VARICAM HS

Operating Guide

Version 7.6

Panasonic

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How to read this document

■ Illustrations

- Screenshots or illustrations may differ from the actual product. Explanations may be based on screenshots and illustrations of VariCam 35.

■ Conventions used in this manual

- Words and phrases in [ ] brackets indicate details and content displayed in the viewfinder or control panel.
- Words and phrases in < > brackets indicate design text used on this camera, such as button names.

■ Reference pages

- Reference pages in this document are indicated by (page 00).

■ Terminology

- SD memory card, SDHC memory card, and SDXC memory card are referred to as "SD memory card".
- A memory card with the "P2" logo such as AJ-P2E064FG memory card (optional) is referred to as a "P2 memory card".
- A memory card with the "microP2" logo such as AJ-P2M032AG memory card (optional) is referred to as a "microP2 memory card".
- A memory card with the "expressP2" logo such as AU-XP0256AG memory card (optional) is referred to as a "expressP2 memory card".
- P2 memory card, microP2 memory card, and expressP2 memory card are referred to only as "P2 card" unless distinguished otherwise.
- Video that is created during a single recording operation is referred to as a "clip".
- Electronic HD color view finder that can be used is referred to as "AU-VCVF1G".
  Refer to the support desk at the following website for the latest information regarding the electric HD color view finder.
  https://pro-av.panasonic.net/

Contents

Chapter 1   Overview

Before using the camera, read this chapter.

Before using the camera

■ **Before using the camera, always check if the built-in battery is not consumed, and then set the date/time.**

The internal clock of the camera is reset when the built-in battery has been consumed. This may result in the metadata of the clip not recorded correctly, and it may not display correctly in the thumbnail screen.

Check if the built-in battery is not consumed before using. (page 33)

Also, set the correct date/time. (page 34)

■ **Cautions when throwing memory cards away or transferring them to others**

Formatting memory cards or deleting data using the functions of the camera or a computer will merely change the file management information: it will not completely erase the data on the cards. When throwing these cards away or transferring them to others, either physically destroy them or use a data deletion program for computers (commercially available) to completely erase the data. Users are responsible for managing the data stored in their memory cards.

■ **Control panel and viewfinder**

● If the same image or letters are allowed to be displayed on the control panel for a long time, the image may be burned into the screen. It will return to normal after leaving the camera recorder turned off for several hours.

● Condensation sometimes forms on the LCD of the control panel in locations subject to extreme temperature differences. If this happens, wipe with a soft, dry cloth.

● If the camera recorder is very cold, the control panel will be slightly darker than normal immediately after the power is turned on. It will return to its regular brightness when the temperature inside increases.

● Since the viewfinder uses organic EL, if the same image or letters are allowed to be displayed for a long time, the image may be burned into the screen. There is no problem with the recorded images.

  Switch the screen by turning off the screen or by using the eye sensor, etc.

● The control panel and viewfinder monitor (organic EL) are highly-precisely managed so that at least 99.99% of the dots are effective pixels and 0.01% or less are invalid pixels and always lit. This is not a malfunction and it has no effect whatsoever on the recorded images.

■ **Do not point the eye piece of the lens and viewfinder at the sun.**

Doing so might damage the components inside.

■ **GPS**

GPS (Global Position System) satellite is managed by the United States Department of State and its precision is sometimes intentionally changed.

Position it in a location where there is a good view of the sky and there is no influence of obstacles such as roofs and trees, etc.

Depending upon the surrounding environment and the time, it may take a long time to position and errors may be larger.

■ **Caution regarding laser beams**

The MOS sensor may be damaged if the MOS sensor is subjected to light from a laser beam.

Take sufficient care to prevent laser beams from striking the lens when shooting in an environment where laser devices are used.

■ **Note the following points.**

● If you prepare 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 the camera or the P2 cards used, we will not assume liability for such failure.

● Set up or check the calendar and time zone before recording. (page 34) These settings have an effect on the management and playback order of the recorded contents.

■ **Software information about this product**

1 This product includes software licensed under GNU General Public License (GPL) and GNU Lesser General Public License (LGPL), and customers are hereby notified that they have rights to obtain, re-engineer, and redistribute the source code of these software.

2 This product includes software licensed under MIT-License.

3 This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/).

4 This product includes software licensed under OpenBSD License.

5 This product includes PHP, freely available from <http://www.php.net/>.

6 This software is based in part on the work of the Independent JPEG Group.

7 This product includes software licensed under MOZILLA PUBLIC LICENSE.

For details on these descriptions (originally provided in English) and how to obtain the source code, visit the following website.

https://pro-av.panasonic.net/

We do not accept inquiries about the details of the source code obtained by the customer.

■ **Precautions when installing USB drivers**

For the latest information on the driver, visit the following website.

https://pro-av.panasonic.net/

● Install the required driver into your computer from the website.

● For installation procedure of the driver, refer to the installation manual on the website.

Accessories

Camera module

● Mount cap (already attached to the camera module)

Recording module

● Control panel extension unit
● Control panel mounting part

Electronic HD color viewfinder

● Connecting cable
● Slider unit
● Slider unit mounting screw (2 pcs.)
● Eye cup (already attached to the Electronic HD color viewfinder)
● Eye piece filter (already attached to the Electronic HD color viewfinder)

Shoulder mount module

● Slide rail (already attached to the shoulder mount module)

NOTE

· After unpacking the product, dispose of the packing material properly.

Use of the camera on a system

Use the following recommended parts.

Basic system devices

The following are required devices for shooting.

Product name	Model No.	Remark
VariCam HS Camera module*1	AU-V23HS1G	"Assembling the camera module and recording module" (page 21)
Recording module*1	AU-VREC1G	"Assembling the camera module and recording module" (page 21)
Shoulder mount module	AU-VSHL1G	"Mounting the shoulder mount module" (page 23)
Electronic HD color view finder*2	AU-VCVF1G	"Mounting the Electronic HD color viewfinder" (page 22)
Lens (Bayonet type)	CANON/FUJINON	"Mounting the lens" (page 28)
Stereo microphone kit	AJ-MC900G	"Using front microphone" (page 63)
Battery	DIONIC HD*3 HYTRON140*3	"Mounting and setting battery" (page 26)
expressP2 memory card	AU-XP0256AG/AU-XP0256BG/AU-XP0512BG	"P2 card" (page 43)
SD memory card*4 P2 memory card*4 microP2 memory card*4	Visit the support desk at the website*4	"P2 card" (page 43) "Handling SD memory cards" (page 87)

*1 The camera module and recording module are both required in this system. The system will not run with only one of those modules.
*2 Refer to the support desk at the following website for the latest information regarding the electric HD color view finder.
https://pro-av.panasonic.net/
*3 A battery holder is provided as standard on the recording module.
*4 Refer to our support desk at the following website for the latest information not included in this document.
https://pro-av.panasonic.net/

Expansion system devices

You can also use the following devices in addition to the basic system devices.

Product name	Model No.	Remark
LCD monitor	BT-LH910G, etc.	—
Memory card drive	AU-XPD1	—
External DC power supply	—	"Using external DC power supply" (page 27)
VariCam 35 camera module	AU-V35C1G	—
Wireless module	AJ-WM30/AJ-WM50	"For wireless LAN" (page 130)
Remote operation panel	AK-HRP200G	"Connecting the remote operation panel (AK-HRP200G)" (page 136)
Extension module	AU-VEXT1G	"Extension module" (page 138)
Extension cable	AU-VCBL05G	"Extension module" (page 138)

Accessories
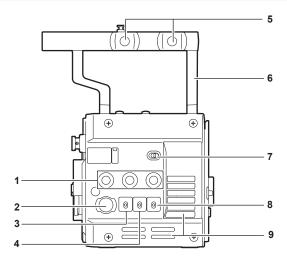
Product name	Model No.	Remark
Tripod adaptor	SHAN-TM700	"Attaching a tripod" (page 24)
Soft carrying case	AJ-SC900	—
Rain cover	SHAN-RC700	"Attaching the rain cover" (page 25)
Microphone holder	AJ-MH800G	"Using front microphone" (page 63)

Chapter 2   Description of Parts

This chapter describes the names, functions, and operations of parts on the camera.

Camera module

Left side

1 **USER buttons (<1>/<2>/<3>)**
   User-selected functions can be assigned to each button. Pressing a button performs the assigned function.

2 **<REC> button**
   Press this button to start recording. Press this button again to stop recording. The button lights up in red during recording.

3 **<SHUTTER> switch**
   Switch for changing the electronic shutter.

4 **<EI> switch**
   Switch for changing the EXPOSURE INDEX (gain).

5 **Accessory mounting holes**
   For attaching accessories.
   ● Mounting hole size
     - 3/8-16 UNC

6 **Handle**

7 **<LOCK> switch**
   Disables the operation of the camera module buttons and switches. (except the <REC> button)
   Keep this in the <LOCK> position to prevent incorrect operation when moving the camera, etc.
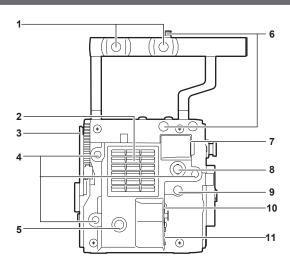
8 **<WB> switch**
   Switch for changing the white balance.

9 **Fan inlet**
   Fan inlet for dissipating heat. Do not block this when the camera is in use.

Right side

1 **Accessory mounting holes**
   For attaching accessories.
   ● Mounting hole size
     - 3/8-16 UNC

2 **Fan outlet**
   Fan outlet for dissipating heat. Do not block this when the camera is in use.

3   Recording module release lever
Lever for removing the recording module (optional) from the camera module.

4   Accessory mounting holes
For attaching accessories.
● Mounting hole size
- 1/4-20 UNC (screw length 5.5 mm or shorter)

5   USER button (<4>)
User-selected functions can be assigned to this button. Pressing the button performs the assigned function.

6   Focus hook
Indicate the focal plane of the MOS sensor. It provides a reference for measuring the accurate focal length from the subject.

7   <VF> terminal
Terminal for connecting the HD viewfinder AU-VCVF1G (optional).

8   <VF SDI> terminal
Output terminal for 3G/HD SDI. Displays the video equal to the viewfinder display.
For the cable to connect to this terminal, prepare a double-shielded cable equivalent to 5C-FB.

9   <DC OUT> terminal
This is the DC12 V output terminal. It provides a maximum current of 1 A.
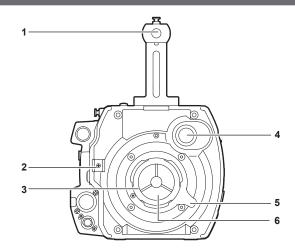
10   <MIC IN> terminal
Terminal for connecting a microphone.

11   <LENS> terminal
Terminal for connecting a lens cable. For details, refer to the Operating Instructions for the lens.

Front

1   Accessory mounting holes
For attaching accessories.
● Mounting hole size
- 3/8-16 UNC (screw length 5.5 mm or shorter)

2   Lens cable /microphone cable clamp
Clamp for securing the lens and microphone cables.

3   Lens mount
Holds the lens.

4   <ND FILTER>/<CC FILTER> dial
Selects a filter which suits the luminance or color temperature of the subject.
<CC FILTER>
<A><3200 K>: Sets the color temperature to 3200 K.
<B><4300 K>: Sets the color temperature to 4300 K.
<C><5600 K>: Sets the color temperature to 5600 K.
<D><0.3ND>: Reduces the amount of light entering the MOS sensor to 1/2.
<ND FILTER>
<1><CLEAR>: Does not use the ND filter.
<2><0.6ND>: Reduces the amount of light entering the MOS sensor to 1/4.
<3><1.2ND>: Reduces the amount of light entering the MOS sensor to 1/16.
<4><1.8ND>: Reduces the amount of light entering the MOS sensor to 1/64.
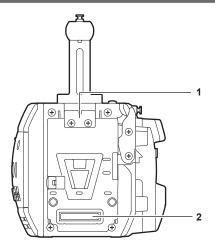
5   Lens lever
After mounting the lens to the lens mount, tighten the lever to secure the lens.

6   Mount cap
Attach the cap when the lens is not mounted.

Rear
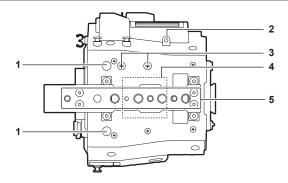
1 Lock plate
Fitting which secures the recording module in place when connected.

2 Recording module connection terminal
Terminal for connecting the recording module.

Top

1 Viewfinder mounting holes
For attaching the viewfinder.

2 Mounting hole for control panel mounting part

3 Microphone holder mounting position

4 GPS module position
This part has a built-in GPS module. Do not cover this part with metallic objects when the GPS is in use.
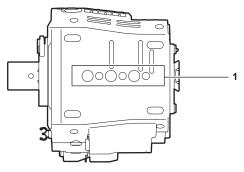
5 Accessory mounting holes
For attaching accessories.
● Mounting hole size
  - 1/4-20 UNC
  - 3/8-16 UNC

Bottom
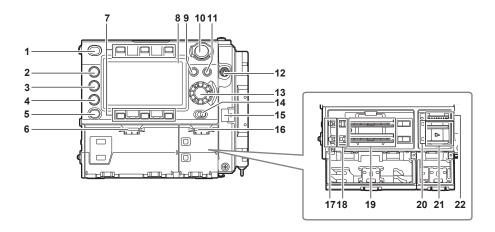
1 Shoulder mount module/tripod mounting holes
For attaching the shoulder mount module or a tripod.
● Mounting hole size
  - 1/4-20 UNC (screw length 5.5 mm or shorter)
  - 3/8-16 UNC (screw length 5.5 mm or shorter)

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Recording module

Left side

1 **<HOME> button**
Returns to the HOME screen when pressed.

2 **<PLAY> button**
Shows the PLAY screen when pressed.

3 **<TC> button**
Shows the TC screen when pressed.

4 **<INFO> button**
Shows the INFO screen when pressed.

5 **<VIEW> button**
Displays the camera video in the control panel.

6 **Main slot open/close switch**
Opens the main slot bay.

7 **Control panel operation buttons**
Buttons for operating the control panel. User-selected functions can be assigned to each button to function as USER buttons.

8 **Control panel**
Used to perform tasks such as checking the device status and setting basic items.

9 **<MENU> button**
Displays the setting menu in the control panel screen.

10 **<REC> button**
Press this button to start recording. Press this button again to stop recording. The button lights up in red during recording.

11 **<EXIT> button**
Restores the display to the previous state while the setting menu or control panel operation is displayed.

12 **<POWER> switch**
Switch on/off the power.
Even when the <POWER> switch is set to the <OFF> position, the camera is not shut off from the main power.

13 **Jog dial button**
Used for setting, moving items, and selecting menus on the control panel.

14 **<LOCK> switch**
Disables the operation of the control panel buttons and switches. (except the <REC> button)
Keep this in the <LOCK> position to prevent incorrect operation when moving the camera, etc.

15 **Cable clamp**
Clamp for securing the control panel extension unit cable.

16 **Open/close switch for sub slot and SD memory card slot**
Opens the sub slot / SD memory card slot bay.

17 **Main slot lock switch 1/2**
Lock switch to prevent incorrect insertion and removal in the main slot.
Recording is enabled when this is locked.
Do not release the lock during recording.

18 **Main slot 1/2 access LED**
Indicates the access status of recording and playback of each card inserted in main slot 1/2.

19 **Main slot 1/2**
Slot for expressP2 memory cards.

20 **Sub slot 3/4 access LED**
Indicates the access status of recording and playback of each card inserted in sub slot 3/4.
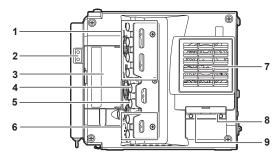
21 **Sub slot 3/4**
Slot for microP2 memory cards.

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22 SD memory card slot

Slot for SD memory cards (optional). SD memory cards are used for opening the camera setting menu, recording/opening lens files, or uploading metadata.

Right side

1 \<SDI OUT1>/\<SDI OUT2>/\<SDI OUT3>/\<SDI OUT4> terminal

Output terminal for 3G/HD SDI. This terminal outputs videos in SINGLE, DUAL, or QUAD mode.

For the cable to connect to this terminal, prepare a double-shielded cable equivalent to 5C-FB.

2 Light output terminal

Power supply terminal when light is connected.

3 \<USB HOST> terminal (inside the cover, 5.0 V 0.5 A max)

For mounting the wireless module AJ-WM30/AJ-WM50 (optional).

For the cable to connect to this terminal, prepare a double-shielded cable.

4 \<TC IN/OUT> terminal

Connects to the time code input terminal of the external device when locking the time code of the external device to the time code on the camera.

For the cable to connect to this terminal, prepare a double-shielded cable equivalent to 5C-FB.

5 \<GENLOCK IN> terminal

Inputs reference signals when setting the genlock on the camera unit or when externally locking the time code. The input signal is 3G/HD-SDI.

For the cable to connect to this terminal, prepare a double-shielded cable equivalent to 5C-FB.

6 \<MON OUT1>/\<MON OUT2> terminal

3G/HD-SDI output terminal of videos for the monitor.

For the cable to connect to this terminal, prepare a double-shielded cable equivalent to 5C-FB.

7 Fan outlet

Fan outlet for dissipating heat. Do not block this when the camera is in use.

8 \<USB DEVICE> terminal

USB device terminal for connecting a USB 2.0 cable.
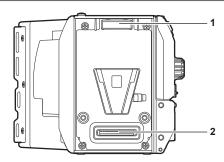
For the cable to connect to this terminal, prepare a double-shielded cable.

9 \<LAN> terminal

For connecting a LAN (100BASE-TX) cable.

For the cable to connect to this terminal, prepare a shielded cable.

Front

1 Lock angle
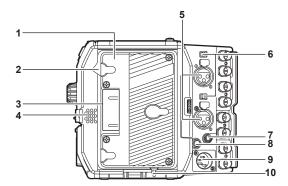
Fitting which secures the camera unit (optional) in place when connected.

2 Camera unit connection terminal

Terminal for connecting the camera unit (optional).

Rear

1 Battery holder
For mounting Anton/Bauer batteries.

2 Battery release lever
Pull this battery release lever down to release the battery.

3 Battery contact terminals
Contact terminals for the battery.

4 Speaker
EE audio can be monitored during recording while playback audio can be monitored during playback.
The alarm is output in sync with flashing/lighting of the warning indicator.
Audio from the speaker automatically is turned off when headphones are connected to the <PHONES> terminal.

5 <AUDIO IN 1>/<AUDIO IN 2> terminal
Connect the audio equipment or the microphone.

6 <LINE>/<MIC> switch
Switch for switching audio input signals connected to the <AUDIO IN 1>/<AUDIO IN 2> terminal.
<LINE>: Select when audio equipment is connected by the line input.
<MIC>: Select when a microphone is connected.

7 <PHONES> terminal
Connecting terminal of headphones for audio monitor. (Stereo mini jack)

8 <DC OUT/RS> terminal
Terminal for DC 12 V output and REC trigger input. The DC output provides a maximum current of 1.0 A.
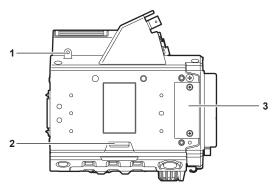
9 <DC IN> terminal
Input terminal for connecting an external DC power supply.

10 <LIGHT CONTROL> switch
Control switch when light is connected to the light output terminal.

Top side

1 Mounting hole for control panel mounting part
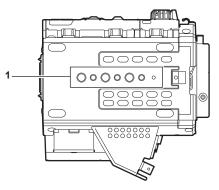
2 <RELEASE> switch
Switch for removing the control panel.

3 External unit connection terminal
Terminal for future expansions. Keep the cover on during normal use.

Bottom
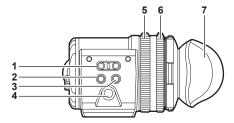
1 **Shoulder mount module/tripod mounting holes**
   For attaching the shoulder mount module or a tripod.
   • Mounting hole size
     - 1/4-20 UNC (screw length 5.5 mm or shorter)
     - 3/8-16 UNC (screw length 5.5 mm or shorter)

Electronic HD color viewfinder

Left side

1 **<EVF USER 1>/<EVF USER 2> buttons**
User-selected functions can be assigned to each button. Pressing a button performs the assigned function. Functions are set on the viewfinder menu.

2 **<CAM MENU> button**
Displays the camera menu screen.

3 **<EVF MENU> button**
Displays the viewfinder menu screen.

4 **Jog dial**
Operation dial.
Used for setting, moving, and selecting in menus.

5 **Zoom ring**
Ring which enlarges/reduces the size of the viewfinder display screen.
This is used to enlarge the display when adjusting the focus. When the display is enlarged, some parts of the video may be hidden.
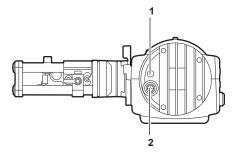
6 **Visibility adjustment ring**
Ring which adjusts the visibility. Turn this ring while pressing and holding the upper button.

7 **Eye cup**

Front
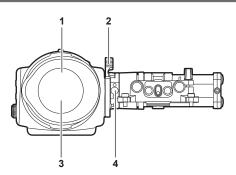
1 **Tally LED**
Lights up in red during recording. This can be disabled in the viewfinder menu.

2 **Connection terminal**
Terminal for connecting the supplied cable. This connects to the camera module (optional).

Rear

1 **Eye sensor**
Screen is displayed on the viewfinder when an eye is brought close.
The eye sensor may not work properly depending on the shape of glasses in use, how you hold the camera, or the strong light hitting around the eye piece.

2 **Lock lever**
Secures the viewfinder in place.
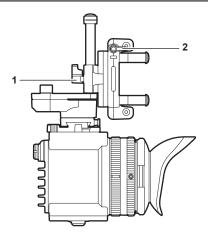
3 **Eye piece filter**
Protective filter against dust, water, and moisture. Use the camera with this attached.

4 Stopper
Used when removing the viewfinder from the slider unit.

Top
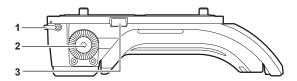
1 Lock lever (left/right position)
Adjusts the position of the viewfinder (left/right).

