code frames	Subcode area user bits	VIDEO AUX area user bits (VITC UB)
59.94 Hz CAMERA mode	1080i/60i 1080i/30P	Not related	Depends on time code mode*1	Depends on time code mode*1	30	30	30/24 switchable *8	Depends on user bits mode*4	Locked to frame rate data
	1080i/24P 1080i24PA	Not related	Locked to non-drop frame rate*2	Locked to non-drop frame rate*2	30	30	30/24 switchable *8		
	720P/60P 720P/30P 720P/24P	12 to 60P (except at 24P)	Depends on time code mode*1	Depends on time code mode*1	30	30	30/24 switchable *8	Depends on user bits mode*4	Locked to frame rate data
		24P	Locked to non-drop frame rate*2	Locked to non-drop frame rate*2	30	30	30/24 switchable *8		
	720P/30PN	12P to 60P	Depends on time code mode*1	Depends on time code mode*1*7	30	30	Locked at 30	Depends on user bits mode*4	Locked to frame rate data
	720P/24PN	12P to 60P	Locked to non-drop frame rate	Locked to non-drop frame rate*2*7	24	30	Locked at 24		
	480i/60i 480i/30P	Not related	Depends on time code mode*1	Depends on time code mode*1	30	30	30/24 switchable *8	Depends on user bits mode*4	Locked to frame rate data
	480i/24P 480i/24PA	Not related	Locked to non-drop frame rate*2	Locked to non-drop frame rate*2	30	30	30/24 switchable *8		
59.94 Hz MCR mode (recording of 1394 input)	1080i/60i 720P/60P 480i/60i	Not related	Depends on time code mode*3	Records VIDEO AUX area time code input via 1394 regardless of setting	30	30	30/24 switchable *8	Depends on user bits mode*5	Records VIDEO AUX area user bits input via 1394 regardless of setting
	720P/30PN	Not related	Not recorded (Playback 30: frame)	Not recorded (Playback 24: frame)	—	– (Playback: 30)	— (Playback: locked at 30)	Not recorded	Not recorded (playback: frame rate data is converted and generated in synch with video pull-down)
	720P/24PN	Not related	Not recorded (playback 30: frame)	Not recorded (playback 30: frame)	—	– (Playback: 30)	— (Playback*9: 30/24 switchable)		
59 Hz CAMERA mode	1080i/50i 1080i/25P	Not related	*1	*1	25	25	Locked at 25	Depends on user bits mode	Locked to frame rate data
	720P/50P 720P/25P	12P to 50P							
	720P/25P	12P to 50P	*1*7	*1*7					
	576i/50i 576i/25P	Not related	*1	*1					
59 Hz MCR mode (recording of 1394 input)	1080i/50i 720P/50P 576i/50i	Not related	*3	Records VIDEO AUX area time code input via 1394 regardless of setting	25	25	Locked at 25	Depends on user bits mode*5	Records VIDEO AUX area user bits input via 1394 regardless of setting
	720P25PN	Not related	Not recorded	Not recorded	—	– (Playback: 30)	— (Playback: 25)	Not recorded	Not recorded (playback: frame rate data is converted and generated in synch with video pull-down)

*1 In Free Run mode, slaved to time code input to the TC IN connector.
*2 In Free Run mode, slaved to non-drop frame time code input to the TC IN connector.
*3 Setting F-FUN TC SAVE to 1394 in Free Run mode slaves it to the input from the 1394 connector, not to the TC IN connector input.
*4 Setting TC IN UB REG to ON in the setting menu slaves it to user bits input to the TC IN connector.
*5 Setting 1394 UB REG to ON in the setting menu slaves it to user bits input to the 1394 connector.
*6 When UB MODE is the FRM RATE, it is output at the same frame rate as that generated by VITC UB.
*7 Should the set capture frame rate differ from the recording frame rate, it is locked to Rec Run (not slaved)
*8 Only in FILM CAM mode. In VIDEO CAM mode, it is locked at 30 frames.
*9 Only in FILM CAM mode. In VIDEO CAM mode, it is locked at 24 frames.

Setting user bits

Use the setting menu UB MODE to select the user bits to record in the subcode area.

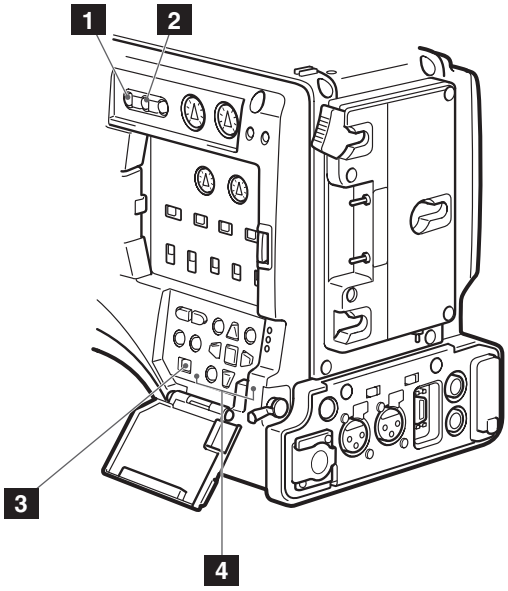
- **USER**
  Records internal user values.
  To set user values, set the TCG switch to SET to open the setting menu TC PRESET screen.
  Set values are retained after the power is turned off.
  For details, see [Entering UB user values].
- **TIME**
  Records the time calculated by the internal clock.
- **DATE**
  Records the year, month and day time digits from the internal clock.
- **TGG**
  Records the time code value.
- **FRM. RATE**
  Records the frame rate information of camera capture.
  A natively recorded clip is output at the same frame rate as the user bit in the VIDEO AUX area regardless of recorded values. Use this setting when a PC or other editing device is to use the user bit frame rate.
  For details, see [Frame Rate Information Recorded in User Bits].

- To slave lock to user bit input to the TC IN connector, set the setting menu TC IN UB REGEN to ON.
- To slave lock to user bit input to the 1394 connector during recording of input from the 1394 connector in MCR MODE, set the setting menu 1394 UB REGEN to ON.
- In slave mode, the UB indicator is highlighted. In this status, the UB MODE setting is disabled.
- A slave relationship, once started, continues even after input from the TC IN or 1394 connector ends. However, the following events release a user bit slave status.
  - When the setting menu TC IN UB REGEN or 1394 UB REGEN is set to OFF.
  - UB PRESET is performed
  - CAMERA/MCR mode switching
  - The power is turned off

The internal user value retains the slave values even after slave release.

Setting the User Bits

The user bits allow information, including memos that use up to eight-digit hexadecimal numbers (date and time), to be recorded in the Subcode area.



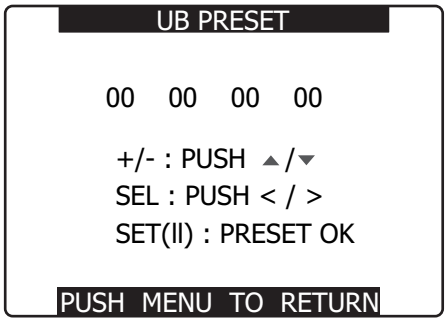
1 HOLD button
2 COUNTER button
3 TCG switch
4 CURSOR and SET buttons

1 Set the COUNTER button to UB.

2 Position the TCG switch at [SET].

- When the left digit starts blinking you can change the value.

3 Use CURSOR buttons to set the user bits.



▶ button: Shifts the target (highlighted) digit to the right.
◀ button: Shifts the target (highlighted) digit to the left.
▲ button: Increases the highlighted number by one.
▼ button: Decreases the highlighted number by one.

4 **Press the SET button, check the set user bit value and position the TCG switch at F-RUN or R-RUN.**

<Note>
Changing the TCG switch setting without pressing the SET button disables the set value.

5 **Open the setting menu RECORDING SETUP screen and set the menu option UB MODE to USER.**

<Note>
When the TCG switch is positioned at [SET], thumbnails cannot be manipulated.

Retaining the user bits

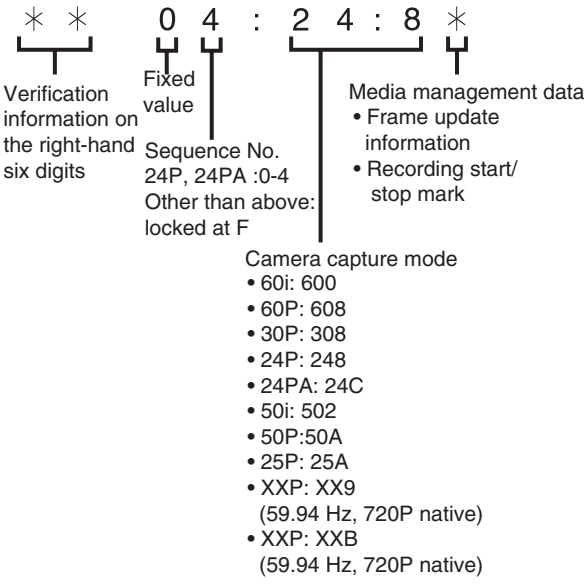
The data set for the user bits are automatically saved and retained even if the video camera-recorder is turned off.

Frame rate information recorded in user bits

Video is captured at the frame rate set in the setting menu REC FORMAT (setting menu FRAME RATE in FILM CAM 720P) and the recorded video information is recorded in the user bits to allow use in an editing device (PC editing software).
In CAMERA mode recording, this information is always recorded in the VIDEO AUX area user bits.
Setting the setting menu UB MODE to FRM. RATE, records the information also to the user bits in the subcode area. In playback of clips recorded at 720P native, the same frame rate information as that obtained in playing back the user bits in the VIDEO AUX area is also output to the user bits in the subcode area.

■Frame rate information

Frame rate, video pull-down and time code user bits are related as described below.



When 1080i, 480i or 576i

Frame rate: 24P over 60i (2:3)

First field of updated frame rate

Time code digit

00	01	02	03	04	05	06	...	23	24	25	26	27	28	29

Video

Ao	Ae	Bo	Be	Bo	Ce	Co	De	Do	De	Ao	Ae	Bo	Be	...	Co	De	Do	De	Ao	Ae	Bo	Be	Bo	Ce	Co	De	Do	De

Sequence No.

0	1	2	3	4	0	1	...	3	4	0	1	2	3	4

Updated frame information

10	10	01	01	00	10	10	...	01	00	10	10	01	01	00

Frame rate: 24PA over 60i (2:3)

Time code digit

00	01	02	03	04	05	06	...	23	24	25	26	27	28	29

Video

Ao	Ae	Bo	Be	Bo	Ce	Co	Ce	Do	De	Ao	Ae	Bo	Be	...	Co	Ce	Do	De	Ao	Ae	Bo	Be	Bo	Ce	Co	Ce	Do	De

Sequence No.

0	1	2	3	4	0	1	...	3	4	0	1	2	3	4

Updated frame information

10	10	01	00	10	10	10	...	00	10	10	10	01	00	10

Frame rate: 30P over 60i (2:2)
25P over 50i (2:2)

Time code digit

00	01	02	...

Video

Ao	Ae	Bo	Be	Co	Ce	...

Updated frame information

10	10	10	...

720P mode

Frame rate: 24PA over 60i (2:3)

Updated frame

Time code digit

00	01	02	03	04	05	06	...	23	24	25	26	27	28	29

Video

A	A	B	B	B	C	C	D	D	D	A	A	B	B	...	C	D	D	D	A	A	B	B	B	C	C	D	D	D

Updated frame information

10	10	01	01	00	10	10	...	01	00	10	10	01	01	00

Frame rate: 24P over 60i (2:2)
25P over 50i (2:2)

Time code digit

00	01	02	...

Video

A	A	B	B	C	C	...

Updated frame information

10	10	10	...

Setting the Time Code

1 **Switch the menu option TC MODE to DF or NDF using the menus. (In 59.94 Hz mode)**

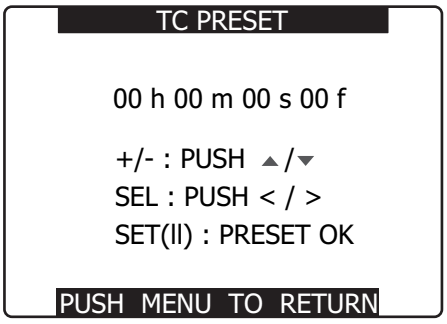
- Select the menu option TC MODE from the setting menu RECORDING SETUP screen.
- Select DF to advance time code in drop frame mode and NDF in non-drop frame mode. Note that 24P, 24PA and 24PN are always recorded in NDF mode.

2 **Use the COUNTER button to switch to time code display**

3 **Position the TCG switch at [SET].**

4 **Use the CURSOR buttons to set the time code.**

- The time code setting range extends from 00:00:00:00 to 23:59:59:29.



▶ button: Shifts the target (highlighted) digit to the right.
◀ button: Shifts the target (highlighted) digit to the left.
▲ button: Increases the highlighted number by one.
▼ button: Decreases the highlighted number by one.
II (SET) button: Use to confirm set time code value.

5 **Change the position of the TCG switch.**

- [F-RUN] steps the time code in free run mode, and [R-RUN] set it in recording run mode.

<Notes>

- **When 24P or 24PA is used, the time code is adjusted every 5 frames. Adjust a multiple of four for 24PN, an even number for 30PN and make sure that the seconds plus the frame value makes an even number. The time code cannot be set during recording.**
- **When the TCG switch is positioned at [SET], thumbnails cannot be manipulated.**

Time code function during battery replacement

Even during battery replacement the backup mechanism keeps the time code generator functioning for a considerable time (about one year).

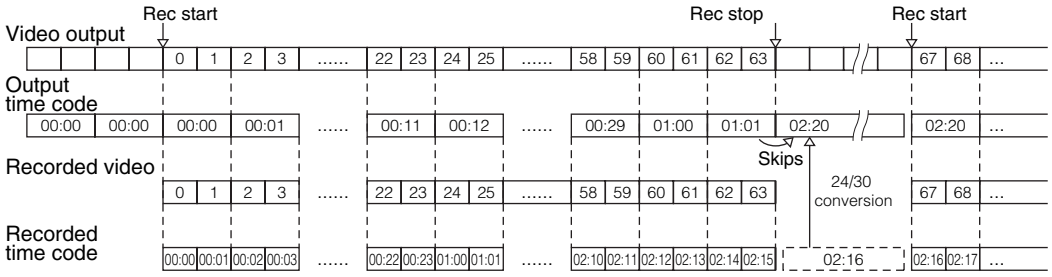
<Note>

When the POWER switch has been switched ON → OFF → ON, the backup accuracy of the time code in free run mode is about ±2 frames.

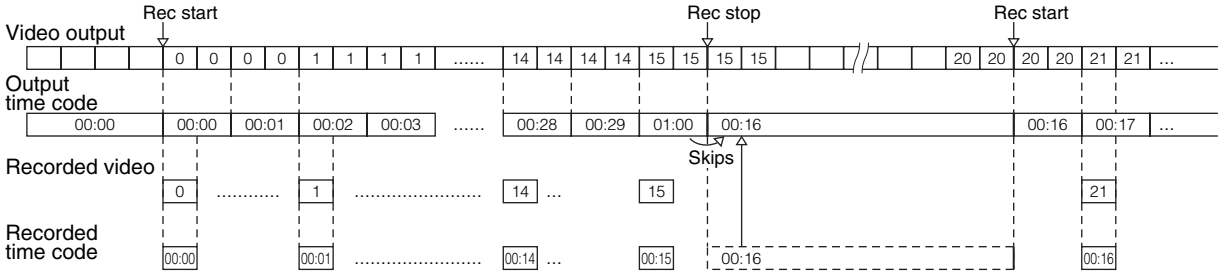
Time code in 720P native mode

- At 24PN, recording is performed at 24 frames and output uses a 2:3 pull-down scheme to produce 30 frames.
- At a frame rate (capture frame rate) of 24P the speed of recording and the output time code matches actual time, but not at any speed other than 24P. (Example: at 60P recording progresses at 60/24 speed)
- Then the camera operates in Rec Run mode and the time code output at start of recording matches the recording time code.
- This is also the case for other than 30P capture at 30PN and other than 25P capture at 25PN.

24PN recording at 60P capture



30 recording at 15P capture



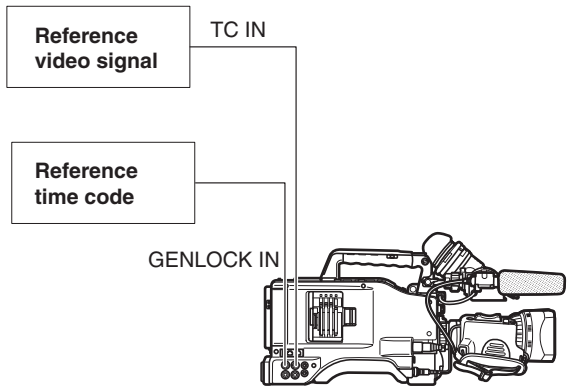
Externally Locking the Time Code

The time code generator built into your AG-HPX500P/E may be locked with an external generator. It is also possible to lock an external time code generator with the internal generator.

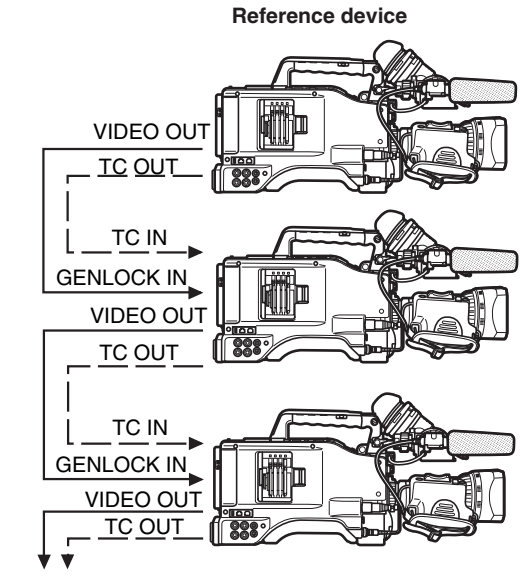
Connections for externally locking the time code (examples)

As illustrated, both the reference video signals and the time code must be input.

■Example 1: Locking the time code with external signals



■Example 2: Connecting two or more AG-HPX500P/Es with one another, with one being used as the reference device.



<Note>
On all connected devices, set the setting menu TC VIDEO SYNCRO to TC IN, GL SELECT to COMPOSITE and CMPNT/SDI SEL to 720P.

To externally lock the time code

Follow the steps below.

1 **Turn on the POWER switch.**

2 **Position the TCG switch at [F-RUN].**

3 **Set the COUNTER button to TC.**

4 **Supply a phase-relationship reference time code (that conforms to the time code requirements) and reference video signals to the TC IN and GENLOCK IN connectors, respectively.**

- Now the built-in time code generator is locked with the reference time code.
- When locked to an external time code generator, the time code is at all times locked to the external time code, which is displayed as a highlighted value on the counter indicator. Do not engage the recording mode during the few seconds it takes for the sync generator to stabilize.
- Once a slave relationship is established, the TC IN and GENLOCK IN connectors stay in slave status. Note that the following events release slave status.
  - When TC PRESET is performed
  - When CAMERA mode and MCR mode are switched
  - The power is turned off
  - The time code mode is switched
  - The TCG switch is set to R-RUN

Setting the user bits when the time code is externally locked

To externally lock user bits, set the setting menu TC IN UB REGEN to ON.
Regardless of an F-RUN or R-RUN setting of the TCG switch, the time code is slaved to user bit values input to the TC IN connector.
For details, refer to [Setting the User Bits] and [Setting the Time Code].

To unlock the externally locked time code

Discontinue external time code supply, then position the TCG switch at [R-RUN].

Cautions in switching the power source from battery to external power supply

Connect the DC IN socket with the external power supply before removing the battery pack, in order to keep the time code generator energized. If the battery pack is removed first, there is no guarantee that the time code will stay externally locked.

External synchronisation of the camera when the time code is externally locked

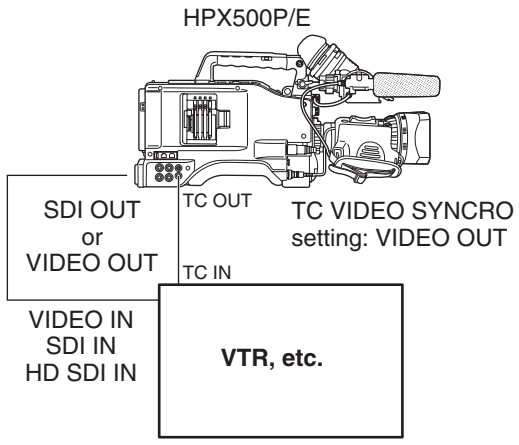
When the time code is externally locked, the reference video signals input through the GENLOCK IN connector gen-lock the camera.

<Notes>

- **To externally lock the AG-HPX500P/E, as the master device, with more than one unit, the mode must be the same as that of the camera. Note that in a system using both interlaced and progressive scanning, there may be breaks in the video and time code.**
- **Note that switching to MCR mode will disrupt GENLOCK synchronization resulting in loss of image stability.**
- **When the 24P or 24PA is selected and the time code is externally locked, be sure to input a non-drop frame time code. The time code cannot be externally locked when drop frame mode is selected. When the time code is externally locked, the video may be distorted, but this is because of the 5-frame adjustment and not a malfunction.**

Outputting the time code externally

To output time code from the camera's TC OUT connector to a VTR or other recording device in sync with camera picture or playback picture, set the setting menu TC VIDEO SYNCRO to VIDEO OUT.
Set also the setting menu GL SELECT to SDI or COMPOSITE to suit video output.



CTL Count Setting and Display

Pressing the COUNTER button to view the counter displays the counter value on the time code indicator in the LCD and in the viewfinder. The counter value is indicated in "Hour : Minute : Second* format.
The counter can display the total recording time but is not displayed during playback.
The recording CTL counter value is retained also when P2 cards are replaced and after a power down. At next power up, the counter starts from the value reached at the previous power down.

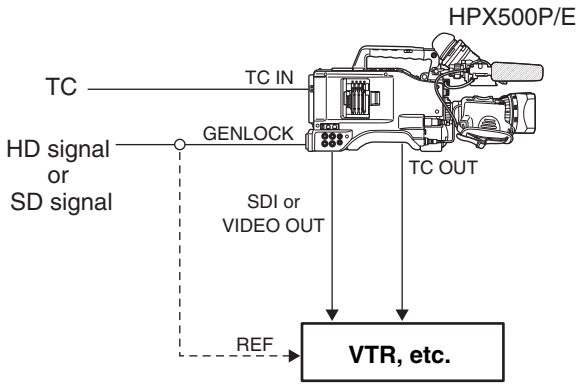
<Note>

Pressing the RESET button when the counter value is displayed resets the counter to 0.

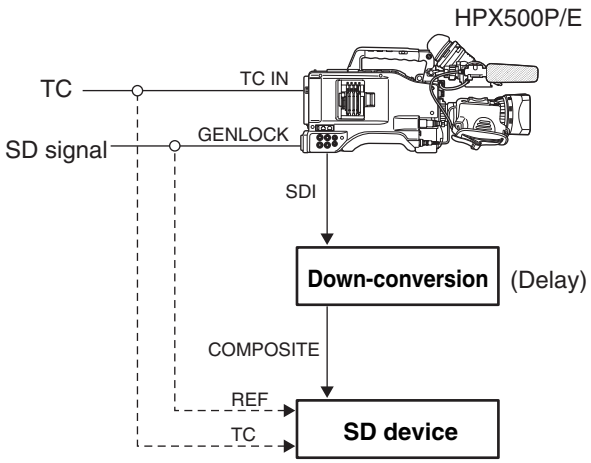
GENLOCK and time code input/output connection and setup

Camera operating conditions			Camera setup		GENLOCK input and camera output phase In phase: ❍ Out of phase: ×			
Recording format	Video and reference signal to be output externally	GENLOCK input	GL SELECT	GL PHASE	SDI OUT	VIDEO OUT	TC OUT	Connection diagram
1080i	SDI OUT (1080i)	1080i	SDI	Disabled	❍	×	❍	(1)
	VIDEO OUT		COMPOSITE	OFF	×	❍	❍	
				ON	×	▲ 90H delay	▲ 90H delay	—
	SDI OUT (1080i)	SD (480i, 576i)	SDI	OFF	❍	×	❍	(1)
				ON	▲ 90H advance	×	▲ 90H advance	(2)
	VIDEO OUT		COMPOSITE	Disabled	×	❍	❍	(1)
720P	SDI OUT (720P)	SD (480i, 576i)	SDI	OFF	❍	×	❍	(1)
				ON	▲ 120H advance	×	▲ 120H advance	(2)
	VIDEO OUT		COMPOSITE	Disabled	×	❍	❍	(1)
480i, 576i	SDI OUT (480i, 576i)	SD (480i, 576i)	SDI	Disabled	❍	×	❍	(1)
	VIDEO OUT		COMPOSITE	Disabled	×	❍	❍	

■Connection diagram (1)

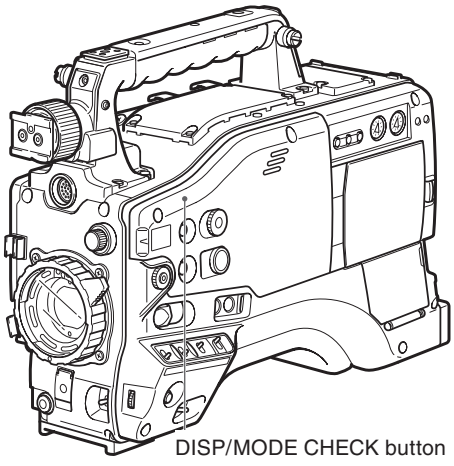


■Connection diagram (2)



Mode Check Screen Displays (MODE CHECK button function)

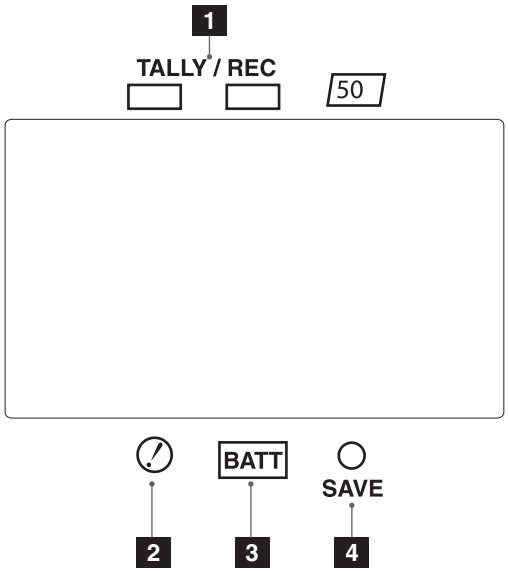
- The viewfinder can display a screen that allows you to check the settings and status of the AG-HPX500P/E.
- Hold down the DISP/MODE CHECK button in recording standby or during recording to display the settings of each shooting function, the list of functions assigned to USER buttons and all other information. Press again to return to the regular screen.
- Press the DISP/MODE CHECK button during recording standby or recording clears all displays. Press again to return to the regular display.


DISP/MODE CHECK button

Viewfinder Screen Status Displays

In addition to video images, the viewfinder displays lamps and text that indicate the settings and operating status of the AG-HPX500P/E, together with messages, a center marker, a safety zone marker and the camera ID.

Lamps in the Viewfinder Screen



The illustration above shows the AG-VF11G viewfinder. (For further information on the viewfinder, see the Operating Instructions supplied with the viewfinder.)

1 TALLY/REC (recording) Lamp
This lamp stays illuminated during recording, and starts blinking if any abnormal action occurs.
For more information, see [Warning System].

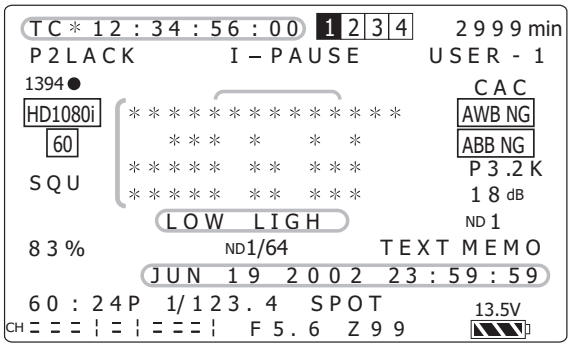
2 Abnormal Operating Status Warning Lamp
This lamp comes on when this unit is in any of the abnormal operating statuses specified through the menu options in the VF ! LED screen.
For statuses that activate the lamp, see the option in the section [VF ! LED screen].

3 BATT (battery) Lamp
This lamp starts blinking a few minutes before the battery charge starts to run out, and stays illuminated after the battery is completely flat. The battery should be replaced before it is nearly flat, so that operation will not be interrupted.
For more information, see [Warning System].

4 SAVE Lamp
This lamp lights when the SAVE switch is set to ON and the LCD is off.

Viewfinder Status Indication Layout

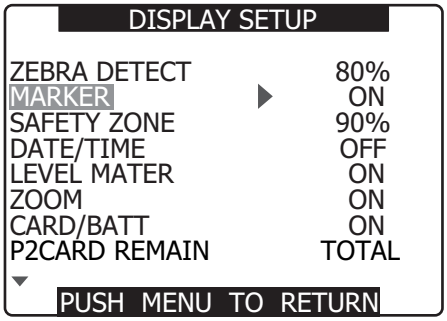
The indications are arranged as illustrated below.



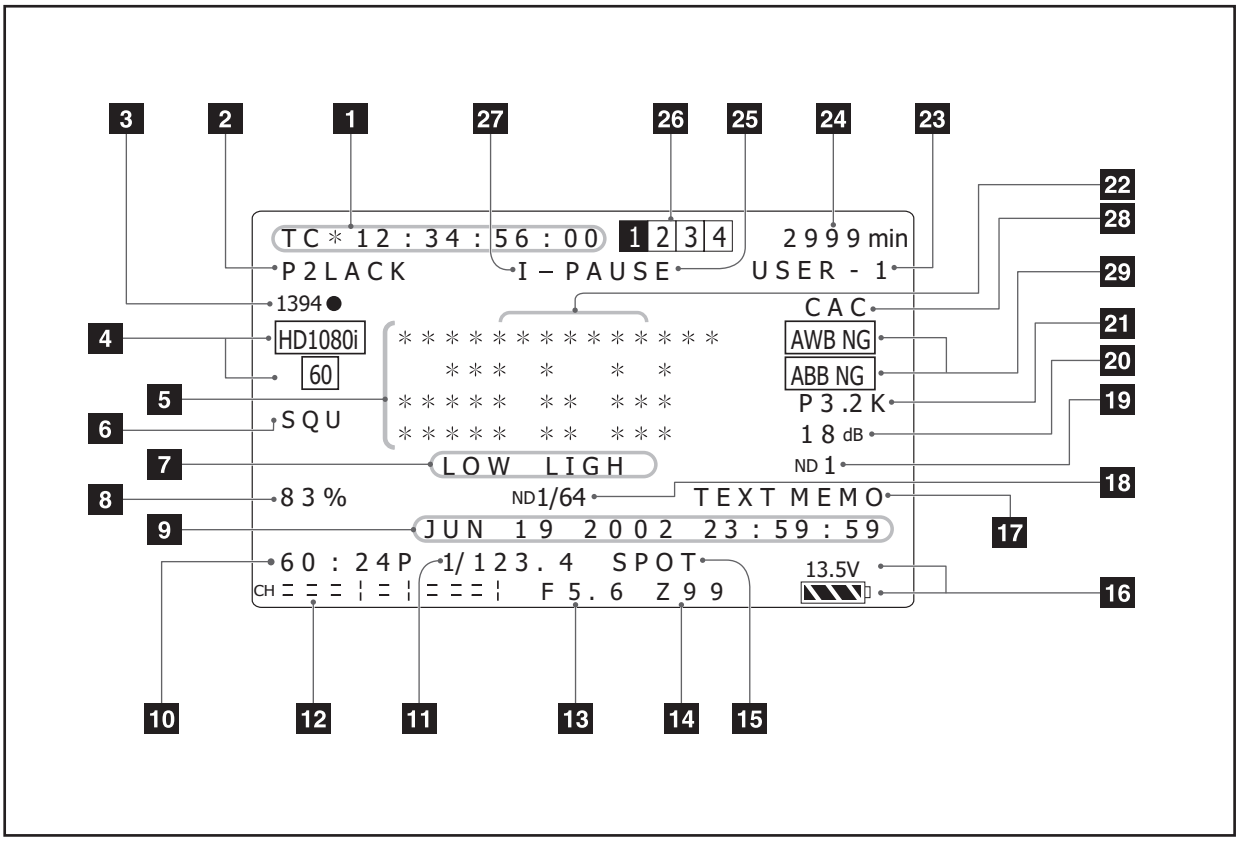
For more information, see the following pages:

Selecting Viewfinder Display Information

To select items in the viewfinder screen, open the DISPLAY SETUP screen and turn on or off each item or type.
Refer to the section [Using the menus].



Screen displays



1 Time code displays

Each time you press the COUNTER button, the display switches over to the following data (or no indication).

- **Not indicated:** Counter value (only in recording mode)
- **TC:** Time code value
  "TC*" is displayed when the time code value cannot be correctly read from 1394 connector input.
  The colon (:) between the seconds and the frames changes to a period (.) in drop frame mode.
- **tc:** Time code value (frame digits are indicated in 24/30 frame conversion: 59.94 Hz FILM CAM only)
  "tc*" is indicated when the time code value cannot be correctly read from 1394 connector input.
  The colon (:) between the seconds and the frames changes to a period (.) in drop frame mode.
- **UB:** User information
  "UB*" is indicated when the user bit value cannot be correctly read from 1394 connector input.
- **FR:** Frame rate information for recording
  - FR 60I: Standard (60i interlace) mode (60 fields/sec.)
  - FR 60P: 60P progressive mode (60 frames/sec.)
  - FR 30P: 30P progressive mode (30 frames/sec.)
  - FR 24P: 24P progressive mode (24 frames/sec.)
  - FR24PA: 24p advanced mode (24 frames/sec.)

  In FR24P and FR24PA modes, the last digit indicates the frame conversion sequence information.

2 Warnings

- : flashes when no P2 card is inserted or the card is write protected.
- **FULL:** Blinks when either there is no remaining capacity in the P2 card.
- **LACK:** Blinks in the loop rec mode when the remaining capacity of the P2 card is insufficient.
- : Lights when the battery for the internal clock is depleted.

3 Backup unit displays

- The status of the backup unit connected to the 1394 connector is displayed here.
- Nothing is displayed if in the setup menus, OTHER FUNCTIONS screen, 1394 CONTROL, you have selected “OFF”.
  - ●1394 ●: Recording
  - ●1394 ▮▮: Recording standby
  - ●1394 ⊠: The backup unit cannot be controlled.
  - ●1394: The backup unit is not connected.
  - ●1394— —: The backup unit is connected but is in a mode other than recording or recording standby.

4 Recording format and system frequency indication

- **Recording format**
  - HD1080i: Records in the 1080i DVCPRO HD format
  - HD720P: Records in the 720P DVCPRO HD format
  - 50M: Records in the 480i and 576i DVCPRO 50 format
  - 25M: Records in the 480i and 576i DVCPRO format
  - DV: Records in the 480i and 576i DV format
- **System frequency**
  - 60: 59.94 Hz
  - 50: 50 Hz

5 Information display

Following information is displayed depending on the situation.

- Performance of the auto white balance or the auto black balance
- Warning and error indication
- The functions allocated to the USER buttons are displayed while you hold down the MODE CHECK button.

6 Squeeze information

Appears when in the setup menus, CAMERA SETUP screen, ASPECT CONV, you have selected “SQUEEZE” (page 101) or when playing back images recorded in the squeeze mode.

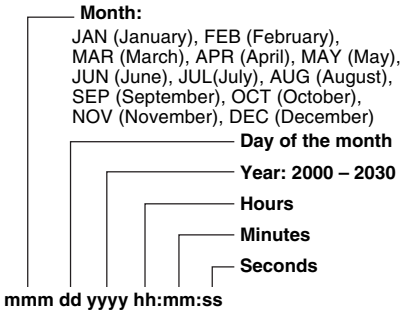
7 AWB error

- **LOWLIGHT:** Appears when the brightness level adjusted by the auto white balance is too low.

8 Marker luminance display

When markers are displayed, the brightness level around the center of the screen is indicated as 0% to 99%. “99%↑” appears if the percentage is over 99.

9 Calendar



10 Recording/playback frame rate display

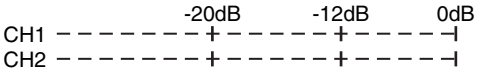
Apart from 720/30PN, 720/24PN, and 720/25PN, only the recording frame rate is displayed.
Example: 60:24P (Native recording and playback at 24P to 60P capture)
Playback applies a 2:3 pull-down to perform 24P over 60, indicating that a 24/60 speed slow playback is performed.

11 Shutter speed

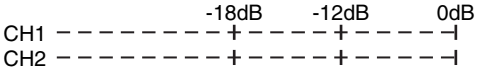
The shutter speed is displayed here.
The synchro scan function sets time (minutes) display in VIDEO CAM mode and shutter opening angle (degrees) in FILM CAM mode.

12 Audio level meter display

At a HEAD ROOM of -20 dB



At a HEAD ROOM of -18 dB



13 IRIS display

Displays F value.

14 Zoom position display

The zoom poison is displayed with Z00 (maximum wide-angle) - Z99 (maximum zoom).

15 Auto iris control displays

- **SPOT:** Auto iris control for spotlight
- **BACK:** Auto iris control for backlight compensation

Also appears when the lens is set to manual iris, but does not function.

16 Remaining battery charge

As the remaining battery charge drops, the display changes as follows: → → → → → When the battery has completely discharged, (□) blinks.

(When the AC adapter is being used, a display other than may appear: this is not a sign of malfunctioning.)

- **15.3V:** Battery voltage indication
  Indicates the current voltage for analog batteries.
- **XX%:** 10% to 99%
  Indicates the remaining battery level in % for digital batteries.
  This value is not indicated on the meter.
- **MAX:** Indicates that a digital battery is fully charged.
- **EMP:** Indicates that a digital battery has a remaining charge of less than 10%.
- Battery type indication
  Holding down the DISP/MODE CHECK button will show the value currently set for battery remaining level indication.
  "AC ADPT" is shown when the AC adapter is used.

17 Text memo and shot mark indicator

This indicator lights when text memos are inserted during recording or playback by pressing the USER button to which the TEXT MEMO function has been assigned.

- "MARK ON" appears when shot marks are inserted during recording by pressing the USER button to which the SHOT MARK function has been assigned.
  A second press will delete the shot mark and MARK OFF appears.
- "INVALID" appears when a text memo could not be entered or a shot mark could not be recorded or deleted.

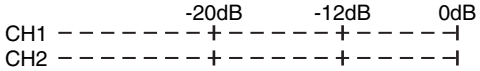
18 Recommended ND filter

The recommended ND filter under the current shooting conditions is displayed here.

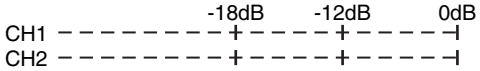
19 ND filter display

- ND filter selected is displayed.
- When [ND——] is displayed, the ND filter may be out of alignment. (OFF, the position except 1/8, 1/64) Check the position of the ND filter switch.

At a HEAD ROOM of -20 dB



At a HEAD ROOM of -18 dB



20 Gain display

Displays the gain value of the image amplifier configured.

21 AWB operation display

The white balance operation is indicated here.

22 Displays marker

Markers are displayed when the MARKER item in the setting menu DISPLAY SETUP screen is set to ON.

23 Scene file name display

24 Media remaining memory display

Setting the setting menu P2 CARD REMAIN to ONE-CARD displays the remaining time on the P2 card that is currently being recorded and the number of the slot it resides in. Setting P2 CARD REMAIN to TOTAL displays the remaining time on all four cards.

In a mode check, "ONE-CARD" and "TOTAL" are alternately displayed.

There is no display while the remaining memory is being calculated. "LOOP" is displayed during Loop recording (LOOP REC).

In a mode check during loop recording, the minimum guaranteed available recording time is displayed.

25 Operational state display

- **REC:** Recording
- **PAUSE:** Recording pause
- **II:** Play pause
- **▶ (◀):** Play (reverse play)
- **▶▶ (◀◀):** Fast-forward/Fast-forward play (Rewind/Fast-backward play)
- **II▶ (◀II):** Slow play (Reverse slow play)
- **CHK:** Rec check
- **II▶ (II▶):** Frame-by-frame (Reverse Frame-by-frame)
- **×▶ / ×▶▶ (×◀ / ×◀◀):** Variable-speed search (Reverse variable-speed search)
- **CLIP II▶ (CLIP II◀):** Clip forward (Clip reverse) Cue up of single clips

26 Media information display

The card slot where the P2 card was inserted and the basic information of the media are displayed here.

- **1 lights:** P2 card on which data can be recorded.
- **1 lights green:** P2 card on which data is to be recorded.
- **1 flashes:** Card recognition underway.
- **— :** No card inserted.
- **P :** Write-protected
- **F :** Full memory
- **X :** Cannot recognize
- **E :** a P2 card in an invalid format

Not displayed when the LCD is on in CAMERA mode. (Displayed when pre-recording, interval recording, or one-shot recording is set.)

27 Special recording display

This display appears when the REC FUNCTION option of the setting menu RECORDING SETUP screen is set to INTERVAL, ONE SHOT or LOOP, and when PRE REC is set to ON.

Loop recording is not displayed when the LCD is on.

28 Lens chromatic aberration compensation (CAC) indicator

During a mode check, it indicates that lens chromatic aberration compensation (CAC) operates normally.

29 AWB, ABB error indication
In a mode check, the status of AWB and ABB that do not operate normally is shown.

■Safety zone

The range of the zone is indicated by the SAFETY ZONE item on the DISPLAY SETUP screen.

• 4:3: 

This indicates the position which is cropped to 4:3.

• 90%: 

This indicates the range (90%) in which signals can be displayed by an ordinary home-use TV set.

Warnings

• COPY INHIBITED
Input of DV formats via the 1394 connector in MCR mode cannot be recorded normally since the contents are copyright protected.
• EXTERNAL 1394 DISCONNECT
When the 1394 CONTROL item of the OTHER FUNCTIONS screen of the setup menu is set to EXT and recording without connecting external units with 1394 terminal, this display appears.
• INCOMPATIBLE CARD
The card cannot be used since it does not comply with the specified standard.
• DIR ENTRY NG CARD
Indicates a card where folder location has become corrupted. This type of card cannot be used for special recording modes (interval, ONE SHOT and loop recording).
A warning appears when such a P2 card is inserted in a P2 device or when recording is completed.
• RUN DOWN CARD
Indicates that a P2 card has reached the end of its life. Replace any card that causes this warning to appear. The card can still be recorded and played back, but the warning appears when it is inserted in a P2 device and at the end of recording.
• FORMAT ERR !
Indicates a P2 card that does not meet the P2 card standard.

<Thumbnail operations>

• CANNOT ACCESS
Cannot access clips.
• CANNOT DELETE
Cannot delete clips.
• CANNOT FORMAT
Cannot format P2 cards or SD memory cards.
• CANNOT REPAIR
Cannot repair clips.
• CARD FULL
The P2 card does not have enough free space for recording.
• WRITE PROTECTED
The P2 card or SD memory card is writeprotected.
• NO CARD
A P2 card or SD memory card has not been inserted.
• NO FILE
There are no files (version upgrade files, etc.).

P2 card playback data indication

• EOS: End of stream. No more data is available in the forward playback direction.
• BOS: Beginning of stream. No more data is available in the rearward playback direction.
• P2 SLOT: Appears when pressing the USER button to which SLOT SEL is assigned.

Errors

These are displayed when an error occurs in the unit, P2 card, tape, or other component. If the problem is not fixed by turning the power off and then on again, either replace the card or tape based on the error information, or consult with your dealer as to which one is to be purchased.

• CANNOT REC

This is displayed during a recording error.

• CANNOT PLAY

This is displayed when trouble has occurred during playback.

• CARD ERR (1) (2) (3) (4) (1/2/3/4): Trouble has occurred in the P2 card found in the slot indicated by the number.

• CLIP ERROR: clip trouble

• UPDATING: Reading card data

• ERROR: other type of trouble

• SYSTEM ERROR

This is displayed when trouble has occurred in the system. Switch ON the power again.

• P2 MICON ERROR: No P2 microcomputer response

• P2 CONTROL ERROR: Trouble in P2 control

• REC RAM OVERFLOW: Recording RAM overflow

• TURN POWER OFF

This message indicates that an abnormal event has occurred, for example, that a card has been removed during access or that a change in system frequency has been made. Turn the power off and then turn it back on again.

• REC WARNING

This is displayed when trouble has occurred during recording. Carry out recording once again. If the warning persists, consult your dealer.

• CARD ERR (1) (2) (1/2): Trouble has occurred in the P2 card found in the slot indicated by the number.

●If the warning continues, turn off the power.

●If the warning appears even when recording is carried out again, replace the card with another one.

• ERROR: Other type of trouble

• 1394

This is displayed when trouble has occurred in the 1394 connections or signals. (P2 mode only)

• 1394 INITIAL ERROR: Connection error

• 1394 INPUT ERROR: Input error

• 1394 INPUT ERROR (OTHER FORMAT): (Wrong input format)

• LOW BATTERY:

Indicates that the battery is exhausted.

Camera status display

• **ABW:** ABW indicator

• **ABB:** ABB indicator

• **AWB P3.2 K/AWB P5.6K:** Displays the color temperature assigned to PRST when the WHITE BAL switch is set to PRST. Also displayed when AWB is performed in the PRST position.

• **GAIN:** Displayed when **dB GAIN is switched..

• **BACK LIGHT (OFF):** Displayed during iris control when back light status is changed by pressing the user button to which BACK LIGHT is assigned.

• **SPOT LIGHT (OFF):** Displayed during iris control when back light status is changed by pressing the user button to which SPOT LIGHT is assigned.

• **SHUTTER 1/XXXX (OFF):** Displayed when the shutter speed is changed.

• **SCENE ******:** Displays the name of a scene file selected by turning the SCENE FILE dial.

• **ND NG:** Displayed when the ND filter is not working normally.

• **AUTO KNEE (ON/OFF):** Displayed when changing the AUTO KNEE switch position.

USER buttons assignment information (at mode check)

Displays the function assigned to each USER button. For details, see [Assigning Functions to USER buttons].

! LED light indication (at mode check)

Indicates why an ! LED is lit according to setting menu VF! LED screen settings.

• **GAIN:** Indicates the camera is using a gain value other than 0 dB.

• **AWB:** Indicates that the WHITE BAL switch is set to PRST.

• **SHUT:** Indicates the electronic shutter is operating.

• **FILT:** Indicates filter setting.

• **EXT:** Indicates when the lens extender is inserted.

Checking and displaying shooting status

- Hold down the DISP/MODE CHECK button in recording standby or during recording to display the settings of each shooting function, the list of functions assigned to USER buttons and all other information. Press again to return to the regular screen.
- Press the DISP/MODE CHECK button during recording standby or recording clears all displays. Press again to return to the regular display.
- These settings are maintained when the unit is turned off and also when switching media and operating mode.
- Display the following items on the viewfinder and LCD monitor screen by pressing the DISP/MODE CHECK button or by configuring OTHER DISPLAY of the DISPLAY SETUP screen of the setup menus.

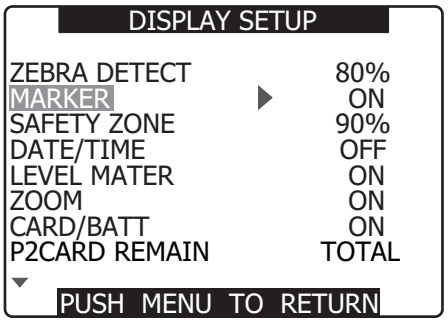
Displays		MODE CHECK	DISPLAY	Audio dubbing mode		
				ALL	PARTIAL	OFF
1	Time code display	❍	—	—	—	—
3	AUTO/MANUAL switch operation display	—	❍	❍	❍	×
4	Recording format/ recording time display	❍	❍	❍	×	×
5	Information display	❍	—	×	×	×
6	Squeeze information display	❍	❍	❍	❍	×
9	Calendar display	❍	❍	—	—	—
10	Recording/playback frame rate display	❍	❍	❍*1	×	×
11	Shutter speed display	❍	❍	❍	❍	×
12	Audio level meter display	❍	❍	—	—	—
13	IRIS display	❍	❍	❍	❍	×
14	Zoom position display	❍	❍	—	—	—
15	Auto-IRIS control display	❍	❍	❍	❍	×
16	Media remaining memory display	❍	❍	—	—	—
18	Recommended ND filter display	❍	❍	❍	❍	×
19	ND filter display	❍	❍	❍	×	×
20	Gain display	❍	❍	❍	❍*2	×
21	AWB information display	❍	❍	❍	❍*3	×
23	Scene file name/DUB display	❍	❍	❍	×	×
24	Media data display	❍	❍	—	—	—
25	Operating status display	❍	❍	—	—	—
26	Remaining media display	❍	❍	—	—	—
27	Special recording display	❍	❍	—	—	—
28	Safety zone display	—	—	—	—	—
29	AWB, ABB error display	❍	×	—	—	—
30	Chromatic aberration compensation display	❍	×	—	—	—

❍: Displayed
×: Not displayed
—: Displayed depending on other settings

The item in ❍ in the MODE CHECK space appears when you press and hold the DISP/MODE CHECK button.
The item in ❍ in the DISPLAY space disappears when you press the DISP/MODE CHECK button.
*1 Not displayed when FRAME RATE is set to 60i or 50i.
*2 0 dB is not displayed.
*3 Only preset 3.2K and 5.6K are displayed.

Setting the Marker Displays

Turn marker display on or off.
Select the display mode from the setting menu DISPLAY SETUP screen.
For directions on navigating the menu, see [Setting Menu Options].



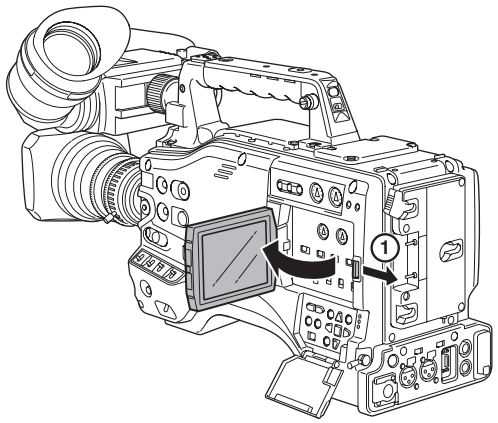
You can also press the USER button to which the MARKER function has been assigned to turn the marker on and off.

Adjusting and setting the LCD monitor

Using the LCD Monitor

1 **Turn on the POWER switch of the AG-HPX500P/E.**

2 **Slide the OPEN button in the arrow ① direction to open the LCD monitor.**

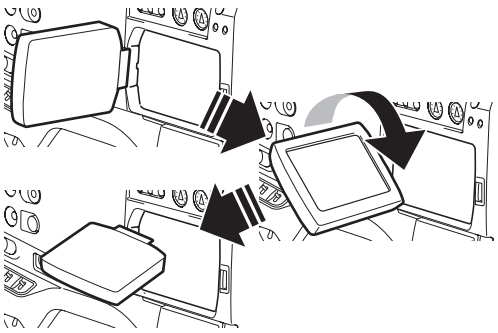


3 **Adjust the angle of the LCD monitor for most convenient viewing.**

- The monitor can turn up to 180 degrees towards the lens and up to 90 degrees towards you.

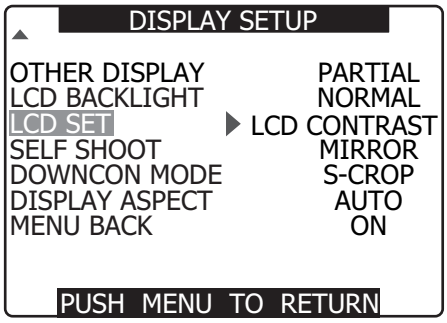
<Note>

To prevent camera-recorder failure, do not allow undue force to be applied to the monitor (when it is open).



4 **Use the menu option LCD SET to set display the brightness, color level, and contrast of the screen.**

- Select these items from the setting menu DISPLAY SETUP screen.



<Notes>

- **When closing the LCD monitor make sure that it is shut tight.**
- **In an environment with sudden temperature changes, condensation may form on the liquid crystal surface of the monitor. If this happens, wipe off the moisture with a soft, dry cloth.**
- **When the camera-recorder is very cold, the video image in the LCD monitor will appear slightly darker immediately after the power is turned on. Once the interior of the camera-recorder warms up, the LCD monitor delivers normal brightness.**

Self-portrait Shooting

When shooting with the LCD display angled 180 degrees towards the lens, you can set the menu option SELF SHOOT to MIRROR", to horizontally flip the video image on the LCD display, and allow you to view a mirror image while shooting.