2 Lock lever (front/back position)
Adjusts the position of the viewfinder (front/back).

Shoulder mount module

Left side

1 **Support rod lock knob**
Secures the rod in place.
⊚▭: Release, ▭⊚: Lock
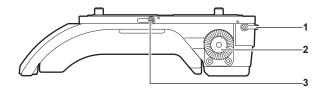
2 **Accessory attachment (rosette)**
Attach accessories such as hand grip.
● Mounting screw size
  - M6 (screw length 9 mm or shorter)

3 **Stopper**
Pressed when removing the slide rail from the shoulder mount module.
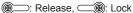
Right side

1 **Support rod lock knob**
Secures the rod in place.
⊚▭: Release, ▭⊚: Lock
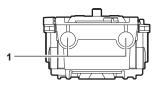
2 **Accessory attachment (rosette)**
Attach accessories such as hand grip.
● Mounting screw size
  - M6 (screw length 9 mm or shorter)

3 **Slide rail lock knob**
Secures the slide rail in place.
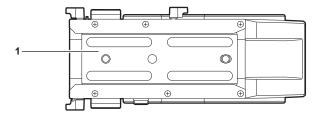
Front

1 **Support rod mounting holes**
Holes for connecting a rod with a diameter of 15 mm.
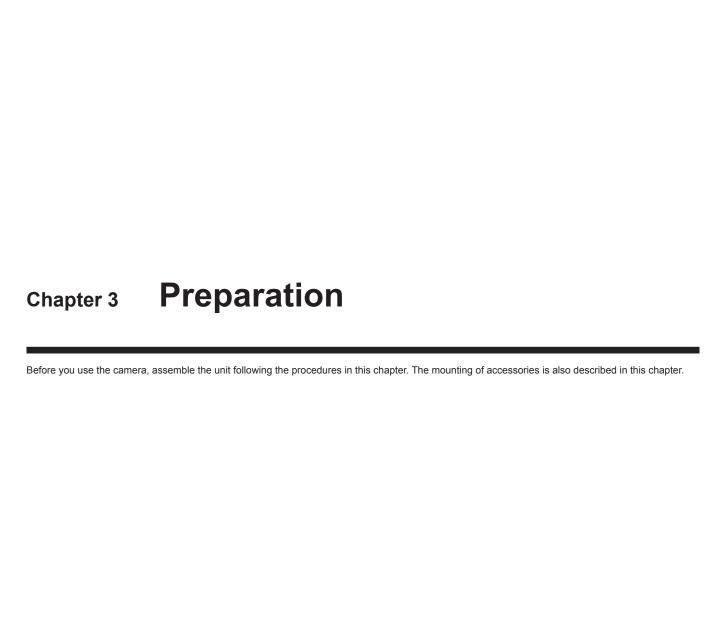
Top
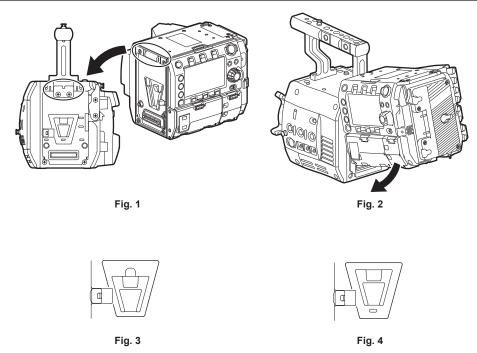
1 **Slide rail**
Attaches to the camera.

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Chapter 3 Preparation

Before you use the camera, assemble the unit following the procedures in this chapter. The mounting of accessories is also described in this chapter.

Assembling modules

Assembling the camera module and recording module
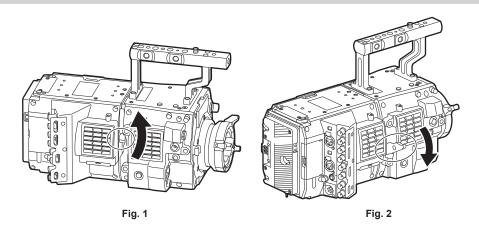
Fig. 1   Fig. 2

Fig. 3   Fig. 4

1 **Align the upper lock angle in front of the recording module with the upper lock plate at the rear of the camera module. (Fig. 1)**

2 **Firmly push in the recording module and connect the connection terminals of the camera module and recording module. (Fig. 2)**

📝 *NOTE*

· The modules cannot be joined together if the V edge of the camera module is down. (Fig. 3) Push down the recording module release lever of the camera module to raise the V edge. (Fig. 4)
· Do not touch the mechanical parts near the V edge. The V edge will move quickly, which may cause injury.

Disassembling

Fig. 1   Fig. 2

1 **Push down the recording module release lever (Fig. 2) while pulling up the lock knob (red) of the recording module release lever (Fig. 1).**

The rear part of the recording module will slightly come up.
It will be difficult for the rear part to come up when heavy items such as batteries are mounted.

2 **Lift the recording module.**

Do not hold the control panel part. Doing so may cause the control panel to detach and fall.

3 **Remove the upper lock angle in front of the recording module from the upper lock plate at the rear of the camera module.**

Mounting the Electronic HD color viewfinder

Lock

Release
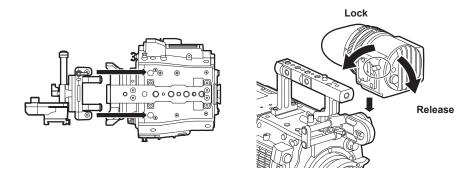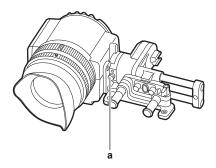
Fig. 1   **Fig. 2**

1 Attach the slider unit to the viewfinder mounting holes on top of the camera module using the two supplied screws. (Fig. 1)

2 Slide the viewfinder plate from above into the slider unit. (Fig. 2)

Release the viewfinder lock lever by pushing it forward.

3 Push down the lock lever backwards to lock.

4 Connect the supplied connecting cable to the viewfinder connection terminal and the camera module's <VF> terminal.

Connect by aligning the red mark on the connector.

Disassembling

a
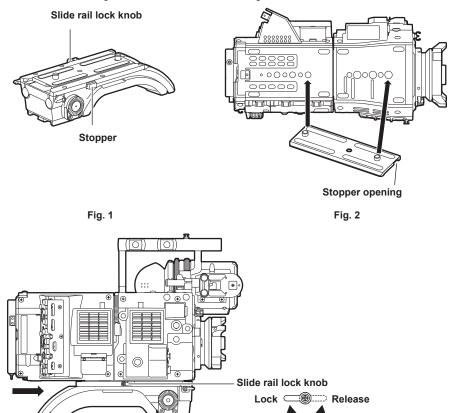
a: Stopper

1 Remove the connecting cable.

2 Push down the lock lever towards the front to release the lock.

3 Lift the viewfinder while pulling the stopper.

4 Remove the slider unit clamping screw.

Mounting the shoulder mount module

Mount the shoulder mount module after mounting the camera module and recording module.

Slide rail lock knob

Stopper

Fig. 1

Stopper opening

Fig. 2

Slide rail lock knob

Lock ⊝⊛⊙⊡ **Release**

Fig. 3

1 **Release the slide rail lock knob.**

2 **Remove the slide rail from the shoulder mount module while pressing the stopper. (Fig. 1)**

3 **Orient the stopper opening of the slide rail toward the front of the camera, and securely mount to the bottom of the camera with the supplied two screws on the screw holes indicated in the figure. (Fig. 2)**

4 **Slide the camera forward along the groove in the shoulder mount module from the rear until it clicks. (Fig. 3)**

Before mounting, confirm that the slide rail lock knob is released.

5 **After adjusting the slide position of the camera considering its weight balance, lock by turning the slide rail lock knob clockwise.**

Confirm that the camera is securely locked. The camera may fall causing a malfunction or injury when the camera is off balance or the screws are not locked securely.

Disassembling

1 **Release the slide rail lock knob.**

2 **Remove the camera from the shoulder mount module by sliding it toward rear while pressing the stopper.**

3 **Loosen the two screws and remove the slide rail from the bottom of the camera.**

If the shoulder mount is mounted on a tripod, lock the pan lock lever and the tilt lock lever of the tripod. It may lose balance and fall, causing a malfunction or injury.

Attaching and removing accessories

Eye cup/eye piece filter
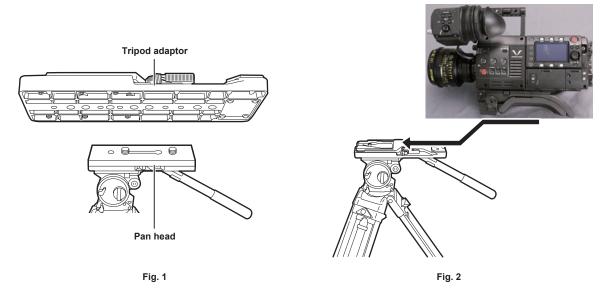
The eye cup and eye piece filter can be removed. Always use the camera with these attached.

a: **Eye cup**

b: **Eye piece filter**

Attaching a tripod

When mounting the camera on a tripod, use the optional tripod adaptor (SHAN-TM700).

Fig. 1

Fig. 2

1 **Mount the tripod adaptor on the tripod. (Fig. 1)**

2 **Mount the camera on the tripod adaptor. (Fig. 2)**
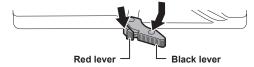
Slide the camera forward along the grooves until you hear a click.

📝 *NOTE*

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

Removing the camera from the tripod adaptor

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

Red lever ── **Black lever**

📝 *NOTE*
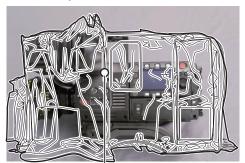
・ If the tripod adaptor pin does not return to its original position after the camera has been removed, hold the red lever down and move the black lever in the direction of the arrow again, in order to return the pin to its original position.
  The camera cannot be mounted if the pin remains in the center. Be careful.
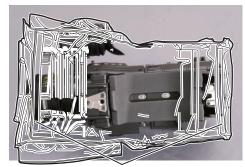
Attaching the rain cover

The figure below shows an example of use of the rain cover SHAN-RC700 (optional).

Tighten the cord

Secure with the surface fastener

Power supply

A battery or an external DC power supply can be used as the power supply.

Using batteries

Connection of the following batteries to the camera has been verified.

■ Anton/Bauer batteries

HYTRON140
DIONIC HC/DIONIC HCX/DIONIC HD

■ IDX batteries

ENDURA HL9

NOTE

・ Other batteries can be supported by changing [BATTERY SELECT] in [MENU] → [SYSTEM SETTINGS] → [BATTERY]. Use of batteries that are already verified as connectable to the camera is recommended.
・ Before you use a battery, charge it with a battery charger. (For details on charging, refer to each operating instructions.)

Mounting and setting battery

Using Anton/Bauer batteries

Release lever

Anton/Bauer batteries

1 Mount the Anton/Bauer battery.

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

3 Set the battery type.

From [MENU] → [SYSTEM SETTINGS] → [BATTERY] → [BATTERY SELECT], select the battery type.
For details, refer to "Setting menu basic operations" (page 96).

NOTE

・ To remove the battery, keep the release lever of the battery holder completely down, slide the battery in the opposite direction when you mounted it.

Using V-mount type batteries

Mount the V-mount type battery plate. As shown in the illustration, insert and slide in the direction of the arrow.

Release lever

1 Mount the V-mount type battery plate.

2 Slide in the direction of the arrow.

3 Set the battery type.

● From [MENU] → [SYSTEM SETTINGS] → [BATTERY] → [BATTERY SELECT], select the battery type.

📝 *NOTE*
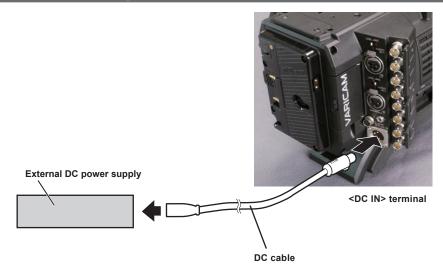
・ Contact your dealer for information about the V-mount type battery plate.
・ When the V-mount type battery plate is used, % (percent) is not displayed even if batteries with a battery level indicator function are used.
・ When removing the plate, remove by sliding the release lever.
・ When using a battery that is not included in [BATTERY SELECT], set [other], then set [FULL Volt], [NEAR END Volt], or [END Volt] according to the characteristics of the battery.

Using external DC power supply

External DC power supply

<DC IN> terminal

DC cable

1 Connect the external DC power supply to the <DC IN> terminal of the camera.

2 Turn on the power switch of the external DC power supply (if the external DC power supply has a power switch).

3 Turn the <POWER> switch of the camera to <ON>.

■ **External DC power supply**

Connect after making sure that the output voltage of the external DC power supply is compatible with the rated voltage of the camera.
Select an output amperage for the external DC power supply with a margin above the total amperage of the connected devices.
The total amperage of connected devices can be calculated with the following formula.
Total power consumption ÷ Voltage
When the power of the camera is turned on, inrush current is generated. Insufficient power supply when turning on the power may cause a malfunction. We recommend that you use an external DC power supply that can assure double the capacity of the total power consumption of the camera and connected devices that are turned on by interlock when the power of the camera is turned on (such as lenses). For the DC cable, use a dual-core shielded wire of AWG16 (nominal cross section area 1.309 mm^2) or thicker.

● Make sure of the pin alignment of the DC output terminal of the external DC power supply and the camera <DC IN> terminal, and connect the polarity correctly.
If the +12 V power supply is mistakenly connected to the GND terminal, it may cause fire or malfunction.

DC IN		
	1	GND
	2	NC
	3	NC
	4	+12 V
	Panasonic Parts No.: K1AA104H0038 Manufacturer Parts No.: HA16RX-4P (SW1) (76) (Hirose Electric Co.)	

📝 *NOTE*

・ When both the battery and the external DC power supply are connected, the power supply from the external DC power supply has priority. The battery may be removed while using the external DC power supply.
・ When using an external DC power supply, always turn the power switch of the external DC power supply on before turning the <POWER> switch of the camera <ON>. If the operations are performed in reverse, the camera may malfunction because the external DC power supply output voltage rises too slowly.
・ When switching the power supply from an external DC power supply to the battery, carefully remove the DC cable from the <DC IN> terminal. Removing the cable quickly may temporarily stop the camera's operation.
・ When power is supplied from the <DC IN> terminal, the light circuit does not function. The light circuit can be used only when power is supplied from the Anton/Bauer battery plate.
・ When a battery is connected to the <DC IN> terminal, set [MENU] → [SYSTEM SETTINGS] → [BATTERY] → [EXT DC IN SELECT] to [BATTERY], then set [FULL Volt], [NEAR END Volt], or [END Volt] according to the characteristics of the battery. However, in this the case, the percent (%) display will not be available for batteries with a battery level indicator function.

Mounting and adjusting the lens

Mounting the lens

Lens lever

Mark

Mount cap

Fig. 1

Fig. 2

Cable clamp

<LENS> terminal
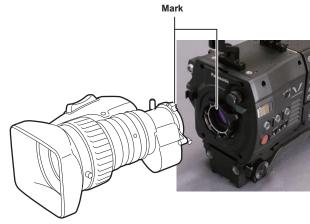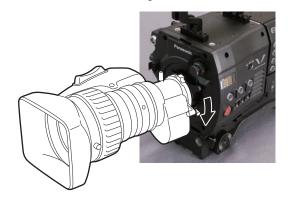
Fig. 3

Fig. 4

1 **Raise the lens lever and remove the mount cap. (Fig. 1)**

2 **Align the indentation at the top center of the lens mount with the center mark of the lens to mount the lens. (Fig. 2)**

3 **Lower the lens lever to firmly clamp the lens. (Fig. 3)**

4 **Secure the cable through the cable clamp and connect it to the <LENS> terminal. (Fig. 4)**

5 **Perform lens flange back adjustments.**

For details, refer to "Flange lens back adjustment" (page 28).

NOTE

・ For handling the lens, refer to the lens operating instructions.
・ When the lens is removed, install the mount cap to protect the device.

Flange lens back adjustment
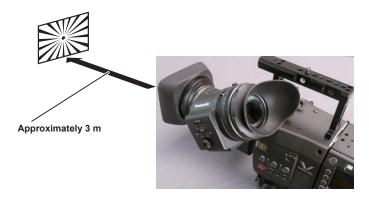
If images are not clearly focused at both telephoto and wide-angle positions during zoom operations, adjust the lens flange back (distance from the lens mounting surface to the image formation surface).

Once adjusted, the flange back does not need to be readjusted until the lens is changed.

NOTE

・ Refer to the lens operating instructions for guidance on adjustment methods and positions of lens parts.

For a normal lens

Approximately 3 m

1 **Mount the lens on the camera.**

Make sure to connect the lens cable.

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

3 **Place the lens flange back adjustment chart approximately 3 m from the lens and adjust the lighting on the chart to obtain an appropriate image output level.**

If the image level is too high, use the filters or the shutter.

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

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

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

7 **Set the zoom ring to the wide-angle end position and turn the F.f (Flange focus) ring to bring into focus.**

At this time, do not 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 (Flange focus) ring clamping screw.**

📝 *NOTE*
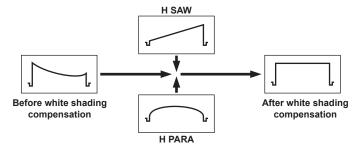
· F.b (Lens flange back) ring may be indicated on some lenses as the F.f (lens flange focus) ring.

White shading compensation

Adjusting the white shading

This is a method of combining the sawtooth shaped waveform and parabola waveform to compensate to a flatter waveform based on the respective R, G and B waveforms of the video signal.

We recommend adjusting the R, G and B waveforms in the horizontal and vertical directions while monitoring them on the waveform monitor.

Make sure to adjust the white shading after disabling the variable frame rate.

H SAW

Before white shading compensation

H PARA

After white shading compensation

1 **Set the camera for adjustment.**

1) Mount the lens on the camera.

  ● Make sure to connect the lens cable.

2) Switch the shutter OFF and set the EXPOSURE INDEX to 0 dB or ISO2500.

3) If the lens is equipped with an extender function, release the extender function.

4) Confirm that [MENU] → [SYSTEM SETTINGS] → [COLOR SETTING] → [MAIN] is set to [HD]. Also, confirm that [ZEBRA1 DETECT] is set to [70%], [ZEBRA2 DETECT] is set to [85%], and [ZEBRA2 MODE] is set to [SPOT] in [MENU] → [OUTPUT SETTINGS] → [VF EI ASSIST] → [ZEBRA], and close the menu screen.

  ● Change the settings if they are different.

5) Select [ON] in [MENU] → [OUTPUT SETTINGS] → [VF EI ASSIST] → [ZEBRA] → [ZEBRA MASTER SW].

2 Set the screen.

1) Shoot a white sheet of paper with no unevenness of color for the whole screen.

2) Set the lens aperture to manual, and adjust it so that the zebra pattern covers the whole viewfinder screen.
   - Make sure that the lens aperture control is between F4 and F11.
   - Adjust the position of the lighting because the zebra pattern will not cover the whole screen if there is any unevenness in the lighting.
   - Make adjustments to avoid several light sources of different color temperature (e.g. fluorescent lights and halogen lamp) from illuminating on the white paper.

3 Adjust the white balance/black balance.

1) Make sure that white balance is set to [PRESET].
   - When checking from the control panel
     Select [WB] → [PRESET] from the HOME screen.
   - When checking from the menu
     From [MENU] → [CAMERA SETTINGS] → [WHITE] → [MODE], select [PRESET].

2) Execute white balancing.
   - When executing from the control panel
     Select [WB] → [AWB] from the HOME screen.
   - When executing from the menu
     From [MENU] → [CAMERA SETTINGS] → [WHITE] → [AWB], select [EXECUTE].

3) Execute black balancing.
   From [MENU] → [CAMERA SETTINGS] → [BLACK] → [ABB], select [EXECUTE].

4) Perform the operation in Step **2)** and execute white balancing again.

4 Perform Steps 2-2) again.

5 Adjust white shading.

1) From [MENU] → [CAMERA SETTINGS] → [WHITE SHADING], adjust [H.SAW] through [V.PARA] to create a flatter waveform.

6 If the lens is equipped with an extender function, turn on the extender function and repeat steps 2 to 5.
Compensation values are stored on the camera as a single lens file data using two patterns for when the lens is equipped and not equipped with an extender pattern.
Adjustment values are saved in memory, so there is no need to re-adjust white shading even after turning the camera off.

📝 NOTE
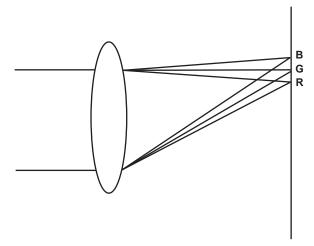
- Coloring may occur in the vertical direction near where the lens aperture is open (OPEN) even when the white shading has been adjusted, but this is something that is inherent to optical systems. This is not a malfunction.
- Since fluorescent lights, mercury lamps, and other such kinds of lighting tend to flicker, use a light source which is less subject to flickering such as sunlight or a halogen lamp.
- Make adjustments to the position of the lighting, etc. also when the lens aperture is not between F4 and F11.
- Make sure to leave the shutter OFF.

Chromatic aberration compensation function (CAC)

The chromatic aberration compensation function minimizes color smearing in peripheral images. This function automatically compensates for registration error that is caused mainly due to slight chromatic aberration, which is hard to completely compensate with the lens itself, using the camera recorder unit.

When the lens compatible with the chromatic aberration compensation function is mounted, if the camera has the chromatic aberration compensation data of the lens, then the chromatic aberration compensation function is activated automatically.

What is lens chromatic aberration?

"Chromatic aberration" here refers to zoom factor chromatic aberration. Zoom factor chromatic aberration occurs since the diffraction ratio of a lens differs according to red (R)/green (G)/blue (B). Chromatic aberration on the lens itself is compensated for, but still remains in the periphery, in particular. Also, this chromatic aberration occurs on zoom lens due to a complex relationship between zoom ratio, aperture and focal distance. In image terms, this is registration error.

Chromatic aberration compensation function

To compensate chromatic aberration, store the chromatic aberration characteristics of the lens regarding zoom ratio, aperture and focal distance to the camera recorder beforehand. Connect a lens that matches those chromatic aberration characteristics, and perform compensation matched to the zoom ratio, aperture and focal distance of that lens.
The camera does not store chromatic aberration compensation function data of the lens as a factory setting.

NOTE

・ For details on additions and modifications to lenses compatible with the chromatic aberration compensation function, visit the support desk at the following website:
  https://pro-av.panasonic.net/

Operation of chromatic aberration compensation function

Operate by the following procedure when lens data is already stored on the camera.

1 **Mount the lens on the camera, and connect the lens connector to the camera.**

2 **Set [MENU] → [CAMERA SETTINGS] → [EXT.FUNC] → [CAC] to [ON].**

If the lens model number stored on the camera matches the model number of the connected lens, the chromatic aberration data stored on the camera will automatically be read.

Connecting to the DC output terminal

Connecting the <DC OUT/RS> terminal to the external recording start/stop switch

It is possible to get a 1.0 A current from the <DC OUT/RS> terminal of the recording module.

Recording start/stop can be controlled by connecting an external switch to this terminal.

An LED connected to this terminal can also be used as a tally lamp. This is useful for shooting video when fixing the camera on a crane.

<DC OUT/RS> terminal

(Connection example)

Cable connector
HR10A-7R-4SC (73)
Hirose Electric Co.

LED

Resistance

Recording
start/stop

1 **GND**

2 **TALLY OUT**

Open collector output on the camera side

Tally lamp on	Low impedance
Tally lamp off	High impedance

3 **Recording start/stop switch**

This is connected in parallel to the <REC> button on the camera or the VTR button on the lens.

4 +**12 V**

NOTE

・ Make sure that polarity is correct before connecting an external device. Otherwise, it may result in a malfunction.

Connecting to the <DC OUT> terminal

It is possible to get a 1.0 A current from the <DC OUT> terminal of the camera module.

1 ○

2 ○

Cable connector
0B.302
LEMO

1 **GND**

2 +**12 V**

NOTE

・ Make sure that polarity is correct before connecting an external device. Otherwise, it may result in a malfunction.

Charging the built-in battery

The date/time set in the camera is maintained by the built-in battery.

The built-in battery may be consumed when the power of the camera is not turned on for approximately a half year.

If [BACKUP BATT EMPTY] is displayed in the viewfinder for approximately five seconds when the <POWER> switch is set to <ON>, the built-in battery has been consumed.

Charge the built-in battery with the following procedure.

1 **Make sure that the <POWER> switch is <OFF>.**

2 **Connect the batteries or the external DC power supply to the camera.**

For details on the connection of batteries or external DC power supply, refer to "Power supply" (page 145).

3 **Leave the camera for approx. four hours.**

The built-in battery will be charged.

Make sure the settings for the date/time and timecode after the built-in battery has been charged. Set the date and time of the internal clock when the [SET DATE AND TIME] is displayed in the viewfinder.

4 **Set the <POWER> switch to <ON>, and check that [BACKUP BATT EMPTY] is not displayed in the viewfinder screen.**

Replacement of the built-in battery is necessary when [BACKUP BATT EMPTY] is displayed even after the built-in battery has been charged. Consult your dealer.

Setting the date/time of the internal clock

The date/time and time zone are recorded as metadata in the content (clip) while shooting. The date/time metadata will affect the playback order by the thumbnail.

Always check and set the date/time and time zone before using the camera for the first time.

Do not change the setting of the date/time and time zone while shooting.

1 **Press the <MENU> button.**

● The [MENU] screen is displayed on the control panel.

2 **Select [MENU] → [SYSTEM SETTINGS] → [CLOCK] → [CLOCK SETTING] to set the year, month, day, and time.**

The year setting upper limit is 2037. For details on the settings menu, refer to "Setting menu basic operations" (page 96).

3 **Select [MENU] → [SYSTEM SETTINGS] → [CLOCK] → [TIME ZONE] to set the time difference from Greenwich Mean Time.**

✍ NOTE

· You can correct the date and time of the internal clock from GPS by enabling the GPS function.
· The accuracy of the clock is approximately ±30 seconds per month. Check and reset the time when accurate time is required.
· Note that if the time is received using the built-in GPS, the time of the internal clock (local date and time) is maintained accurately based on the time received (Greenwich mean time) and the time zone.
  Check the settings of the time zone again if the settings for the time zone is not correct, such as the wrong local date and time are displayed as the time of the internal clock (it is not necessary to reset the internal clock).

■ **Time zone table**

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

Inspections before shooting

Before shooting, perform the following inspections to ensure that the system operates properly.

1 **Confirm that the assembled modules and the handles are fixed securely.**

2 **Insert an expressP2 memory card or P2 memory card into the main slot, and close the slot cover.**

3 **Set the <POWER> switch to <ON> and check the following items.**
- [BACKUP BATT EMPTY] is not displayed on the viewfinder screen.
- The remaining battery level is adequate in the status display on the control panel.
- The remaining space on the media is adequate in the status display on the control panel.

4 **Press the <REC> button and check the following.**
- The main slot card access LED flashes in orange.
- The <REC> button lights up in red.
- No system warning is displayed with the status display on the control panel.

5 **Press the <REC> button again.**

Confirm that the main slot card access LED lights up in orange and the <REC> button does not light in red.

6 **Press the <PLAY> button to switch to the PLAY screen, and play back the clip you just recorded.**
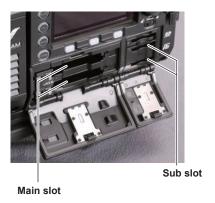
Confirm that the clip plays back properly on the control panel or viewfinder.

Chapter 4   Video Recording and Color Grading

This chapter describes the video combinations that can be recorded and the color grading (in-camera color grading) that can be performed using the camera.

Dual-recording

The camera has two built-in recorders.

Sub slot

Main slot

■ Main recorder

Card slot	expressP2 memory card slot × 2
Compatible memory cards	expressP2 memory card P2 memory card (with some restrictions)

- The P2 memory card cannot be used if it is in ProRes format, [AVC-Intra2K 444], [AVC-Intra444], or [AVC-Intra200] formats, or when the variable frame rate function is enabled.
- P2 memory cards of 2 GB cannot be used.
- R, A, and E series P2 memory cards cannot be used for 1080/59.94P and 1080/50P.

■ Sub recorder

Card slot	microP2 memory card slot × 2
Compatible memory cards	microP2 memory card

- Proxy data can be recorded simultaneously in the sub recorder (with some restrictions)
- Sub recorder has two types of operation modes. Set the mode using [MENU] → [SYSTEM SETTINGS] → [SYSTEM MODE] → [VFR SUB REC].
  - [NORMAL+Audio]: Records in the frame of system frequency. Audio signal is also recorded.
  - [VFR up to 60p (50p)]: Records in a variable frame rate by synchronizing to the [VFR] setting of the main recorder. Audio signal is not recorded when [VFR] is set to [ON].
  If either of the following is set, the operation mode is fixed to [NORMAL+Audio].
  - [HIGH SPEED]: [ON (1-✲✲fps)]
  - [SUB CODEC]: [AVC-LongG50] or [AVC-LongG25]
- Recording using only the sub recorder is not possible.

File name style

The file name style for recorded clips can be set in [MENU] → [REC SETTINGS] → [FILE NAME STYLE].

■ [P2]

Start recording   **Stop recording**

Example: [AVC-Intra100]   4GB   4GB

[MAIN CODEC]   Split Clip1: 023QM200   Split Clip2: 023QM201   Split Clip3: 023QM202

File name with information split

Example: [AVC-LongG25]

[SUB CODEC]   CLIP1: 451QM2UR
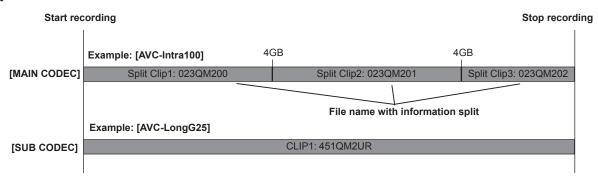
Fig. 1

Fig. 2

If the file name style is set to [P2], the information split is included in the file name even if the file is separated by 4 GB. (Fig. 1)

The file can be handled as a single clip in editing software, etc.

In the following cases, the file is split by 4 GB and it is recorded as the P2 file name style.

• When the format of the recording media is FAT32

Recording media	Format
P2	FAT32
microP2 (32 GB)	FAT32

• When the recording format is OP-Atom format

[MAIN CODEC]	Format
[AVC-Intra200]	OP-Atom
[AVC-Intra100]	OP-Atom

In the following cases, "M" to indicate metadata is displayed next to the REEL number in the HOME screen and the clip number icon. (Fig. 2)

• Set the [FILE NAME STYLE] to [P2]

• Set the [User Clip Name] to [TYPE3]

■ [CINE]

Start recording   **Stop recording**

Example: [AVC-Intra422]

[MAIN CODEC]   CLIP1:A005C031_151201_I40B

                                                        The file name is the same

Example: [AVC-LongG25]

[SUB CODEC]   CLIP1:A005C031_151201_I40B

                        4GB   4GB

A 001C001_ yymmdd _ hhhh.mxf
(A 001C001_ yymmdd _ hhhh.mov)

1   2   3   4   5

Fig. 1
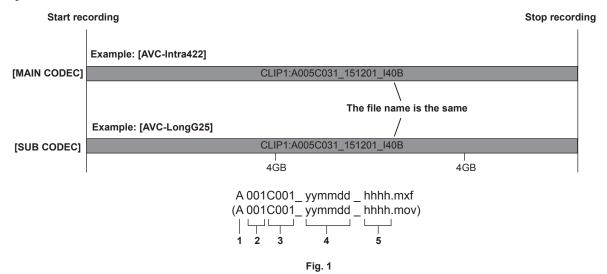
Fig. 2

1   **CAM INDEX**

2   **REEL No.**

3   **Clip number**

4   **Date**

5   **Hashtag generated from the serial number of the recording module**

The [CINE] setting of the file name style is enabled if the following conditions (where a clip is not split by 4 GB) are met.

When these conditions are not met, the setting of the file name style is forcibly switched to [P2] even if [CINE] is set in [FILE NAME STYLE]. An alert is displayed. Check the alert.

• When the format of the recording media is exFAT

Recording media	Format
expressP2	exFAT
microP2 (64 GB)	exFAT

• When the recording format is OP-1b format

[MAIN CODEC]	Format
[AVC-Intra444]	OP-1b
[AVC-Intra422]	OP-1b
[ProRes 4444 XQ]	OP-1b
[ProRes 4444]	OP-1b
[ProRes 422 HQ]	OP-1b
[ProRes 422]	OP-1b
[ProRes 422 LT]	OP-1b

The following happens when [CINE] is enabled.

• The file name of the main recorder and sub recorder is the same. (Fig. 1)

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● Recording across slots cannot be performed.

● Recording stops if there is no more space on the sub recorder card even if space remains on the main recorder card.

● "F" to indicate the file is displayed next to the REEL number of the HOME screen and the clip number icon. (Fig. 2)

Even when [P2] is set, the [CINE] file name style (1-5) is recorded in the metadata as [USER CLIP NAME] if [USER CLIP NAME] is set to [TYPE3].

Selecting the resolution, codec, and video format for recording

You can select the recording resolution, recording codec, and recording frame rate.

- [MAIN PIXEL]: Resolution
- [MAIN CODEC]: Recording format
- [FREQUENCY]: System frequency
- [HIGH SPEED]: High speed mode
- VFR: Variable frame rate function (variable frame rate range)
- [SUB CODEC]: Sub recording format
- [PROXY]: Proxy data recording (Proxy data recording does not function when the variable frame rate function is enabled.)

Recording format

- OP-1b format: [AVC-Intra444]/[AVC-Intra422]/[AVC-LongG50]/[AVC-LongG25]/[ProRes 4444 XQ]/[ProRes 4444]/[ProRes 422 HQ]/[ProRes 422]/[ProRes 422 LT]
- OP-Atom format: [AVC-Intra200]/[AVC-Intra100]

The recording will stop in six hours for the following cases:

- [MAIN CODEC] is set to ProRes format.
- [FILE NAME STYLE] is set to [CINE], and the [CINE] function is enabled.

■ When [MAIN PIXEL] is set to [1920×1080]

[MAIN CODEC]	[FREQUENCY]	[HIGH SPEED]	VFR Variable range	[SUB CODEC]	[PROXY]
[AVC-Intra444]	[23.98p]	[OFF (1-60fps)]	1fps - 60fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG50] [AVC-LongG25]	[G3.5(960×540)]
	[25.00p]	[OFF (1-50fps)]	1fps - 50fps		
	[29.97p]	[OFF (1-60fps)]	1fps - 60fps		
[AVC-Intra200]	[23.98p]	[OFF (1-60fps)]	1fps - 60fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG50] [AVC-LongG25]	[G3.5(960×540)]
	[25.00p]	[OFF (1-50fps)]	1fps - 50fps		
	[29.97p]	[OFF (1-60fps)]	1fps - 60fps		
[AVC-Intra422]	[23.98p]	[OFF (1-60fps)]	1fps - 60fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG50] [AVC-LongG25]	[G3.5(960×540)]
		[OFF (1-120fps)]	1fps - 120fps		
		[ON (1-240fps)]	1fps - 240fps		—
	[25.00p]	[OFF (1-50fps)]	1fps - 50fps		[G3.5(960×540)]
		[OFF (1-100fps)]	1fps - 100fps		
		[ON (1-200fps)]	1fps - 200fps		—
	[29.97p]	[OFF (1-60fps)]	1fps - 60fps		[G3.5(960×540)]
		[OFF (1-120fps)]	1fps - 120fps		
		[ON (1-240fps)]	1fps - 240fps		—
	[50.00p]	[OFF (1-50fps)]	1fps - 50fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG25]	—
		[OFF (1-100fps)]	1fps - 100fps		
		[ON (1-200fps)]	1fps - 200fps		
	[50.00i]	—	—	[AVC-Intra100]	[G3.5(960×540)]
	[59.94p]	[OFF (1-60fps)]	1fps - 60fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG25]	—
		[OFF (1-120fps)]	1fps - 120fps		
		[ON (1-240fps)]	1fps - 240fps		
	[59.94i]	—	—	[AVC-Intra100]	[G3.5(960×540)]
[AVC-Intra100]	[23.98p]	[OFF (1-60fps)]	1fps - 60fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG50] [AVC-LongG25]	[G3.5(960×540)]
		[OFF (1-120fps)]	1fps - 120fps		
		[ON (1-240fps)]	1fps - 240fps		—
	[25.00p]	[OFF (1-50fps)]	1fps - 50fps		[G3.5(960×540)]
		[OFF (1-100fps)]	1fps - 100fps		
		[ON (1-200fps)]	1fps - 200fps		—
	[29.97p]	[OFF (1-60fps)]	1fps - 60fps		[G3.5(960×540)]
		[OFF (1-120fps)]	1fps - 120fps		
		[ON (1-240fps)]	1fps - 240fps		—
	[50.00p]	[OFF (1-50fps)]	1fps - 50fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG25]	—
		[OFF (1-100fps)]	1fps - 100fps		
		[ON (1-200fps)]	1fps - 200fps		
	[50.00i]	—	—	[AVC-Intra100]	[G3.5(960×540)]
	[59.94p]	[OFF (1-60fps)]	1fps - 60fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG25]	—
		[OFF (1-120fps)]	1fps - 120fps		
		[ON (1-240fps)]	1fps - 240fps		
	[59.94i]	—	—	[AVC-Intra100]	[G3.5(960×540)]

[MAIN CODEC]	[FREQUENCY]	[HIGH SPEED]	VFR Variable range	[SUB CODEC]	[PROXY]
[ProRes 4444 XQ]	[23.98p]	[OFF (1-48fps)]	1fps - 48fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG50] [AVC-LongG25]	[G3.5(960×540)]
	[24.00p]	[OFF (1-48fps)]	1fps - 48fps		
	[25.00p]	[OFF (1-50fps)]	1fps - 50fps		
	[29.97p]	[OFF (1-48fps)]	1fps - 48fps		
[ProRes 4444]	[23.98p]	[OFF (1-60fps)]	1fps - 60fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG50] [AVC-LongG25]	[G3.5(960×540)]
	[24.00p]	[OFF (1-60fps)]	1fps - 60fps		
	[25.00p]	[OFF (1-50fps)]	1fps - 50fps		
	[29.97p]	[OFF (1-60fps)]	1fps - 60fps		
[ProRes 422 HQ] [ProRes 422] [ProRes 422 LT]	[23.98p]	[OFF (1-60fps)]	1fps - 60fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG50] [AVC-LongG25]	[G3.5(960×540)]
		[ON (1-120fps)]*	1fps - 120fps		
	[24.00p]	[OFF (1-60fps)]	1fps - 60fps		
		[ON (1-120fps)]*	1fps - 120fps		
	[25.00p]	[OFF (1-50fps)]	1fps - 50fps		
		[ON (1-100fps)]*	1fps - 100fps		
	[29.97p]	[OFF (1-60fps)]	1fps - 60fps		
		[ON (1-120fps)]*	1fps - 120fps		
	[50.00p]	[OFF (1-50fps)]	1fps - 50fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG25]	—
		[ON (1-100fps)]*	1fps - 100fps		
	[50.00i]	—	—	[AVC-Intra100]	[G3.5(960×540)]
	[59.94p]	[OFF (1-60fps)]	1fps - 60fps	[AVC-Intra422] [AVC-Intra100] [AVC-LongG25]	—
		[ON (1-120fps)]*	1fps - 120fps		
	[59.94i]	—	—	[AVC-Intra100]	[G3.5(960×540)]

* Cannot be played back. To play back, set [HIGH SPEED] to [OFF].

■ **When [MAIN PIXEL] is set to [1280×720]**

[MAIN CODEC]	[FREQUENCY]	[HIGH SPEED]	VFR Variable range	[SUB CODEC]	[PROXY]
[AVC-Intra100]	[50.00p]	—	—	[AVC-Intra100]	—
	[59.94p]	—	—		—

✏ *NOTE*

· Operation mode of the image sensor and signal processing will change depending on selection of [HIGH SPEED].
· When [ON] is selected in [HIGH SPEED], the performance will degrade partially, compared to when other items are selected.
· Recording on multiple cards cannot be performed with ProRes format.
· In ProRes format, data cannot be recorded in a card with the CPS function set.

In-camera grading

This chapter describes the camera's grading function. You can record V-Log (master video) in the main recorder and grading video in the sub recorder simultaneously.

Grading function

[CDL]:
● Controlled using [Slope], [Offset], [Power] (RGB stand-alone), and [Saturation] (RGB common).
● Can be controlled in real-time using the camera's control panel.
● Control parameters are saved to a file and stored in a P2 card together with videos, etc.
  It can also be saved to the SD memory card.
● The file extension is .cdl.

Control combinations through settings

[MAIN COLOR]	[Grading SEL]	[SUB COLOR]	[CDL]	Output Picture Adjustment		
				[MON 1] [MON 2]	[EVF]	[VF SDI]
[V-Log]	[External App]/ [Internal]	[V-Log]	[ON]	V-Log/Grading (selectable)	V-Log/ Grading/V-709/LCC (selectable)	Same As VF/V-Log
		[Grading]				
	[OFF]	[V-Log]	[OFF]	V-Log/V-709 (selectable)	V-Log/V-709/LCC (selectable)	
		[V-709]				
[V-709]	[OFF]	[V-709]	[OFF]	V-709	V-709	Same As VF
[F-REC]	[OFF]	[F-REC]	[OFF]	F-REC/LCC (selectable)	F-REC/LCC (selectable)	
[HD]	[OFF]	[HD]	[OFF]	HD	HD	

When [MAIN COLOR] is set to [V-Log], [MENU] → [CAMERA SETTINGS] → [Enhanced] → [Enhanced SW] is fixed to [OFF].

When [Grading SEL] is set to [External App], the function is controlled from the color grading application of the computer connected via network. When [Grading SEL] is set to [Internal], the function is controlled from the control panel.

Color grading operations can be performed using CDL even while recording is in operation. The CDL parameter value to record as the .cdl file becomes the value when recording stops.

The control parameter recorded in the file and the CDL parameter applied to the video may not match when an operation for color grading is performed right before stopping the recording.

Picture adjustment matching the settings of the output picture adjustment is output when playing the recorded V-Log video.

The CDL parameters that is currently set in the camera is applied rather than the .cdl that is saved at the same time as the clip to play when set to Grading.

■ **When playing back the recorded V-Log video**

When outputting in output picture adjustment
● Select [OFF] in [MENU] → [SYSTEM SETTINGS] → [COLOR SETTING] → [PLAYBACK GRADING].
● This is reflected to the output with [MON 1]/[MON 2]/[VF]/[VF SDI] setting is set to [Grading].

When outputting with the control parameter recorded in the P2 card
● Select [ON] in [MENU] → [SYSTEM SETTINGS] → [COLOR SETTING] → [PLAYBACK GRADING].
● This is reflected to all output regardless of [MON 1]/[MON 2]/[VF]/[VF SDI] setting.

📝 **NOTE**

・ The V-Log video with the [3D LUT] file other than the [V-709] setting recorded by VariCam 35 attached
  VariCam HS will not perform the picture adjustment by the saved control parameter even when [PLAYBACK GRADING] is set to [ON].

P2 card

Inserting a P2 card

When using the camera for the first time, be sure to set the time data beforehand. (page 34)

Insert the expressP2 memory card into the main slot and the microP2 memory card into the sub slot.

Main slot 1

Eject button

Sub slot 3

Sub slot card access LED

Card slot cover

Sub slot 4

Main slot 2

Main slot card access LED

Main slot lock switch
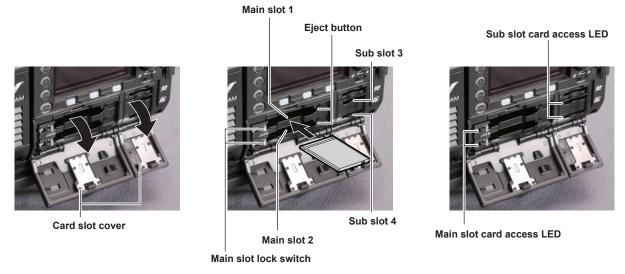
Fig. 1   **Fig. 2**   **Fig. 3**

1 **Open the card slot cover. (Fig. 1)**

2 **Insert a card into the card slot. (Fig. 2)**

- expressP2 memory cards (main slot)
  - Slide the main slot lock switch to the left to release the lock.
  - Insert the card with the logo facing up until the eject button pops out.
  - Press the eject button that pops up to the right.
  - Slide the main slot lock switch to the right to lock.
- microP2 memory cards (sub slot)
  - Insert with the label facing up.