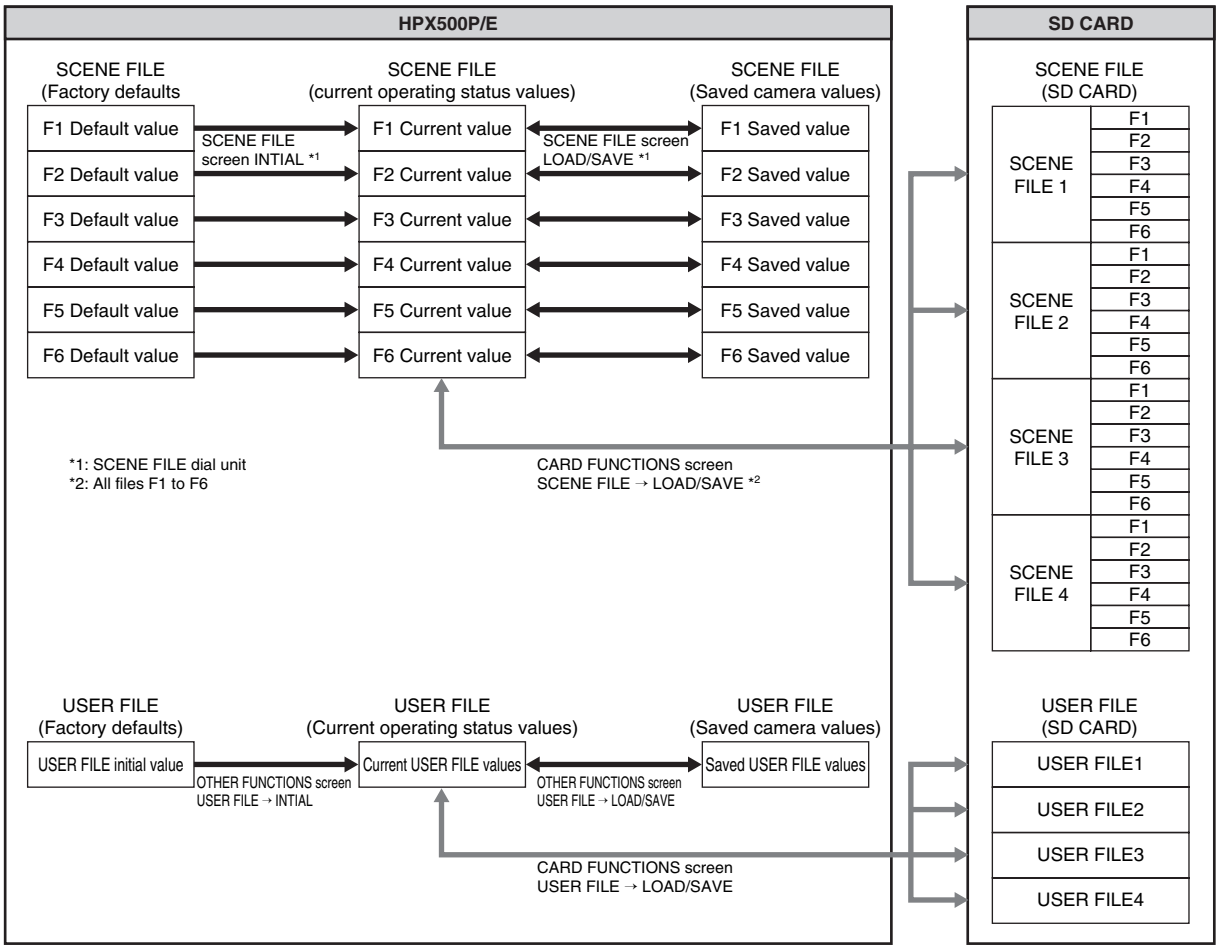
Note that only the video image on the LCD monitor is horizontally flipped, not the actual video being recorded.

The menu option SELF SHOOT can be found in the <LCD MONITOR> screen, which is accessible from the SYSTEM SETTING page.

Handling setup data

Configuration of setup data files

This camera makes it possible to save a scene file to each of the F1 to F6 positions on the SCENE FILE dial. Use of an SD memory card makes it possible to save up to four of the F1 to F6 files on an SD card for later retrieval.
The setting menu values can be stored as a user file in the camera and up to four files can be stored on the SD memory card.
The setting data files are configured as shown below.



Setting Data Using an SD memory card

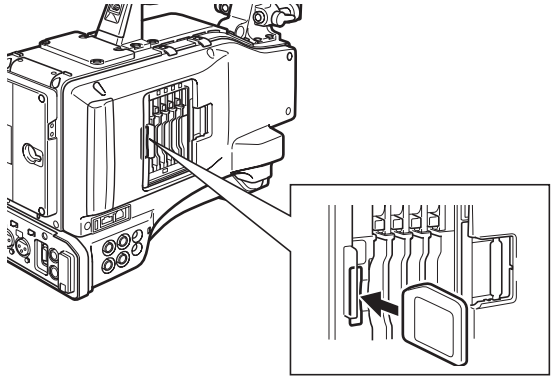
An SD or SDHC memory card (optional accessory) can be used as a setup card that stores up to four files of settings menu specifications.
This data allows you to quickly reproduce an optimum state. Regarding SD memory cards, please see <Cautions in using SD memory cards>.

Handling SD memory cards

An SD memory card may be inserted or removed, either before or after the power is turned on.

To insert an SD memory card

Open the lid of the switch cover, and insert an SD memory card (optional accessory) into the SD memory card slot with the notch upward. Close the lid.



<Note>
An SD memory card must be inserted with the right side facing the slot. If the card is hard to insert, it may be reversed or upside down. Do not force it into the slot. Check the card before reinserting it.

To remove the SD memory card

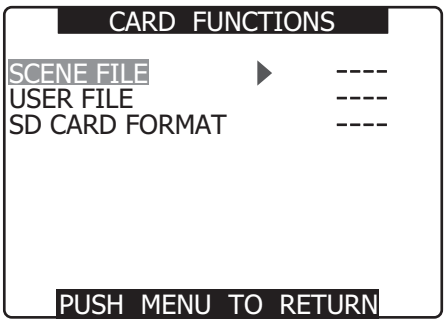
Open the lid of the switch cover, and ensure that the BUSY lamp is not illuminated. Then, further depress the SD memory card towards the main unit. This releases the SD memory card from the insertion slot. Take hold of the SD memory card and remove it. Close the lid.

SD memory cards must not be used or stored in an environment where they may be
- Exposed to high temperatures/humidities;
- Exposed to water droplets; or
- Electrically charged.

For storage, the SD memory card must be kept inserted into the AG-HPX500P/E with the lid closed.

Formatting, Writing and Reading an SD memory card

Open the CARD FUNCTIONS screen from the setting menu to format SD memory cards, write setting data to SD memory cards and to read data stored on an SD memory card.



For an SD memory card formatted with a device that does not support SD/SDHC standards, the message “FORMAT ERROR” appears at the upper right of the screen. In this case, reformat the card as follows.

To format an SD memory card

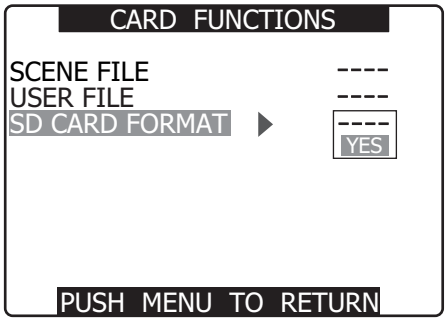
<Note>
SD memory cards may be formatted via the thumbnail screen. For more information, see [Formatting SD memory cards].

1 Navigate the menu to the <CARD FUNCTIONS> screen.

2 Turn the JOG dial button to move the cursor to the menu option CARD CONFIG.

3 Press the JOG dial button.

4 To format the SD memory card, turn the JOG dial button to move the cursor to YES. Then, press the dial button.
- This formats an SD memory card.

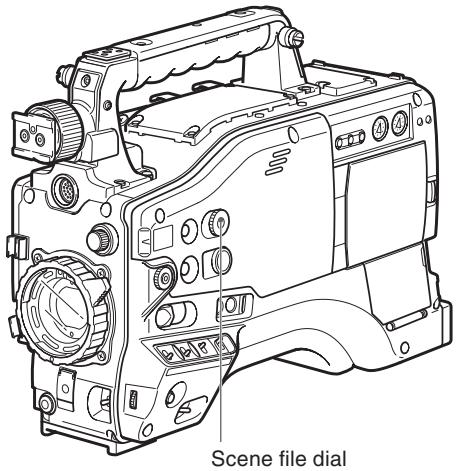


The card will not be formatted if the following message appears when the JOG dial button is pressed:

Error message	Remedy
SD CARD FORMAT NG NO CARD (No SD memory card inserted.)	Insert an SD memory card.
SD CARD FORMAT NG ERROR (SD memory card cannot be formatted.)	The card may be defective. Replace the card.
SD CARD FORMAT NG WRITE PROTECT (SD memory card is write-protected.)	Remove the card and cancel the protect.
SD CARD FORMAT NG CANNOT ACCESS (SD memory card not accessible).	Example: The SD memory card is not accessible. When the current access operation ends, reformat the card.

How to Use Scene File Data

- The settings according to the variety of shooting circumstances are stored in each position of scene file dial.
- When shooting, you can retrieve the necessary file instantly using scene file dial.
- You can also use menu options to change set scene file values. A modified scene file can be saved to each scene file dial position.



Scene file dial

- During recording, the OPERATION TYPE and FRAME RATE settings remain unchanged even when the scene file is changed.
  To change these settings, set the camera-recorder to recording standby state.

■Factory setting

• F1: SCENE
File suitable for normal shooting.
• F2: SCENE FLUO.
File suitable for shooting under fluorescent lights, ie. indoors.
• F3: SCENE SPARK
File suitable for shooting with fuller variations of resolution, coloring and contrast.
• F4: SCENE B-STR
File for broadening the contrast of dark parts, such as when shooting sunsets.
• F5: SCENE CINE V
File suitable for shooting movie-like scenes where the contrast is to be emphasized. (The recording format remains unchanged even when the scene file is changed. It must be set using the REC FORMAT option on the RECORDING SETUP screen.)
• F6: SCENE CINE D
File suitable for shooting movie-like scenes where the dynamic range is to be emphasized.
(The recording format remains unchanged even when the scene file is changed. It must be set using the REC FORMAT option on the RECORDING SETUP screen.)

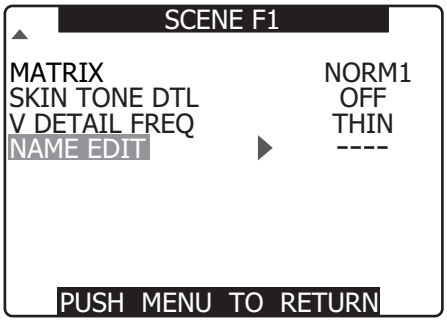
Changing scene file settings

■Example1: Change the name of the scene file.

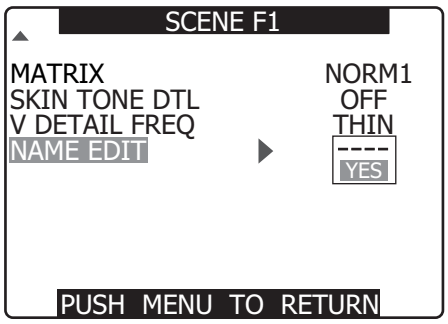
1 **Turn the scene file dial, then select the scene file to be changed.**

2 **In the setup menus, open the SCENE FILE screen.**

3 **Turn the JOG dial button to move the cursor to the option NAME EDIT. Then, press the JOG dial button.**

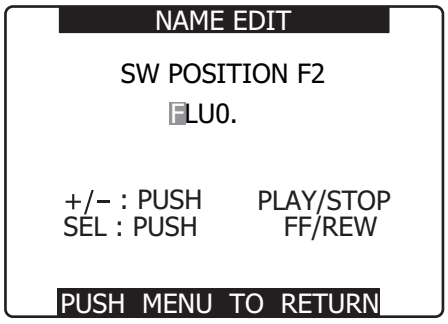


4 **Turn the JOG dial button to move the cursor to YES. Then, press the JOG dial button.**



5 **When the screen shown below appears, use the JOG dial button to enter a 6-character file name.**

- Turning the JOG dial button changes the character display in the following order: space (❑)→ alphabet (A to Z) → numerics (0 to 9) → symbols (; : < = > ? @ [\ ] ^_-./).
- If the COUNTER RESET button is pressed when the filename has been set, the characters are cleared.

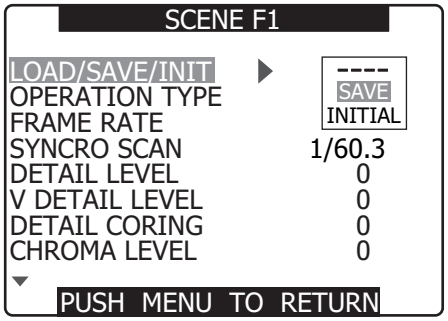


6 **After you finish setting the filename, press the MENU button.**

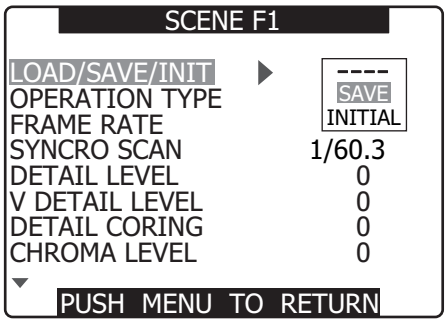
- This completes the NAME EDIT change. A change that has been confirmed is retained after a power down and is not affected by dial position.

■Example2: Save the F1 scene file to the camera.

1 **Turn the JOG dial button to move the cursor to the option LOAD/SAVE/INT. Then, press the JOG dial button.**

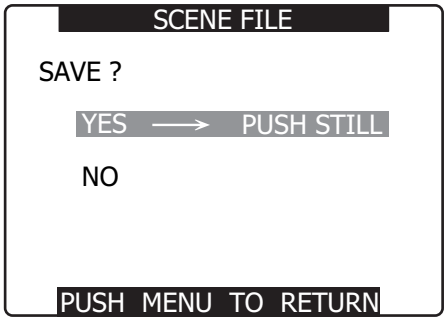


2 **Turn the JOG dial button to move the cursor to the option SAVE. Then, press the JOG dial button.**



3 **Turn the JOG dial button to move the cursor to YES. Then, press the dial button.**

• To return to the menu level above, press the MENU button.



• The message shown below appears when all changes have been completed.

4 Press the MENU button to end menu operations.

• To return the scene file settings to their factory defaults, select INITIAL in step 2 and perform the operation described in step 3.

Saving scene files and other settings on SD memory cards

You can save up to four scene file settings or other settings as files on an SD memory card, and you can also load them from the card.

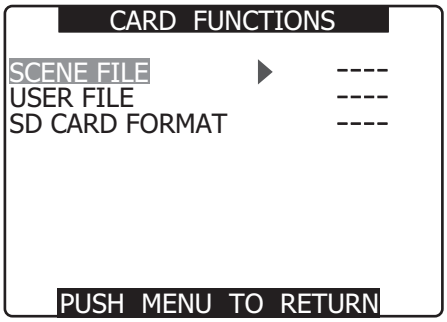
• In the case of the scene files, the current settings are automatically saved in the unit, and the saved data is written on an SD memory card. When data has been read from an SD memory card, the current settings are rewritten at the same time as the data saved inside the unit.
• The data in all the scene files, F1 to F6, is rewritten.

If you have saved a scene file

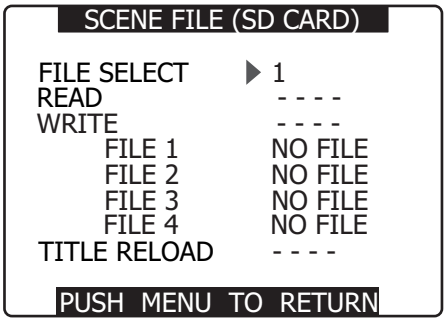
1 **Set the unit's POWER switch to ON.**

2 **Select SCENE FILE on the setting menu CARD FUNCTIONS screen, select YES, and press the JOG dial button.**

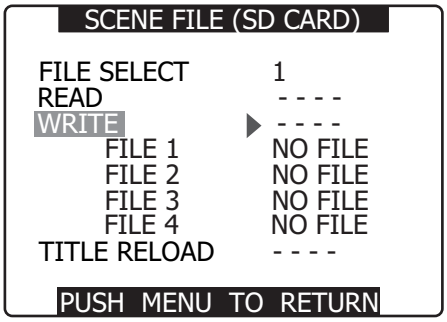
• For all other settings, select USER FILE.



3 **Select the file number (1 to 4) using the JOG dial button.**

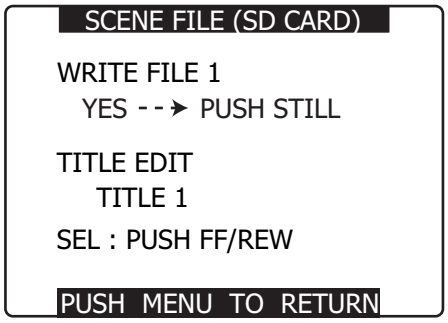


4 **Select WRITE using the JOG dial button, and press the JOG dial button.**



5 **Select YES using the JOG dial button, and press the JOG dial button.**

- In the following example, TITLE 1 is the filename.
- When writing is completed, WRITE OK appears.



6 **Press the MENU button to cancel the menu mode.**

To load a file

Perform steps 1 to 3, select READ in step 4, and press the JOG dial button.
When reading is completed, READ OK appears.

To title a file

1 **Perform steps 1 to 4.**

2 **Use the JOG dial button to select characters, then press the JOG dial button to move to the next character.**

- You can input any of the following characters: Space, A to Z, 0 to 9, : ; < = > ? @ [\ ] ^_-./
- You can erase all characters using the RESET button.

3 **After entering all the characters, press the cursor button at the left end of the characters, and then press the JOG dial button.**

<Note>

- **If WRITE NG FORMAT ERROR appears, format the SD memory card.**
- **If WRITE NG WRITE PROTECT appears, release the protected status of the SD memory card.**
- **If WRITE NG CANNOT ACCESS appears, quit all other operations (such as playback) before proceeding.**
- **If WRITE NG ERROR appears, the SD memory card may be defective. Replace it.**

Chapter 5 Preparation

Power Supply

A battery pack or AC power can be used as the power supply for the camera-recorder.

Using a Battery Pack

Battery packs from the following manufacturers can be used:

- Anton/Bauer
- IDX
- PACO
- Sony

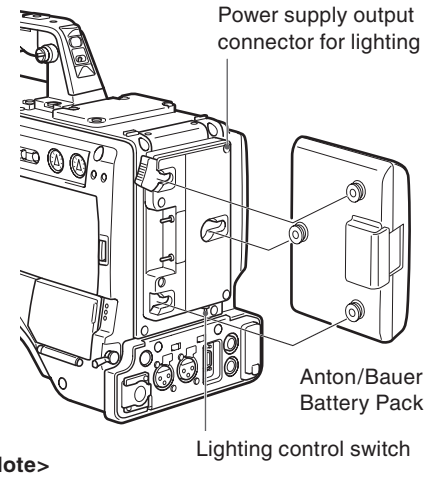
<Notes>

- **Other batteries may be used by changing the menu setting, but system compatibility is not guaranteed.**
- **Charge the battery pack with the battery charger before using it. (Please refer to the battery charger's instruction manual for information about charging.)**

Mounting the Battery and Setting the Battery Type

Using an Anton/Bauer Battery Pack

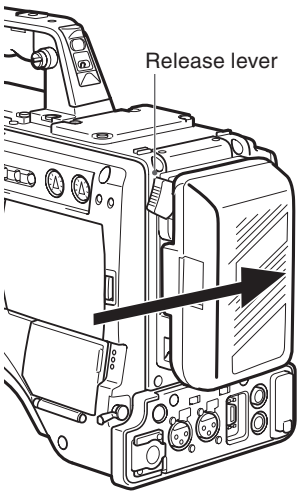
1 Power supply output connector for lighting



<Note>

The Anton/Bauer battery holder includes both a power supply output connector for lighting and a lighting control switch, which are convenient when attaching a light. Please contact Anton/Bauer for information about the lighting system.

2 Insert the battery and slide it in the direction of the arrow.



<Note>
●Removing the battery pack
Completely push down and hold the release lever on the battery holder. Then, slide the battery pack in the opposite direction to the arrow while holding the lever down.

3 Setting the battery type.

- Select the battery type listed under BATTERY SELECT. Select the menu option BATTERY SELECT from the setting menu BATTERY SETUP screen. Please refer to [BATTERY SETUP] for more information.

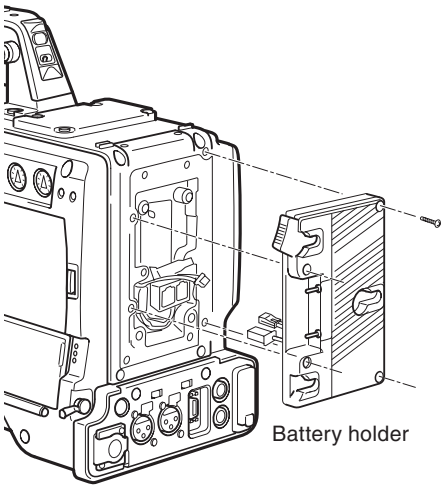
■The following Anton/Bauer batteries can be used:

- PROPAC14
- TRIMPAC14
- HYTRON50
- HYTRON100
- HYTRON140
- DIONIC90
- DIONIC160

Using an NP-1 type battery pack

When replacing the battery holder, consult your distributor.

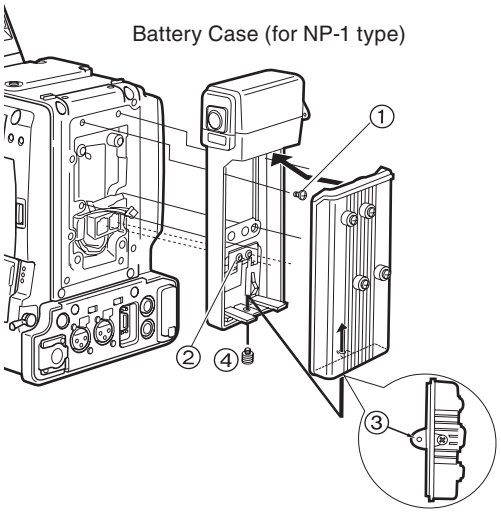
1 Remove the battery holder.



2 Mount the NP-1 type battery case on the camera-recorder.

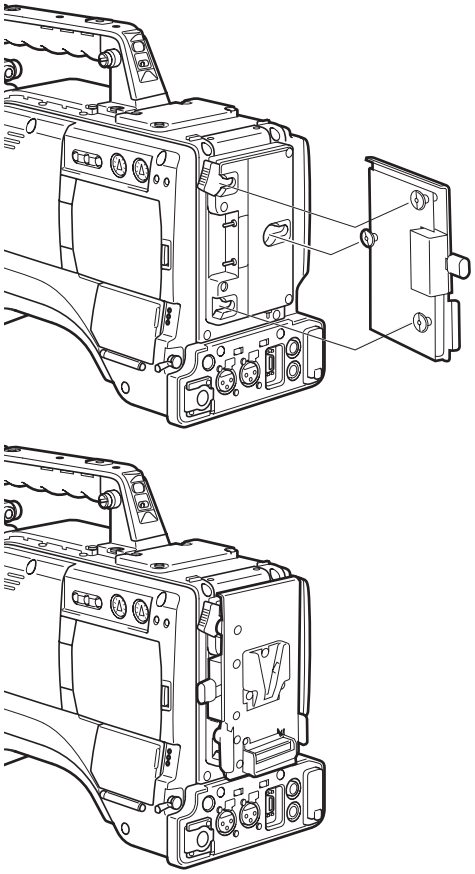
①Tighten the mounting screws.
②Tighten the power contact screws.
③Insert the upper part of the removed cover in the direction of the arrow.
④Align the holes in the bottom part (metal part) of the cover with the holes in the case, and secure the cover with the screw.

<Note>
When mounting the battery holder, take care not to pinch the connection cord.



When using a V-mount type battery pack

Mount the V-mount adapter plate. Insert the plate and slide it in the direction of the arrow.



3 **Setting the battery type.**

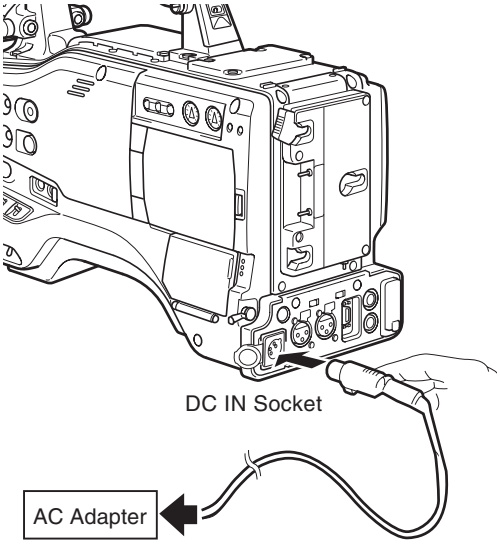
- Select the battery type listed under BATTERY SELECT. Select the menu option BATTERY SELECT from the setting menu BATTERY SETUP screen.
- When using a battery not listed under BATTERY SELECT:
  If it is a NiCD battery, select “NiCd14(14V)” depending on the battery voltage. Set the other items according to the battery properties. If it is not a NiCd battery, select TYPE A or TYPE B and set the other items according to the battery properties. Please refer to [BATTERY SET UP] for more information.

<Note>

For information about the V-mount adapter plate, please contact the store where you purchased the camera-recorder.

Using an AC Power Supply

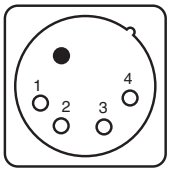
1 **Plug the DC OUT connector into the camera-recorder’s external DC input socket.**



2 **Turn the AC adapter power ON.**
(If the AC adapter is equipped with a power switch)

3 **Turn the camera-recorder power switch ON.**

- **At power-on, a rush current occurs. Therefore, use of an external AC power adaptor that assures the power consumption twice as large as the total amount of all the devices connected to the unit. Also, use a DC cable of 10 A or more.**
- **When using an external power supply other than the AC adapter, check the DC IN socket pin information to ensure correct polarity. If a +12 V power supply is accidentally connected to the GND terminal, this could cause a fire or personal injury.**



DC IN Socket

Pin No.	Signal
1	GND
2, 3	-
4	+12V

<Notes>

- **When both the battery pack and AC adapter are connected, power is supplied from the AC adapter. The battery can be removed or mounted while using the AC adapter.**
- **When using the AC adapter, make sure you turn ON the AC adapter power before turning ON the camera-recorder's power switch. If this sequence is reversed, the camera-recorder may malfunction due to slow rising of the AC adapter output voltage.**
- **To connect a battery to the DC IN connector, select BATTERY in the EXT DC INSEL item and select the battery type in the BATTERY SELECT item.**
- **Select the EXT DC IN SEL or BATTERY SELECT from the BATTERY SETUP screen. Note that "%" indication can then not be made even for digital batteries.**

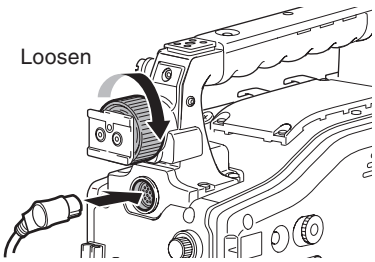
Mounting the Viewfinder and Adjusting its Position

For more information, refer to the Operating Instructions supplied with the viewfinder.
• Note that old attachment models are not supported.

Mounting the Viewfinder

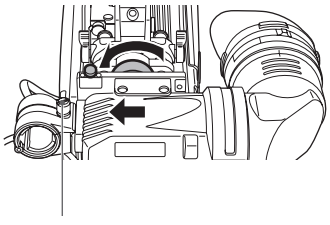
1 **Confirm that the POWER switch is turned off.**

2 **Connect the plug to the viewfinder connector.**
<Note>
Make sure that the plug is firmly seated in the viewfinder connector.