3 **Make sure that the card access LED is lit in orange or green. (Fig. 3) (page 44)**

When two P2 cards are inserted in the card slots, the P2 card with the smaller slot number will be recorded to first. Note, however, that regardless of the slot number, if a P2 card is inserted later, that P2 card will not be accessed until the previously inserted P2 card has been recorded to.

- **Example: When expressP2 memory cards are inserted in two slots**

  If expressP2 memory cards are inserted into the two slots, the cards are used as expressP2 memory cards in the order of the slot number 1 → 2. However, if you remove the expressP2 memory card from slot 1 and then insert it again, recording to the expressP2 memory cards will take place in the order slot 2 → 1.

The P2 memory card number to be recorded to is maintained even if the camera is turned off. When the camera is next turned on, recording can be continued to the same P2 memory card as before the camera was turned off.

4 **Close the cover of the main slot or sub slot.**

📝 *NOTE*

- The topmost slot on the sub slot side is for the SD memory card used for configuration, etc. Videos and other forms of data cannot be recorded.
- Be sure to close the card slot cover in order to prevent dropping, dust, and static electricity.
- Be sure to format P2 cards only on the camera.
- Operation is not guaranteed if SDHC/SDXC memory cards other than microP2 memory cards are used in the sub slot.
- If a microP2 memory card is inserted slowly, [FORMAT ERROR!] or [NOT SUPPORTED!] may be displayed. In such a case, insert the card again.
- In the ProRes format, recording across the cards.

Removing a P2 card

Fig. 1

Fig. 2

1 **Open the card slot cover.**

2 **Remove the card.**
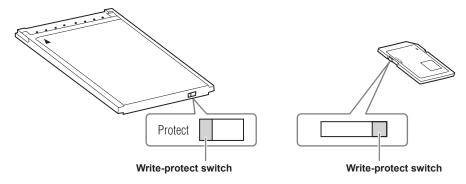
- expressP2 memory cards
  - Slide the main slot lock switch to the left to release the lock.
  - Lift the eject button (Fig. 1), and press in. (Fig. 2)
- microP2 memory cards
  - Press in the microP2 card further into the camera and let go.
  - The microP2 memory card is released from the card slot, and the microP2 memory card can be removed.

📝 *NOTE*

- Do not remove the P2 card after inserting it, while it is being accessed, or being detected (card access LED flashing in orange). Otherwise, it may result in a malfunction.
- If the P2 card is removed while being accessed, [TURN POWER OFF] is displayed on the viewfinder screen, and the camera gives out a warning indication by a warning lamp, etc. Also, all card access LEDs flash rapidly in orange. Turn off the power. (page 151)
- If the P2 card is removed while being accessed, clips on it may become irregular. Check the clips and restore them, if required.
- If the P2 card being formatted is removed, formatting of the P2 card is not guaranteed. In this case, [TURN POWER OFF] is displayed on the viewfinder screen displays. Turn off the power and then back on again, and reformat the P2 card.
- If a P2 card is inserted into another slot during playback, the inserted card is not recognized and the card access LED does not light up. The P2 card will start to be recognized when playback ends.
- Even if a P2 card is inserted in a vacant card slot during recording, the P2 card may not be recognized immediately in the following instance:
  - Immediately after a recording slot is switched

Preventing accidental erasure

In order to prevent erasing the recorded contents of the P2 card by mistake, turn the write protect switch on the P2 card to the Protect side (or the LOCK side).

Write-protect switch   **Write-protect switch**

📝 *NOTE*

- Write-protect switch can be switched while the card is being accessed (during recording or playback), but does not take effect until accessing of the card stops.

Card access LEDs and P2 card status

Card access LED	P2 card status	
Illuminated in green	Recording possible	Reading/writing are both possible.
Illuminated in orange	Recording target	Reading/writing are both possible. The card is currently the recording target (including loop recording).
Flashing in orange	Accessing card	Reading/writing are currently being performed.
Flashing in orange rapidly	The card is being recognized.	The P2 card is being recognized.

Card access LED	P2 card status	
Flashing in green slowly	Card full	There is no free space on the P2 card. Reading only is possible.
	Write protect	The write-protect switch on the P2 card is at the Protect position. Reading only is possible.
	Unrecordable card	Recording is not possible by the currently set recording format since the SD memory card, etc. is inserted. To record the card, change the recording format or use a P2 card.
Off	Card not supported	This card cannot be used on the camera. Replace the card.
	Illegal format	The P2 card is not properly formatted. Reformat the card.
	No card	The P2 card is not inserted. The card is waiting to be recognized.
	Unauthenticated card	An expressP2 memory card or microP2 memory card that cannot be authenticated. Select [MENU] → [SYSTEM SETTINGS] → [CARDS/MEDIA] → [CPS PASSWORD], and enter the password.

P2 card recording time

■ P2 cards supported on the camera

The optional expressP2, P2, and microP2 memory cards can be used with the camera.

NOTE

· AJ-P2C002SG (2 GB) cards cannot be used.
· Refer to our support desk at the following website for the latest information not included in this document.
  https://pro-av.panasonic.net/

■ Main recorder

Main recording format ([MAIN CODEC])	Setting conditions	Recording time when using a 256 GB expressP2 memory card
[AVC-Intra100]	[25.00p]/[29.97p] VFR: [OFF]	Approx. 256 min
	VFR: [ON], [50fps]/[60fps]	Approx. 128 min
	VFR: [ON] [200fps]/[240fps]	Approx. 32 min

■ Sub recorder

Sub recording format ([SUB CODEC])	Setting conditions	Recording time when using a 64 GB microP2 memory card
[AVC-Intra100]	[25.00p]/[29.97p]	Approx. 64 min
[AVC-LongG50]	[25.00p]/[29.97p]	Approx. 128 min
[AVC-LongG25]	[25.00p]/[29.97p]	Approx. 256 min

NOTE

· Indicated capacities include management and other area, so the space available for recording is less than the values in the table above.

Dividing clips recorded on P2 cards

If a P2 card with a capacity of 8 GB or more are used with the camera, recording is automatically continued as another clip when a single continuous recording time exceeds the following time. The thumbnail operation (display, delete, restore, etc.) for a clip on the P2 devices can be performed as a operation for a single clip. Clips may be displayed as separate clips in nonlinear editing software and on a computer. , and if the recording is performed on a microP2 memory card that exceeds 32 GB in AVC-LongG 50 or AVC-LongG 25, the recording can be continued as a same clip by selecting [ONE FILE] from [MENU] → [REC SETTINGS] → [FILE SPLIT].

Recording format (excluding native recording)	Continuous recording time
AVC-Intra 100 (1080/50P, 1080/59.94P)	Approx. 3 min
AVC-Intra 100 (1080/25P, 1080/29.97P)	Approx. 5 min
AVC-LongG 50	Approx. 10 min
AVC-LongG 25	Approx. 20 min

CPS (Content Protection System)

The expressP2 memory card (excluding B series) and the microP2 memory card support the security function "Content Protection System" that allows encryption formatting to prevent data leakage to third party.

This camera supports reading of the CPS formatted expressP2 memory card and microP2 memory card.

To read the CPS formatted card, set the CPS password for the camera, and enable the authentication function and the encryption format function of the expressP2 memory card or the microP2 memory card. Encrypted memory cards will be automatically recognized between devices where the same CPS password is set, and recording and playback of the memory cards will be enabled. For details, refer to "Setting CPS password" (page 46).

NOTE

· From [MENU] → [SYSTEM SETTINGS] → [CARDS/MEDIA] → [CPS PASSWORD], set or delete the CPS password.
· Up to 16 characters can be input.

· When setting the CPS password, insert a CPS formatted expressP2 memory card or microP2 memory card into each slot.
· The encrypted memory card is not recognized in the SD card slot in a computer.
· If the card is unable to be recognized, authenticate with the correct password or format and use the card as recording media. Recording data on the card failed to be recognized cannot be checked. Do not perform any operation other than manual authentication and formatting with the failed card inserted.

Setting CPS password

To set a CPS password, either load the password from the SD memory card or use the menu of the camera to enter the password.
Only one CPS password can be set on the camera. Loading the CPS password again overwrites the previously saved password.

Loading CPS password from SD memory card

1 **Download and install the latest P2 Viewer Plus into a computer.**

2 **With P2 Viewer Plus, generate a CPS password and write it to the SD memory card.**

3 **Load the CPS password file.**

1) Start the camera, and insert the SD memory card into the SD card slot.

2) Open the thumbnail screen, and select [LOAD] from [MENU] → [SYSTEM SETTINGS] → [CARDS/MEDIA] → [CPS PASSWORD].
   The password file list is displayed.

3) Select a file to be used and press the jog dial button.
   ● When loading of the CPS password has succeeded, the message [LOADING PASSWORD COMPLETED!] is displayed.
   ● When loading of the CPS password has failed, a warning message is displayed. For an explanation of warnings, refer to "Warning system" (page 151).

📝 NOTE

· The CPS password file generated on the SD memory card is encrypted. When it is not necessary any more, format the SD memory card, etc., for security risk management.

Setting CPS password using the menu of the camera

1 **Open the thumbnail screen, and select [SET] from [MENU] → [SYSTEM SETTINGS] → [CARDS/MEDIA] → [CPS PASSWORD].**
   The software keyboard to enter the CPS password is displayed.

2 **Enter the CPS password with the keyboard.**
   Enter [PASSWORD] and [RETRY PASSWORD] for verification, and select [OK] to set the CPS password.
   ● When entry of the CPS password has succeeded, the message [SETTING PASSWORD COMPLETED!] is displayed.
   ● When entry of the CPS password has failed, the warning message is displayed. For warnings description, refer to "During thumbnail and menu operation" (page 152).

📝 NOTE

· Up to 16 characters can be input.
· The entered password cannot be displayed on the device. Do not forget the password.
· Data in ProRes format cannot be recorded in a card with the CPS function set.

Deleting CPS password

When the CPS function is no longer used, delete the CPS password.

1 **Open the thumbnail screen, and select [DELETE] from [MENU] → [SYSTEM SETTINGS] → [CARDS/MEDIA] → [CPS PASSWORD].**
   [DELETING PASSWORD COMPLETED!] is displayed and the CPS password is deleted.

📝 NOTE
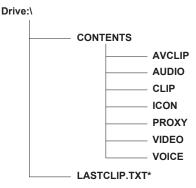
· When the CPS password is deleted and becomes unset, the encryption format function and the automatic authentication of the encrypted memory cards are disabled.

How to handle data recorded on P2 cards

P2 cards are semiconductor memory cards that are used as the recording medium in the professional video production and broadcasting devices that make up the DVCPRO P2 series.
● Since data recorded in the P2 format is in a file format, they have excellent compatibility with computers. The file structure is a unique format, which in addition to video and audio data in MXF files contains various other important information items. The folder structure links data recorded in the P2 format as shown below.

Drive:
```
            ├── CONTENTS
            │        ├──────── AVCLIP
            │        ├──────── AUDIO
            │        ├──────── CLIP
            │        ├──────── ICON
            │        ├──────── PROXY
            │        ├──────── VIDEO
            │        └──────── VOICE
            └── LASTCLIP.TXT*
```

All these folders are required.

If even part of this information is modified or deleted, the data may no longer be recognized as P2 data, or the card may no longer be able to be used with P2 devices.

*This is the file to which the information of the final clip that was recorded with the P2 device is written.

📝 *NOTE*

・ P2 cards formatted on devices other than microP2 memory card compatible devices do not have the AVCLIP folder. For P2 cards without the AVCLIP folder, the folder will automatically be created when recording is performed on microP2 memory card compatible devices.
・ When transferring data from a P2 card to a computer, or when rewriting data saved on a computer back to a P2 card, to prevent data loss be sure to download the special "P2 Viewer Plus" software. For details on downloading P2 Viewer Plus and the operating environment, visit the support desk at the following website:
  https://pro-av.panasonic.net/
・ Follow the steps below to use general IT tools such as Microsoft Windows Explorer or Apple Finder to transfer the data to a computer. Be sure to use P2 Viewer Plus to write data back to a P2 card.
  - Transfer the corresponding CONTENTS folder and LASTCLIP.TXT file together as a set.
  - Do not transfer individual files from the CONTENTS folder.
  - When copying, copy the LASTCLIP.TXT file at the same time as the CONTENTS folder.
  - When transferring the data in multiple P2 cards to a computer, create a folder for each P2 card to prevent clips with the same name from being overwritten.
  - Do not delete data from the P2 card.
  - Be sure to format P2 cards on the camera or the latest P2 Viewer Plus.

Formatting a P2 card

1 **Select the slot for P2 card to format with [MENU] → [SYSTEM SETTINGS] → [CARDS/MEDIA] → [FORMAT MEDIA].**

● Select [EXIT] when you do not wish to format the card.

2 **Select [YES] using the jog dial button.**

The selected P2 card is formatted.

📝 *NOTE*

・ Data deleted as a result of formatting cannot be restored. Always check the data before formatting.
・ If the CPS password has been set, the confirmation message whether to select the encrypted format [CPS(ENCRYPT)] or normal format [NORMAL] is displayed when a slot with CPS formatted P2 card is selected. Encrypted format is performed when the encrypted format is selected.

Special recording functions

Hot swap recording

When P2 cards are inserted into two card slots, recording can be performed continuously across two cards.

Also, the card other than the one currently being recorded to can be swapped and recording can be continued on three or more cards (hot swap recording).

However, P2 card recognition might slow down depending on the timing (before and after continuous recording across two card slots) that the P2 card is inserted into the vacant card slot. When inserting a P2 card, make sure that there is at least one minute of free space on the card to be recorded to.

NOTE

· Hot swap playback is not supported.
· The hot swap recording is not possible with the ProRes format.
· The hot swap recording cannot be performed when [CINE] is selected for file name style.

Shot mark recording function

Shot mark is the mark added to the thumbnail of each clip to distinguish that clip from others.

Only clips with shot marks attached can be displayed or played back.

Adding shot marks

1 From [MENU] → [SYSTEM SETTINGS] → [USER SWITCHES], set [SHOT MARK] for any setting from [USER1] to [USER4].

2 During recording or while a clip is selected in the PLAY screen, press the button to which the shot mark is assigned.

● [MARK ON] is displayed, and the short mark is added to the recorded clip.
● Another press of the button displays [MARK OFF] and the shot mark disappears.

NOTE

· To add shot marks to combined clips, such as those recorded over multiple P2 cards, or delete them, there are following restrictions.
  - All P2 cards constituting clips must be inserted into the slots.
  - A shot mark is added only to the top clip among combined clips.

Text memo recording function

Text memos can be added to any video point.

Adding text memos
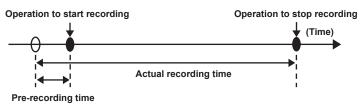
1 From [MENU] → [SYSTEM SETTINGS] → [USER SWITCHES], set [TEXT MEMO] for any setting from [USER1] to [USER4].

2 During a pause or while a clip is selected in the PLAY screen, press the button to which the text memo is assigned.

[TEXT MEMO] is displayed, and the text memo is added to the video clip that was displayed when the button was pressed.

NOTE

· Up to 100 text memos can be recorded to a single clip.

Pre-recording

This function enables recording of video and audio from a fixed amount of time (approximately three seconds) before the operation to start recording is performed.

1 Set [MENU] → [REC SETTINGS] → [REC FUNCTION] → [PRE REC MODE] to [ON].

● [P-REC] is displayed on the [HOME] screen.

2 Press the <REC> button.

● [P-REC] lights up in red on the [HOME] screen.

NOTE
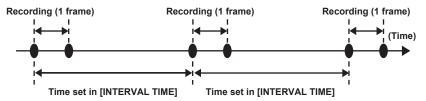
· Video and audio according to the preset time may not be recorded in the following cases:
  - Immediately after the power is turned on
  - After recording-related settings have been altered in the setting menu
  - Immediately after the P2 card is inserted
  - After playback
  - When the [VFR] setting has been changed (When [ON]/[OFF] for [VFR] has been switched or the [FPS] setting has been changed)

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- Immediately after [WINDOW BURN] has been set and [PREVIEW] has been performed
- During the time from recording stop until completion of writing to a card
- The pre-recording function does not work in the following cases:
  - When [SUB CODEC] is set to [AVC-LongG50] or [AVC-LongG25], or when the proxy data recording is selected
  - When the interval recording or one-shot recording is set
  - When [MAIN CODEC] setting is ProRes format and [HIGH SPEED] setting is [ON].
  - When [MAIN CODEC] setting is [ProRes 4444 XQ] or [ProRes 4444]

Interval recording

Perform recording at the set time intervals. One frame is recorded at a single recording.

1 Set [MENU] → [REC SETTINGS] → [REC FUNCTION] → [REC MODE] to [INTERVAL].

2 Set the following related items from [MENU] → [REC SETTINGS] → [REC FUNCTION].
- [INTERVAL TIME]: Intermittent time (minimum 2 frames, maximum 1 hour)
- [START DELAY]: Delay time from the time when the <REC> button is pressed until the time when the first recording starts

3 Press the <REC> button.

Interval recording starts according to the set intermittent time.
- When [INTERVAL TIME] is set to two minutes or longer, the tally lamp flashes every five seconds to indicate that the camera is on standby.
- To stop recording, press the <REC> button.
- To clear settings, set [MENU] → [REC SETTINGS] → [REC FUNCTION] → [REC MODE] to [NORMAL].
- The followings are displayed on the [HOME] screen.
  - During recording: [i REC] lights up in red
  - During pause: [i REC] is inverted in red and white
    When [INTERVAL TIME] is set to less than two seconds, [i REC] lights up in red.
  - During stop: [i REC] in black character

📝 NOTE

- During operation in the interval recording mode, the card access LED of the recording slot flashes in orange. Do not remove this P2 card. If you remove the card, restore the clips. Note that even when the clips are restored, the last three to four seconds of the recording may still be lost (maximum ten seconds in case that the card was removed during recording on multiple P2 cards).
- Pre-recording does not function.
- Audio is not recorded.
- Recorded data (data recorded until the recording was stopped) is included in one file.

One-shot recording

Recording takes place once for the set amount of time.

1 Set [MENU] → [REC SETTINGS] → [REC FUNCTION] → [REC MODE] to [ONE SHOT].
- When [SUB CODEC] is set to [AVC-LongG50] or [AVC-LongG25], or when the proxy data recording is selected, one-shot recording is not available.
- When [VFR] is set, one-shot recording is not available.

2 Set the following related items from [MENU] → [REC SETTINGS] → [REC FUNCTION].
- [REC TIME]: Duration of each recording
- [START DELAY]: Delay time from the time when the <REC> button is pressed until the time the first recording starts

3 Press the <REC> button.
- Recording is performed for the time set in step **2**, and then pauses.
- To stop recording, perform one of the following operations.
  - Press and hold the <REC> button for at least two seconds. After recording operation is performed once, recording stops.
  - Press and hold the <HOME> button for at least two seconds.
- To clear settings, set [MENU] → [REC SETTINGS] → [REC FUNCTION] → [REC MODE] to [NORMAL].
- The followings are displayed on the top right in the display window and the right side in the viewfinder or LCD monitor.
  - During recording: [i REC] lights up in red
  - During pause: [i REC] is inverted in red and white
  - During stop: [i] in black character

📝 *NOTE*

- During operation in the one-shot recording mode, the card access LED of the recording slot flashes in orange. Do not remove this P2 card. If you remove the card, restore the clips. Note that even when the clips are restored, the last three to four seconds of the recording may still be lost (maximum 10 seconds in case that the card was removed during recording on multiple P2 cards).
- Pre-recording does not function.
- Audio is not recorded.
- Recorded data (data recorded until the recording was stopped) is included in one file.
- When one-shot recording is continuously performed, the recording operation may be slower.

Chapter 5   Control Panel

This chapter describes how to change each setting and check the setting status using the control panel.

Control panel operation

Basic camera operations can be performed using the control panel.

When the setting is changed in the control panel, the setting in the [MENU] is also changed in conjunction.

a: **<HOME> button**

b: **<PLAY> button**

c: **<TC> button**

d: **<INFO> button**

e: **<VIEW> button**

f: **<EXIT> button**

g: **<MENU> button**

h: **Jog dial button**

i: **<LOCK> switch**

j: **Control panel operation buttons**

Camera status display

1 **Recording status display**
   Top: Main slot recording status display
   ● [REC]: Currently recording
   ⊘: When audio is not being recorded
   Bottom: Sub slot recording status display
   ● [REC]: Currently recording

2 **Media free space display**
   Top: Main slot media remaining capacity display
   Bottom: Sub slot media remaining capacity display
   ● [∗∗∗min]: Remaining capacity (0 to 599 minutes)
   ● [∗∗h]: Remaining capacity (more than 10 hours)
   ● [END]: No remaining free space
   ● [WP]: Write protected
   ● [OFF]: When [SUB CODEC] is [OFF]

3 **Codec display**
   Top: Main slot codec display ([MAIN CODEC] setting value)
   Bottom: Sub slot codec display ([SUB CODEC] setting value)

4 **Battery display**
   ● Changes to ⊏▮▮▮⊐ → ⊏▯▮▮⊐ → ⊏▯▯▮⊐ →⊏▯▯▯⊐ as the battery charge level gets lower.
   ● ⊏▯▯▯⊐ (yellow): Battery charge level is low.
   ● ⊏▯▯▯⊐ (red): Battery charge has run out.
   ● [∗∗.∗V]: Displays the battery charge level in units of 0.1 V.
   ● [∗∗∗%]: Displays the battery charge level with charge level information in %.

5 **Audio level meter display**

- Channel display
  [1]/[2] or [3]/[4]
- Level meter display
  Displays the level represented by 19 bars. (2 dB increments)
- Standard level bar
  At the −18 dB position or the −20 dB position
  The standard is in [MENU] → [SYSTEM SETTINGS] → [AUDIO LEVEL] → [HEADROOM]

6 Warning/error displays
 ◆: Warning (details are displayed on the time code display in the following cases)
- [SYSTEM ERROR !]
- [TURN POWER OFF !]
- [REC WARING !]
- [CARD ERROR !] (when recording has stopped)
- [LOW BATTERY !]
- [MEDIA END !]
 ◆: Alert

7 Time code display
- [TCG 12:59:59:20]: Displays the time code generator value.
- [TCR 12:59:59:20]: Displays the time code reader value.
- [UBG AB CD EF 98]: Displays the user bits generator value.
- [UBR AB CD EF 98]: Indicates the user bits reader value.
- [Dur.00:59:59:23]: Displays the duration.