3 **Loosen the viewfinder right-left positioning ring.**

4 **Turn the viewfinder securing screw counterclockwise (to cancel the safety mechanism) and slide the viewfinder in the direction of the arrow.**



5 **Turn the viewfinder securing screw clockwise (to prevent it from falling off).**

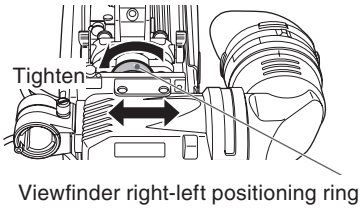
6 **Tighten the viewfinder right-left positioning rings.**

<Note>
Be sure to firmly tighten the viewfinder securing screw on the viewfinder right-left positioning module. The viewfinder may fall off if the viewfinder securing screw is not properly tightened.

Adjusting Viewfinder Right-Left Position

1 **Loosen the viewfinder right-left positioning ring.**

2 **Slide the viewfinder right and left to find a position that facilitates viewing.**



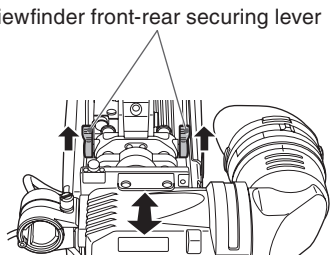
3 **Tighten the right and left viewfinder positioning ring.**

Adjusting Viewfinder Front-to-Rear Position

When equipped with slide rail for front-to-rear adjustment

1 **Loosen the viewfinder front-rear securing lever.**

2 **Slide the viewfinder forward and backwards to find a position that facilitates viewing.**

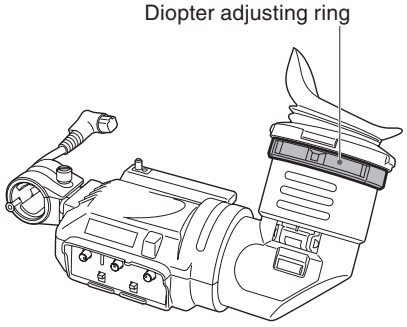


3 **Tighten the viewfinder front-rear securing lever.**

Diopter Adjustments

1 **Turn on the POWER switch on the camera.**
- Look at the image in the viewfinder.

2 **Turn the diopter adjusting ring until you get the sharpest possible image in the viewfinder.**



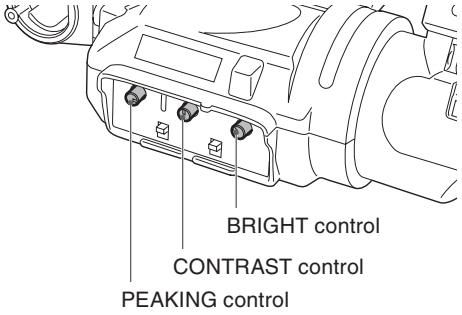
Screen Adjustments

Use the following controls to adjust viewfinder screen.
- Brightness: Turn the BRIGHT control.
- Contrast: Turn the CONTRAST control.
- Peaking: Turn the PEAKING control.

1 **Turn on the POWER switch on the camera.**

2 **Set the OUTPUT switch of the camera to BARS.**

3 **Turn the viewfinder BRIGHT and CONTRAST controls to adjust viewfinder brightness and contrast.**
- Turn the PEAKING control to obtain a sharp image.
- A sharper viewfinder image will facilitate focusing.

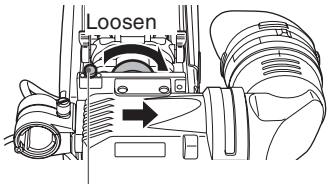


Removing the Viewfinder

1 **Confirm that the POWER switch is turned off.**

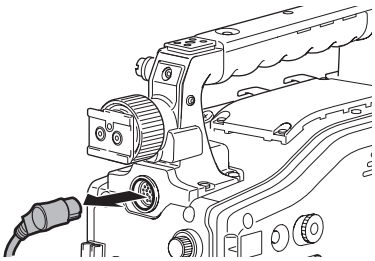
2 **Loosen the viewfinder right-left positioning rings.**

3 **Turn the viewfinder securing screw counterclockwise, slide the viewfinder in the direction of the arrow and remove it.**



Viewfinder securing screw

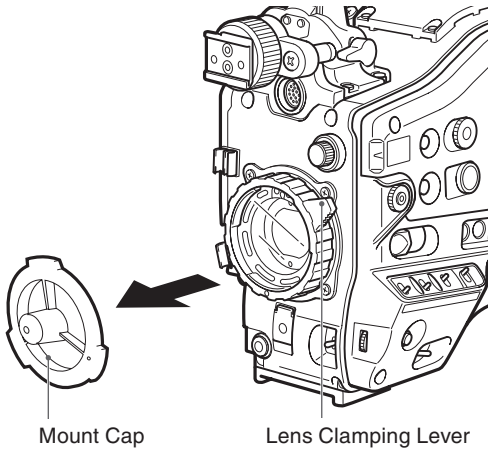
4 **Disconnect the viewfinder cable and microphone clamp from the clamp and remove them.**



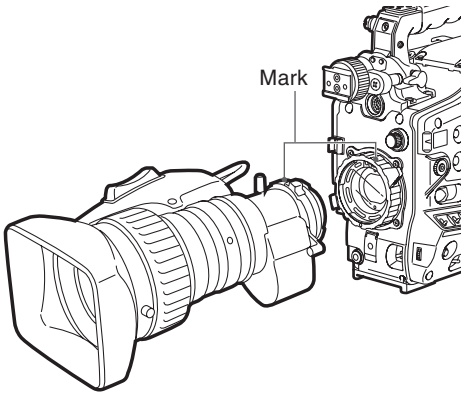
Mounting the lens and Performing the Flange Back Adjustment

Mounting the Lens

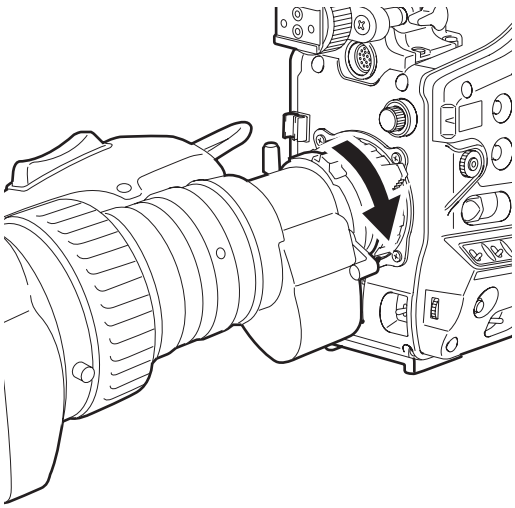
1 **Raise the lens clamping lever and remove the mount cap.**



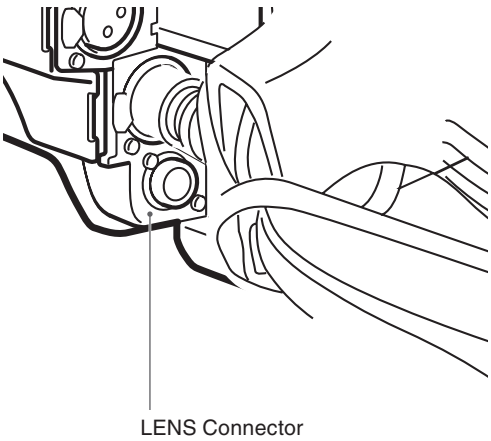
2 **To mount the lens, align the indentation at the top center of the lens mount with the center mark of the lens.**



3 **Lower the lens clamping lever to clamp the lens.**



4 **Secure the cable through the cable clamp, and plug it into the LENS connector.**



5 **Adjust the lens flange back.**

<Notes>

- **Please refer to the lens instruction manual for guidance on lens handling.**
- **When the lens is removed, install the mount cap to protect the device.**

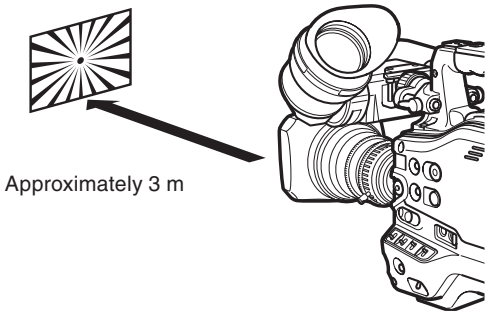
Adjusting the Lens Flange Back

If images are not clearly focused at both telephoto and wide-angle positions during zoom operations, adjust the flange back (distance from the lens mounting surface to the image formation surface).
Once adjusted, the flange back does not need to be re-adjusted as long as the same lens is mounted on the camera.

<Note>
Please also refer to the lens instruction manual for directions on adjustment and locations of individual lens parts.

1 **Mount the lens on the camera.**
- Make sure you connect the lens cable.

2 **Set the lens iris to manual, and fully open the iris.**



3 **Place the flange back adjustment chart about 3 m from the lens and adjust the lighting on the chart to obtain an appropriate video output level.**
- If the video level is too high, use the filters or the shutter.

4 **Loosen the F.f (Flange focus) ring clamping screw.**

<Note>
F.b (Flange back) may be indicated on some lenses.

5 **Set the zoom ring to the telephoto position, either manually or by electric drive.**

6 **Aim the lens at the flange back adjustment chart and turn the distance ring to bring the chart into focus.**

7 **Set the zoom ring to the wide-angle position and turn the F.f ring to bring the chart into focus.**
- While focusing, take care not to move the distance ring.

8 **Repeat Steps 5 to 7 until the lens is in focus at both the telephoto and wide-angle positions.**

9 **Firmly tighten the F.f ring clamping screw.**

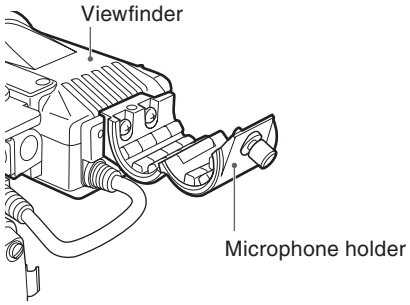
Preparing for Audio Input

Take the following steps to prepare the camera for connecting audio input devices.

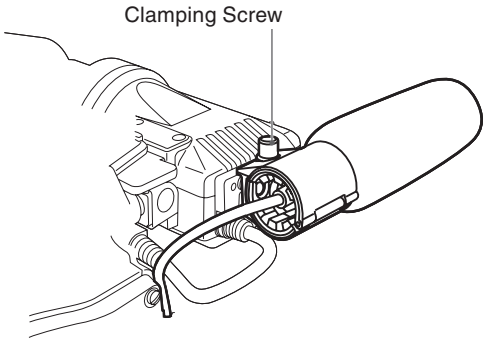
When Using the Front Microphone

The AJ-MC700P microphone kit (optional) includes a microphone that can be mounted on the camera.

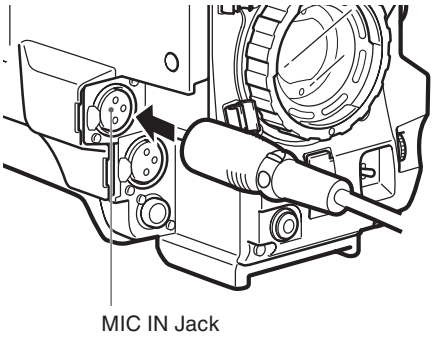
1 **Open the microphone holder.**



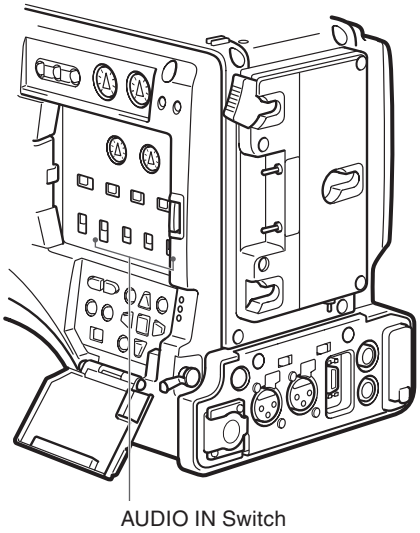
2 **Mount the microphone and tighten the clamping screw.**



3 **Connect the microphone cable to the MIC IN jack on the camera.**



4 **Set the AUDIO IN switch to [FRONT] depending on the audio channel to be recorded.**

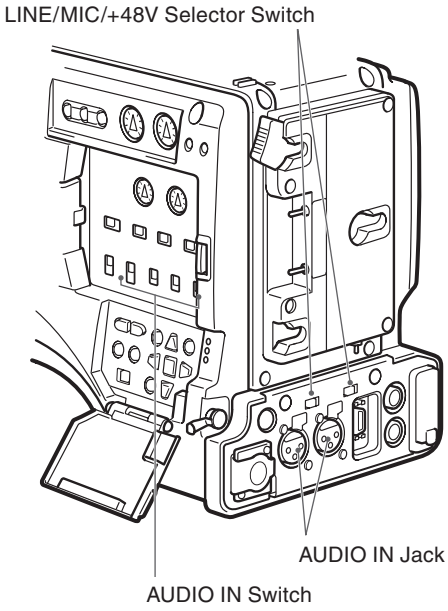


When Using Audio Devices

1 **Connect the audio device to the AUDIO IN jack with the XLR cable.**

2 **Set the AUDIO IN switch to [REAR] for the channel to which the XLR cable is connected.**

3 **Set the LINE/MIC/+48V selector switch on the rear panel to [LINE].**

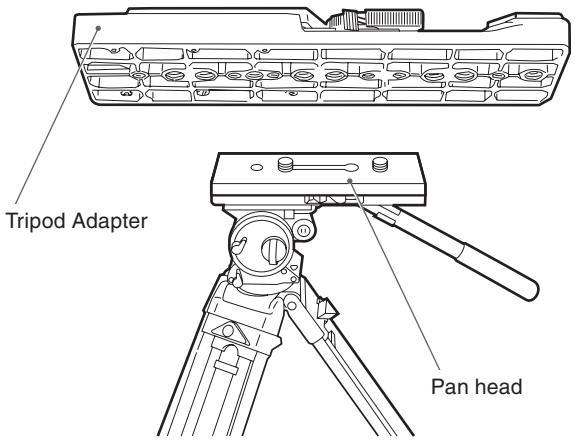


Attaching Accessories

Mounting the Camera on a Tripod

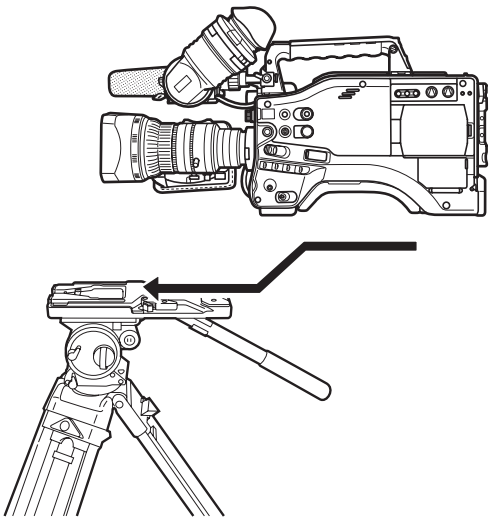
When mounting the camera on a tripod, use the tripod adapter supplied with the camera.

1 **Mount the tripod adapter on the tripod.**



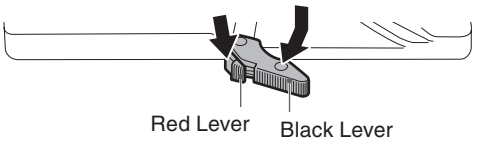
<Note>
Select an appropriate hole in the adapter, taking into account the center of gravity of the camera and tripod adapter combined.
Also, make sure that the diameter of the selected hole matches the diameter of the pan head screw.

2 **Mount the camera on the tripod adapter.**
- Slide the camera forward along the grooves until you hear a “click”.



Removing the Camera from the Tripod Adapter

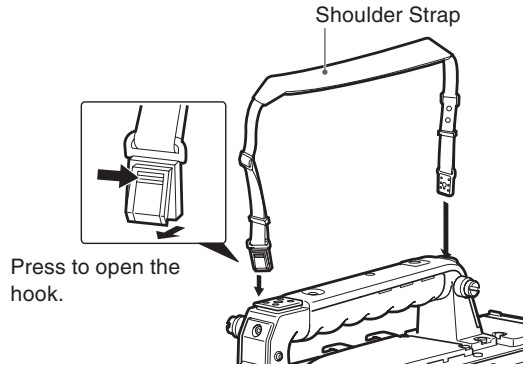
While holding the red lever down, move the black lever in the direction of the arrow, and slide the camera backward to remove it.



<Note>
If the tripod adapter pin does not return to its original position after the camera has been removed, hold the red lever down and move the black lever in the direction of the arrow again, in order to return the pin to its original position.
Please note that the camera cannot be mounted if the pin remains in the center.

Attaching the Shoulder Strap

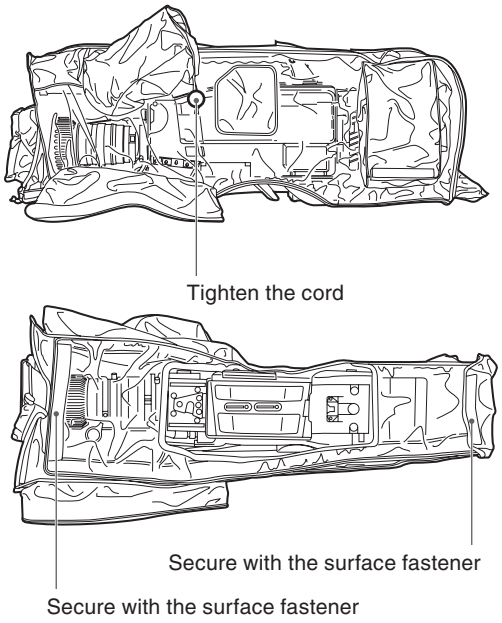
To detach the shoulder strap, first open the hooks, then detach the strap.



<Note>
Make sure that the shoulder strap is securely attached.

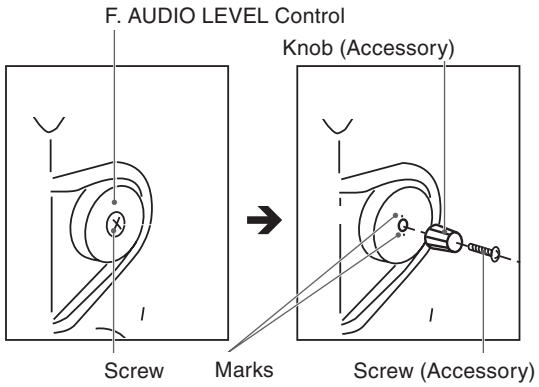
Attaching the Rain Cover

When using the SHAN-RC700 Rain Cover



Attaching the F. AUDIO LEVEL Control Knob

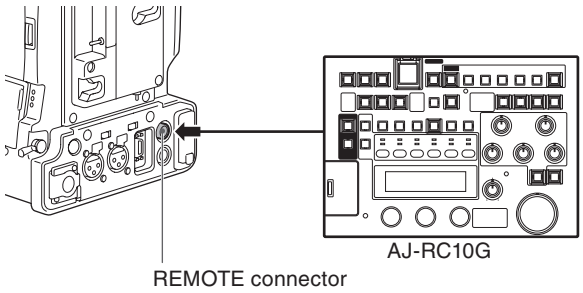
If you use the F. AUDIO LEVEL control frequently, attach the accessory knob so that it can be easily operated.



Remove the screw in the center of the F. AUDIO LEVEL control, and attach the accessory knob using the screw (included). When attaching the knob, be sure to align the marks on the control with the marks on the knob.

Connecting the AJ-RC10G Extension Controller

- Some functions can be remote-controlled when the AJ-RC10G extension control unit (optional) is connected to the camera.
- When the AJ-RC10G is connected, the camera automatically enters remote control mode after the power switches of both the camera and the AJ-RC10G are turned ON.



<Notes>

- **Be sure to turn OFF both the camera and the AJ-RC10G power switches before connecting or disconnecting the controller cable.**
- **If ECU DATA SAVE is set to OFF, the camera-related setting values, which have been adjusted or set using the AJ-RC10G, will be cancelled when the camera power switch is turned OFF. Also, the setting values cannot be written to an SD memory card. However, the menu settings performed using the AJ-RC10G can be written to an SD memory card. Next time the AJ-RC10G is connected, the setting values will return to the AJ-RC10G settings.**
  ECU DATA SAVE can be selected from the <SW MODE> screen on the CAM OPERATION page.
- **If ECU DATA SAVE is set to ON, the values adjusted or set using the AJ-RC10G are retained, even after the camera power switch is turned OFF.**
- **The USER switch on the camera does not function when the AJ-RC10G is connected.**
- **When controlling the shutter from the AJ-RC10G, the shutter speeds correspond to the speeds set by the menu on the camera, not the speeds written on the AJ-RC10G. The shutter speeds correspond as follows:**

AJ-RC10G Shutter Speed Indication	Camera Shutter Speeds
100 (60)	POSITION1
120	POSITION2
250	POSITION3
500	POSITION4
1000	POSITION5
2000	POSITION6

Chapter 6 Manipulating Clips with Thumbnails

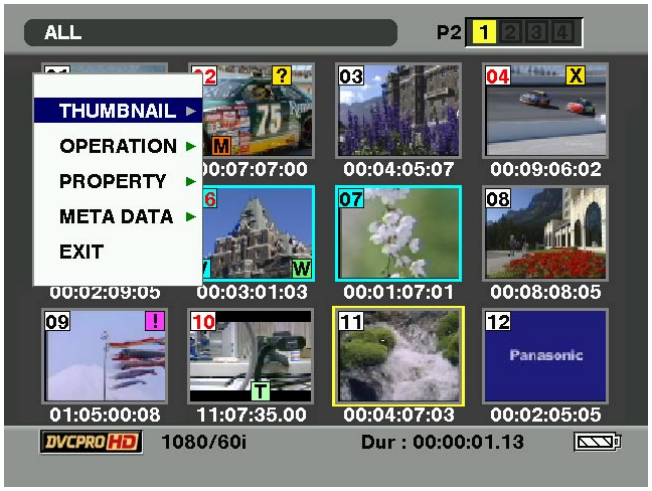
A clip is a data group that includes the images and voices created from one shooting session, together with additional information such as text memos and meta data.
The following manipulations can be performed using the cursor and SET buttons, while checking the images displayed on the LCD monitor:

- Play back, delete and repair clips
- Add or delete a shot mark on the clip thumbnail.
- Format P2 cards and SD memory cards.
- Upload the clip meta data from an SD memory card.

Thumbnail Operations

Thumbnail Overview

Thumbnail screens are configured as follows:



THUMBNAIL
- ALL CLIP
- SAME FORMAT CLIPS
- SELECTED CLIPS
- MARKED CLIPS
- TEXT MEMO CLIPS
- SLOT CLIPS
- SETUP
- EXIT

OPERATION
- DELETE
- FORMAT
- REPAIR CLIP
- REPAIR CLIP (LOOP)
- EXIT

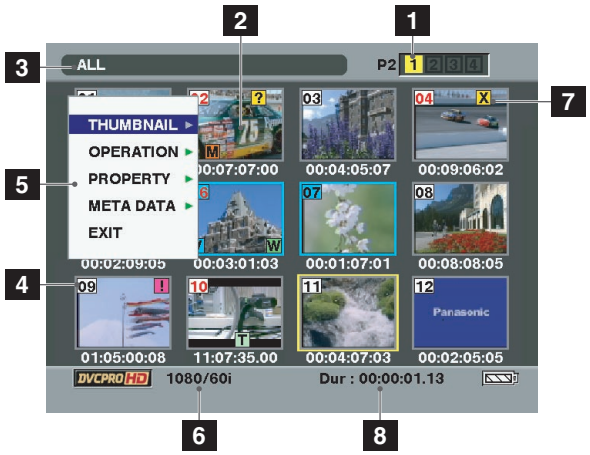
PROPERTY
- CLIP PROPERTY
- CARD STATUS
- DEVICES
- PROPERTY SETUP
- SYSTEM INFO
- EXIT

META DATA
- LOAD
- RECORD
- USER CLIP NAME
- INITIALIZE
- PROPERTY
- EXIT

• Thumbnail screens are not output from the component video output connectors.

Thumbnail Screen

Press the MODE button to engage the MCR mode and open the thumbnail screen on the LCD monitor. When switching is done from the regular screen display to the thumbnail screen display, all the clips will be displayed on the thumbnail screen.
Pressing the thumbnail menu button in the thumbnail screen moves the pointer to the menu bar providing access to allow thumbnail menu functions.



1 Slot number
- The number of the slot with the P2 card containing the selected clip is indicated here. (The number appears in yellow.)
- If a clip extends over the P2 cards in two or more slots, numbers will appear in yellow.
- The slot number is surrounded by a pink border when a DIR location error or life end-up occurs.

2 Thumbnails
This is where the initial images of the clips are displayed.

3 Thumbnail display status
The types of clips displayed as thumbnails appear in this area.

4 Clip numbers
- The clips are displayed in the order in which they were shot. (up to 2000)
- Clips in the wrong recording format or clips which cannot be played back for other reasons are shown in red.
- To play clips indicated by the red numbers, set the format for the REC FORMAT option on the RECORDING SETUP setting menu to the format **6** below.
  - Clips on the playlist which have been edited and copied using the AJ-SPD850 memory card recorder or other such unit and which have more than one format (DV, DVCPRO or DVCPRO50) are shown in red, and these clips cannot be played back even when the REC FORMAT item has been set.

5 Menu display
- This is where the menu items are displayed.
- When EXIT is selected and the SET button is pressed, the menu display is cleared, and the original screen is restored.

6 Recording mode/format display
This is where the recording mode and format of the recorded images are displayed.

7 Indicators

M (Shot mark):
This indicates that a clip has a shot mark.

W (Wide):
This indicates that a clip has been recorded in the 16:9 aspect ratio (wide screen). (480i recording)

! (Incomplete clip):
This indicator appears when the recording of a clip extends over two P2 cards and one of the cards is not found in the slot.

X (Defective clip):
- This indicator appears for a clip whose recording was defective because the power was cut off during the recording process, for instance.
- Clips indicated by the yellow defective clip indicator can be repaired.
- Clips indicated by the red defective clip indicator cannot be repaired so delete them. If a clip cannot be deleted, first back up its data, and then format the P2 card. Clips in the wrong format are indicated by (**?**) instead.

V (Voice memo):
This indicates that a clip has a voice memo. (You cannot perform recording/playback with this camera.)

T (Text memo):
This indicates that a clip has a text memo.

E (Edit copy):
This indicates that this is an edit copy clip. (You cannot perform editing with this camera.)

P (Proxy):
This indicates that a proxy has been added and recorded. (You cannot perform recording with this camera.)

8 Duration display
This displays the duration of the selected clip.

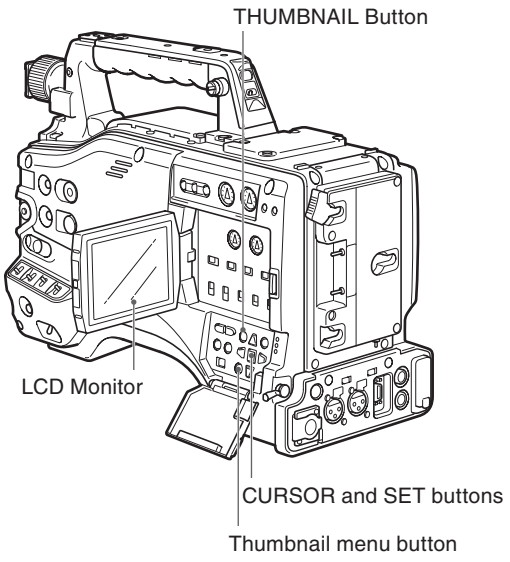
Selecting Thumbnails

Multiple thumbnails can be randomly selected in the thumbnailscreen.