8 [USER CLIP NAME]/[TYPE3] display
 Displays the CAM INDEX, REEL number, and clip number.

9 Lock display/network status display
 Displayed when button operations are disabled due to the <LOCK> switch.
  IP: Displays the network connection status.

Using the control panel extension unit

The control panel can still be used after it is removed. To remove the control panel, set the <POWER> button to <OFF>.

Fig. 1

Fig. 2

Fig. 3

1 **Press the <RELEASE> switch while lifting up the control panel. (Fig. 1)**
 The control panel will come off.

2 **Attach the control panel extension unit. (Fig. 2)**

3 **Connect the control panel extension unit cable to the control panel. (Fig. 3)**

Securing the control panel using the control panel mounting part

The removed control panel can be secured using the control panel mounting part.

Fig. 1

Fig. 2

Fig. 3
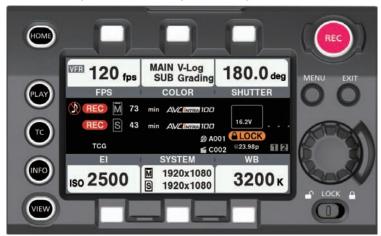
1 **Mount the control panel mounting part. (Fig. 1)**

2 **Mount the control panel onto the control panel mounting part. (Fig. 2)**

3 **Secure the control panel using screws. (Fig. 3)**

📝 *NOTE*

• Use the cable clamp to prevent the cable from getting snagged.

HOME screen

The Home screen displays the basic camera settings and is used to change those settings.

[FPS]	Sets the frame rate.	
	[VFR]	Toggles the variable frame rate. When this is [OFF], the frame rate become 1x the rate set in [MENU] → [SYSTEM SETTING] → [FREQUENCY]. ● When this is [ON], audio cannot be recorded. Audio is recorded at the sub recorder.
	[PRESET]	Mode for selecting preset frame rates. Up to 12 presets can be stored in memory. Presets can be added/deleted using [ADD]/[DEL].
	[VARIABLE]	Mode for selecting from the overall variable range. The variable step changes through [FINE]/[NORMAL]/[COARSE].
[SHUTTER]	Sets the shutter speed.	
	[ON]/[OFF]	[OFF] means shutter off (open angle 360 deg).
	[PRESET]	Mode for selecting preset shutter speeds. Up to 12 can be registered. Presets can be added/deleted using [ADD]/[DEL].
	[SYNCHRO]	Mode for selecting from the overall variable range. The variable step changes through [FINE]/[COARSE].
	[deg/sec]	Determines the shutter setting unit. [deg]: Open angle [sec]: Second
[EI]	Sets the EXPOSURE INDEX (gain).	
	[ISO/dB]	Selects the setting method.
[WB]	Sets the color temperature (white balance).	
	[AWB]	Executes automatic white balancing.
	[PRESET]	Mode for selecting preset white balance values. Up to 12 can be registered. Presets can be added/deleted using [ADD]/[DEL]. If [AWB] is performed, the results are automatically added to the choices. The first character of the added value denotes the <CC FILTER> position during execution.
	[TEMP SHIFT]	Mode for making adjustments from the overall variable range.
	[GMg]	Shifts to the Green-Magenta axis.
[COLOR]	Sets the video colors (gamma and gamut).	
	[MAIN COLOR]	Sets the output colors of videos from terminals <SDI OUT1> to <SDI OUT4> as well as videos recorded in the main recorder.
	[SUB COLOR]	Sets the colors of videos recorded in the sub recorder.
	[Grading SEL]	Sets the grading function. [MAIN COLOR] is only enabled in [V-Log] mode.
	[CDL]	Sets the grading in [CDL]. [Grading SEL] is disabled when this is [OFF]. When [Grading SEL] is set to [Internal] or [External App] ● Sets [Slope]/[Offset]/[Power]/[Saturation] on the control panel. ● Loads from the SD memory card using [LOAD]. ● Saves the setting value to the SD memory card with [SAVE AS].
	[MON SET]	Sets the display color for [MON OUT]/[VF]/[VF SDI].

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[SYSTEM MODE]	Sets the camera's system.	
	[FREQUENCY]	Sets the system frequency.
	[PIXEL]	Sets the camera's main resolution (number of pixels).
	[MAIN CODEC]	Sets the main recorder's codec. The camera's basic system is determined by four settings: [FREQUENCY], [PIXEL], [MAIN CODEC], and [HIGH SPEED]. Restarting the system may be necessary if basic system settings are changed. After confirming the four settings, restart in accordance with the guide.
	[SUB CODEC]	[SUB CODEC]: Sets the codec of the sub recorder. [VFR SUB REC]: Selects either [NORMAL+Audio] or [VFR up to 60p (50p)]. ● [NORMAL+Audio]: Records in the frame of system frequency. Audio signal is also recorded. ● [VFR up to 60p (50p)]: Records in a variable frame rate by synchronizing to the [VFR] setting of the main recorder. Audio signal is not recorded when [VFR] is set to [ON]. Recording is not available when the frame rate is 60p (50p) display or higher.
	[HIGH SPEED]	Sets the high speed mode. Playback operation is not possible when [MAIN CODEC] is set to ProRes format and [HIGH SPEED] is set to [ON].
[AUDIO]	[AUDIO]	Sets the audio input and recording. [VOL]: Sets the input volume. [IN]: Sets input channel switching and level control. [OUT]: Sets the output to a speaker or headphone.
[DAILIES]	Sets the data to superimpose on the video to be recorded in the sub recorder.	
	[WATER MARK]	Superimposes the set character string.
	[FRAME MARK]	Superimposes the frame mark.
	[WINDOW BURN]	Sets [WINDOW BURN].
	[BURN DATA]	Sets [BURN DATA] used in [WINDOW BURN].
	[PREVIEW]	Checks the setting status of [WINDOW BURN].
[USER CLIP NAME]	Sets [USER CLIP NAME].	
	[CAM INDEX]	Sets the [CAM INDEX] applicable when the [USER CLIP NAME] is set to [TYPE3].
	[NEXT REEL COUNT]	Sets the [NEXT REEL COUNT] applicable when the [USER CLIP NAME] is set to [TYPE3].
	[TYPE]	Sets [TYPE] of [USER CLIP NAME].

PLAY screen

The Play screen is the screen for playing recorded videos.

You can select clips by turning the jog dial button.

Play the clip selected in the middle by pressing the jog dial button.

At the end of the clip, the display will return to the list display.

Playback is paused by pressing the jog dial button.

Fast-forward/cue is performed by turning the jog dial button during playback.

[SLOT]	Switches between the main recorder and sub recorder. Displays the selected recorder on the upper left. [M]: Main recorder [S]: Sub recorder
[DEL/FORMAT]	Deletes the selected clip or formats the card.
[COPY]	Copies the selected clips.
[SORT]	Sets the conditions for displaying clips in a list.
[REPAIR]	Selects and repairs the target clip (file).
[PROPERTY]	Displays the properties of the clip selected in the middle.

Playback operation is not possible when [MAIN CODEC] is set to ProRes format and [HIGH SPEED] is set to [ON].

The list will display first 15 characters of [USER CLIP NAME] when the [USER CLIP NAME] setting is set to [TYPE3].

TC screen

The TC screen is the screen for setting the time code.

[TC/UB/Dur.]	Switches between the HOME screen and status display. [TC]: Time code [UB]: User bits [Dur.]: Duration
[FREE/REC RUN]	Switches between free run and recording run. This is fixed to recording run when the variable frame rate function is enabled.
[DF/NDF]	Switches between drop frame and non-drop frame.
[SET]	Sets the time code generator.

INFO screen

The INFO screen displays information about the camera.

[DIAGNOSTICS]	Displays camera statuses such as warnings.
[SWITCHES]	The switch information assigned to each USER switch is displayed as list with [MENU] → [SYSTEM SETTINGS] → [USER SWITCHES].
[VERSION]	Displays the firmware version. [UPDATE]: Performs an update of the firmware.
[PERIPHERAL]	Displays information about peripheral devices (USB, network, etc).
[HISTORY]	Performs operations related to services. [USB]: Enters the support mode using the USB. [TRACE LOG]: Writes the trace log to an SD memory card.
[MEDIA]	Performs operations related to recording media such as formatting, etc. [CPS PASSWORD]: Moves to the screen for performing CPS (Content Protection System) operations. This can be selected only when a CPS formatted P2 card is inserted. [FORMAT]: Moves to the screen for performing card formatting operations.

VIEW screen

Displays video. For status display contents, configure [MENU].

MENU screen

Displays the [MENU].

Depending on the [MENU] → [SYSTEM SETTINGS] → [MON OUT] → [MENU DISP] setting, [MENU] is displayed for the output from the <MON OUT1> terminal and <MON OUT2> terminal.

Chapter 6   Audio recording
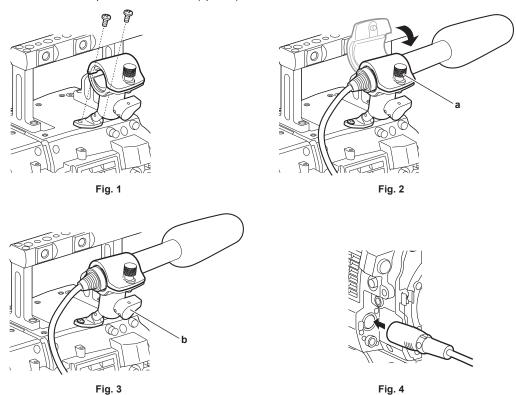
This chapter describes how to prepare and adjust audio recorded at the time of shooting.

Preparing for audio input

Prepare the camera for connecting audio input devices.

Using front microphone

Microphones such as the stereo microphone kit AJ-MC900G (optional) can be mounted.

Fig. 1

Fig. 2

Fig. 3

Fig. 4

1 **Remove the screws at the microphone holder mounting position and attach the microphone holder AJ-MH800G (optional). (Fig. 1)**

2 **Attach the microphone and tighten the clamping screw (a). (Fig. 2)**

Mount with the UP indication on the microphone facing up.
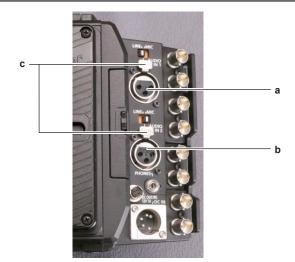
3 **Loosen the lock lever (b), adjust the angle of the microphone, and tighten the lock lever. (Fig. 3)**

4 **Connect the microphone cable to the <MIC IN> terminal on the camera module. (Fig. 4)**

5 **According to the audio channel to be recorded, select [FRONT] in control panel audio input.**

Setting the audio input using the control panel

1 **Press the <HOME> button to display the HOME screen.**

2 **From [SYSTEM] → [AUDIO], select [AUDIO IN].**

3 **Select [FRONT] in [CH1/2 IN].**

[CH3/4 IN] is automatically set to [REAR].

Using audio devices

a: **<AUDIO IN 1> terminal**

b: **<AUDIO IN 2> terminal**

c: **<LINE>/<MIC> switch**

1 Connect the audio device to the <AUDIO IN 1> or <AUDIO IN 2> terminal of the recording module using the XLR cable.

2 According to the channel to which the XLR cable is connected, select [REAR] in control panel audio input.

3 Switch the <LINE>/<MIC> switch on the <AUDIO IN 1> terminal or <AUDIO IN 2> terminal to <LINE>.

Setting the control panel

1 Press the <HOME> button to display the HOME screen.

2 From [SYSTEM] → [AUDIO], select [AUDIO IN].

3 Select [REAR] in [CH1/2 IN].

[CH3/4 IN] is automatically set to [FRONT].

NOTE

・ When the input signal is digital audio (AES/EBU format), set [MENU] → [SYSTEM SETTINGS] → [AUDIO INPUT] → [AES/EBU IN] to [ON]. All 4 channels become digital inputs, and audio input setting and level adjustment are disabled.

Selecting audio input and adjusting recording levels

The camera supports independent 4-channel sound recording in all recording formats.

Selecting audio input signals

1 Press the <HOME> button to display the HOME screen.

2 From [SYSTEM] → [AUDIO], select [AUDIO IN].

3 Select [FRONT] in [CH1/2 IN].

[CH3/4 IN] is automatically set to [REAR].

📝 NOTE

· When the input signal is in AES/EBU format, all 4 channels become AES/EBU input, and audio input signal setting is disabled.
· The audio signal to be recorded is output straight as SDI signal. The details regarding audio is set in [MENU] → [SYSTEM SETTINGS] → [AUDIO INPUT], [AUDIO LEVEL], and [AUDIO OUTPUT].

Adjusting the recording levels

The camera performs manual adjustment and automatic adjustment of recording levels.

Automatic adjustment

The recording levels in audio channel 1/2 can be automatically adjusted. When audio channels 1/2 are set to [FRONT], audio channels 3/4 can be set in the same manner.

1 Press the <HOME> button to display the HOME screen.

2 From [SYSTEM] → [AUDIO], select [AUDIO IN].

3 Select [AUTO] in [FRONT1 LEVEL] or [FRONT2 LEVEL].

Manual adjustment

Recording levels in audio channel 1/2 can be manually adjusted. When audio channels 1/2 are set to [FRONT], audio channels 3/4 can be set in the same manner.

1 Press the <HOME> button to display the HOME screen.

2 **From [SYSTEM] → [AUDIO], set [AUDIO IN].**

For [CH3/4], switch to [CH1/2] in [to CH1/2].

3 **Select [MANUAL] in [FRONT1 LEVEL] or [FRONT2 LEVEL].**

If [AUTO] is selected, [A] is displayed on the [VOL] screen and manual adjustment is not possible.

4 **Select [AUDIO VOL] in [SYSTEM] → [AUDIO].**

5 **Adjust with [FRONT1+]/[FRONT1−] or [FRONT2+]/[FRONT2−] or turning the jog dial while viewing the display of the audio channel level meter.**

When the topmost bar (0 dB) is exceeded, the red bar display lights up to indicate that input volume is excessive. Adjust the maximum level so that the display does not reach 0 dB.
The levels for both channels will increase or decrease with the jog dial operation. It will not increase or decrease in case of [AUTO].

■ **Recording standard level**

In [MENU] → [SYSTEM SETTINGS] → [AUDIO LEVEL] → [HEADROOM], [18dB] or [20dB] can be selected.

Common settings for channels 1 through 4.

📝 *NOTE*

・ When the level adjustment is set to [MANUAL], set whether to enable [FRONT1 LIMITER]/[FRONT2 LIMITER]/[REAR1 LIMITER]/[REAR2 LIMITER] in [MENU] → [SYSTEM SETTING] → [SYSTEM MODE] → [AUDIO LEVEL]. This is set to [OFF] in the factory settings.

Audio monitor (headphones)

You can listen to the camera's audio using headphones.

1 **Press the <HOME> button to display the HOME screen.**

2 **From [SYSTEM] → [AUDIO], select [AUDIO OUT].**

■ **Setting the headphones output audio**

1 **Select the output signal (mono, stereo, mix) in [MONITOR].**

■ **Adjusting the headphones output audio level**

1 **Adjust with [MON+]/[MON−] or turning the jog dial.**

Chapter 7   Viewfinder
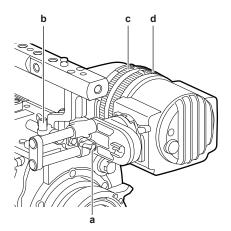
This chapter describes the viewfinder screen display and how to make adjustments.

Adjusting and setting the viewfinder

The camera's panel is OLED (organic EL).

Positioning your eye near the viewfinder will trigger the eye sensor to automatically display the image.

Adjustment method

a: Lock lever (left/right position)

b: Lock lever (front/back position)

c: Visibility adjustment ring

d: Zoom ring

■ **Left/right position adjustment**

1 **Loosen the lock lever (left/right positions).**

2 **Slide the viewfinder from side to side.**

Adjust to a comfortable position.

3 **Lock the lock lever (left/right position).**

■ **Front/back position adjustment**

1 **Loosen the lock lever (front/rear positions).**

2 **Slide the viewfinder back and forth.**

Adjust to a comfortable position.

3 **Lock the lock lever (front/back position).**

■ **Visibility adjustment**

1 **Turn the visibility adjustment ring while pressing holding the upper button.**

Visibility adjustment range: −3.6 D - +1.4 D

■ **Zoom adjustment**

1 **Adjust by turning the zoom ring.**

Adjust to a comfortable view angle while checking the video.
Perform adjustment when adjusting the focus.
Vignetting may occur around the screen of the enlarged image.
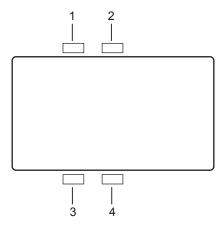
Viewfinder status display

In addition to video, the viewfinder displays messages, a center marker, safety zone marker, zebra patterns, and other information that indicate the camera settings and operation status.

Lamp display

1 Green tally lamp
Lights up in green when green tally signals are received.

2 Red tally/recording lamp
Lights up in red during recording or when red tally signals are received.

3 Warning lamp
Flashes or lights up when a warning occurs with the camera.

4 Battery lamp
Starts flashing when the remaining battery level is low. It is illuminated after the battery is completely flat.

Status display

Refer to "Status display (STATUS) in the <MON OUT1>, <MON OUT2>, and <VF SDI> outputs.".

Adjusting the screen

1 **Press the <EVF MENU> button.**

Screen adjustment items are displayed on the upper part of the screen.

2 **Turn the jog dial button to select the items you want to adjust.**

3 **Press the jog dial button.**

4 **Turn the jog dial button to make adjustments.**

5 **Press the jog dial button.**

6 **Press the <EVF MENU> button.**

The screen adjustment items display disappears.
This can also be done in [EVF MENU] → [DISPLAY SETUP].

Direct camera settings

The following camera settings can be set directly through viewfinder operation.
[FPS]/[SHUTTER]/[EI]/[WB]

1 **Press the <CAM MENU> button of the viewfinder.**

Setting items are displayed on the lower part of the screen.

2 **Turn the jog dial button to select the items you want to set.**

3 **Press the jog dial button.**

4 **Turn the jog dial button to select setting details.**

5 **Press the <CAM MENU> button.**

[MENU] settings from the viewfinder

The camera's [MENU] can be directly configured through viewfinder operation.

1 **Press and hold the <CAM MENU> button of the viewfinder for at least two seconds.**

The camera [MENU] is displayed.

[MENU] is also displayed on the camera's operation panel.

[EVF MENU] operation

1 **Press and hold the <EVF MENU> button for at least two seconds.**

[EVF MENU] is displayed.

[EVF MENU] list

■ [DISPLAY SETUP]

Item	Description of settings
[CONTRAST]	Adjusts the contrast. **[−32]…[31]** ● Factory setting: [0]
[BRIGHT]	Adjusts the brightness. **[−32]…[31]** ● Factory setting: [0]
[COLOR]	Adjusts the color level. **[−32]…[31]** ● Factory setting: [0]
[-- PEAKING VALUE]	Adjusts the outline of the image in the viewfinder. **[0]…[9]** ● Factory setting: [0]
[R BRT]	Adjusts the red color brightness. **[−32]…[31]** ● Factory setting: [0]
[G BRT]	Adjusts the green color brightness. **[−32]…[31]** ● Factory setting: [0]
[B BRT]	Adjusts the blue color brightness. **[−32]…[31]** ● Factory setting: [0]

■ [SW MODE]

Item	Description of settings
[FRONT TALLY]	Enables/disables the front tally lamp function. **[ON]/[OFF]**
[EYE SENSOR]	Sets sensitivity of eye sensor. **[NORMAL]:** Displays the viewfinder screen according to the eye sensor. **[1min]:** Keeps the viewfinder screen display for one minute after the eye sensor is released. **[5min]:** Keeps the viewfinder screen display for five minutes after the eye sensor is released.
[B/W]	Switches to monochrome mode. **[ON]:** Display will be all black and white. **[OFF]:** Disables the monochrome mode.
[SCAN]	Reverses the display. **[NORMAL]/[REVERSE]**

■ [USER SW 1]/[USER SW 2]

Selects the function assigned to the <EVF USER 1>/<EVF USER 2> button.

The setting will be common with the contents displayed and set in the VF related item in [MENU] → [OUTPUT SETTINGS] of the camera.

(excluding [FALSE COLOR])

Description of settings
[MARKER]: Displays/hides markers. **[CENTER MARKER]:** Displays/hides the center marker. **[SAFETY MARKER]:** Switches the display/hide of the safety marker. **[FRAME MARK]:** Displays/hides the frame marker. **[USER BOX]:** Displays/hides the user box. **[ZEBRA]:** Displays/hides the zebra display. **[EXPAND]:** Enables/disables the display enlargement function. **[FOCUS ASSIST]:** Enables/disables the focus assist function. **[IN COLOR/SQ./MONO]:** Enables/disables the advanced assist (focus assist) function. **[FALSE COLOR]:** Enables/disables false color mode. **[SMOOTH MODE]:** Enables/disables the smooth mode. **[WFM]:** Displays/hides waveform monitor.

■ [INFORMATION]

Item	Description of settings
[OPERATION TIME]	Displays the total display time of the organic EL panel of the viewfinder.
[VERSION]	Displays the firmware version of the viewfinder.

False color mode

Check the exposure using the false color.

Image will be displayed with colors sored by luminosity signals. Images of other levels are displayed in black and white.

The false color can be displayed in the viewfinder and the output image from the <VF SDI> terminal.