1 Use the cursor buttons to move the pointer (yellow frame) to the desired clip and press the SET button.
- The frame around the selected thumbnail changes to a blueframe. Press the SET button again to deselect the clip.

2 Additional clips can be selected by repeating Step 1.

It is possible to display only the selected thumbnails in the thumbnail screen for playback. Please refer to [Switching the Thumbnail Display] for more information.

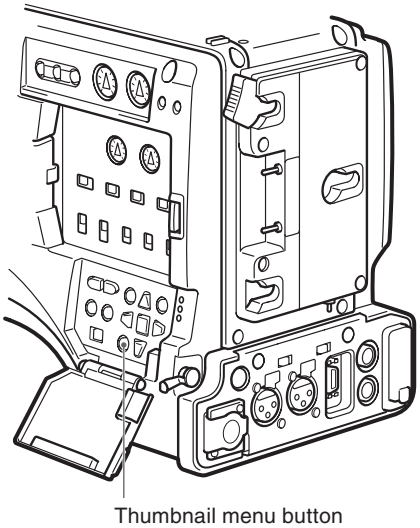


Switching the Thumbnail Display

The display can be switched so that only those clips matching the specified conditions are displayed in the thumbnail screen.

1 **Press the MODE button to enter the MCR mode.**
- The thumbnail screen appears on the LCD monitor.

2 **Press the thumbnail menu button to open the menu.**



3 **Move the pointer to THUMBNAIL and select with the SET button.**
- The setting sub -menu appears.
- Select the desired item to specify the type of thumbnail display.

- **ALL CLIP:**
Display all clips.
- **SAME FORMAT CLIPS:**
The clips in the same recording format are displayed.
- **SELECTED CLIPS:**
Display randomly selected clips.
- **MARKED CLIPS:**
Display clips with shot marks attached.
- **TEXT MEMO CLIPS:**
Clips with text memos are displayed. Thumbnails at text memo positions, time codes (TC), total number of memos and the current order of the clips are displayed.
- **SLOT CLIPS:**
Display clips recorded in the P2 card inserted in the specified slot.
- **SETUP:**
Various setup operations are performed.
- **EXIT:**
The previous screen reappears.

■To delete a text memo

1 **Select THUMBNAIL-TEXT MEMO CLIPS, move the cursor to the text memo to be deleted and press the SET button.**

2 **Move the cursor to the text memo thumbnail to be deleted.**

3 **Press the MENU button to open the setting menu and choose OPERATION → DELETE.**

Setting the Thumbnail Display Mode

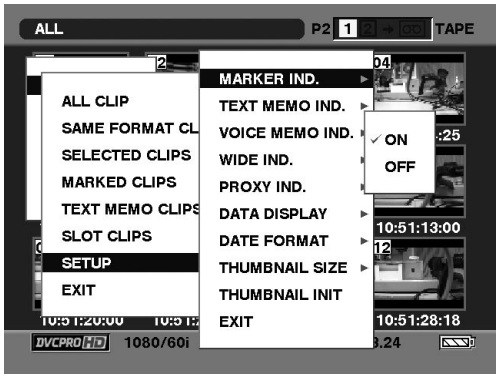
The thumbnail display mode can be customized to suit your preferences.

1 **Press the MODE button to enter the MCR mode.**

- The thumbnail screen appears on the LCD monitor.

2 **Press the thumbnail menu button to open the menu.**

3 **Select THUMBNAIL → SETUP.**



- **MARKER IND.:**
  Switches the shot mark marker between indication and no indication (ON/OFF). The factory setting is ON (indication).
- **TEXT MEMO IND.:**
  Shows or hides (ON/OFF) the text memo indicator. The factory setting is ON (indication).
- **VOICE MEMO IND.:**
  Switches the voice memo marker between indication and no indication (ON/OFF). The factory setting is ON (indication).
- **WIDE IND.:**
  Switches the wide marker between indication and no indication (ON/OFF). The factory setting is ON (indication).
- **PROXY IND.:**
  Switches the proxy indicator between indication and no indication (ON/OFF). The factory setting is ON (indication).
- **DATA DISPLAY:**
  The time display field of the clip offers a choice of Time Code (TC), User Bits (UB), Shooting Time (TIME) or Shooting Date (DATE)/Shooting Time and Date (DATE TIME). The factory setting is Time Code.
- **DATE FORMAT:**
  You can specify the display order for the shooting date as either Year/Month/Day (YMD), Month/Day/Year (MDY) or Day/Month/Year (DMY). The factory setting is Year/Month/ Day.
  This setting is reflected in the recording date shown in the clip property and the shooting date shown when DATE is selected under the item DATA DISPLAY.
- **THUMBNAIL SIZE:**
  For the size of thumbnails displayed on one screen, either LARGE (3 × 2 thumbnails displayed) or NORMAL (4 × 3 thumbnails displayed) can be selected. The factory default value is NORMAL.
- **THUMBNAIL INIT:**
  Return the above thumbnail display settings to default.
  Move the cursor to this option, and press the SET button. Select “YES” when the confirmation screen is displayed.
- **EXIT:**
  Returns to the previous menu.

Clip Operations

Playing Back Clips

1 **Press the MODE button to enter the MCR mode.**
- The thumbnail screen appears on the LCD monitor.

2 **Use the cursor buttons to move the pointer over the desired clip.**

3 **Press the PLAY/PAUSE button, and the clip under the pointer will be played back on the LCD monitor.**
- After playback of the clip under the pointer, subsequent clips are played back in order, according to when they were shot. The thumbnail screen returns after the last clip has been played back.

<Notes>
- **When playing back clips, it is not necessary to "select" the clips (blue frames around the thumbnails).**
- **Clips with clip numbers displayed in red cannot be played.**

4 **During playback, pressing the REW button starts 4× speed reverse playback, and the FF button starts 4× speed fast playback.**
- Press the PLAY button to return to normal playback.

5 **During clip playback, pressing the STILL button will temporarily stop (pause) the process.**
- During a pause, pressing the REW button moves the pause position to the beginning of the clip.
- Pressing the REW button again moves the pause position to the beginning of the previous clip.
- During a pause, pressing the FF button moves the pause position to the beginning of the next clip.

6 **Pressing the STOP button during clip playback stops the playback and returns the display to the thumbnail screen.**

<Note>
When playback is stopped, the position of the pointer remains on the clip that was being played back, regardless of where the playback started.

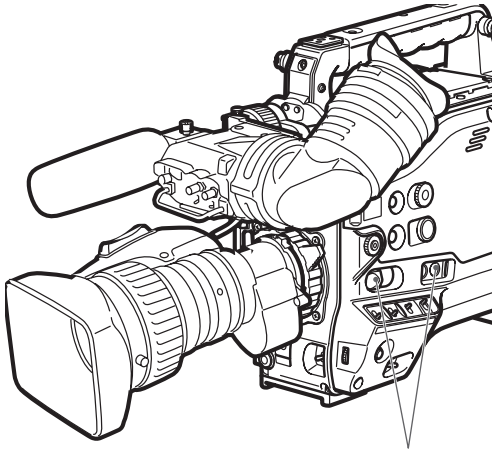
Shot Mark

A shot mark can be added to a clip thumbnail to distinguish this clip from the others.

1 **Press the MODE button to enter the MCR mode.**
- The thumbnail screen appears on the LCD monitor.

2 **Use the cursor buttons to move the pointer over the clip to which you want to attach a shot mark.**

3 **Press the USER button to which the shot mark function has been assigned.**
- Use the setting menu SW MODE screen to assign the SHOT MARK function to a USER button.



USER MAIN, USER1 and USER2 buttons

4 **A shot mark will be attached to the clip thumbnail under the pointer.**
- To delete a shot mark, reposition the pointer over the clip and press the Shot Mark button.

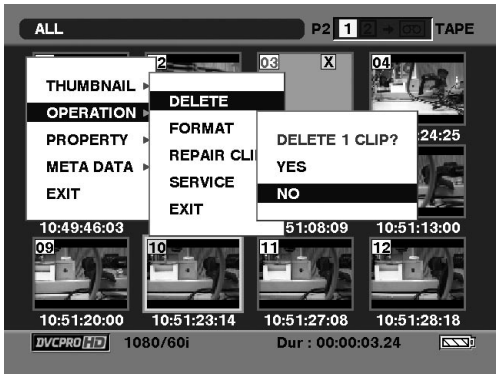
<Notes>
When adding a shot mark to (or deleting the shot mark from) a clip recorded across multiple P2 cards, do this with all these P2 cards inserted into P2 card slots.

Deleting Clips

1 **Press the MODE button to enter the MCR mode.**
- The thumbnail screen appears on the LCD monitor.

2 **Use the cursor buttons to move the pointer over the clip you want to delete, and press the SET button.**
- Press the SET button to select the clip.

3 **Press the thumbnail menu button to select OPERATION → DELETE from the menu bar.**



4 **A screen to confirm the delete operation appears. Use the cursor buttons and the SET button to select YES.**
- The clip is deleted.
- All selected clips (in blue-green frames) are deleted by this operation.

<Note>
Pressing the SET button stops the deletion operation in the middle.

Restoring Clips

Restores clips that are defective as a result of sudden poweringdown during recording, or removal of the P2 card being accessed.

<Note>
- **Only those clips with yellow corrupt clip markers can be restored. Delete the clips with red corrupt clip markers. If the clip cannot be deleted, format the P2 card.**
- **During restoration of the clips, however, the defective-clip indicator may change from yellow to red, resulting in inability to restore the clips.**

1 **Press the thumbnail menu button to open the menu.**
- The thumbnail screen appears on the LCD monitor.

2 **Use the cursor buttons to move the pointer over the clip you want to restore (defective clips are indicated by corrupt clip marks), and press the SET button.**
- Press the SET button to select the clip.

3 **Press the thumbnail menu button to select OPERATION → REPAIR CLIP from the menu bar.**

4 **The confirmation window appears. Use the cursor buttons and the SET button to select YES.**

Setting of Clip Meta Data

Information such as the name of person who shot the video, the name of the reporter, the shooting location, or a text memo can be read from the SD memory card, and can be recorded as Clip Meta Data.

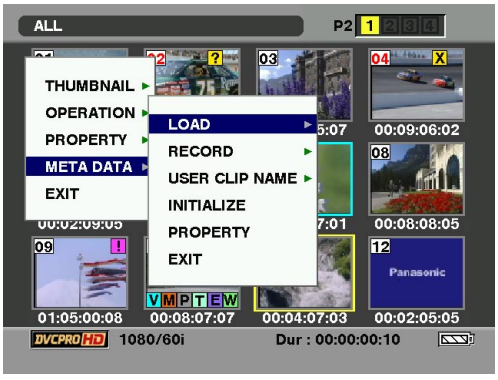
Reading Clip Meta Data (metadata upload)

1 **Insert the SD memory card that contains the Clip Meta Data (metadata upload file).**

2 **Press the MODE button to enter the MCR mode.**
- The thumbnail screen appears on the LCD monitor.

3 **Press the thumbnail menu button to open the menu.**

4 **Select META DATA → LOAD from the menu bar, and press the SET button.**



5 **Names of metadata upload files stored on the SD memory card are displayed.**
- Select the desired files using the cursor buttons, and choose YES. Upload starts.
- Uploaded metadata is retained even if the power is turned off.
  For confirmation of uploaded data, see [Confirmation of Metadata Upload].

Clip metadata content

Clip Meta Data includes the following items:
Underlined items can be set by reading the metadata upload file on the SD memory card. Other items are set automatically during shooting. Using the latest update version of P2 viewer, metadata upload files can be written to SD memory cards using a PC. Download the latest update version of P2 viewer from the following URL and install it to your PC:

http://panasonic.biz/sav/p2

Regarding SD memory cards to be used, see [Cautions in using SD memory cards].
<Note>
The file which was edited by except P2 viewer is displayed as "UNKNOWN DATA", and may not be read.
You can set the underlined items by loading the metadata upload file on the SD memory card. All other items are automatically set during shooting.

- **GLOBAL CLIP ID:**
Displays the global clip ID, which indicates the shooting status of the clip.
- **USER CLIP NAME:**
Displays the clip name specified by the user.*
* If the metadata upload file does not contain any data, the global clip ID serves as the USER CLIP NAME. The USER CLIP NAME recording method is selectable. For more information, see [Selecting the USER CLIP NAME recording method].
- **VIDEO:**
Displays [FRAME RATE] (frame rate of the clip), [PULL DOWN], and [ASPECT RATIO].
- **AUDIO:**
[SAMPLING RATE] (sampling frequency of recorded sound) and [BITS PER SAMPLE] (digitized bit[s] of recorded sound).
- **ACCESS:**
Displays [CREATOR] (person who recorded the clip), [CREATION DATE] (date when the clip was recorded), [LAST UPDATE DATE] (date of the latest update of the clip), and [LAST UPDATE PERSON] (person who made the latest update of the clip).
- **DEVICE:**
Displays [MANUFACTURER] (name of the device manufacturer), [SERIAL NO.] (serial number of the device) and [MODEL NAME] (model name of the device).
- **SHOOT:**
Displays [SHOOTER] (name of the person who shot the video), [START DATE] (start date of shooting), [END DATE] (end date of shooting), and [LOCATION] ALTITUDE/LONGITUDE/LATITUDE/SOURCE/PLACE NAME (altitude, longitude, latitude, and source of the information and name of the location).

• SCENARIO*:
Displays [PROGRAM NAME], [SCENE NO.], and [TAKE NO.].
* Be sure to enter PROGRAM NAME when entering SCENARIO. It is not possible to record only the SCENE NO or TAKE NO.

• NEWS:
Displays [REPORTER] (name of the reporter), [PURPOSE] (purpose of shooting), and [OBJECT] (object of shooting).

• MEMO*:
Displays the NO. (memo number), OFFSET (frame position from the beginning of the clip), PERSON (name of the person who recorded the text memo), and TEXT (memo content).
* Be sure to enter TEXT when entering MEMO. It is not possible to record only PERSON or OFFSET.

<Note>
The AG-HPX500P/E only displays printable ASCII characters.

To set whether or not the uploaded metadata is recorded

Set ON/OFF by selecting META DATA → RECORD.

Selecting the USER CLIP NAME recording method

Select META DATA → USER CLIP NAME from the menu bar to select the recording method. Two options are available: TYPE1 and TYPE2.

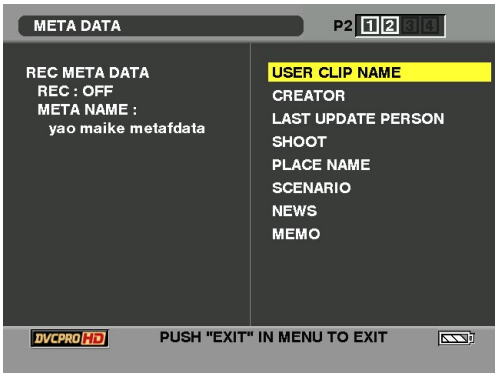
●TYPE1

	USER CLIP NAME to be recorded
If clip metadata has been read in	Uploaded data
If no clip metadata has been read in or if the setting for recording clip metadata has been turned off	Same as GLOBAL CLIP ID (UMID data)

●TYPE2

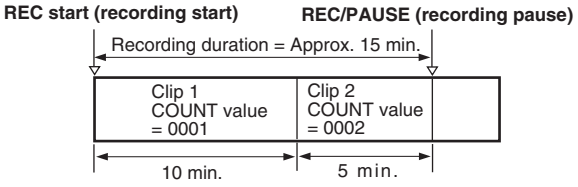
	USER CLIP NAME to be recorded
If clip metadata has been read in	Uploaded data + COUNT value*
If no clip metadata has been read in or if the setting for recording clip metadata has been turned off	Same as CLIP NAME

* The COUNT value is indicated as a four-digit number.
The COUNT value is incremented each time a new clip is captured if clip metadata has been read in and TYPE2 has been selected as the recording method.
The COUNT value can be reset using the following procedure.
Select METADATA → PROPERTY → USER CLIP NAME.
Select “COUNT RESET” with the cursor and press the SET button to reset the COUNT value to 1.

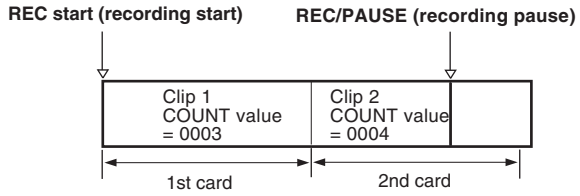


<Note>
When a P2 card with a memory capacity of 8 GB or more is used in this unit and a one-time continuous recording exceeds the prescribed duration (approx. 10 minutes for DVCPRO50 or approx. 20 minutes for DVCPRO or DV) or when a one-time recording extends over more than one P2 card, the recording concerned will automatically be undertaken as a separate clip. At this time, each clip will be provided with its own COUNT value.

■**Example of recording (DVCPRO50) a clip on one P2 card:**



■**Example of recording a clip on two P2 cards:**



If the clip thumbnails are displayed as shown in the example above or their properties are indicated using a P2 device, the thumbnail and COUNT value of clip 1 will be displayed.

Clear the uploaded metadata

Select META DATA →INITIALIZE, and press the SET button. Select “YES” when the confirmation screen is displayed.

Displaying loaded metadata

Select METADATA → PROPERTY and press the SET button to display the metadata recorded in this unit.

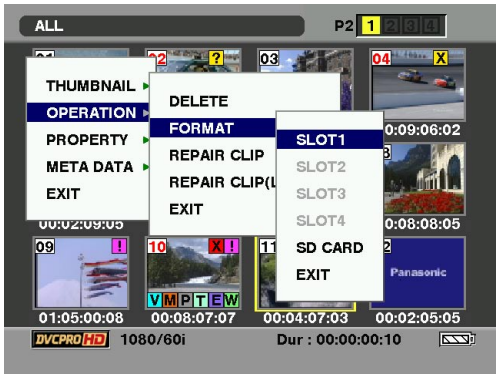
Formatting P2 and SD Memory Cards

Formatting a P2 Card

1 **Press the MODE button to enter the MCR mode.**
- The thumbnail screen appears on the LCD monitor.

2 **Press the thumbnail menu button to open the menu.**

3 **From the menu bar, select OPERATION → FORMAT.**
- The following screen appears. Select the slot number for the P2 card you want to format.
- Select EXIT if formatting is not required.



4 **Use the CURSOR and SET buttons to select YES in the screen that confirms whether you want to format the card.**

5 **The selected P2 card is formatted.**

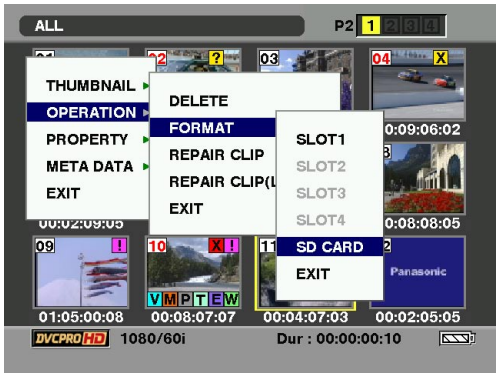
Formatting SD memory cards

SD memory cards can also be formatted from the thumbnail screen. With an SD memory card inserted into the camerarecorder, perform the following operation:

1 **Press the MODE button to enter the MCR mode.**
- The thumbnail screen appears on the LCD monitor.

2 **Press the thumbnail menu button to open the menu.**

3 **Select OPERATION → FORMAT.**
- The following screen appears. Select “SD-CARD”.
- Select “EXIT” if formatting is not required.



4 **Use the CURSOR and SET buttons to select YES in the screen that confirms whether you want to format the card.**

5 **The SD memory card is formatted.**

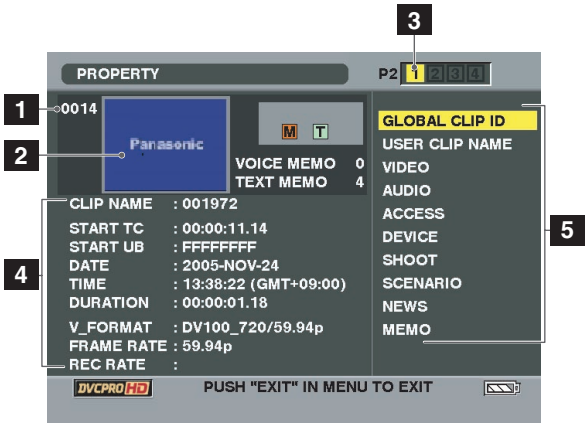
<Note>
SD memory cards can also be formatted from the menu screen.
For more information, see [Formatting, Writing and Reading an SD memory card].

Properties

The clip's properties and the P2 card's status are displayed.

Clip Property

Select PROPERTY → CLIP PROPERTY.
The following screen appears.



1 Clip number

2 Thumbnail

3 Slot number

4 Clip information

Various indicators that have been added to the clip and also various kinds of data are displayed. (🔒 appears if the P2 card is writeprotected)

- **CLIP NAME:** Clip name
- **START TC:** Time code value when recording started
- **START UB:** User information value when recording started
- **DATE:** Date when the recording was made
- **TIME:** Time when recording started
- **DURATION:** Clip length
- **V_FORMAT:** Video signal format
- **FRAME RATE:** Playback frame rate
- **REC RATE:** Recording frame rate

This display appears when recording using a setting for the FRAME RATE item on the SCENE FILE screen other than the default during 720P/24PN or 720P/30PN recording operation.

5 Clip metadata

The video and audio formats, videographer information and other detailed data are displayed here. Use the CURSOR button to select the item and press the SET button. (For details on the clip metadata, see [Setting of Clip Meta Data].)

P2 Card Status Display

P2 Card Status Display Settings

Select PROPERTY → CARD STATUS to set the desired indication mode (remaining free space or used memory capacity) for the P2 card status display.

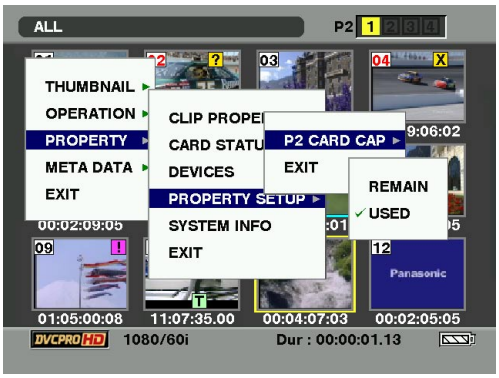
1 Press the MODE button to enter the MCR mode.

- The thumbnail screen appears on the LCD monitor.

2 Press the thumbnail menu button to open the menu.

3 Select PROPERTY → PROPERTY SETUP → P2CARD CAP.

- The following screen appears. Select the P2 card status display settings from the P2 CARD CAP menu option.

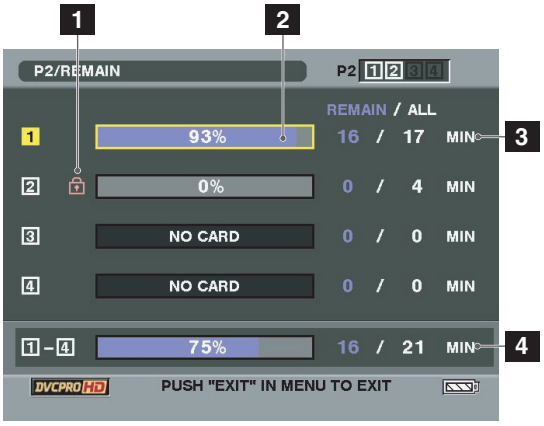


- **REMAIN:**
  Show remaining free space on the P2 card as the P2 card status display.
- **USED:**
  Show used memory capacity on the P2 card as the P2 card status display.

Contents of P2 Card Status Display Settings

Select PROPERTY → PROPERTY SETUP → P2CARD CAP. The following screen appears.

■When “REMAIN” is selected:



1 Write-protect Mark

The mark 🔒 appears if the P2 card is write-protected.

2 P2 Card Status (remaining free space)

The remaining memory capacity of the P2 card is indicated by a bar graph and percentage. The bar graph indicator moves to the left as the remaining free space decreases.

The following indications may appear, depending on the card status:

- **FORMAT ERROR:**
  An unformatted P2 card is inserted.
- **NOT SUPPORTED:**
  An unsupported card is inserted in the camera.
- **NO CARD:**
  P2 cards are not inserted.
  Press the SET button to view the following data for the card in the selected slot (indicated in yellow numbers).
- **BRAND:** maker name
- **MODEL NO.:** model number
- **SERIAL NO.:** serial number
- **USER ID:** user ID
- **WARNING:** DIR ENTRY NG (DIR location error)
  RUN DOWN CARD (life)

3 P2 Card Remaining Capacity/Total Capacity

Displays the P2 card remaining capacity and total capacity in minutes.

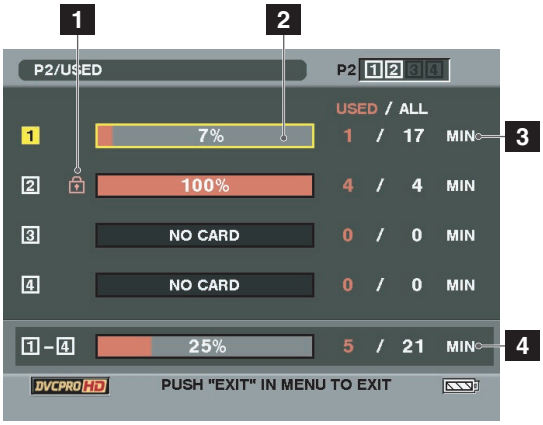
The total of the remaining memory capacity for each P2 card that is displayed may not match the actual total remaining memory capacity for the P2 cards because only the figure in minute is displayed.

4 Total remaining free space for the slot

Displays the total remaining free space for all 4 slots.

Please note that the remaining capacity of a write-protected P2 card is not included in the total remaining capacity.

■When “USED” is selected:



1 Write-protect Mark

The mark 🔒 appears if the P2 card is write-protected.

2 P2 Card Status (used memory capacity)

The used memory capacity of the P2 card is indicated by a bar graph and a percentage figure. The bar graph indicator moves to the right as the used memory capacity increases.

The following indications may appear, depending on the card status:

- **FORMAT ERROR:**
  An unformatted P2 card is inserted.
- **NOT SUPPORTED:**
  An unsupported card is inserted in the camera.
- **NO CARD:**
  P2 cards are not inserted.
  Press the SET button to view the following data for the card in the selected slot (indicated in yellow numbers).
- **BRAND:** maker name
- **MODEL NO.:** model number
- **SERIAL NO.:** serial number
- **USER ID:** user ID
- **WARNING:** DIR ENTRY NG (DIR location error)
  RUN DOWN CARD (life)

3 P2 Card memory capacity/Total Capacity

Displays the used memory capacity on a P2 card and the total capacity, in minutes.

Because fractions are truncated, the figure shown for used memory capacity on a P2 card may differ from the figure for total capacity.

The used memory capacity of a write-protected P2 card is displayed as 100%.

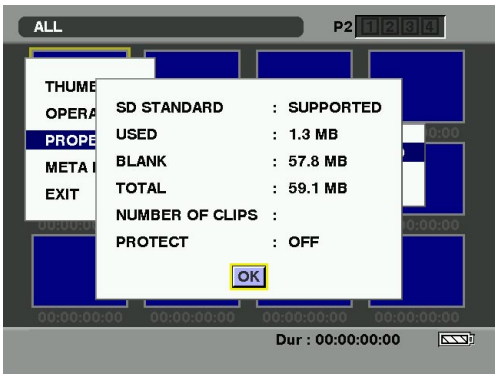
4 Total used memory capacity for all slots

Displays the total used memory capacity for all 4 slots.

SD memory card Status Display

The status display enables a confirmation of the SD memory card formatted condition, available memory capacity etc.
Select PROPERTY → DEVICES → SD CARD.

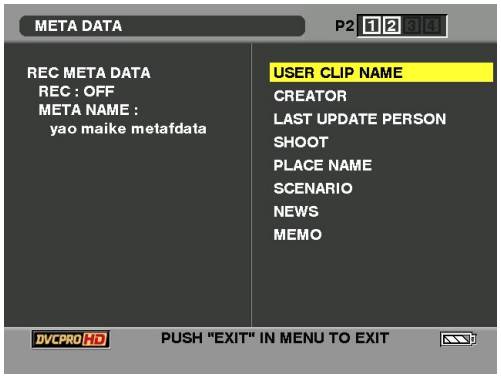
■Screen showing SD memory card data



- **SD STANDARD:** This indicates whether the SD memory card was formatted in compliance with the SD standard (SUPPORTED/NOT SUPPORTED).
- **USED**: Space used
- **BLANK**: Space available
- **TOTAL**: Total space
- **NUMBER OF CLIPS**: Number of clips
- **PROTECT**: This indicates that the SD memory card is write protected.

Confirmation of Metadata Upload

- The contents of the metadata upload file that is read from the SD memory card can be checked.
- Select META DATA → PROPERTY. The following screen appears:



For more information on each item, see [Setting of Clip Meta Data].

- The META NAME is the meta data name written in the meta data upload file, and is not recorded in the clip.

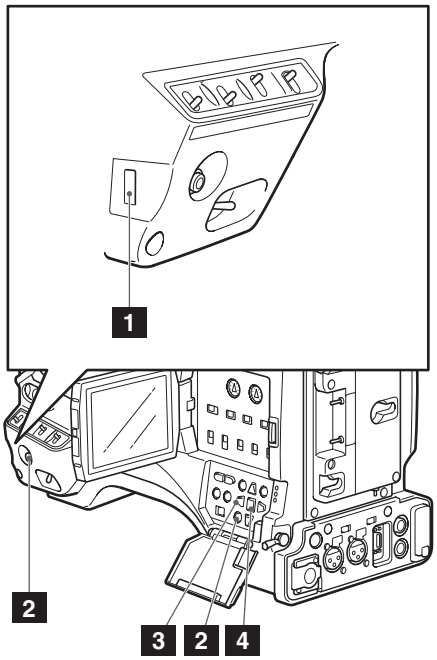
Chapter 7 Menu Operations

Viewfinder and LCD Menus

Using the menus

Use the setup menus to change the settings to suit the scenes you are shooting or what you are recording.

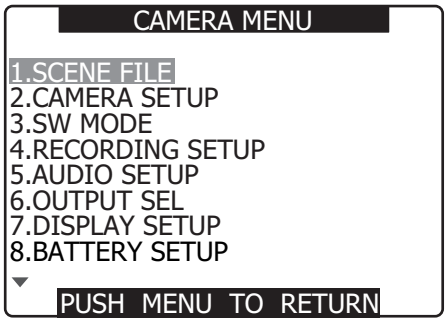
- If the thumbnail menu is displayed, press the THUMBNAIL button to release the display.
- The menu items indicated in the blue characters cannot be used.



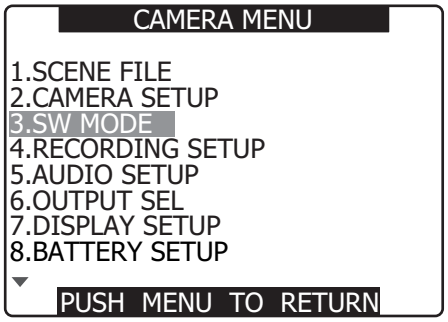
1 JOG dial button
2 MENU button
3 CURSOR buttons
4 SET button

1 **When the unit is in other than playback or recording mode, press the MENU button.**

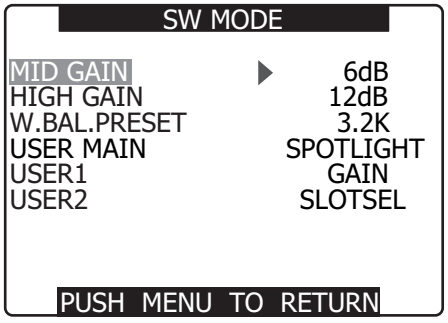
- The function screen appears in the viewfinder and on the LCD screen.



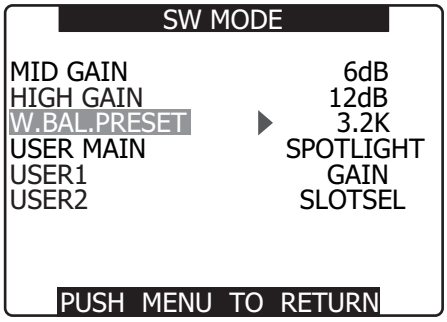
2 **Use the JOG dial button (or the Up and Down cursor buttons) to highlight the function you want to change.**



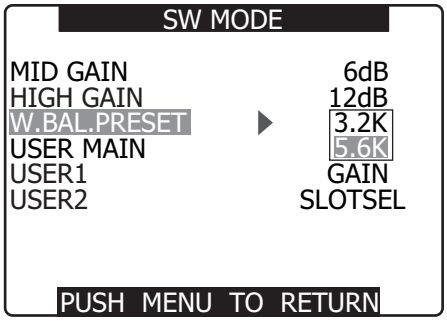
3 **Press the JOG dial button (or the SET button) to display the items.**



4 **Use the JOG dial button (or the Up and Down cursor buttons) to highlight the item you want to change.**



5 **Use the JOG dial button (or the SET button) to change the setting value.**



6 **To change other settings, repeat steps 4 and 5.**

- When you finish, press the MENU button to return to the function screen.

7 **To change other functions, repeat steps 2 to 5.**

- To exit the function screen and return to the normal screen, press the MENU button again.

Initializing the menu settings

The menu settings contain both the user file settings and the scene file settings. You can initialize them separately.

To initialize the user file (i.e. all the settings other than the scene file settings)

Select INITIAL in USER FILE of the OTHER FUNCTIONS screen. The current menu settings of user file will return to the factory settings.

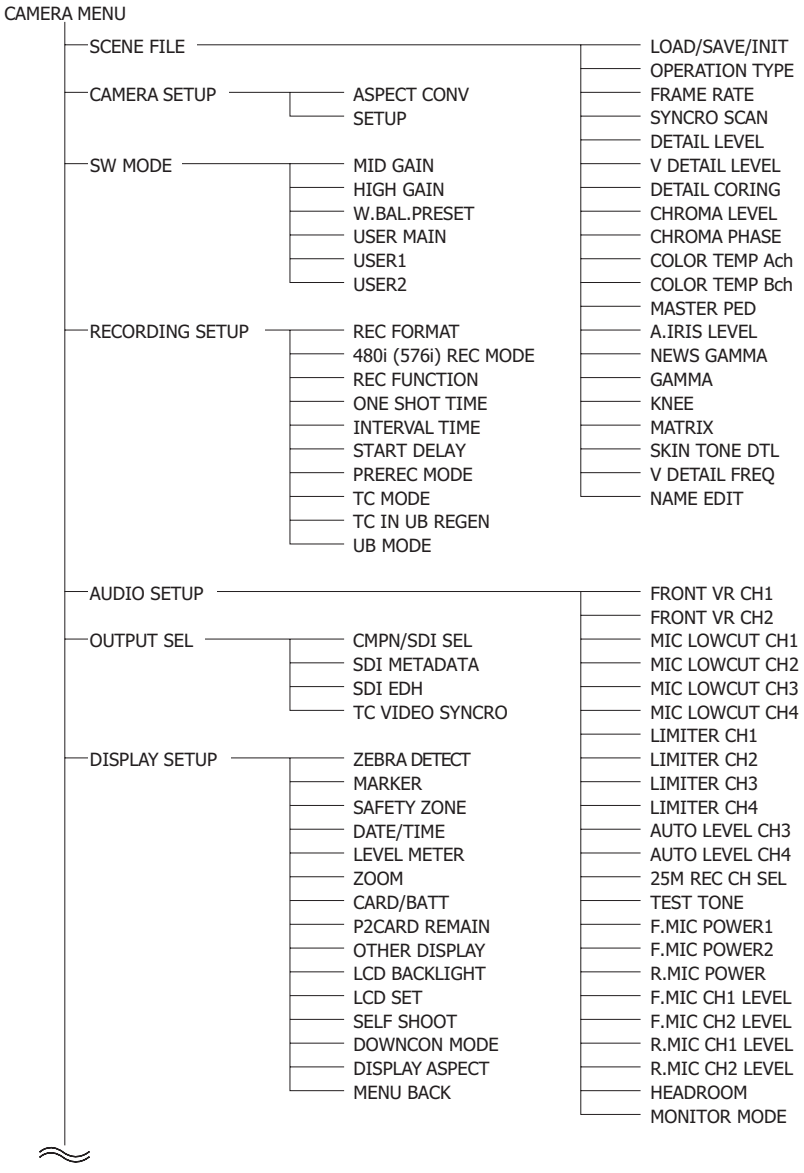
To initialize the scene file

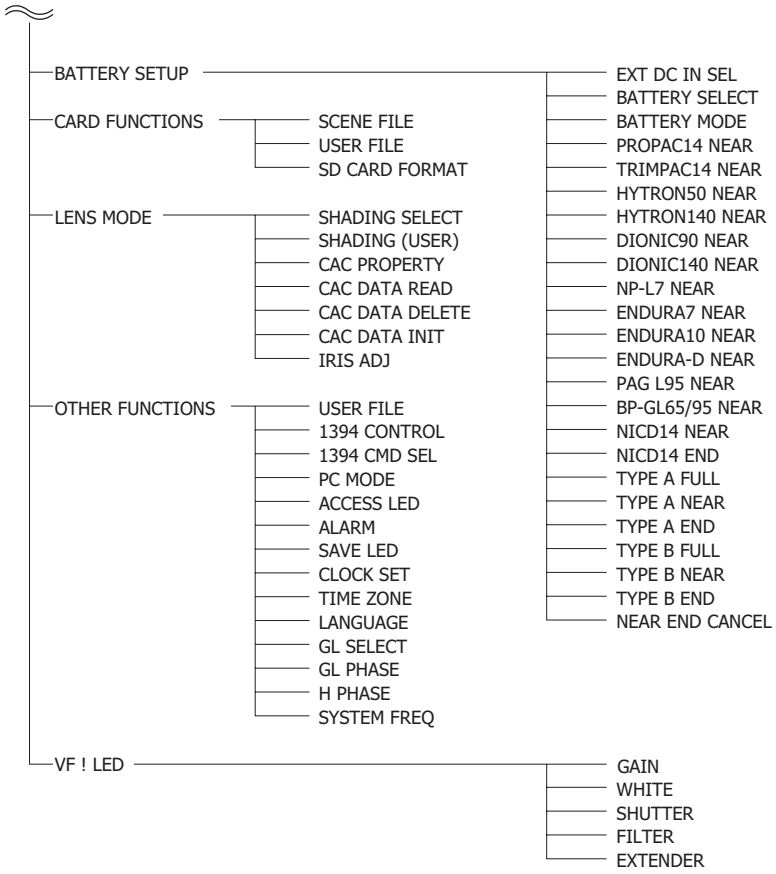
From the 6 scene files, select the one you want to initialize with the scene dial. Then in the SCENE FILE screen, LOAD/SAVE/INIT, select INITIAL.
The settings for only the selected scene file are returned to the factory settings.

- This does not effect the other scene files.

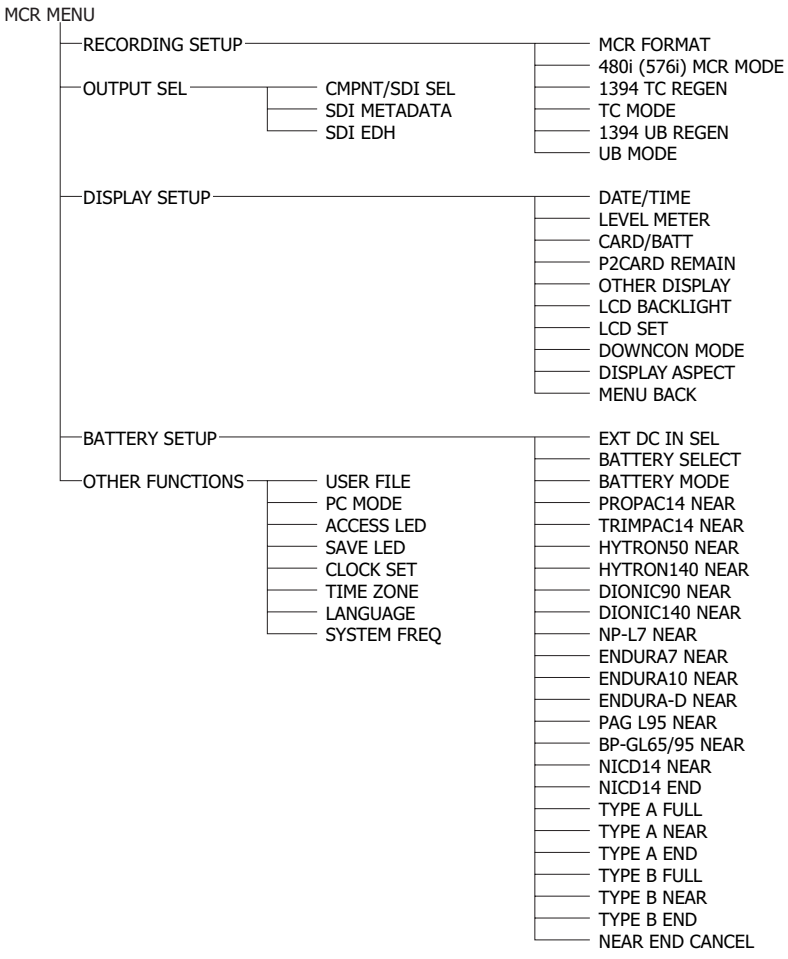
Setup menu structure

Camera (CAM) mode menu





MCR mode menu



Setup menu list

SCENE FILE screen

Item	Description of settings (Items in bold are factory settings.)
LOAD/SAVE/INIT	Saves, loads and initializes scene files (SD memory card) ----(No operation), LOAD (Load), SAVE (Save), INITIAL (Initialize)
OPERATION TYPE	Switches the shutter and frame rate operation to the video type or film type. ●**VIDEO CAM: SYNCRO SCAN is set in 1/n increments./The frame rate is dependent on the REC FORMAT./Slow shutter speeds are enabled./Time code is displayed at 30 frames except at 24PN.** ●FILM CAM: SYNCRO SCAN is displayed as an angle./ FRAME RATE can be used to vary the frame rate./Slow shutter speeds are disabled./ The time code indication is fixed at 24 hour display.
FRAME RATE	Selects the shooting interval and exposure time when 720P and FILM CAM is selected. The default values for the REC FORMAT 720/60, 720/30 and 720/24 are fixed at 60P, 30P and 24P, respectively. ●59.94Hz SYSTEM **DEFAULT**, 12, 18, 20, 22, 24, 26, 30, 32, 36, 48, 60 ●50Hz SYSTEM **DEFAULT**, 12, 18, 20, 23, 25, 27, 30, 32, 37, 48, 50
SYNCRO SCAN	Adjusts the synchro scan shutter speed used for shooting images on a TV screen, etc. Turn and hold the JOG dial button (operation button) upwards or downwards to increase the speed at which the set values change. ●When VIDEO CAM is selected as the OPERATION TYPE option setting: • 60P/60i: **1/60.0** ... 1/249.8 • 30P/30PN: 1/30.1 ... **1/48.0** ... 1/249.8 • 24P/24PA/24PN: 1/24.0 ... **1/48.0** ... 1/249.8 ●When FILM CAM is selected as the OPERATION TYPE option setting: • The shutter speed is displayed as an angle such as “180.0d.” • 10.0 deg ... **180.0 deg** ... 350.0 deg (the angle can be changed in increments of 0.5 degrees)
DETAIL LEVEL	Adjusts the level of the image outline correction (in the horizontal and vertical directions). ●Adjustable range: – 7 ... **0** ... + 7
V DETAIL LEVEL	Adjusts the level of outline correction in the vertical direction. ●Adjustable range: – 7 ... **0** ... + 7
DETAIL CORING	Adjusts the level of noise reduction of the detail signal. ●Adjustable range: – 2 ... **0** ... + 7 Set to – for a clearer image. Noise increases slightly. Set to + to reduce noise.
CHROMA LEVEL	Adjusts the chroma level. ●Adjustable range: – 7 ... **0** ... + 7
CHROMA PHASE	Makes fine adjustments to the chroma phase. ●Adjustable range: – 7 ... **0** ... + 7
COLOR TEMP Ach	Makes fine adjustments to the color temperature (after white balance adjustment of Ach). ●Adjustable range: – 7 ... **0** ... + 7
COLOR TEMP Bch	Makes fine adjustments to the color temperature (after white balance adjustment of Bch). ●Adjustable range: – 7 ... **0** ... + 7
MASTER PED	Adjusts the black master pedestal that serves as the video reference. ●Adjustable range: – 127 ... **0** ... + 127
A. IRIS LEVEL	Sets the desired AUTO IRIS level. ●Adjustable range: – 10 ... **0** ... + 10
NEWS GAMMA	Selects the news gamma curve. (Only valid for 1080i/60i, 50i, 720/50P, 50P, 480/60i and 576/50i) ●ON, **OFF** Setting this function to ON also turns on ADSC (adaptable shading correction).

Item	Description of settings (Items in bold are factory settings.)
GAMMA	Selects the gamma curves other than the news gamma curve. ●HD NORM: This gamma setting is suitable for HD shooting. ●LOW: Makes a mellow image using the gamma curve which has a gentle incline in lowbrightness curve. The contrast sharpens. ●SD NORM: This is the normal video setting. ●HIGH: Expands the tone of dark parts and makes a brighter image using the gamma curve which has a sharp incline in lowbrightness curve. The contrast softens. ●B.PRESS: Makes the contrast sharper than LOW. ●CINELIKE_D: Makes a cinema-like image. ●CINELIKE_V: Makes a cinema-like image with emphasized contrast. When you select CINE-LIKE gamma, we recommend to set the lens aperture lower than normal image level (approximately 1/2) to enjoy the full benefit of the function. (Disabled when gamma is ON.)
KNEE	To avoid overexposure, select the compression level (knee point) of the high intensity video signals received through CCD. ●LOW: Low setting (Compression starts at approx. 80 %.) ●MID: Medium setting (Compression starts at approx. 90 %.) ●HIGH: High Setting (Compression starts at approx. 100 %.) This setting cannot be changed when GAMMA is enabled and CINELIKE_D, V are selected.
MATRIX	Selects the MATRIX table suitable for the desired color expression during shooting. **●NORM1: Suitable for shooting in the open air or under a halogen lamp.** ●NORM2: Suitable for brighter colors than the NORM1 mode. ●FLUO: Suitable for shooting under fluorescent light indoors. ●CINE-LIKE: Suitable for cinema-like image.
SKIN TONE DTL	Sets the skin tone details. Select ON to reduce the skin tone details and soften the skin tone. ●ON, **OFF**
V DETAIL FREQ	Sets the vertical detail for shooting in 480 24P, 24PA, 30P 576/25P mode. **●THIN: Makes the detail thin.** ●MID: Makes the detail slightly thicker. ●THICK: Makes the detail thicker. When images were shot in the progressive mode in which the vertical detail is set as “THIN” or “MID” and are played on a monitoring television (60i interlace), you will see flickers caused on horizontal lines and almost horizontal oblique lines. When playing back images in the progressive mode or when editing images or performing other postprocessing, images with a higher resolution will be obtained with the THIN or MID setting than with the THICK setting.
NAME EDIT	Edits the name of the selected scene file you have selected with the scene file dial.

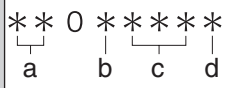
CAMERA SETUP screen

Item	Description of settings (Items in bold are factory settings.)
ASPECT CONV	Selects the aspect ratio of the image you record in 480i format. This item cannot be selected when the 1080i or 720P recording format is used. **●SIDE-CROP (Side crop), LETTER BOX, SQUEEZE**
SETUP	Selects the setup level for the 480i video signal. ●0 %: Setup is switched to 0 % for both camera output and recording. **●7.5 %A: Setup is switched to 7.5 % for camera output and 0 % for recording.**

SW MODE screen

Item	Description of settings (Items in bold are factory settings.)
MID GAIN	Sets the gain value assigned to the M position of the GAIN switch. ●0 dB, 3 dB, **6 dB**, 9 dB, 12 dB
HIGH GAIN	Sets the gain value assigned to the H position of the GAIN switch. ●0 dB, 3 dB, 6 dB, 9 dB, **12 dB**
W.BAL.PRESET	Sets the color temperature assigned to the PRST position of the WHITE BAL switch. ●3.2 K / 5.6 K
USER MAIN	Selects the function assigned to the USER MAIN button. ●REC CHECK: Performs Rec Check. ●SPOTLIGHT: Auto iris control for the spotlight ON/OFF ●BACKLIGHT: Auto iris control for the backlight compensation ●BLACKFADE: Blackfade ●WHITEFADE: Whitefade ●GAIN: 18 dB: • Press the button to set the gain value to 18 dB. This setting takes effect with the 60i and 60P recording formats only. It is not valid when the recording frame rate is less than 22 fps or when the slow shutter mode (1/15) is established. • When the gain value is set to 18 dB or set from 18 dB to another value, the image can be disordered for a moment. • If the unit is being used in the MANUAL mode or AUTO mode, set the AGC item on the AUTO SW screen of the setting menu to OFF to use this function. ●TEXT MEMO: Text memo recording ●SLOT SEL: Selects one of the P2 card slots. ●**SHOT MARK: Shot mark recording** ●LEV METER: Displays the level for channels other than those set in the menu. ●MARKER: Displays markers. ●LCD REV: Displays an upside down and reversed image on the LCD.
USER1	Selects the function assigned to the USER1 button. The settings are the same as USER MAIN above.
USER2	Selects the function assigned to the USER2 button. The settings are the same as USER MAIN above.

RECORDING SETUP screen

Item	Description of settings (Items in bold are factory settings.)
REC FORMAT	Selects the recording format for P2 card. ●59.94Hz System: 1080i/60i, 1080i/30P, 1080i/24P, 1080i/24PA, 720P/60P, 720P/30P, 720P/24P, 720P/30PN, 720P/24PN, 480i/60i, 480i/30P, 480i/24P, 480i/24PA ●50 Hz System: **1080i/50i**, 1080i/25P, 720P/50P, 720P/25P, 720P/25PN, 576i/50i, 576i/25P
480i (576i) REC MODE	Selects the 480i (576i) recording mode. ●**DVCPRO50**/DVCPRO DV
REC FUNCTION	Selects the special recording mode. ●**NORMAL**, INTERVAL, ONE SHOT, LOOP
ONE SHOT TIME	Selects the one-shot recording time. ●**1F,** 2F, 4F, 8F, 16F, 1s
INTERVAL TIME	Sets the interval time (INT) for interval recording (INTERVAL REC). ●**2F**, 4F, 8F, 16F, 1s, 2s, 5s, 10s, 30s, 1m, 5m, 10m
START DELAY	Sets the START delay time for INTERVAL REC and ONE SHOT REC.
PREREC MODE	Sets PRE RECORDING to ON or OFF. (Fixed to 3 seconds for HD and 7 seconds for SD) ●ON, **OFF**
TC MODE	Selects the time code correction mode when recording the time code output by the internal time code generator. ●**DF: Uses the drop frame mode.** ●NDF: Uses the non-drop frame mode. The non-drop frame mode is used when a frame rate of 24P, 24PA, or 24PN is selected in a recording format regardless of TC MODE setting.
TC IN UB REGEN	Selects the user bits to be recorded when recording signals from a device connected to the TC IN connector. ●ON: Records the user bits of the signal input to the TC IN connector. ●**OFF: Records the user bits selected in the menu option UB MODE.** • Setting this option to ON prioritizes the input signal over the settings made in the menu option UB MODE. • No user bits are recorded when the input signal does not contain any user bits. • Settings of the menu option UB MODE are used when no signal is input to the TC IN connector.
UB MODE	Set the content for user information. ●USER: Records the information of user. ●TIME: Records the time at recording. ●DATE: Records the date at recording. ●TCG: Records the values of the time code generator. ●**FRM. RATE: Records the frame rate information for frame conversion.**  a: Checking information for user information b: Frame sequence No. • 0 to 4 are displayed in 24P/24P (ADV) mode. • F is displayed in 60i/30P mode. c: Frame rates • Frame rate (60/30/24) • I/P ID • Conversion data • Frame rate coefficient d: Recording management data • Frame update information • REC START/STOP information

AUDIO SETUP screen

Item	Description of settings (Items in bold are factory settings.)
FRONT VR CH1	Selects the function of the F. AUDIO LEVEL control of CH1 input. ●FRONT: The F. AUDIO LEVEL control controls FRONT1 input. ●REAR: The F. AUDIO LEVEL control controls REAR1 input. ●ALL: The F. AUDIO LEVEL control controls both FRONT1 and REAR1 inputs. ●**OFF: The F. AUDIO LEVEL control does not control the input signal.** This control is disabled when the AUDIO SELECT CH1 switch is set to AUTO.
FRONT VR CH2	Selects the function of the F. AUDIO LEVEL control of CH2 input. ●FRONT: The F. AUDIO LEVEL control controls FRONT2 input. ●REAR: The F. AUDIO LEVEL control controls REAR2 input. ●ALL: The F. AUDIO LEVEL control controls both FRONT2 and REAR2 inputs. ●**OFF: The F. AUDIO LEVEL control does not control the input signal.** This control is disabled when the AUDIO SELECT CH2 switch is set to AUTO.
MIC LOWCUT CH1	Turns on and off the CH1 microphone lowcut filter. ●ON, **OFF**
MIC LOWCUT CH2	Turns on and off the CH2 microphone lowcut filter. ●ON, **OFF**
MIC LOWCUT CH3	Turns on and off the CH3 microphone lowcut filter. ●ON, **OFF**
MIC LOWCUT CH4	Turns on and off the CH4 microphone lowcut filter. ●ON, **OFF**
LIMITER CH1	Turns on and off the CH1 limiter. ●ON, **OFF**
LIMITER CH2	Turns on and off the CH2 limiter. ●ON, **OFF**
LIMITER CH3	Turns on and off the CH3 limiter. ●ON, **OFF**
LIMITER CH4	Turns on and off the CH4 limiter. ●ON, **OFF**
AUTO LEVEL CH3	Selects the method for selecting CH3 level. ●ON: Automatically controls CH3 level. ●**OFF: Enables dial control of CH3 level via dial.**
AUTO LEVEL CH4	Selects the method for selecting CH4 level. ●ON: Automatically controls CH4 level. ●**OFF: Enables dial control of CH4 level via dial.**
25M REC CH SEL	Selects the audio channels to be recorded in the DVCPRO and DV formats. ●**2CH: Only recorded on CH1 and CH2.** ●4CH: Recorded on channels 1 to 4.
TEST TONE	Selects the test signal. ●OFF: Disables test tone output. ●**NORMAL: Outputs test tones to channels 1, 2, 3 and 4 when the OUTPUT/AUTO KNEE selector switch is set to BARS and the AUDIO IN switch CH1 is set to FRONT.** ●ALWAYS: Outputs test tones to channels 1, 2, 3 and 4 when the OUTPUT/AUTO KNEE selector switch is set to BARS. ●CHSEL: Outputs test tones to channels where the AUDIO IN switch CH1 or CH2 is set to FRONT with the OUTPUT/AUTO KNEE selector switch set to BARS.
F.MIC POWER1	Turns on and off the phantom power supply for the front microphone connected to CH1. ●**ON**, OFF
F.MIC POWER2	Turns on and off the phantom power supply for the front microphone connected to CH2. ●**ON**, OFF
R.MIC POWER	Turns on and off the phantom power supply for the rear microphone. ●**ON**, OFF
F.MIC CH1 LEVEL	Selects the input level for the front microphone connected to CH1. ●–40 dB, **–50 dB**, –60 dB
F.MIC CH2 LEVEL	Selects the input level for the front microphone connected to CH2. ●–40 dB, **–50 dB**, –60 dB
R.MIC CH1 LEVEL	Selects the input level for the rear microphone connected to CH1. ●–50 dB, **–60 dB**
R.MIC CH2 LEVEL	Selects the input level for the rear microphone connected to CH2. ●–50 dB, **–60 dB**
HEADROOM	Sets the headroom (standard level). ●59.94Hz System: 18 dB, **20 dB** ●50 Hz System: 18 dB, **20 dB**
MONITOR MODE	Switches speaker and headphone audio delay. ●LIVE: No audio delay ●**RECORDING: Recorded (delayed) audio**

OUTUT SEL screen

Item	Description of settings (Items in bold are factory settings.)
CMPNT/SDI SEL	Selects D or SDI connector. ●59.94Hz system: **720P**, 1080i, 480i ●50 Hz system: **720P**, 1080i, 576i
SDI METADATA	Turns on and off metadata superimposition onto the HS-SDI signal. ●**ON**, OFF
SDI EDH	Turns on and off EDH superimposition onto the SD-SDI signal. ●**ON**, OFF
TC VIDEO SYNCRO	Selects whether to delay time code output. ●**TC IN: Outputs the input from the TC IN connector without delay.** ●VIDEO: Outputs the time code with delay according to the output video.