Display patterns

■ **When [MAIN COLOR] is [V-Log]**

Color	Level	Description
(Red)	92.0% - 95.0%	White-level clip
(Yellow)	88.9% - 91.9%	Lower area of the white-level clip
(Pink)	48.7% - 51.7%	One-stopover color from neutral gray
(Green)	40.5% - 43.5%	18% gray neutral color
(Blue)	10.3% - 13.3%	Upper area of the black-level clip
(Purple)	7.3% - 10.3%	Black-level clip

■ **When [MAIN COLOR] is not [V-Log]**

Color	Level	Description
(Red)	108.0% - 109.0%	White-level clip
(Yellow)	98% - 100%	100% level of video output
(Blue)	2.5% - 4.0%	Upper area of the black-level clip
(Purple)	0% - 2.5%	Black-level clip

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Convenient shooting functions
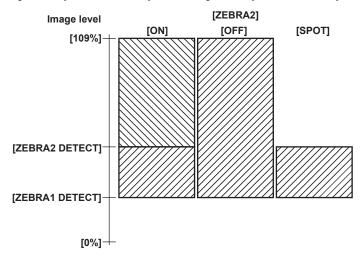
Zebra patterns display

The camera can display two types of zebra patterns.
The level to display the zebra pattern can be set in [MENU] → [OUTPUT SETTINGS] → [VF EI ASSIST] → [ZEBRA].

Item	Description of settings
[ZEBRA SW]	Sets whether to superimpose the zebra signal on the output from the <VF> terminal and <VF SDI> terminal. **[ON], [OFF]** ● Factory setting: [OFF]
[ZEBRA1 DETECT]	Sets the detection level of zebra pattern 1. **[0%]…[109%]** ● Factory setting: [80%]
[ZEBRA2 DETECT]	Sets the detection level of zebra pattern 2. **[0%]…[109%]** ● Factory setting: [100%]
[ZEBRA2 MODE]	Enables/disables zebra pattern 2 and selects [SPOT]. **[ON], [SPOT], [OFF]** ● Factory setting: [OFF]

[SPOT]: The image level from the setting value of [ZEBRA1 DETECT] to the setting value of [ZEBRA2 DETECT] is displayed in the zebra pattern.

Displaying the center marker

Displayed when [MENU] → [OUTPUT SETTINGS] → [VF MARKER] → [CENTER MARKER] is set to anything other than [OFF].

Displaying the safety zone marker

The item selected in [MENU] → [OUTPUT SETTINGS] → [VF MARKER] → [SAFETY MARKER] is displayed.
The size of the safety zone marker can be changed in [MENU] → [OUTPUT SETTINGS] → [VF MARKER] → [SAFETY AREA].

Displaying frame marker

Displayed when [MENU] → [OUTPUT SETTINGS] → [VF MARKER] → [FRAME MARK] is set to [ON].
Set the view angle in [MENU] → [OUTPUT SETTINGS] → [VF MARKER] → [FRAME SIG].
Set the color of the frame marker in [MENU] → [OUTPUT SETTINGS] → [VF MARKER] → [FRAME COLOR].
Set the level for outside in [MENU] → [OUTPUT SETTINGS] → [VF MARKER] → [FRAME LEVEL].
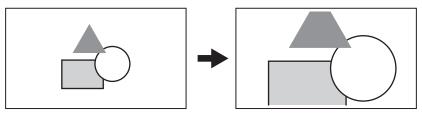
Focus assist function

The focus assist function enables you to focus the target easily.
Enlarged display in the output image from the viewfinder or <VF SDI> terminal, peaking display (display with the contours of the image in red), focus square display (display in the size of a square displayed in each area), and focus bar display are available.

Expanded display

Set [MENU] → [OUTPUT SETTINGS] → [VF FOCUS ASSIST] → [EXPAND SW] to [ON].

- In the expanded display, the status display and zebra pattern disappear.
- The display mode can be set in [MENU] → [OUTPUT SETTINGS] → [VF FOCUS ASSIST] → [- POS]/[- VALUE]/[- MODE].

NOTE

· The output video from the viewfinder screen and <VF SDI> terminal are enlarged.
· Images output from the <SDI OUT1>/<SDI OUT2>/<SDI OUT3>/<SDI OUT4> terminals and the <MON OUT1> terminal are not expanded.
· The output from the <MON OUT2> terminal will be the same output as the <VF SDI> terminal when [VF] is selected in [MENU] → [OUTPUT SETTINGS] → [MON OUT] → [MON OUT2 SIGNAL SEL].
· A marker is displayed to see which area is expanded during the expanded display.

Advanced assist function

Peaking display (focus in red)

Set [MENU] → [OUTPUT SETTINGS] → [VF FOCUS ASSIST] → [IN COLOR/SQ./MONO SW] to [ON].
Set [MENU] → [OUTPUT SETTINGS] → [VF FOCUS ASSIST] → [- FOCUS IN COLOR SW] to [ON].
Set [MENU] → [OUTPUT SETTINGS] → [VF FOCUS ASSIST] → [-- COLOR SEL] to [RED].
Adjust the focus so that the contours of the subject you want to focus on turn red.
[GREEN] or [WHITE] can also be selected in [MENU] → [OUTPUT SETTINGS] → [VF FOCUS ASSIST] → [-- COLOR SEL].

NOTE
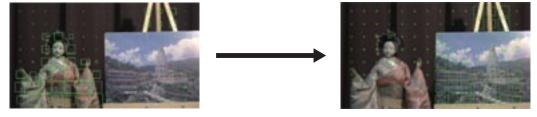
· Only the output video from the viewfinder screen and <VF SDI> terminal are displayed.

Focus square display

Set [MENU] → [OUTPUT SETTINGS] → [VF FOCUS ASSIST] → [IN COLOR/SQ./MONO SW] to [ON].
Set [MENU] → [OUTPUT SETTINGS] → [VF FOCUS ASSIST] → [- FOCUS SQUARES SW] to [ON].
Adjust the focus so that the square size displayed in the area of the subject to be focused becomes the largest.

When focused on the doll   **When focused on the panel**

NOTE

· Only the output video from the viewfinder screen and <VF SDI> terminal are displayed.

Focus bar display

The focus bar can be displayed by setting [MENU] → [OUTPUT SETTINGS] → [VF FOCUS ASSIST] → [FOCUS BAR SW] to [ON].
The degree of focus is indicated by the length of the bar.
- White bar: Focus bar display
- Green line: Peak display

Not in focus   **The bar extends to the right when the viewfinder is
in-focus.**

NOTE

· Only the output video from the viewfinder screen and <VF SDI> terminal are displayed.

Chapter 8   Output and Screen Display

This chapter describes video output.

SDI output

Output format is set in [MENU] → [OUTPUT SETTINGS] → [SDI OUT].

One type of image is output from the four BNC terminals: <SDI OUT1> to <SDI OUT4>.

If the setting does not require all four terminals, there may be terminals that do not provide output. If the output format is 3G × 2, images are output from the <SDI OUT1> and <SDI OUT2> terminals, and are not output from the <SDI OUT3> and <SDI OUT4> terminals.

Status, markers, etc. cannot be displayed.

During playback with the sub recorder, output is muted and the screen becomes black.

Output format list

— indicates that the item is not affected by the settings.

∗∗P becomes the setting value of [SYSTEM MODE] → [FREQUENCY].

[SYSTEM MODE]				[VFR SW]	[SDI OUT]	Output Format	
[FREQUENCY]	[MAIN PIXEL]	[MAIN CODEC]	[HIGH SPEED]		[P to PsF]	Signal	Format
[23.98p] [29.97p]	[1920×1080]	[AVC-Intra444] [ProRes 4444]	—	[OFF]	[OFF]	1920×1080 ∗∗P*1 4:4:4	3G×1
					[ON]	1920×1080 ∗∗Psf*1 4:4:4	3G×1
				[ON]	[OFF]	1920×1080 29.97P×2*1 4:4:4	3G×2
					[ON]	1920×1080 29.97Psf×2*1 4:4:4	
		[AVC-Intra200]	—	[OFF]	[OFF]	1920×1080 ∗∗P*1 4:2:2	1.5G×1
					[ON]	1920×1080 ∗∗Psf*1 4:2:2	1.5G×1
				[ON]	—	1920×1080 59.94P 4:2:2	3G×1
		[AVC-Intra422] [AVC-Intra100]	[OFF (1-120fps)]	[OFF]	[OFF]	1920×1080 ∗∗P 4:2:2	1.5G×1
					[ON]	1920×1080 ∗∗Psf 4:2:2	1.5G×1
				[ON]	—	1920×1080 119.9P*1 4:2:2	3G×2*2
			[ON (1-240fps)]	[ON]	—	1920×1080 239.8P*1 4:2:2	3G×4*2
		[ProRes 422 HQ]	[OFF (1-60fps)]	[OFF]	[OFF]	1920×1080 ∗∗P 4:2:2	1.5G×1
					[ON]	1920×1080 ∗∗Psf 4:2:2	1.5G×1
				[ON]	—	1920×1080 59.94P 4:2:2	3G×1
			[ON (1-120fps)]	—	—	1920×1080 119.9P 4:2:2	3G×2
[59.94p]	[1920×1080]	[AVC-Intra422] [AVC-Intra100]	[OFF (1-120fps)]	[OFF]	—	1920×1080 59.94P 4:2:2	3G×1
				[ON]	—	1920×1080 119.9P*1 4:2:2	3G×2*2
			[ON (1-240fps)]	[ON]	—	1920×1080 239.8P*1 4:2:2	3G×4*2

[SYSTEM MODE]				[VFR SW]	[SDI OUT]	Output Format	
[FREQUENCY]	[MAIN PIXEL]	[MAIN CODEC]	[HIGH SPEED]		[P to PsF]	Signal	Format
		[ProRes 422 HQ]	[OFF (1-60fps)]	[OFF]	—	1920×1080 59.94P 4:2:2	3G×1
				[ON]	—	1920×1080 59.94P 4:2:2	3G×1
			[ON (1-120fps)]	—	—	1920×1080 119.9P 4:2:2	3G×2
[25.00p]	[1920×1080]	[AVC-Intra444] [ProRes 4444]	—	[OFF]	[OFF]	1920×1080 25.00P*1 4:4:4	3G×1
					[ON]	1920×1080 25.00Psf*1 4:4:4	3G×1
				[ON]	[OFF]	1920×1080 25.00P×2*1 4:4:4	3G×2
					[ON]	1920×1080 25.00Psf×2*1 4:4:4	
		[AVC-Intra200]	—	[OFF]	[OFF]	1920×1080 25.00P 4:2:2	1.5G×1
					[ON]	1920×1080 25.00Psf 4:2:2	1.5G×1
				[ON]	—	1920×1080 59.94P 4:2:2	3G×1
		[AVC-Intra422] [AVC-Intra100]	[OFF (1-100fps)]	[OFF]	[OFF]	1920×1080 25.00P 4:2:2	1.5G×1
					[ON]	1920×1080 25.00Psf 4:2:2	1.5G×1
				[ON]	—	1920×1080 100P*3 4:2:2	3G×2*2
			[ON (1-200fps)]	[ON]	—	1920×1080 200P*3 4:2:2	3G×4*2
		[ProRes 422 HQ]	[OFF (1-50fps)]	[OFF]	[OFF]	1920×1080 25.00P 4:2:2	1.5G×1
					[ON]	1920×1080 25.00Psf 4:2:2	1.5G×1
				[ON]	—	1920×1080 50.00P 4:2:2	3G×1
			[ON (1-100fps)]	—	—	1920×1080 100.00P 4:2:2	3G×2
[50.00p]	[1920×1080]	[AVC-Intra422] [AVC-Intra100]	[OFF (1-100fps)]	[OFF]	—	1920×1080 50.00P 4:2:2	3G×1
				[ON]	—	1920×1080 100P*3 4:2:2	3G×2*2
			[ON (1-200fps)]	[ON]	—	1920×1080 200P*3 4:2:2	3G×4*2
		[ProRes 422 HQ]	[OFF (1-50fps)]	[OFF]	—	1920×1080 50.00P 4:2:2	3G×1
				[ON]	—	1920×1080 50.00P 4:2:2	3G×1
			[ON (1-100fps)]	—	—	1920×1080 100.00P 4:2:2	3G×2

[SYSTEM MODE]				[VFR SW]	[SDI OUT]	Output Format	
[FREQUENCY]	[MAIN PIXEL]	[MAIN CODEC]	[HIGH SPEED]		[P to PsF]	Signal	Format
[59.94i]	[1920×1080]	[AVC-Intra100]	—	[OFF]	—	1920×1080 59.94i 4:2:2	1.5G×1
[50.00i]	[1920×1080]	[AVC-Intra100]	—	[OFF]	—	1920×1080 50.00i 4:2:2	1.5G×1
[59.94p]	[1280×720]	[AVC-Intra100]	—	[OFF]	—	1280×720 59.94P 4:2:2	1.5G×1
[50.00p]	[1280×720]	[AVC-Intra100]	—	[OFF]	—	1280×720 50.00P 4:2:2	1.5G×1

*1   During playback: 59.94P

*2   During playback: 3G × 1

*3   During playback: 50.00P

<MON OUT1> output

Output format is set in [MENU] → [OUTPUT SETTINGS] → [MON OUT].
Status display is set in [MENU] → [OUTPUT SETTINGS] → [MON OUT INDICATOR].
Marker display is set in [MENU] → [OUTPUT SETTINGS] → [MON OUT MARKER].

Output format list

[SYSTEM MODE]			[MON OUT]	Output Format	
[FREQUENCY]	[MAIN PIXEL]	[MAIN CODEC]	[MON OUT FORMAT]	Signal	Format
[23.98p] [29.97p]	[1920×1080]	[AVC-Intra422] [AVC-Intra100] [ProRes 4444] [ProRes 422 HQ] [AVC-Intra444]	[1920 over 59.94p]	1920×1080 59.94P 4:2:2	3G
			[1920 over 59.94i]	1920×1080 59.94i 4:2:2	1.5G
[59.94p]	[1920×1080]	[AVC-Intra422] [AVC-Intra100] [ProRes 422 HQ]	[1920 over 59.94p]	1920×1080 59.94P 4:2:2	3G
			[1920 over 59.94i]	1920×1080 59.94i 4:2:2	1.5G
[25.00p]	[1920×1080]	[AVC-Intra422] [AVC-Intra100] [ProRes 4444] [ProRes 422 HQ] [AVC-Intra444]	[1920 over 50p]	1920×1080 50.00P 4:2:2	3G
			[1920 over 50i]	1920×1080 50.00i 4:2:2	1.5G
[50.00p]	[1920×1080]	[AVC-Intra422] [AVC-Intra100] [ProRes 422 HQ]	[1920 over 50p]	1920×1080 50.00P 4:2:2	3G
			[1920 over 50i]	1920×1080 50.00i 4:2:2	1.5G
[59.94i]	[1920×1080]	[AVC-Intra100]	[1920 over 59.94p]	1920×1080 59.94i 4:2:2	1.5G
[50.00i]	[1920×1080]	[AVC-Intra100]	[1920 over 50i]	1920×1080 50.00i 4:2:2	1.5G
[59.94p]	[1280×720]	[AVC-Intra100]	[1280 over 59.94p]	1280×720 59.94P 4:2:2	1.5G
[50.00p]	[1280×720]	[AVC-Intra100]	[1280 over 59.94i]	1280×720 50.00P 4:2:2	1.5G

<MON OUT2> output

Output format is set in [MENU] → [OUTPUT SETTINGS] → [MON OUT].

The setting details of the status display and marker display are the same as the details for the <MON OUT1> terminal. Each can be set to be displayed or hidden.

- Output signal can be switched in [MENU] → [OUTPUT SETTINGS] → [MON OUT] → [MON OUT2 SIGNAL SEL].

  [MON OUT1]: The image (output image, etc.) becomes the same image as the output from the <MON OUT1> terminal.

  [VF SDI (1080p)]/[VF SDI (1080i)]: The image (output image, marker, status, enlargement, etc.) will be the same as the output from the <VF SDI> terminal. Regardless of the [MON OUT FORMAT] setting, it is output in the selected format (1080P or 1080i), and it will be LEVEL-A signal when 1080P is selected.

Output format list

[SYSTEM MODE]			[MON OUT]		Output Format	
[FREQUENCY]	[MAIN PIXEL]	[MAIN CODEC]	[MON OUT2 SIGNAL SEL]	[MON OUT FORMAT]	Signal	Format
[23.98p] [29.97p]	[1920×1080]	[AVC-Intra444] [AVC-Intra422] [AVC-Intra100] [ProRes 4444] [ProRes 422 HQ]	[MON OUT1]	[1920 over 59.94p]	1920×1080 59.94P 4:2:2	3G
				[1920 over 59.94i]	1920×1080 59.94i 4:2:2	1.5G
			[VF SDI (1080p)]	—	1920×1080 59.94P 4:2:2	3G
			[VF SDI (1080i)]	—	1920×1080 59.94i 4:2:2	1.5G
[59.94p]	[1920×1080]	[AVC-Intra422] [AVC-Intra100] [ProRes 422 HQ]	[MON OUT1]	[1920 over 59.94p]	1920×1080 59.94P 4:2:2	3G
				[1920 over 59.94i]	1920×1080 59.94i 4:2:2	1.5G
			[VF SDI (1080p)]	—	1920×1080 59.94P 4:2:2	3G
			[VF SDI (1080i)]	—	1920×1080 59.94i 4:2:2	1.5G
[25.00p]	[1920×1080]	[AVC-Intra444] [AVC-Intra422] [AVC-Intra100] [ProRes 4444] [ProRes 422 HQ]	[MON OUT1]	[1920 over 50p]	1920×1080 50.00P 4:2:2	3G
				[1920 over 50i]	1920×1080 50.00i 4:2:2	1.5G
			[VF SDI (1080p)]	—	1920×1080 50.00P 4:2:2	3G
			[VF SDI (1080i)]	—	1920×1080 50.00i 4:2:2	1.5G
[50.00p]	[1920×1080]	[AVC-Intra422] [AVC-Intra100] [ProRes 422 HQ]	[MON OUT1]	[1920 over 50p]	1920×1080 50.00P 4:2:2	3G
				[1920 over 50i]	1920×1080 50.00i 4:2:2	1.5G
			[VF SDI (1080p)]	—	1920×1080 50.00P 4:2:2	3G
			[VF SDI (1080i)]	—	1920×1080 50.00i 4:2:2	1.5G
[59.94i]	[1920×1080]	[AVC-Intra100]	[MON OUT1]	[1920 over 59.94i]	1920×1080 59.94i 4:2:2	1.5G
			[VF SDI (1080p)]	—	1920×1080 59.94P 4:2:2	3G
			[VF SDI (1080i)]	—	1920×1080 59.94i 4:2:2	1.5G

[SYSTEM MODE]			[MON OUT]		Output Format	
[FREQUENCY]	[MAIN PIXEL]	[MAIN CODEC]	[MON OUT2 SIGNAL SEL]	[MON OUT FORMAT]	Signal	Format
[50.00i]	[1920×1080]	[AVC-Intra100]	[MON OUT1]	[1920 over 50i]	1920×1080 50.00i 4:2:2	1.5G
			[VF SDI (1080p)]	—	1920×1080 50.00P 4:2:2	3G
			[VF SDI (1080i)]	—	1920×1080 50.00i 4:2:2	1.5G
[59.94p]	[1280×720]	[AVC-Intra100]	[MON OUT1]	[1280 over 59.94p]	1280×720 59.94P 4:2:2	1.5G
			[VF SDI (1080p)]	—	1920×1080 59.94P 4:2:2	3G
			[VF SDI (1080i)]	—	1920×1080 59.94i 4:2:2	1.5G
[50.00p]	[1280×720]	[AVC-Intra100]	[MON OUT1]	[1280 over 50p]	1280×720 50.00P 4:2:2	1.5G
			[VF SDI (1080p)]	—	1920×1080 50.00P 4:2:2	3G
			[VF SDI (1080i)]	—	1920×1080 50.00i 4:2:2	1.5G

<VF SDI> output

This output outputs the same image as the viewfinder display.

Set the output format, surround view function, and smooth mode function in [MENU] → [OUTPUT SETTINGS] → [VF OUT].

Set the status display in [MENU] → [OUTPUT SETTINGS] → [VF INDICATOR].

Set the marker display in [MENU] → [OUTPUT SETTINGS] → [VF MARKER].

Set the focus assist function in [MENU] → [OUTPUT SETTINGS] → [VF FOCUS ASSIST].

Set the EXPOSURE INDEX assist function in [MENU] → [OUTPUT SETTINGS] → [VF EI ASSIST].

Image from the camera is output during playback when [MENU] → [OUTPUT SETTINGS] → [VF OUT] → [PLAYBACK VF IMAGE] is set to [CAMERA].

The setting details of the status display and marker display are the same as the details for the viewfinder.
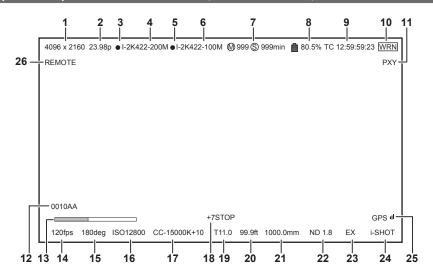
Output format list

[SYSTEM MODE]	[OUTPUT SETTINGS]→[VF OUT]	Output Format	
[FREQUENCY]	[VF SDI OUT FORMAT]	Signal	Format
[23.98p] [29.97p] [59.94p]	[1080P]	1920×1080 59.94P 4:2:2	3G*
	[1080i]	1920×1080 59.94i 4:2:2	1.5G
[25.00p] [50.00p]	[1080P]	1920×1080 50.00P 4:2:2	3G*
	[1080i]	1920×1080 50.00i 4:2:2	1.5G

* With 3G SDI output, LEVEL-A signal is output.
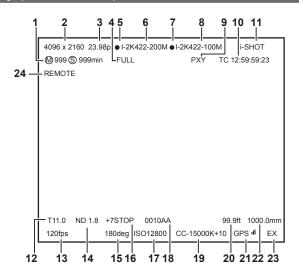
Screen status display

Status display (STATUS) in the <MON OUT1>, <MON OUT2>, and <VF SDI> outputs.