DISPLAY SETUP screen

Item	Description of settings (Items in bold are factory settings.)
ZEBRA DETECT	Selects the brightness level of the leftleaning zebra patterns on the screen. ●50 %, 55 %, 60 %, 65 %, 70 %, 75 %, **80 %**, 85 %, 90 %, 95 %, 100 %, 105 %
MARKER	Select ON to display the marker. ●**ON**, OFF To display the marker.
SAFETY ZONE	Sets SAFETY ZONE. ●OFF, **90 %**, 4:3
DATE/TIME	Sets whether to display the date and time on the screen and whether to output from the VIDEO IN/OUT jack. ●**OFF: The date and time are not displayed.** ●TIME: The time is displayed. ●DATE: The date is displayed. ●TIME&DATE: The time and date are displayed.
LEVEL METER	Select ON to display the audio level meter. ●**ON**, OFF
ZOOM	Turns zoom value display on and off. ●**ON**, OFF Displays zoom values between Z00 to Z99.
CARD/BATT	Turns on and off card and battery remaining level. ●**ON**, OFF
P2CARD REMAIN	Switches the indication of remaining P2 memory card capacity. ●**TOTAL: Indicates total remaining capacity of all cards.** ●ONE CARD: Indicates the remaining capacity of the card that is being recorded.
OTHER DISPLAY	Select how much information to display on the screen. ●OFF, **PARTIAL**, ALL
LCD BACKLIGHT	Adjusts the backlight of the LCD monitor. Select HIGH for brighter backlight. ●HIGH, **NORMAL**
LCD SET	Adjusts the display level of the images on the LCD monitor. ●LCD COLOR LEVEL, LCD BRIGHTNESS ,LCD CONTRAST Select to set respective value using the right and left cursor keys.
SELF SHOOT	Selects the LCD mirror mode for self-portrait shooting. Select MIRROR to reverse left and right at self-portrait shooting. ●NORMAL, **MIRROR**
DOWNCON MODE	Switches down-conversion output mode. ●SIDE-CROP: Side-crop mode ●**LETTER-BOX: Letter-box mode** ●SQUEEZE: Squeeze mode
DISPLAY ASPECT	Selects the aspect ratio of the LCD monitor and the viewfinder. ●**AUTO: Changes automatically to the appropriate ratio according to the recording or play mode information.** ●4:3: Fixed at 4:3. Black bands appear at the top and bottom of the screen when images are displayed at a 16:9 aspect ratio. No parts of the images are missing.
MENU BACK	Selects whether to lower the transparency of the background to make menu text easier to read. ●**ON: Lowers background transparency. This function is not available for synchro scan and LCD SET pages.** ●OFF: Sets a background transparency of 100%.

BATTERY SETUP screen

Item	Description of settings (Items in bold are factory settings.)
EXT DC IN SEL	Selects external DC power supply type. ●**AC ADAPTER: AC adapter** ●BATTERY: battery
BATTERY SELECT	Selects battery type. ●PROPAC14, TRIMPAC14, HYTRON50, HYTRON140, **DIONIC90**, DIONIC140, NP-L7, ENDURA7, ENDURA10, ENDURA-D, PAG L95, BP-GL65/95, NICD14, TYPE A, TYPE B
BATTERY MODE	Near end setting ●**AUTO: Automatically sets one of the following battery types.** PROPAC14, TRIMPAC14, HYTRON50, HYTRON140, DIONIC90, DIONIC140, NP-L7, ENDURA7, ENDURA10, ENDURA-D, PAG L95, BP-GL65/95 ●MANUAL: Manually enter near end voltage for battery types other than those listed above.
PROPAC14 NEAR	Sets near end voltage for PROPAC14 • Adjustable in 0.1 V units.
TRIMPAC14NEAR	Sets near end voltage for TRIMPAC14 • Adjustable in 0.1 V units.
HYTRON50 NEAR	Sets near end voltage for HYTRON50 • Adjustable in 0.1 V units.
HYTRON140 NEAR	Sets near end voltage for HYTRON140 • Adjustable in 0.1 V units.
DIONIC90 NEAR	Sets near end voltage for DIONIC90 • Adjustable in 0.1 V units.
DIONIC160 NEAR	Sets near end voltage for DIONIC160 • Adjustable in 0.1 V units.
NP-L7 NEAR	Sets near end voltage for NP-L7 • Adjustable in 0.1 V units.
ENDURA7 NEAR	Sets near end voltage for ENDURA7 • Adjustable in 0.1 V units.
ENDURA10 NEAR	Sets near end voltage for ENDURA10 • Adjustable in 0.1 V units.
ENDURA-D NEAR	Sets near end voltage for ENDURA-D • Adjustable in 0.1 V units.
PAGL95 NEAR	Sets near end voltage for PAG L95 • Adjustable in 0.1 V units.
BP-L65/95 NEAR	Sets near end voltage for BP-GL65/95 • Adjustable in 0.1 V units.
NICD14 NEAR	Sets near end voltage for NICD14 • Adjustable in 0.1 V units.
NICD14 END	Sets end voltage for NICD14 • Adjustable in 0.1 V units.
TYPEA FULL	Sets full voltage for TYPE A • Adjustable in 0.1 V units.
TYPEA NEAR	Sets near end voltage for TYPE A • Adjustable in 0.1 V units.
TYPEA END	Sets end voltage for TYPE A • Adjustable in 0.1 V units.
TYPEB FULL	Sets full voltage for TYPE B • Adjustable in 0.1 V units.
TYPEB NEAR	Sets near end voltage for TYPE B • Adjustable in 0.1 V units.
TYPEB END	Sets end voltage for TYPE B • Adjustable in 0.1 V units.
NEAR END CANCEL	Selects whether to cancel battery near end warning or not.

CARD FUNCTIONS screen

Item	Description of settings
SCENE FILE	Reads/writes a scene file from/onto the SD memory card. ●READ: Loads the selected scene file (F1 to F6) values from an SD memory card. ●WRITE: Saves the current scene file (F1 to F6) settings to the SD memory card.
USER FILE	Reads/writes user files (files other than scene files) from/onto the SD memory card. ●READ: Loads the user file settings from an SD memory card. ●WRITE: Saves the current user file settings to the SD memory card.
SD CARD FORMAT	Formats the SD memory cards or not. ●----: Does not format. ●YES: Format.

LENS SETUP screen

Item	Description of settings (Items in bold are factory settings.)
SHADING SELECT	Selects one of the following shading compensation parameters. ●**DEFAULT: Standard lens setting** ●USER1: User setting 1 ●USER2: User setting 2 ●USER3: User setting 3 ●OFF: Sets shading compensation to OFF.
SHADING (USER)	Selects whether to set shading parameters to SHADING SELECT USER1, 2, and 3 or not. ●----: Off ●YES: On This item is disabled when SHADING SELECT is set to DEFAULT or OFF.
CAC PROPERTY	Selects whether to indicate the currently selected chromatic aberration correction data or not. ●----: Off ●YES: On
CAC DATA READ	Selects whether to load chromatic aberration correction data from the SD card or not. ●----: Off ●YES: On
CAC DATA DELETE	Selects whether to display a list of chromatic aberration data loaded in the camera and to delete the selected item. ●----: Off ●YES: On
CAC DATA INIT	Returns the chromatic aberration data to its factory default setting. ●----: Off ●YES: On
IRIS ADJ	Forcibly sets the iris. ●**OFF: Sets the iris automatically.** / F 2.8 / F 16

OTHER FUNCTIONS screen

Item	Description of settings (Items in bold are factory settings.)
USER FILE	Saves users files on, loads users files from the storage area of the camera (EEPROM), and initializes the storage area. ●----: Off (no operation) ●LOAD: Loads the settings in a user file previously stored on the storage area. ●SAVE: Saves the user file updated settings on the storage area. ●INITIAL: Returns the user settings in the user file to their factory defaults. • After a LOAD or INITIAL operation, turn the POWER switch off and then back on again to make the new settings available. • An INITIAL operation does not change the setting of the menu option TIME ZONE.
1394CONTROL	Sets the control method for backup recording using a backup unit connected to the 1394 terminal. ●**OFF: The backup unit is not controlled.** ●EXT: The backup unit can be controlled by the START/STOP button. The images shot by the camera recorder are recorded by the backup unit. Note that the camera recorder does not record them. ●BOTH: The images shot by the camera recorder are recorded by both the camera recorder and backup unit. ●CHAIN: When the camera recorder's media approaches its end during shooting, the backup unit in the recording standby mode automatically starts recording images.
1394CMD SEL	Sets how the START/STOP button works for the backup unit. ●**REC_P: This switches between recording and pause.** ●STOP: This switches between recording and stop. If the backup unit does not have a rec pause function, select STOP.
PC MODE	Selects the terminal for data transfer. (You cannot select USB and 1394 at the same time.) ●USB DEVICE: Mode for sending files using the USB connector. ●**1394 DEVICE: Mode for sending files using the 1394 connector.** ●1394 HOST: Mode for copying files from the P2 card onto an external hard disk drive using the 1394 connector.
ACCESS LED	Enables or disables the access LED. The L-SIDE is the left side as seen from the lens (the P2 card slot side). ●OFF L-SIDE: OFF R-SIDE: OFF ●SLOT SIDE L-SIDE: ON R-SIDE: OFF ●LCD SIDE L-SIDE: OFF R-SIDE: ON ●BOTH L-SIDE: ON R-SIDE: OFF
ALARM	Turns the alarm function on and off. ●**ON**, OFF
SAVE LED	Sets the SAVE lamp operation. ●**SAVE: Lights when the SAVE/STBY switch is set to SAVE. Off during recording.** ●P2CARD: Blinks when a warning message appears to indicate that there is little space left on a P2 card.
CLOCK SET	Sets the camera-recorder's calendar.
TIME ZONE	Adds to or deducts from GMT the time value of –12:00 to +13:00 in 30-minute steps. (As an exception, you can set +12:45.) (Page XX) ●**+9:00**
LANGUAGE	Sets the Menu language. ●ENGLISH ●JAPANESE ●CHINESE
GL SELECT	Determines which signal to lock on to. ●**SDI**, COMPOSITE, COMPONENT
GL PHASE	Determines whether to perform a 90H shift (ON) or not (OFF). ●ON, **OFF**
H PHASE	Adjusts the phase. ●–511 ~ **0** ~ +511
SYSTEM FREQ	Switches between NTSC and PAL. ●59.94 Hz, 50 Hz

VF! LED screen

Item	Description of settings (Items in bold are factory settings.)
GAIN	Sets the conditions (gain value) for lighting the “!” symbol LED in the viewfinder. ●**w/o0 dB: other than 0 dB** ●OFF: Off
WHITE	Sets the conditions (white balance value) for lighting the “!” symbol LED in the viewfinder. ●PRE: Preset ●**OFF: Off**
SHUTTER	Sets the conditions (shutter status) for lighting the “!” symbol LED in the viewfinder. ●**ON**, OFF
FILTER	Sets the conditions (filter status) for lighting the “!” symbol LED in the viewfinder. ●NG: Abnormal ●No1: No1 ●w/o No1: other than No 1 ●**OFF: Off**
EXTENDER	Sets the conditions (extender status) for lighting the “!” symbol LED in the viewfinder. ●**ON**, OFF

Chapter 8 Connecting to External Devices

Connecting to External Devices Using USB2.0 Port (PC mode)

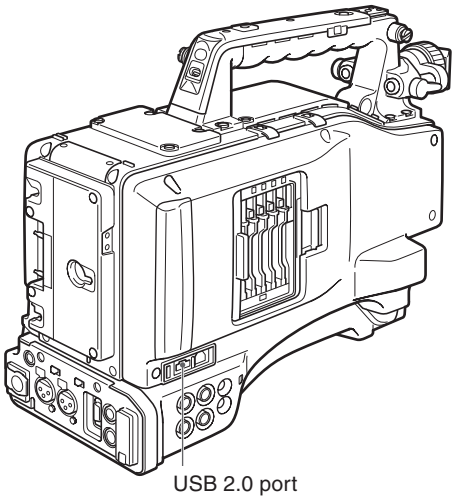
By connecting the AG-HPX500P/E with an external PC using USB 2.0, the P2 card connected to the AG-HPX500P/E can be used as a mass storage device.

Procedures for establishing a connection with a PC

1 Connect the USB cable to the USB 2.0 port.

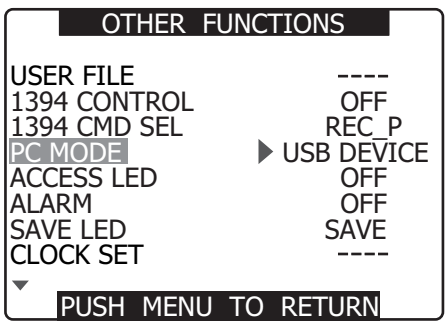
<Notes>

- **The USB 2.0 cable is not included with AG-HPX500P/E. Please use a commercially available USB 2.0 cable (shield with a ferrite core).**
- **The length of the USB cable shall be not exceed 3 meters. Using a USB cable whose length is greater than 3 meters might result in erroneous operations.**



USB 2.0 port

2 Open the setting menu <OTHER FUNCTIONS> screen, and set the menu option PC MODE to USB DEVICE.



3 Press the setting menu button to end menu operations.

4 Press the MODE button to turn on the MCR mode LED and keep the button held down.

- This lights the PC mode LED indicating that the unit is in the PC mode.

5 Edit data on the PC.

- For details, refer to the Operating Instructions supplied with the PC.

When you establish the USB connection for the first time, install the accessory P2 software for AG-HPX500P/E on the PC. Refer to the Installation Manual for the details.

<Notes>

- **A USB driver must be installed on the PC.**
- **AG-HPX500P/E is only applicable to USB 2.0, not to USB 1.1.**
- **Only one AG-HPX500P/E at a time must be connected to the PC via USB.**
- **The P2 card must not be removed when it is connected via USB.**
- **While a USB connection is established, the P2 card's access LED should not be lit except when access is being carried out.**
- **Recording, playback and clip thumbnail operations cannot be performed when the PC MODE is set to USB DEVICE.**

- "CONNECT" lights during USB connection. "USB DEVICE" appears in the system information and warning area in the viewfinder.
- This indication blinks when the devices are not correctly connected.

6 To exit the PC MODE, turn the POWER switch OFF.

Connecting to external devices using the IEEE1394 connector (PC mode)

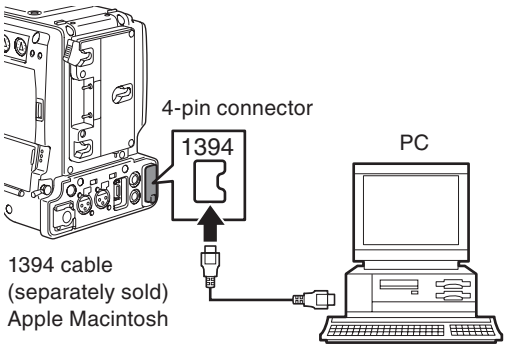
Connecting an external PC or hard disk to this unit via IEEE1394 makes it possible to use the P2 cards in this unit as mass storage.

Procedures for establishing a connection with a PC

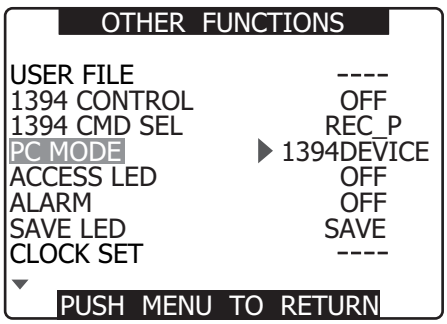
1 **Connect the IEEE1394 cable to the 1394 connector.**

<Note>

- **An IEEE1394 cable is not supplied. Purchase a commercially available cable.**
- **Use a Macintosh computer running Apple® Mac OS® X in version 10.3 or later.**
- **This operation is not guaranteed under Windows®.**



2 **Open the setting menu <OTHER FUNCTIONS> screen and set the menu option PC MODE to 1394DEVICE.**



3 **Press the setting menu button to end menu operations.**

4 **Press the MODE button to turn on the MCR mode LED and keep the button held down.**

- This lights the PC mode LED indicating that the unit is in the PC mode.

5 **Edit data on the PC.**

- For details, refer to the Operating Instructions supplied with the PC.

When using an IEEE1394 connection for the first time, first install the P2 software on the supplied CD-ROM on the computer. For details, refer to the Installation Manual.

<Note>

- **Do not remove P2 cards when using an IEEE1394 connection.**
- **In an IEEE1394 connection, the P2 CARD ACCESS LED is on only when the card is accessed.**
- **Recording, playback and clip thumbnail operations cannot be performed when the PC MODE is set to 1394DEVICE.**

When the unit is connected to an IEEE1394 device, “1394DEVICE CONNECT” is displayed in the system information and warning area in the viewfinder. This indication blinks when the devices are not correctly connected.

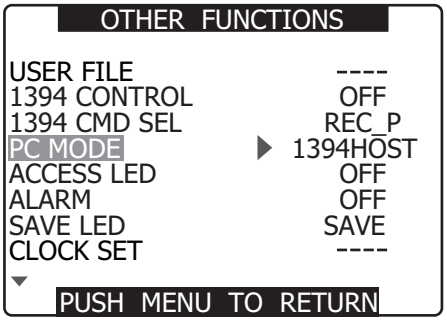
6 **To exit the PC mode, turn the POWER switch OFF.**

Procedures for connecting a hard disk

<Note>
- **Use a hard disk with sufficient space for copying.**
- **Format the hard disk for this unit. Note that this deletes all existing data on the hard disk.**
- **Connect this unit to a hard disk with a 1394 cable.**
- **Even if the hard disk is turned off, be sure to make only one connection. There must be no multiple connections (chaining, hub connections, etc.).**

1 Turn on the hard disk (1394.a SBP2 compliant), connect the IEEE1394 cable, and then turn on this unit.

2 Open the setting menu OTHER FUNCTIONS screen and set the menu option PC MODE to 1394HOST.



3 Press the setting menu button to end menu operations.

4 Press the MODE button to turn on the MCR mode LED and keep the button held down.
- This lights the PC mode LED indicating that the unit is in the PC mode.

5 Select a card slot and copy the data to the hard disk.

6 Turn the POWER switch OFF when copying completes.

<Note>
- **Data cannot be copied from the hard disk to a P2 card.**
- **Use hard disks under the following conditions.**
  - **Use a separate power supply (not the 1394 bus) to power the hard disk since this unit cannot supply power.**
  - **Format the hard disk for this unit.**
  - **Operate hard disks within its operating specifications (temperature, etc.).**
  - **Do not use hard disks in locations that are unstable or exposed to vibration.**
- **Some hard disks may not operate normally.**
- **During formatting and copying, do not disconnect cables, do not remove a P2 card that is involved in any of these activities and do not power off this unit and the hard disk. Any of these operations will require rebooting the hard disk.**
- **If you first set PC MODE to 1394HOST before connecting a hard disk (1394.a SBP2 compliant), normal operation is not guaranteed. Turn the power off and exit the 1394HOST mode.**
- **A hard disk is a precision instrument whose read and write functions may fail in some operating environments. Please note that Panasonic accepts no liability whatsoever for data loss or other losses either direct or indirect arising from hard disk damage or other defects.**
- **When the hard disk used to copy data from this unit is replaced with another device (PC, etc.), the data may no longer work in this unit and the hard disk data may have become corrupted.**

Warnings

- **HDD CAPACITY FULL!**
  There is not enough space left on the hard disk.
- **TOO MANY PARTITIONS!**
  There are too many partitions.
- **HDD DISCONNECTED!**
  The unit is not connected to a hard disk.
- **CANNOT INITIALIZE!**
  The hard disk cannot be initialized.
- **TOO MANY TARGETS!**
  There are too may 1394 connections.
- **CANNOT ACCESS TARGET!**
  The connected device cannot be accessed.
- **CANNOT ACCESS CARD!**
  The card cannot be accessed.
- **MISMATCH COMPONENT!**
  There is a mismatch with the connected device.
- **UNKNOWN DEVICE CONNECTED!**
  A device other than a hard disk is connected.
- **P2 CARD IS UNFORMATTED!**
  The P2 card has not been formatted.
- **CARD IS EMPTY! CANNOT COPY!**
  There is no data on the P2 card to copy.
- **VERIFICATION FAILED!**
  Verification turned up a mismatch.
- **TURN POWER OFF!**
  Turn off the power.
- **CANNOT RECOGNIZE HDD!**
  Hard disk recognition failed.

DVCPRO DV Connection via 1394 Connector

Recording DVCPRO DV signals input to 1394 connector

1 **Connect a 1394 cable (DV cable).**
- For details, see [Precautions in 1394 Connections].
- Make sure that the signal format of the camera and the connected device is the same.

2 **To input via the IEEE1394 interface, enter MCR mode and turn off thumbnails.**

<Note>
- **Input signals that have the same format as the setting menu MCR FORMAT and REC MODE to the IEEE1394 interface. A signal in a different format will not be correctly recorded on a P2 card. Video and audio recording and EE type video and audio of signal inputs other than 1x speed playback signals may not work. For details, see [Errors].**
- **Audio signal inputs are input signals from the 1394 connector.**
- **32 kHz/4CH (12 bit) audio signals input via the IEEE1394 interface are recorded as 48 kHz/4CH (16 bit) on a P2 card.**
- **It is not possible to use the GENLOCK IN connector to synchronize to an external reference signal.**
- **Signals output from the VIDEO OUT, MON OUT or AUDIO OUT connectors differ from actual input signals. Use such signals for monitoring.**
- **The following functions do not operate.**
  - **Pre-recording function**
  - **Loop recording function**
  - **Interval recording and one shot recording function**

Time Code and User Bits

- When input from the IEEE1394 interface is selected, the time code or user bits input to the TC IN connector cannot be recorded on a P2 card.
- When input from the IEEE1394 interface is selected, time code output from the TC OUT connector is not synchronized to the video signal output from the MON OUT connector.

Subcode area time codes and user bits

- When input from the IEEE1394 interface is selected and the TCG switch is set to F-RUN and F-RUN TC SAVE is set to 1394, the time code of the subcode area input from the 1394 connector can be recorded on a P2 card.
- To record user bits input from the 1394 connector on a P2 card, set the setting menu 1394 UB REGEN to ON.

VAUX area time codes and user bits

When input from the IEEE1394 interface is selected, time code and user bits of the VAUX area input from the 1394 connector is recorded on a P2 card regardless of camera menu settings and switch positions.

Recording UMID (Unique Material Identifier) data

When input from the IEEE1394 interface is selected, UMID data input via the 1394 connector is recorded on a P2 card. When no UMID data is available, the camera generates and records such data.

Control of external devices through 1394 connection

Using the 1394 interface to connect an external device for backup recording allows the operator to control start and stop operation of backup recording from the camera.

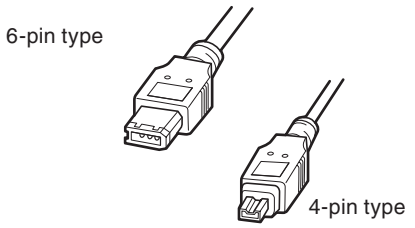
1 **Connect a 1394 cable (DV cable).**
- For details, see [Precautions in 1394 Connections].
- Set 1394 CONTROL in the setting menu OTHER FUNCTION screen to BOTH.

2 **Use the setting menu 1394 CMD SEL to select the command for terminating recording that external devices receive.**

<Note>
When the camera is set to REC RUN to perform backup recording on a connected external device, the advance of time code from the 1394 connector will stop when all P2 cards have been fully recorded regardless of whether backup recording continues.

Precautions in 1394 Connections

- The camera does not supply power via the cable.
- Observe the following in connections using a 1394 cable (DV cable).
  - Connect this unit to only one other device.
  - Do not expose the 1394 connector to excessive force when connecting a 1394 cable (DV cable) to avoid damaging the connector.
  - If an error (1394 INITIAL ERROR) should occur when making a connection, reinsert the 1394 cable or turn the camera off and then turn it back on again.
  - Make sure that the camera and all connected devices are connected to ground (or connected to a common ground). If the equipment cannot be connected to ground, turn off all connected devices before connecting or disconnecting an IEEE 1394 cable.
  - When connecting the unit to a device with a 4-pin connector, connect the cable to the 6-pin connector on the camera first.
  - Be sure to properly connect the 1394 cable to a personal computer with a 6-pin connector. Note that inserting the plug the wrong way round may damage the connector.



- AV signals may be disrupted when connected devices are turned on and off or when the interface cable is connected or disconnected.
- It may take the system a few seconds to stabilize after switching input signals or changing modes. Start recording after the system has stabilized.
- The AUDIO LEVEL control does not work in recordings that involve IEEE1394 interface input or output signals.
- Observe the following precautions when controlling a P2 memory card camera-recorder using PC application software (editing software).
  - Recording cannot be inserted to a portion within a clip. It can only be appended to the end of the newest clip.
  - Do not open the thumbnail screen as this will prevent normal operation of the application software.
- Unprocessed video and audio signals are output via the IEEE 1394 interface during special playback. When monitored on another device, these video and audio signals may sound different than when played back on this unit.
- CH1 and CH2 audio channel signals for the DV or DVCPRO (25M) format are output via the IEEE1394 interface.

P2 card recording times

Model number	AJ-P2 C004HG	AJ-P2 C008HG	AJ-P2 C016RG
Capacity	4 GB	8 GB	16 GB
DVCPRO DV Audio 2CH	Approx. 16 min.	Approx. 32 min.	Approx. 64 min.
DVCPRO50 Audio 4CH	Approx. 8 min.	Approx. 16 min.	Approx. 32 min.
DVCPRO HD*1	Approx. 4 min.	Approx. 8 min.	Approx. 16 min.
DVCPRO HD 720P/24PN	Approx. 10 min.	Approx. 20 min.	Approx. 40 min.
DVCPRO HD 720P/30PN 720P/25P	Approx. 8 min.	Approx. 16 min.	Approx. 32 min.

*DVCPRO HD excludes 720P/30PN, 720P/24PN and 720P/25PN.

- This unit cannot use AJ-P2C002SG (2 GB) cards.
- The indicated capacities include a management area so the total area available for recording is somewhat smaller.

Splitting clips recorded on P2 cards

A continuous recording that is longer than the durations given below on an 8 GB P2 card in this camera will result in the automatic division of the recording into different clips. Even so, the recordings on the two clips can be handled as a single clip in thumbnail operations (display, delete, recover, copy, etc.) on a P2 device.
Such a recording may be handled as separate clips by nonlinear editing software or on PCs.

Recording format	Recording duration
DVCPRO HD*	Approx. 5 min.
DVCPRO50	Approx. 10 min.
DVCPRO DV	Approx. 20 min.

*DVCPRO HD excludes 720P/30PN, 720P/24PN and 720P/25PN.

- Use of cards other than the above may require updating the camera driver.

For details, see [Updating Camera Drivers].

- For the latest information not available in the Operating Instructions, visit the P2 Support Desk at the following Web sites.
  http://panasonic.biz/sav/

Chapter 9 Maintenance and Inspections

Inspections Before Shooting

Make sure you check that the system is operating normally before embarking on a shoot. We recommend using a colour video monitor to check the image.

Preparing for Inspections

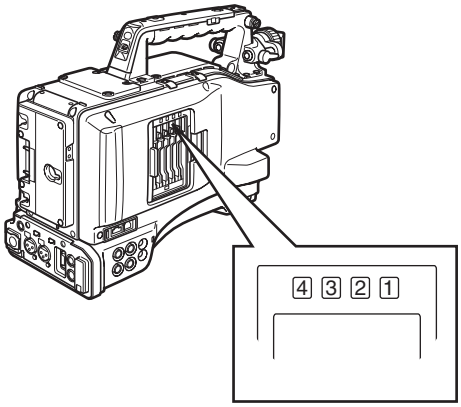
1 **Mount a charged battery pack.**

2 **Turn the POWER switch to ON to check the battery remaining level in the viewfinder.**

- When battery capacity is low, replace it with a fully charged battery.

3 **Insert a P2 card into the card slot and close the slide cover.**

- Confirm that the P2 card access LED for the inserted card slot lights up in orange. If P2 cards are inserted into multiple card slots, only the P2 card access LED for the first-inserted P2 card lights up in orange. Then, the other P2 card access LEDs light up in green when P2 cards are inserted.
- If the access LED for the P2 card slot in which a P2 card is inserted keeps blinking in green, or if there is no display, recording is not possible on that particular P2 card.



Inspecting the Camera Unit

1 Set the zoom to electric zoom mode and check the zoom operation.
- Check that the image changes to telephoto and wide angle.

2 Set the zoom to manual zoom mode and check the zoom operation.
- Turn the manual zoom lever to check that the image changes to telephoto and wide angle.

3 Set the iris to automatic adjustment mode and aim the lens at objects with different degrees of brightness, to check that the automatic iris adjustment operates normally.

4 Set the iris to manual adjustment mode and turn the iris ring, to check the manual iris adjustment.

5 While holding down the instant iris automatic adjustment button, aim the lens at objects with different degrees of brightness, to check that the instant iris automatic adjustment operates properly.

6 Return the iris to automatic adjustment mode and change the GAIN switch setting to L, M, and H, to check the following items:
- The iris is adjusted for objects with the same brightness according to the switch setting.
- The gain value displayed on the viewfinder screen changes according to the switch setting.

7 When a lens with an extender is mounted, set the extender to the operating position to check that the extender operates properly.

Inspecting the Memory Recording Functions

Make sure you successively carry out the inspections from [Inspecting the P2 Card Recording] to [Inspecting the Earphone and Speaker].

Inspecting the P2 Card Recording

1 Check on the display inside the viewfinder that the remaining P2 card recording capacity is sufficient.
Please refer to [P2 Card Status Display] for information about P2 card remaining recording capacity.

2 Set the TCG switch to [R-RUN].

3 Set the COUNTER button to TC.

4 Press the camera's REC START/STOP button to check the following items:
- The P2 access LED blinks in orange.
- The REC lamp inside the viewfinder lights up.
- System warnings do not appear inside the viewfinder.

5 Press the camera's REC START/STOP button again.
- This step confirms that the P2 access LED is on and showing orange, and the REC lamp in the viewfinder is turned off.

6 Using the REC button on the handle, repeat Steps 4 to 5 to check the same operation.
- Check the VTR button on the lens in the same way.

7 Press the PLAY button to check that the clip that has just been shot is played back from the beginning.
- Check that recording and playback operate properly.

8 **Use the USER button to which the SLOT SEL function has been assigned to select P2 cards for recording when more than one P2 card is inserted in the card slots.**
- Repeat the operations in Steps 4 to 5 and 7 to check that recording and playback operate properly.

Inspecting the Audio Level Automatic Adjustment

1 **Set the AUDIO SELECT CH1 and CH2 switches to [AUTO].**

2 **Set the AUDIO IN switch to [FRONT].**

3 **Aim the microphone connected to the MIC IN jack at an appropriate sound source. Then, check that the level displays for both CH1 and CH2 change according to the sound level.**

Inspecting the Audio Level Manual Adjustment

1 **Set the AUDIO IN switch to [FRONT].**

2 **Set the AUDIO SELECT CH1 and CH2 switches to [MAN].**

3 **Turn the AUDIO LEVEL CH1 and CH2 controls.**
- Check that the level display increases when the controls are turned to the right.

4 **Set the AUTO LEVEL CH3 and AUTO LEVEL CH4 in the setting menu AUDIO SETUP screen to ON.**

5 **Set the MONITOR SELECT switch to CH3/CH4 and turn the AUDIO LEVEL CH3/CH4 controls clockwise to check that the level indication increases.**

Inspecting the Earphone and Speaker

1 **Turn the MONITOR control to check that the speaker volume changes.**

2 **Connect an earphone to the PHONES jack.**
- Check that the speaker is turned off and the microphone sound can be heard from the earphone.

3 **Turn the MONITOR control to check that the earphone volume changes.**

Inspection for Using an External Microphone

1 **Connect an external microphone to the REAR 1 and REAR 2 connectors.**

2 **Set the AUDIO IN switch to [REAR].**

3 **Set the LINE/MIC/+48V selector switches on the rear panel to [MIC] or [+48V], depending on the power supply type of the external microphone.**
- **MIC:** For a microphone with internal power supply.
- **+48V:** For a microphone with external power supply.

4 **Set the LINE/MIC/+48V selector switch on the rear panel to MIC or +48 V as required by the power supply of the external microphone.**
- **MIC:** microphone with internal power supply
- **+48V:** microphone powered from external power supply

5 **Aim the microphone at the sound source and check that the sound level indication in the LCD or viewfinder varies with changes in sound intensity.**
- The channels can also be checked separately by connecting a single microphone to each channel.

Inspection of the clock, time code, and user bits

1 **Set the user bits as required.**
Please refer to [Setting the User Bits] for the setting procedures.

2 **Set the time code.**
Please refer to [Setting the Time Code] for the setting procedures.

3 **Set the TCG switch to [R-RUN].**
- Press the COUNTER button to display the time code on the LCD monitor or in the viewfinder.

4 **Press the REC START/STOP button.**
- Check that the counter display number changes as recording progresses.

5 **Press the REC START/STOP button again.**
- Check that recording stops and the counter display number stops changing.

6 **Set the TCG switch to [F-RUN].**
- Check that the counter display number changes regardless of recording status.

7 **Hold down the DISP/MODE CHECK button to check the date and time on the LCD monitor or in the viewfinder.**
- Adjust the date and time setting if the DATE, TIME and time zone is not correctly displayed. For details, see [Setting Date and Time of Internal Clock].

<Note>
Note that date and time data set for DATE, TIME, and time zone is recorded in clips, and affects the playback sequence, etc. at the time of thumbnail manipulations.

Maintenance

Cleaning Inside the Viewfinder

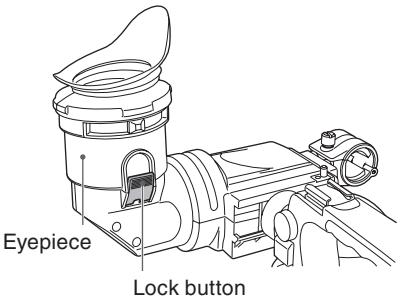
- Do not use thinner or other solvents to remove dirt from the viewfinder.
- Wipe the lens with a commercially available lens cleaner.
- DO NOT wipe the mirror. If dirt or rubbish is sticking on the mirror, remove it with a commercially available air blower.

Eyepiece Care

When the CRT screen and the mirror become dusty, open the eyepiece to clean it.

<Note>

The mirror is provided with a special coating. Use a blower or similar tool to remove dust from the mirror. Using tissue paper will cause dust particles to scrape against and damage the mirror surface. Use a commercially available hair-planted cloth (such as a lens cleaner) to remove more stubborn dirt.



Opening the eyepiece

Press the lock button.

Closing the eyepiece

Press the eyepiece until the lock button clicks into place to close the eyepiece.

<Note>

When outdoors, never carry or set up the camera with the eyepiece facing up to prevent sunlight, which could damage the internal parts of the eyepiece.

Phenomenon Inherent to CCD Cameras

Smears

- Smears may appear when shooting an object with very high brightness.
- This phenomenon may appear more frequently as the electronic shutter speed increases.

Charging the internal battery

The internal battery preserves the date and time settings. The appearance of in the viewfinder or LCD monitor indicates that the internal battery is exhausted.
Follow the steps below to recharge the battery.
Set the date and time when the battery has been fully charged.

1 Connect the camera to an external power source.

- Leave the POWER switch on the camera off.

2 Leave the camera for about 4 hours.

- This is the time it takes to fully charge the internal battery.
- Check the time code and setting menus after completing battery charging.

Replace the internal battery if appears after charging. Consult your distributor.

Warning System

Warning Description Tables

If a problem is detected immediately after the power is turned on, or during operation, this will be indicated by the WARNING lamp, lamps inside the viewfinder and a warning tone.

Priority	Warning type	LCD or viewfinder indication	Viewfinder LED (except tally)	Tally lamp	Warning lamp	Alarm tone *6	Warning description and recording/ playback operation	Countermeasures
1	System error	SYSTEM ERROR Cause indication *1 Red blinking	No	Blinks 4 times per second	Blinks 4 times per second	Continuous tone	P2 microprocessor or control failure. Operation stops.	Check the cause indication (*1) and consult your distributor.
2	Incorrect P2 card removal	TURN POWER OFF Blinks red	No	Blinks 4 times per second	Blinks 4 times per second	Continuous tone	A P2 card was removed during access and card data was corrupted. All four access LEDs blink orange (4 Hz)	Turn off the power. Repair the P2 card if the clips on the card are corrupted.
3	The battery is exhauseted	LOW BATTERY Red blinking or the the last bar in battery level bar blinks. (This indication appears also when MENU indications have been turned OFF.)	No	Blinks 1 time per second	Lights	Continuous tone	The battery is exhausted. Recording and playback stop. The camera stops automatically when the voltage drops.	Replace the battery.
4	P2 card fully recorded	P2 FULL Blinks red (appears only for 3 seconds in MCR mode.)	When SAVE LED is set to P2CARD, the SAVE LED blinks 4 times per second.	Blinks 4 times per second after completion of recording.	Lights after completing recording	Continuous tone after completing recording	No more space on P2 cards left for recording.Stop recording. *3	Delete clips that are no longer needed or insert a new card.
5	Recording error	REC WARNING Cause indication *2 Blinks red	No	Blinks 4 times per second	Blinks 4 times per second	Intermittent tone 4 times per second	A recording error has occurred. Stop recording. *4	Turn the power off and then back on again and check recording and playback. Replace any P2 card that does not enable normal recording.
6	1394 connection errors	1394INTIAL ERROR Blinks red	No	Blinks 4 times per second during recording.	Blinks 4 times per second during recording.	No	Incorrect 1394 connection or signal input/output error.	Check camera and external device connections and reconnect as necessary. Then turn the power off and back on again.
7	PC mode 1394 HOST connection error	No	No	Blinks 4 times per second	Blinks 4 times per second	No	The 1394 cable has become disconnected or multiple devices are connected. (Normal PC mode operation is possible.)	Connect a hard disk drive according to supplied operating instructions.

Priority	Warning type	LCD or viewfinder indication	Viewfinder LED (except tally)	Tally lamp	Warning lamp	Alarm tone *6	Warning description and recording/ playback operation	Countermeasures
8	Battery nearly empty	The last bar in the battery level indication blinks (not if indications have been turned off by the menu)	The BATT LED blinks (during recording, the BATT LED and the tally LED blink alternately; during pause, both LEDs blink.)	Blinks 1 time per second	Blinks 1 time per second	No	The battery is near depletion. Operation continues. *5	Replace the battery as necessary.
9	P2 card nearly fully recorded	The P2CARD level indicator blinks.	When SAVE LED is set to P2CARD, the SAVE LED blinks 1 time per second.	Blinks 1 time per second during recording.	Blinks 1 time per second during recording.	No	Less than 2 minutes is left on the P2 cards (level indicator shows 1 minute or less). This warning appears only during recording.	Replace or insert additional P2 cards.

*1 P2 SYSTEM ERROR cause indication
- P2 MICON ERROR: The P2 microprocessor does not respond
- P2 CONTROL ERROR: A P2 recording error has occurred
- REC RAM OVERFLOW: Overflow of recording RAM

*2 REC WARNING causes
- CARD ERROR*: P2CARD error (* indicates the number of the slot of the card with the error)
- ERROR: Other recording errors

*3 In a transition from thumbnail display to recording, a further transition is made to CAMERA mode where a warning is output. Perform either of the following procedures to cancel this warning.
- Press a playback control button.
- Press the MODE (CAMERA/MCR/PC) button.
- Remove the P2 card and insert another card.

*4 Perform either of the following procedures to cancel this warning.
- Press the REC START button.
- Press a playback control button.
- Press the MODE (CAMERA/MCR/PC) button.
- Remove all cards.

*5 When NEAR END CANCEL is set to ON, you can press the DISP/MODE CHECK button to cancel the alarm.

*6 When the alarm sounds, audio is not output to the camera speakers or headphones. The DISP/MODE CHECK button cancels only the alarm tone when pressed during an alarm.

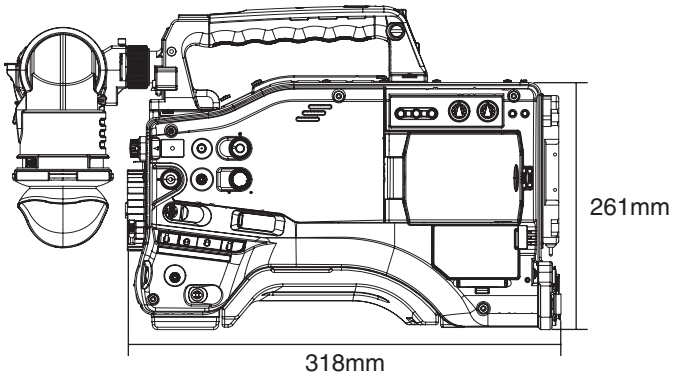
Updating Camera Drivers

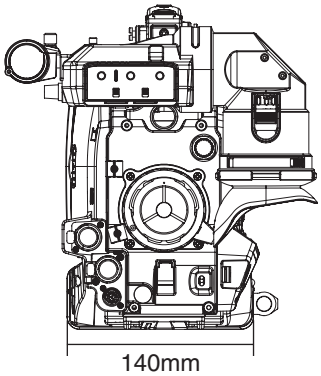
- For the latest information on software drivers, visit the P2 Support Desk at the following Web sites. http://panasonic.biz/sav/
- Before updating the camera driver, check camera driver version in the PROPERTY → SYSTEM INFO in the thumbnail menu. Then access the site listed above to download a driver if necessary.
- Place the downloaded file on an SD memory card and load the driver into the camera. For detailed information on the update procedure, visit the above site.
- Be sure to power the camera from an AC adapter during the installation.
- The camera uses only SD memory cards that comply with the SD specifications.
- Be sure to format SD memory cards in this camera. To format an SD card on a PC, use the following software that can be downloaded from the site listed above.

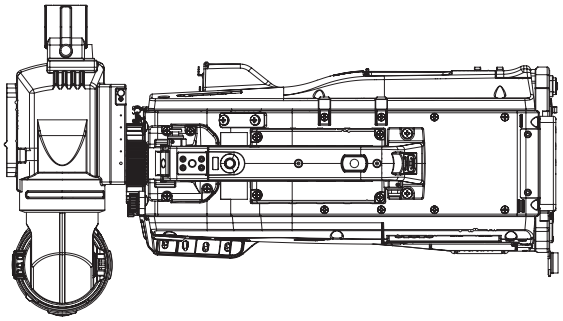
Chapter 10 Specifications

Dimensions and specifications

Dimensions







Specifications

General

Power supply:	DC12 V (11 V to 17 V)
Power consumption:	Approximately 22 W (When 1.5 inch CRT of view finder and 3.5 inch LCD monitor of main unit are ON)
Ambient operating temperature/ humidity:	0 °C to 40 °C/10% to 85% (no condensation)
Weight:	Approximately 3.7 kg (main unit only)
Dimensions (W × H × D):	140 mm × 261 mm × 318 mm (camera excluding handle and prominent parts)

Camera Unit

Pickup devices:	CCD image sensor × 3 (2/3-inch, interline transfer, progressive-capable)
Lens mount:	2/3-inch bayonet type
Color separation optical system:	Prism system
ND filter:	4 positions (CLEAR, 1/4, 1/16, 1/64)
Gain settings:	• 60i/60p mode: 0/+3/+6/+9/+12/+18 dB • In slow shutter mode: gain fixed at 0 dB • 30p/24p/24pA mode: 0/+3/+6/+9/+12 dB • In slow shutter mode: gain fixed at 0 dB
Shutter speed (preset):	• 60i/60p mode: 1/60 (OFF), 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec. • 30p mode: 1/30, 1/50 (OFF), 1/60, 1/120, 1/250, 1/500, 1/1000 sec. • 24p/24pA mode: 1/24, 1/50 (OFF), 1/60, 1/120, 1/250, 1/500, 1/1000 sec. • 50i/50p mode: 1/50 (OFF), 1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec. • 25p mode: 1/25, 1/50 (OFF), 1/60, 1/120, 1/250, 1/500, 1/1000 sec.
Shutter speed (variable):	• 60i mode: 1/60.0 to 1/249.8 • 30p mode: 1/30.0 to 1/249.8 • 24p/24pA mode: 1/24.0 to 1/249.8 (720p only) • 50i/50p mode: 1/50.0 to 1/249.8 • 25p mode: 1/25.0 to 1/249.8
Shutter speed (slow):	• 60i/60p mode: 1/15, 1/30 • 30p mode: 1/15 • 24p/24pA mode: 1/12 (720p only) • 50i/50p mode: 1/12, 1/25 • 25p mode: 1/12
Frame rates:	• 59.94Hz mode: variable 12/18/20/22/24/26/30/32/36/48/60 fps (frames per second) • 50 Hz mode: variable 12/18/20/23/25/27/30/32/37/48/50 fps (frames per second)
Sensitivity:	F10 (Typ)

Memory Card Recorder Unit

Recording format:	DVCPRO HD/DVCPRO50/DVCPRO DV selectable
Recording audio signal:	• PCM digital recording, 48 kHz/16-bits • 4 CH (DVCPRO HD/DVCPRO50), 2 CH/4 CH selectable (DVCPRO DV)
Recording/playback time*:	• Approx. 8 minutes (When recorded in DVCPRO HD format using one AJ-P2C008HG card with audio signals recorded on 4 channels) • Approx. 16 minutes (When recorded in DVCPRO HD format using one AJ-P2C016RG card with audio signals recorded on 4 channels)
Recording media:	P2 Card (4GB, 8GB, 16GB are available) × 4 slots
Recording file:	MXF file (FAT32 file system)
SD memory card slot:	• Complies with SD format (MMC cannot be used) • 1 slot (for reading and writing camera setup data)

* The recording time represents one shot continuously recorded on a P2 card. The recording time may be shorter depending on the number of shots recorded.

■HD video system

Sampling frequency:	Y: 74.25 MHz, Pb/Pr: 37.125 MHz
Quantizing:	8 bits
Video compression system:	DCT + variable-length code
Video compression rate:	1/6.7
Video recording bit rate:	100 Mbps

■Audio system

Sampling frequency:	48 kHz
Quantizing:	16 bits/4 CH
Head room:	20 dB

Video Input/Output

GEN LOCK IN:	BNC × 1, Y: 1.0 V p-p, 75 Ω
COMPONENT OUT:	D4 terminal (component), Y: 1.0 V p-p, 75 Ω, Pb/Pr: 0.7 V p-p, 75 Ω
VIDEO OUT:	BNC × 1, Y: 1.0 V p-p, 75 Ω
SDI OUT:	• BNC × 1, Y: 0.8 V p-p, 75 Ω • HD: compliant with SMPTE 292M/296M/299M • SD: compliant with SMPTE 259M-C/272M-A/ITU-R.BT656-4

Audio Input/Output

MIC IN:	• XLR × 2 (FRONT 1, FRONT 2) • high impedance • + 48 V (available) • MIC: –40 dBu/–50 dBu/–60 dBu (selectable on menu)
AUDIO IN:	• XLR × 2 (REAR 1, REAR 2) • high impedance • LINE/MIC / + 48 V (selectable) • LINE: 0 dB • MIC: –50 dBu/–60 dBu (selectable on menu)
AUDIO OUT:	Pin jack × 2 (CH 1, CH 2), Output: 316 mV, 600 Ω
Headphone:	ø3.5 mm stereo mini jack × 1
Internal speaker:	28 mm diameter × 1

Other Input/Output

TC IN:	BNC × 1, 0.5 V p-p to 8 V p-p, 10 kΩ
TC OUT:	BNC × 1, low impedance, 2.0 V p-p ± 0.5 V p-p
IEEE1394:	6 pins, digital input/output (compliant with IEEE 1394)
DC IN:	XLR × 1, 4 pins, DC 12 V (11.0 V to 17.0 V)
DC OUT:	4 pins, DC 12 V (11.0 V to 17.0 V), max. 1.5 A
REMOTE:	10 pins
LENS:	12 pins
EVF:	20 pins
USB2.0 (DEVICE):	Type-B, 4 pins (compliant with USB ver. 2.0)

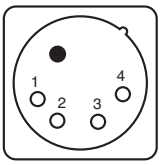
LCD Monitor/Accessories

LCD monitor:	3.5-inch LCD color monitor, 210,000 pixels (4:3)
Accessories:	• 1.5-inch view finder (4:3 CRT, NTSC/PAL switchable) • Shoulder strap • Operating instructions • P2 Software (CD-ROM)

Connector signal description

DC IN	
1	GND
2	NC
3	NC
4	+12V

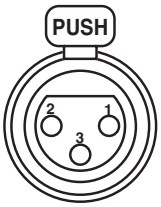
Panasonic Part No. K1AA104H0038
Manufacturer Part No. HA16RX-4P (SW1)
(Hirose Electric Co.)



<Note>
Be sure to use correct polarity when using external power supplies.

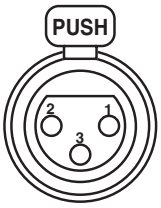
FRONT MIC IN	
1	GND
2	AUDIO IN (H)
3	AUDIO IN (C)

Panasonic Part No. K1AB103B0013
Manufacturer Part No. NC3FBH2 (NEUTRIK)



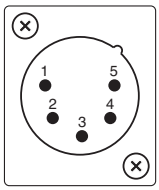
AUDIO IN	
1	GND
2	AUDIO IN (H)
3	AUDIO IN (C)

Panasonic Part No. K1AB103A0007
Manufacturer Part No. HA16PRM-3SG
(Hirose Electric Co.)



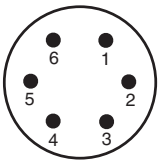
AUDIO OUT	
1	GND
2	L CH OUT (H)
3	L CH OUT (C)
4	R CH OUT (H)
5	R CH OUT (C)

Panasonic Part No. K1AA105H0016
Manufacturer Part No. HA16RD-5P
(Hirose Electric Co.)



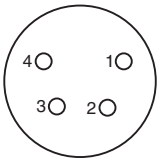
ECU	
1	CAM CONT
2	CAM DATA
3	NC
4	ECU ON
5	UNREG 12V
6	GND

Panasonic Part No. K1AY106J0001
Manufacturer Part No. HR10A-7R-6SC
(Hirose Electric Co.)



DC OUT	
1	GND
2	NC
3	+12V

Panasonic Part No. K1AY104J0001
Manufacturer Part No. HR10A-7R-4SC
(Hirose Electric Co.)



Information on Disposal for Users of Waste Electrical & Electronic Equipment (private households)

This symbol on the products and/or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.
For proper treatment, recovery and recycling, please take these products to designated collection points, where they will be accepted on a free of charge basis. Alternatively, in some countries you may be able to return your products to your local retailer upon the purchase of an equivalent new product.
Disposing of this product correctly will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling. Please contact your local authority for further details of your nearest designated collection point.
Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

For business users in the European Union
If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union
This symbol is only valid in the European Union.
If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

Panasonic®

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Government Marketing Department:
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Broadcast PARTS INFORMATION & ORDERING:
9:00 a.m. - 5:00 p.m. (EST) (800) 334-4881/24 Hr. Fax (800) 334-4880
Emergency after hour parts orders (800) 334-4881

TECHNICAL SUPPORT:
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