1. **System pixel**
2. **System frequency**
3. **Main recorder recording status**
4. **Main codec**
5. **Sub recorder recording status**
6. **Sub codec**
7. **Card remaining free space**
8. **Battery charge level**
9. **Time code**
10. **Warning**
11. **Proxy**
12. **Clip name**
13. **Focus bar (only output from <VF SDI> terminal)**
14. **FPS**
15. **Shutter**
16. **EXPOSURE INDEX**
17. **White balance**
18. **Y GET**
19. **Iris**
20. **Focus position**
21. **Zoom**
22. **ND filter**
23. **Extender**
24. **Recording mode (to be supported)**
25. **GPS status**
26. **ROP app control status**

Control panel status display (VIEW screen)

```
  1      2        3  4 5    6          7          8        9 10    11
4096 x 2160  23.98p ● I-2K422-200M  ● I-2K422-100M      i-SHOT
Ⓜ 999 Ⓢ 999min  └FULL              PXY      TC 12:59:59:23
REMOTE



T11.0   ND 1.8  +7STOP   0010AA          99.9ft  1000.0mm
120fps          180deg  ISO12800  CC-15000K+10  GPS ⠇  EX
12   13    14   15  16   17 18    19       20 21 22 23
```

24 — REMOTE

1 **Card remaining free space**
2 **System pixel**
3 **System frequency**
4 **Battery charge level**
5 **Main recorder recording status**
6 **Main codec**
7 **Sub recorder recording status**
8 **Sub codec**
9 **Proxy**
10 **Time code**
11 **Recording mode (to be supported)**
12 **Iris**
13 **FPS**
14 **ND filter**
15 **Shutter**
16 **Y GET**
17 **EXPOSURE INDEX**
18 **Clip name**
19 **White balance**
20 **Focus position**
21 **GPS status**
22 **Zoom**
23 **Extender**
24 **ROP app control status**

Chapter 9　Other Useful Functions

This chapter describes other useful features such as function buttons, etc.

Getting position information using the GPS

The camera has a built-in GPS. Positioning information can be recorded through GPS.

The GPS antenna is placed on top of the camera module.

When using the GPS function, do not cover the top of the camera module with metallic objects.

● [GPS] flashes in the viewfinder screen when positioning preparation is being performed.

● When positioning is complete, [GPS] lights up and GPS signal reception strength is indicated by 4-level bars.

● If the time is received using GPS, the time of the internal clock is maintained accurately based on the time received (Greenwich mean time) and the time zone.

● If the date and time display is different from the local time, the time zone setting may be incorrect. Recheck the time zone settings.
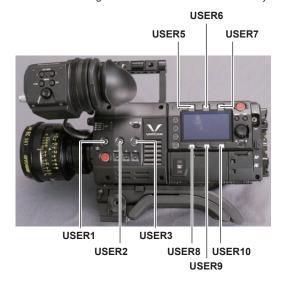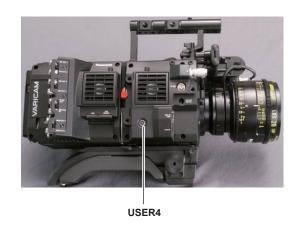
NOTE

・ If it cannot position even after waiting several minutes, it means that the GPS signals are weak and difficult to receive.

・ Position in the open space with a clear view of the sky.

・ Detecting altitude may take more time than detecting latitude and longitude.

・ The followings are locations where the signals from the GPS satellite cannot be properly received. Thus, you may not be able to position or you have large margin of errors.
  - Indoors
  - Near buildings or a canyon of buildings
  - In underground shopping areas
  - In forests
  - While moving in trains or automobiles
  - Inside tunnels

Assigning functions to the USER buttons

Selected functions can be assigned to the USER buttons <1> to <4> and the control panel operation buttons.

Set each function to be assigned to [USER1] to [USER10] in [MENU] → [SYSTEM SETTINGS] → [USER SWITCHES].

There are no functions assigned to the USER button in the factory settings.

Selectable functions

Item	Description
[INHIBIT]	Disables assignment of functions.
[SIX USER BUTTONS]	Sets against the USER <1> to <4> buttons, when the control panel operation button is used as the USER button.
[AWB]	Assigns the automatic white balance function.
[ABB]	Assigns the automatic black balance function.
[Y GET]	Assigns the function for displaying the luminance level of the image at the position indicated by the square marker displayed near the center.
[DRS]	Assigns the dynamic range stretcher function.
[EXPAND]	Assigns the enlargement function.
[IN COLOR/SQ./MONO]	Switches ON/OFF of the focus in color function, the focus square function, and the monochrome display function.
[WFM]	Enables/disables the viewfinder wave form display.
[BARS]	Assigns the color bars display function.
[FALSE COLOR]	Enables/disables the false color mode.
[VF COLOR]	Switches output images from the viewfinder and the <VF SDI> terminal.
[MON1 COLOR]	Switches output images from the <MON OUT1> terminal.
[MON2 COLOR]	Switches output images from the <MON OUT2> terminal.
[SMOOTH MODE]	Assigns the smooth mode function.
[TEXT MEMO]	Assigns the text memo function.
[SHOT MARK]	Assigns the shot mark function.
[MAIN SLOT SEL]	Assigns the function for switching the card for recording when two or more cards are inserted in the main slot.
[SUB SLOT SEL]	Assigns the function for switching the card for recording when two or more cards are inserted in the sub slot.
[REC SW]	Assigns the function of the <REC> button.
[AUDIO MON VOL]	Calls out the screen to adjust the monitor output of audio to the control panel.
[AUDIO IN VOL]	Calls out the screen to adjust the input of audio to the control panel.
[VFR SW]	Enables/disables the variable frame rate function.
[CHECK LAST CLIP START]	Plays back the first 5 seconds of the newest clip of the clips recorded in the main recorder after the power was turned on. Enabled only in the HOME screen or the VIEW screen.
[CHECK LAST CLIP END]	Plays back the last 5 seconds of the newest clip of the clips recorded in the main recorder after the power was turned on. Enabled only in the HOME screen or the VIEW screen.

NOTE

・ Only the following functions can be assigned to [USER5] to [USER10].
 [INHIBIT], [EXPAND], [IN COLOR/SQ./MONO], [FRAME LINE], [VF COLOR], [MON1 COLOR], [MON2 COLOR], [SMOOTH MODE], [VFR SW]

Handling setting data

Each setting data can be saved to and read from an SD memory card.

File types

■ Setup file

All menu data
● Target setting
  All [MENU] (except the following)

[SYSTEM SETTINGS]	[CARDS/MEDIA]	[CPS PASSWORD]
	[CLOCK]	[CLOCK SETTING]
		[TIME ZONE]
[REC SETTINGS]	[TC]	[SET TC]
		[SET UB]
		[TC/UB/Dur.]
[OUTPUT SETTINGS]	[VF FOCUS ASSIST]	[EXPAND SW]

● File extension
  .p2s

■ Lens file

Individual lens correction data
● Number of files that can be saved in the camera
  64
● File extension
  .ins

■ 3D LUT file

3D LUT data for in-camera grading
● File extension
  .vlt

■ CDL file

CDL data for in-camera grading
● File extension
  .cdl

■ Metafile

Metadata for setting [REC META DATA] (only reading from the SD memory card)
● File extension
  .p2

■ CAC file

Aberration correction data (can only be read)
● Number of files that can be saved in the camera
  32
● File extension
  .abr

Handling SD memory cards

The SD memory card can be removed and inserted, either before or after the power is turned on.

Inserting SD memory cards

Fig. 1

Fig. 2

1 Open the slot cover. (Fig. 1)

2 **Insert the SD memory card into the SD memory card slot with the label side of the card upward, and close the slot cover. (Fig. 2)**

📝 *NOTE*

・ The SD memory card must be inserted with the correct side facing the SD card slot. If the SD memory card is hard to insert, it may be reversed or upside-down. Do not force it into the slot. Check the orientation of the card before reinserting it.
・ Cautions when using SD memory cards
  - On the camera, use SD memory cards that conform to the SD standard, SDHC standard, or the SDXC standard.
  - MMC (Multi Media Card) cannot be used. (Bear in mind that taking pictures may no longer be possible if you use them.)
  - When using miniSD/microSD cards with the camera, always install the adaptor specially designed for miniSD/microSD cards. (The camera will not work properly if only the miniSD/microSD adaptor is installed. Make sure that the card has been inserted into the adaptor before use.)
  - Use of Panasonic SD memory cards and miniSD/microSD cards is recommended. Be sure to format cards on the camera before use.
  - Refer to our support desk at the following website for the latest information not included in this document.
    https://pro-av.panasonic.net/
  - SDHC memory cards are a standard that was established in 2006 by the SD Association for large-capacity memory cards that exceed 2 GB.
  - SDXC memory cards are a standard that was established in 2009 by the SD Association for large-capacity memory cards that exceed 32 GB.

Removing SD memory cards

After opening the card slot cover and making sure that the card access LED is not illuminated, push the SD memory card further into the camera and then release. The SD memory card is released from the card slot, so pull out the SD memory card and close the card slot cover.

Note the following points when using or storing memory cards.

● Avoid high temperature and humidity.
● Avoid water droplets.
● Avoid charging with electricity.
Store the SD memory card with the card still inserted into the camera and with the slot cover closed.

Performing operations on SD memory cards

If the SD memory card that was formatted in a standard other than the SD/SDHC/SDXC standards on a device other than the camera is inserted, [LOAD] or [SAVE] operation of the file cannot be performed. Format the SD memory card again.

Formatting SD memory cards

1 **From [MENU] → [SYSTEM SETTINGS] → [CARDS/MEDIA] → [FORMAT MEDIA] select [SD CARD], and press the jog dial button.**

The confirmation screen is displayed.

2 **Select [YES] on the confirmation screen, and press the jog dial button.**

When not formatting, select [NO], and press the jog dial button.

3 **When the completion message is displayed, select [OK], and press the jog dial button.**

For details on error messages, refer to "During thumbnail and menu operation" (page 152).

📝 *NOTE*

・ Data deleted as a result of formatting cannot be restored. Always check the data before formatting.

Setting the time data

The camera provides time codes, user bits, and date and time (real time) data as time data, and they are recorded in the frame in sync with video. They are also recorded as data for clip metadata files.

Definition of time data

■ Time code

You can switch to [REC RUN] and [FREE RUN] with the control panel.
- **[FREE RUN]:** The time code always advances even when the power is turned off, and it can be handled in the same way as time. It can also be recorded slaved to the time code input to the <TC IN/OUT> terminal.
- **[REC RUN]:** Can be regenerated and recorded into the time code of clips recorded to P2 cards as a continuous value.

📝 *NOTE*

- In the following case, the values are not continuous.
  - When deleting recorded clips
  - When switching to 24PN and 30PN (25PN)
  - When recording is interrupted due to a malfunction of [REC WARNING], etc. during recording.

■ User bits

Two types of user bits are built in.
- LTC UB: Recorded as LTC and output from the <TC IN/OUT> terminal. It is also output as LTC of the SDI signal.
- VITC UB: Recorded as VITC. It is also output as VITC of the SDI signal.

LTC UB can select and record user set values, time, year/month/day, the same value as time codes, camera frame rate information, and input value of external signals from the <TC IN/OUT> terminal, etc.

VITC UB records the camera frame rate information.

The LTC UB value of the recording start time can be recorded on the user bits of the clip metadata.

■ Duration (clip length) counter

This counter counts from 0 each time recording starts.The duration of the recorded clip is displayed after recording.

■ Date/time (real time)

- Based on the internal clock, year, month, day, and time can be displayed on the viewfinder/LCD monitor and on the image output from the <VF SDI> terminal, etc.
- The internal clock is used for measuring the free run time code while the power is off and as time and year/month/day data of the user bits. It is also used as the reference for file generation times during clip recording, which determine the sorting order of thumbnails and the order of playback.
- It is also used to generate clip metadata and UMID (Unique Material Identifier).
  For details, refer to "Setting the date/time of the internal clock" (page 34).

User bits settings

Sets the user bits to be recorded in the sub code area with the control panel.

Item	Description
[USER]	Records internal user values. The user value can be set from [MENU] → [REC SETTINGS] → [TC] → [SET UB], the user value can be set. Setting values are held even when the power is turned off. For details, refer to "How to input user bits" (page 89).
[TIME]	Records the time measured by the internal clock.
[DATE]	Records the hour digit of year/month/day/date-time measured by the internal clock.
[EXT INPUT]	Records the user bits values currently entered to the <TC IN/OUT> terminal.
[TCG]	Records the time code value.
[FRAME RATE]	Records the camera photo frame rate information. When playing back clips recorded in native format, the same frame rate information as VITC UB is output regardless of the recorded value. Use at this setting when the editing device such as a computer uses the frame rate information of the user bits.

How to input user bits

By setting user bits, information such as memos (date, time) up to eight digits long (hexadecimal) can be recorded.

1 Press the <TC> button to display the TC screen.

2 From the user bits display, select [User] in [UB MODE].

3 Select [SET].

The [TC SET] screen is displayed.

4 Set the user bits using the jog dial button.

5 Press the jog dial button to confirm the user bits setting value.

📝 *NOTE*
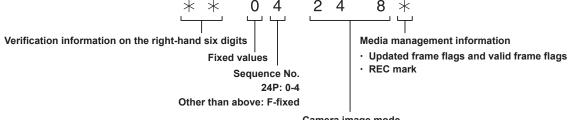
- If you exit the user bits setting screen without pressing the jog dial button, the set values will be disabled.

Retention of user bits in memory

User bit settings are automatically recorded and are retained even if the power is turned off.

Frame rate information

The relationship between frame rates, image pull-down, and time codes/user bits is as follows.

$$\ast \quad \ast \quad 0 \quad 4 \quad 2 \quad 4 \quad 8 \quad \ast$$

Verification information on the right-hand six digits

Fixed values

Sequence No.
24P: 0-4
Other than above: F-fixed

Media management information
· **Updated frame flags and valid frame flags**
· **REC mark**

Camera image mode
Example) · **60i：600**
· **60P：608**
· **30P：308**
· **24P：248**
· **24PN：24C** **(During shooting)**
· **50i：502**
· **50P：50A**
· **25P：25A**
· **＊＊P：＊＊9** **(VFR 30PN or over 60P)**
· **＊＊P：＊＊1** **(VFR over 60P)**
· **＊＊P：＊＊D** **(VFR 24PN during shooting)**
· **＊＊P：＊＊B** **(VFR 25PN or over 50P)**

Setting the time code

1 **Press the <TC> button to display the TC screen.**

2 **From the time code display, select [DF] or [NDF] in [DF/NDF].**

Set [DF] to advance the time code in the drop frame mode, and set [NDF] to advance it in the non-drop frame mode. Note, however, that the time code always runs in [NDF] in the 24p (23.98P) mode.

3 **Select [SET].**

The [TC SET] screen is displayed.

4 **Set the time code using the jog dial button.**

5 **Press the jog dial button to confirm the time code setting value.**

Settable time code range

59.94P, 29.97P	00:00:00:00 to 23:59:59:29
23.98P	00:00:00:00 to 23:59:59:23
50P, 25P	00:00:00:00 to 23:59:59:24

NOTE

· If you exit the time code setting screen without pressing the jog dial button, the set values will be disabled.

Time code function during battery replacement

Even during battery replacement, the backup mechanism functions, allowing the time code generator to continue operating.

When each item of the system mode has been changed, the time code of free run may shift. Turn on the power again, check the time code, and reset it, if necessary.

Time codes in variable frame rate
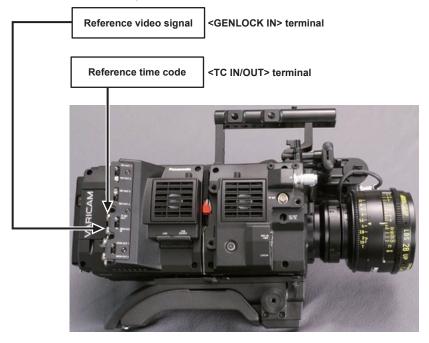
● In 24PN, recording is 24 frames, output is 30 frames, which matches 2:3 pull-down images.

● The advance rate of the recording and output time code matches real time only when the image frame rate is 24P. When 60P, recording advance rate is 60/24 times. In this case, the camera switches to [REC RUN] fixed operation and the time code value that is output when recording starts matches the recording time code.

● It is the same when shooting in modes other than 30P when in 30PN and shooting in modes other than 25P when in 25PN.

Externally locking the time code

The internal time code generator of the camera can be locked to an external generator.

Example of connections for external locking

As shown in the figure, connect both the reference video signal and the reference time code.

| Reference video signal | \<GENLOCK IN\> terminal |
| Reference time code | \<TC IN/OUT\> terminal |

External lock operation procedure

To externally lock the time code, follow the steps below.

1 **Press the \<TC\> button to display the TC screen.**

2 **From the time code display, select [Free Run] in [Free/Rec].**

3 **From [MENU] → [REC SETTINGS] → [TC] → [TC IN/OUT SEL], select [TC IN].**

4 **Enter the external time code from the \<TC IN/OUT\> terminal.**

[SLAVE] is displayed on the TC screen.
The [TCG] characters on the HOME screen are displayed in black and white inversion.

- For the reference video signal, enter the SDI signal which is the same format as the system signal format ([FREQUENCY], [PIXEL]).
- When the system frequency is 59.94p or 50p, the time code may be out of sync by one field.
- When the input reference signal of generator lock is disrupted, recording cannot be performed normally. [TEMPORARY PAUSE IRREGULAR SIG] is displayed in the viewfinder screen, and the clip is divided. The synchronization with the time code is also not guaranteed. Recording will resume when the signal returns to normal.
- When the time code is externally locked, the time code is instantaneously locked to the external time code, the same value as the value of the external time code is output to the counter display area. Do not set to the recording mode for several seconds until the sync generator has stabilized. Furthermore, lock the time code to the \<TC IN/OUT\> terminal signal.
- If you execute the slave once, even if there is no longer \<TC IN/OUT\> terminal and \<GENLOCK IN\> terminal input, the slave status is maintained. However, in the following cases, the slave status will be released.
  - When [TC SET] is executed
  - When the power is turned off
  - When switched [DF]/[NDF]
  - When set to [Rec Run]
  - When a variable frame rate is applied
- The SDI input time code cannot be slave-locked (synchronized).
- If [EXT INPUT] is selected in [UB MODE] of the UB screen, regardless of the time code slave status, the user bits can be matched with the user bits input in the \<TC IN/OUT\> terminal. In this case, [UBG] characters are black and white inverted.

Cautions when switching the power supply from the battery to the external power supply while an external lock is active

To keep on the time code generator power supply continuously, connect an external power supply to the \<DC IN\> terminal and then remove the battery pack. If the battery pack is removed first, there is no guarantee that the time code will stay externally locked.

Supplying the time code externally

You can supply the output time codes to an external recording device from the camera by matching the camera images or the replayed images.

Connection example for supplying to external device

■ **When locking external devices to the camera**

<SDI OUT1>/<SDI OUT2>/<SDI OUT3>/<SDI OUT4> terminal

VIDEO IN terminal
SDI IN terminal
HD SDI IN terminal

VTR, etc.
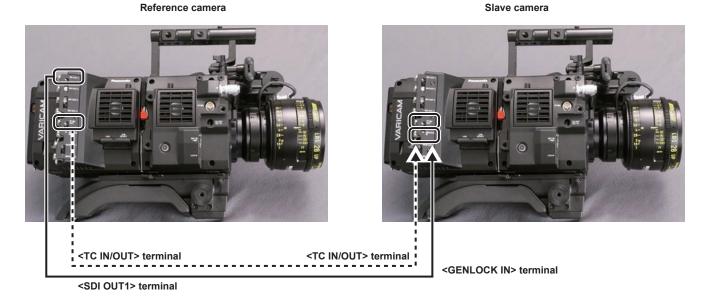
TC IN terminal

<TC IN/OUT> terminal

■ **When two cameras are connected and one is used as a reference camera**

When using two cameras in which one is used as a reference camera to slave the time code, make the connection as follows.

Reference camera   **Slave camera**

<TC IN/OUT> terminal   **<TC IN/OUT> terminal**

<GENLOCK IN> terminal

<SDI OUT1> terminal

NOTE

· Sets the <TC IN/OUT> terminal to output or input in [MENU] → [REC SETTINGS] → [TC] → [TC IN/OUT SEL].
· By setting [MENU] → [REC SETTINGS] → [TC] → [TC OUT REF] to [RECORDING] on both cameras, the two cameras will be able to record with the same time code on the video at the same time.

Operating procedure

1 **From [MENU] → [REC SETTINGS] → [TC] → [TC IN/OUT SEL], set [TC OUT].**

● To match the time code output from the <TC IN/OUT> terminal to the SDI output and monitor output image, set [MENU] → [REC SETTINGS] → [TC] → [TC OUT REF] to [SDI OUT].
● To output TCR during playback, set [MENU] → [REC SETTINGS] → [TC] → [TC OUT] to [TCG/TCR].
These settings are not required, if the internal device uses LTC or VITC output multiplexed to the SDI output.

Connection through the <USB DEVICE> terminal

Connecting to a computer in the USB device mode

Connecting to a computer

Fig. 1

1 **Connect the USB cable to the <USB DEVICE> terminal (device). (Fig. 1)**

2 **Set the [MENU] → [SYSTEM SETTINGS] → [INFORMATION] to [USB].**

For details, refer to "Setting menu basic operations" (page 96).
During USB connection, [USB DEVICE CONNECTED] is displayed in the center of the control panel.
If it is not connected properly, [USB DEVICE DISCONNECTED] is displayed.

3 **Exit the USB device mode.**

There are following two methods:
● Turn the power switch of the camera to <OFF>.
● Press the <HOME> button.

📝 *NOTE*

・ The USB 2.0 cable is not supplied with the camera. Prepare a commercial USB 2.0 cable (double-shielded for noise suppression).
・ A USB connection cable of up to 5 m is supported, however, a cable of 3 m or shorter is recommended as preferable.
・ When the camera is operating in the USB device mode, no camera shooting, recording/playback operation or clip thumbnail operation is allowed.
・ When the camera is operating in the USB device mode, the P2 card remaining capacity and status are not displayed. Also, video/audio cannot be output or displayed.

Chapter 10 Menu Operations

This chapter describes how to operate the camera menus, the structure, and details of the setting menu.

Setting menu structure

Menu configuration

The setting menu is configured as follows.

[SYSTEM SETTINGS]	Sets the system in general. Sets the system frequency, the number of lines, recording format, and recording method.
[CAMERA SETTINGS]	Sets the fine quality adjustment of camera videos and sets camera operation. This item is also handled as a scene file. There are a limited number of fine image quality adjustment items in the factory settings. If [MENU] → [CAMERA SETTINGS] → [Enhanced] → [Enhanced SW] is set to [ON], operation of all items can be performed.
[REC SETTINGS]	The various setting items of the recording function of the camera.
[AUDIO SETTINGS]	Various setting items for audio recording.
[OUTPUT SETTINGS]	Sets the content of displaying output video from the video output terminal.
[FILE]	Performs file-related operations such as reading/writing menu settings data from/to an SD memory card, and handling lens files and lens chromatic aberration correction (CAC) files.
[PERIPHERAL]	Applies settings related to functions used in conjunction with peripheral devices, such as network and GPS devices.

[Enhanced] menu

The camera has an extended ([Enhanced]) menu that can be used to perform fine image quality adjustment for camera videos.

The extended menu is not displayed by default in the factory settings. To display extended menu items, set [MENU] → [CAMERA SETTINGS] → [Enhanced] → [Enhanced SW] to [ON].

The presence of items marked with ENHANCED in the menu list indicates that you are viewing the extended menu.

When [MAIN COLOR] is set to [V-Log], the setting in [MENU] → [CAMERA SETTINGS] → [Enhanced] → [Enhanced SW] is fixed to [OFF].

Setting menu display

Setting menu basic operations

You can change camera settings using the setting menu according to the shooting scene and recording details.
Set data are written and saved in the internal memory of the camera.

a: **<MENU> button**

b: **<EXIT> button**

c: **Jog dial button**

1 **Press the <MENU> button when not recording.**

● The [MENU] screen is displayed on the control panel.

2 **Turn the jog dial button to place the cursor on the desired menu item.**

● Turn the jog dial button to move the cursor vertically.

3 **Press the jog dial button.**

● The next level of screen is displayed.
   If there is another level, press the jog dial button again to display it.

● The current setting value of the item selected on the right is displayed.

4 **Turn the jog dial button to place the cursor on the desired item.**

5 **Press the jog dial button.**

The item is in the setting status.
If there are two items, the setting value selection frame may be displayed on the right.

6 **Turn the jog dial button to place the cursor on the desired item.**

7 **Press the jog dial button.**

Setting is completed.

8 **Press the <EXIT> button to close the menu.**

Setting menu initialization

The values set in the setting menu can be reset to the factory setting.

1 **Select [LOAD FACTORY DATA] from [MENU] → [SYSTEM SETTINGS] → [INITIALIZE].**

[MENU] setting values are reset to factory settings.

Menu list

[SYSTEM SETTINGS]

Sets the system in general.
● ENHANCED is the extended menu. Set [MENU] → [CAMERA SETTINGS] → [Enhanced] → [Enhanced SW] to [ON] to display the extended menu.

Item		Description of settings
[SYSTEM MODE]	[FREQUENCY]	Sets the system frequency. If the setting of this item is changed, the device must be restarted. If a restart is required, a confirmation dialog will be shown. The camera's system operation are determined by four settings: [FREQUENCY], [MAIN PIXEL], [MAIN CODEC], and [HIGH SPEED]. Check the four settings. **[23.98p], [25.00p], [29.97p], [50.00p], [50.00i], [59.94p], [59.94i]** ● Factory setting: [23.98p]
	[MAIN PIXEL]	Sets the main recorder's number of recording pixels. **[1920×1080], [1280×720]** ● Factory setting: [1920×1080]
	[MAIN CODEC]	Sets the main recorder's recording codec. Selectable items vary depending on the [FREQUENCY]/[MAIN PIXEL] setting. [AVC-Intra444], [AVC-Intra200], [AVC-Intra422], [AVC-Intra100], [ProRes 4444 XQ], [ProRes 4444], [ProRes 422 HQ], [ProRes 422], [ProRes 422 LT] ● Factory setting: [AVC-Intra422]
	[SUB CODEC]	Sets the sub recorder's recording codec. Selectable items vary depending on the [FREQUENCY]/[MAIN PIXEL] setting. At the same time, this enables/disables proxy data recording. **[AVC-Intra422], [AVC-Intra100], [AVC-LongG50], [AVC-LongG25], [AVC-Intra422 & Pxy],** **[AVC-Intra100 & Pxy], [AVC-LongG50 & Pxy], [AVC-LongG25 & Pxy], [OFF]** ● Factory setting: [AVC-Intra422]
	[VFR SUB REC]	Sets the operation of the sub recorder during the variable frame rate operation. **[VFR up to 60p (50p)], [NORMAL+Audio]** ● Factory setting: [VFR up to 60p]
	[HIGH SPEED]	Sets the high speed mode. **[ON (1-∗∗fps)], [OFF (1-∗∗fps)]** The variable frame rate recording is not possible when the variable range of the variable frame rate is exceeding 60 fps, and it is displayed with [(NO SUB VFR)]. ∗∗ represents the variable range of VFR. This will change depending on the [MAIN CODEC] setting. Depending on the [MAIN CODEC] setting, when [HIGH SPEED] is set to [ON (1-∗∗fps)], [CAMERA SETTINGS] → [FPS] → [VFR SW] is fixed to [ON]. ● Factory setting: [OFF (1-120fps)]
[COLOR SETTING]	[MAIN]	Sets the colors of videos (entire camera system) recorded in the main recorder. **[V-Log]/[V-709]/[F-REC]/[HD]** ● Factory setting: [V-Log]
	[GRADING]	Sets whether to apply the grading process. This only enabled when [V-Log] is set in [MAIN]. **[Internal]:** Sets grading with the control panel. **[OFF]:** Disables the grading process. **[External App]:** Sets the grading using an external application. ● Factory setting: [OFF]
	[SUB]	Sets the colors of videos (entire camera system) recorded in the sub recorder. Selectable items vary depending on the [MAIN] setting. When [MAIN] is set to [V-Log] and [GRADING] is set to [Internal] or [External App] **[V-Log]/[GRADING]** When [MAIN] is set to [V-Log] and [GRADING] is set to [OFF] **[V-Log]/[V-709]** When [MAIN] is set to [V-709] **[V-709]** When [MAIN] is set to [F-REC] **[F-REC]** When [MAIN] is set to [HD] **[HD]** ● Factory setting: [V-Log]
	[3D LUT]	Sets the grading process method when [GRADING] is set to [Internal] or [External App]. When [GRADING] is set to [Internal] or [External App] **[OFF]/[V-709]** When [GRADING] is set to [OFF] **[OFF]** ● Factory setting: [OFF]
	[PLAYBACK GRADING]	Sets the grading method during the playback. **[ON]:** Applies grading process to the playback video based on the grading information of the recording. The grading process based on the grading information of the recording may not be possible with the clip recorded by anything other than VariCam HS. **[OFF]:** Performs grading process to the playback video based on the setting in [SYSTEM SETTINGS] → [COLOR SETTING] → [MON 1]/[MON 2]/[VF]/[VF SDI]. The grading process is applied only to video recording V-Log. The grading process is not performed to the video from the SDI output terminal. ● Factory setting: [OFF]

Item		Description of settings
	[CDL]	Sets the grading process method when [GRADING] is set to [Internal] or [External App]. When [GRADING] is set to [Internal] or [External App] **[ON]/[OFF]/[SAVE AS(SD CARD)]** When [GRADING] is set to [OFF] **[OFF]** ● Factory setting: [OFF]
	[MON 1]	Sets the output image from the \<MON OUT1\> terminal. Selectable items vary depending on the [MAIN] setting. When [MAIN] is set to [V-Log] and [GRADING] is set to [Internal] or [External App] **[V-Log]/[GRADING]** When [MAIN] is set to [V-Log] and [GRADING] is set to [OFF] **[V-Log]/[V-709]** When [MAIN] is set to [V-709] **[V-709]** When [MAIN] is set to [F-REC] **[F-REC]/[LCC]** When [MAIN] is set to [HD] **[HD]** ● Factory setting: [V-Log]
	[MON 2]	Sets the output image from the \<MON OUT2\> terminal. Selectable items vary depending on the [MAIN] setting. When [MAIN] is set to [V-Log] and [GRADING] is set to [Internal] or [External App] **[V-Log]/[GRADING]** When [MAIN] is set to [V-Log] and [GRADING] is set to [OFF] **[V-Log]/[V-709]** When [MAIN] is set to [V-709] **[V-709]** When [MAIN] is set to [F-REC] **[F-REC]/[LCC]** When [MAIN] is set to [HD] **[HD]** ● Factory setting: [V-Log]
	[VF]	Sets the output image from the \<VF\> terminal and the \<VF SDI\> terminal. Selectable items vary depending on the [MAIN] setting. When [MAIN] is set to [V-Log] and [GRADING] is set to [Internal] or [External App] **[V-Log]/[GRADING]/[V-709]/[LCC]** When [MAIN] is set to [V-Log] and [GRADING] is set to [OFF] **[V-Log]/[V-709]/[LCC]** When [MAIN] is set to [V-709] **[V-709]** When [MAIN] is set to [F-REC] **[F-REC]/[LCC]** When [MAIN] is set to [HD] **[HD]** ● Factory setting: [V-Log]
	[VF SDI]	Sets the output image from the \<VF SDI\> terminal. Selectable items vary depending on the [MAIN] setting. When [MAIN] is set to [V-Log] **[Same As VF]/[V-Log]** When [MAIN] is set to anything other than [V-Log] **[Same As VF]** ● Factory setting: [Same As VF]
[USER SWITCHES]	[USER1]	Sets the function to be assigned to the USER \<1\> button. **[INHIBIT], [SIX USER BUTTONS], [AWB], [ABB], [Y GET], [DRS], [EXPAND], [IN COLOR/SQ./MONO], [WFM], [BARS], [FALSE COLOR], [VF COLOR], [MON1 COLOR], [MON2 COLOR], [SMOOTH MODE], [TEXT MEMO], [SHOT MARK], [MAIN SLOT SEL], [SUB SLOT SEL], [REC SW], [AUDIO MON VOL], [AUDIO IN VOL], [VFR SW], [CHECK LAST CLIP START], [CHECK LAST CLIP END]** ● Factory setting: [INHIBIT]
	[USER2]	Sets the function to be assigned to the USER \<2\> button. **[INHIBIT], [SIX USER BUTTONS], [AWB], [ABB], [Y GET], [DRS], [EXPAND], [IN COLOR/SQ./MONO], [WFM], [BARS], [FALSE COLOR], [VF COLOR], [MON1 COLOR], [MON2 COLOR], [SMOOTH MODE], [TEXT MEMO], [SHOT MARK], [MAIN SLOT SEL], [SUB SLOT SEL], [REC SW], [AUDIO MON VOL], [AUDIO IN VOL], [VFR SW], [CHECK LAST CLIP START], [CHECK LAST CLIP END]** ● Factory setting: [INHIBIT]
	[USER3]	Sets the function to be assigned to the USER \<3\> button. **[INHIBIT], [SIX USER BUTTONS], [AWB], [ABB], [Y GET], [DRS], [EXPAND], [IN COLOR/SQ./MONO], [WFM], [BARS], [FALSE COLOR], [VF COLOR], [MON1 COLOR], [MON2 COLOR], [SMOOTH MODE], [TEXT MEMO], [SHOT MARK], [MAIN SLOT SEL], [SUB SLOT SEL], [REC SW], [AUDIO MON VOL], [AUDIO IN VOL], [VFR SW], [CHECK LAST CLIP START], [CHECK LAST CLIP END]** ● Factory setting: [INHIBIT]
	[USER4]	Sets the function to be assigned to the USER \<4\> button. **[INHIBIT], [SIX USER BUTTONS], [AWB], [ABB], [Y GET], [DRS], [EXPAND], [IN COLOR/SQ./MONO], [WFM], [BARS], [FALSE COLOR], [VF COLOR], [MON1 COLOR], [MON2 COLOR], [SMOOTH MODE], [TEXT MEMO], [SHOT MARK], [MAIN SLOT SEL], [SUB SLOT SEL], [REC SW], [AUDIO MON VOL], [AUDIO IN VOL], [VFR SW], [CHECK LAST CLIP START], [CHECK LAST CLIP END]** ● Factory setting: [INHIBIT]

Item		Description of settings
	[USER5]	Sets the function to be assigned to the control panel operation button. The control panel operation button functions as a USER button. Assign [SIX USER BUTTONS] to USER buttons <1> to <4>. **[INHIBIT], [EXPAND], [IN COLOR/SQ./MONO], [FALSE COLOR], [VF COLOR], [MON1 COLOR], [MON2 COLOR], [SMOOTH MODE], [VFR SW]** ● Factory setting: [INHIBIT]
	[USER6]	Sets the function to be assigned to the control panel operation button. The control panel operation button functions as a USER button. Assign [SIX USER BUTTONS] to USER buttons <1> to <4>. **[INHIBIT], [EXPAND], [IN COLOR/SQ./MONO], [FALSE COLOR], [VF COLOR], [MON1 COLOR], [MON2 COLOR], [SMOOTH MODE], [VFR SW]** ● Factory setting: [INHIBIT]
	[USER7]	Sets the function to be assigned to the control panel operation button. The control panel operation button functions as a USER button. Assign [SIX USER BUTTONS] to USER buttons <1> to <4>. **[INHIBIT], [EXPAND], [IN COLOR/SQ./MONO], [FALSE COLOR], [VF COLOR], [MON1 COLOR], [MON2 COLOR], [SMOOTH MODE], [VFR SW]** ● Factory setting: [INHIBIT]
	[USER8]	Sets the function to be assigned to the control panel operation button. The control panel operation button functions as a USER button. Assign [SIX USER BUTTONS] to USER buttons <1> to <4>. **[INHIBIT], [EXPAND], [IN COLOR/SQ./MONO], [FALSE COLOR], [VF COLOR], [MON1 COLOR], [MON2 COLOR], [SMOOTH MODE], [VFR SW]** ● Factory setting: [INHIBIT]
	[USER9]	Sets the function to be assigned to the control panel operation button. The control panel operation button functions as a USER button. Assign [SIX USER BUTTONS] to USER buttons <1> to <4>. **[INHIBIT], [EXPAND], [IN COLOR/SQ./MONO], [FALSE COLOR], [VF COLOR], [MON1 COLOR], [MON2 COLOR], [SMOOTH MODE], [VFR SW]** ● Factory setting: [INHIBIT]
	[USER10]	Sets the function to be assigned to the control panel operation button. The control panel operation button functions as a USER button. Assign [SIX USER BUTTONS] to USER buttons <1> to <4>. **[INHIBIT], [EXPAND], [IN COLOR/SQ./MONO], [FALSE COLOR], [VF COLOR], [MON1 COLOR], [MON2 COLOR], [SMOOTH MODE], [VFR SW]** ● Factory setting: [INHIBIT]
	[LENS RET SW]	Sets the function to be assigned to the <RET> button of the lens. **[INHIBIT], [EXPAND], [IN COLOR/SQ./MONO]** ● Factory setting: [INHIBIT]
[CARDS/MEDIA]	[CPS PASSWORD]	Sets the CPS encryption password for the expressP2 memory card and the microP2 memory card. Displayed only when the CPS formatted P2 card is inserted. **[LOAD]:** Loads CPS password from an SD memory card. **[SET]:** Enters the CPS password. **[DELETE]:** Deletes the password saved to the device, and disables encrypted formats.
	[FORMAT MEDIA]	Formats the card in the specified slot after the format menu is selected. **[MAIN SLOT1], [MAIN SLOT2], [SUB SLOT1], [SUB SLOT2], [SD CARD]** [NORMAL] (normal format) or [CPS(ENCRYPT)] (encrypted format) can be selected when the CPS password is set and a CPS formatted P2 card is inserted. Data deleted as a result of formatting cannot be restored. Always check the data before formatting.
	[MEDIA END ALARM]	Sets whether to generate an alarm sound when there is no remaining free space in the expressP2 memory card or the microP2 memory card. **[ON], [OFF]** ● Factory setting: [ON]
[POWER MANAGEMENT]	[DC IN SOURCE]	Sets the type of the external power supply input into the <DC IN> terminal. **[DC POWER SUPPLY]:** Selected when connecting an AC adaptor. In this case, the remaining battery charge level is not displayed. **[BATTERY]:** Selected when connecting a battery to the <DC IN> terminal. Remaining charge level is detected from the voltage level. ● Factory setting: [DC POWER SUPPLY]
	[DC IN BATTERY SETTINGS]	(Display only)
	[- FULL VOLT]	Sets the voltage to be displayed in the remaining charge level full display when an external battery is input from the <DC IN> terminal. **[13.0V] - [17.0V]** (0.1 V step) ● Factory setting: [15.5V]
	[- NEAR END VOLT]	Sets the remaining charge level near end voltage when an external battery is input from the <DC IN> terminal. **[11.0V] - [15.0V]** (0.1 V step) ● Factory setting: [13.2V]
	[- END VOLT]	Sets the remaining charge level end voltage when an external battery is input from the <DC IN> terminal. **[11.0V] - [15.0V]** (0.1 V step) ● Factory setting: [12.5V]
	[ONBORD BATTERY SETTINGS]	(Display only)

Item		Description of settings
	[- BATTERY SELECT]	Selected according to the battery used. **[DIONIC], [HyTRON], [ENDURA], [PAG]:** The remaining charge level is detected and a warning is displayed according to the [NEAR END Info] and [END Info] settings. When there is no remaining charge level information, the remaining charge level is detected from the voltage level. **[other]:** Remaining charge level is detected from the voltage level. ● Factory setting: [DIONIC]
	[- FULL VOLT]	Sets the voltage in the remaining charge level full display when the battery remaining charge level is detected from the voltage level. **[13.0V] - [17.0V]** (0.1 V step) ● Factory setting: [15.5V]
	[- NEAR END VOLT]	Sets the remaining charge level near end voltage when the battery remaining charge level is detected from the voltage level. **[11.0V] - [15.0V]** (0.1 V step) ● Factory setting: [13.2V]
	[- END VOLT]	Sets the remaining charge level end voltage when the battery remaining charge level is detected from the voltage level. **[11.0V] - [15.0V]** (0.1 V step) ● Factory setting: [12.5V]
	[- NEAR END INFO]	Sets the percentage value of the remaining charge level near end when remaining charge level information is acquired from the battery. **[4%], [5%], [6%], [7%], [8%], [9%], [10%], [12%], [14%], [16%], [18%], [20%]** ● Factory setting: [5%]
	[- END INFO]	Sets the percentage value of the remaining charge level end when remaining charge level information is acquired from the battery. **[1%] - [10%]** (1% step) ● Factory setting: [1%]
	[CAM DC IN SOURCE]	Sets the type of the external power source input to the <DC IN> terminal of the camera extension module when the camera module and the recording module is separated and they are used connected with an extension cable. Displayed only when the extension module is attached. **[DC POWER SUPPLY]:** Selected when connecting an AC adaptor. In this case, the remaining battery charge level is not displayed. **[BATTERY]:** Selected when a battery is connected to the <DC IN> terminal. The remaining battery level of the camera extension module is detected in accordance with [CAM BATT FULL], [CAM BATT NEAR END], or [CAM BATT END]. ● Factory setting: [DC POWER SUPPLY]
	[CAM BATTERY SETTINGS]	(Display only)
	[- FULL VOLT]	Sets the voltage to display the remaining battery level of the camera extension module as full when the camera module and the recording module is separated and used by connecting them with a extension cable. Displayed only when the extension module is attached. **[13.0V] - [17.0V]** (0.1 V step) ● Factory setting: [15.5V]
	[- NEAR END VOLT]	Sets the near end voltage for the remaining battery level of the camera extension module when the camera module and the recording module is separated and used by connecting them with a extension cable. Displayed only when the extension module is attached. **[11.0V] - [15.0V]** (0.1 V step) ● The maximum value is the value set in [FULL Volt]. (However, the maximum is [15.0V]) ● Factory setting: [13.2V]
	[- END VOLT]	Sets the end voltage for the remaining battery level of the camera extension module when the camera module and the recording module is separated and used by connecting them with a extension cable. Displayed only when the extension module is attached. **[11.0V] - [15.0V]** (0.1 V step) ● The maximum value is the value set in [NEAR END Volt]. ● Factory setting: [12.5V]
	[END ALARM]	Sets whether to sound an alarm at battery remaining charge level end. **[ON], [OFF]** ● Factory setting: [ON]
[FAN]	[FAN SPEED]	Select the rotation speed of the fan. **[REC AUTO]:** The rotation speed is lowered simultaneously with start of recording. However, the fan will rotate in maximum speed when it reaches the specified temperature. **[MATCH CODEC]:** The fan will operate in rotation speed appropriate for each in accordance with [MAIN CODEC]. **[ALWAYS FULL]:** The fan will always rotate at the maximum speed. ● Factory setting: [REC AUTO]
[GENLOCK]	[GENLOCK MODE]	Switches the synchronization signal of the camera signal. **[INT]:** Synchronizes to the internal standard signal. **[EXT]:** Synchronizes to the entered external standard signal. ● Factory setting: [INT]
	[H PHASE COARSE]	Roughly adjusts to match horizontal synchronization phase when building a system. **[−100]…[100]** ● Factory setting: [0]

Item		Description of settings
	[H PHASE FINE]	Minutely adjusts to match horizontal synchronization phase when building a system. **[−100]…[100]** ● Factory setting: [0]
[CONTROL DISPLAY]	[BRIGHTNESS]	Adjusts the brightness of the control panel. **[−15]…[15]** ● Factory setting: [0]
	[COLOR LEVEL]	Adjusts the color levels of the control panel. **[−15]…[15]** ● Factory setting: [0]
	[CONTRAST]	Adjusts the contrast of the control panel. **[−30]…[30]** ● Factory setting: [0]
	[BACK LIGHT]	Sets the brightness of the control panel backlight. **[−1]:** Darkens the display more than normal. **[0]:** Normal brightness. **[1]:** Brightens the display more than normal. ● Factory setting: [0]
	[BUTTON LED]	Illuminates each button of the control panel and camera module. **[ON], [OFF]** ● Factory setting: [ON]
	[STATUS]	Press the <VIEW> button to set whether to show the status display when a camera video is displayed on the control panel. **[ON], [OFF]** ● Factory setting: [ON]
[CLOCK]	[CLOCK SETTING]	Sets the built-in calendar (year/month/day) and time. **[YEAR]:** [2014] - [2037] **[MONTH]:** [JAN]…[DEC] ([1]…[12]) **[DAY]:** [1] - [31] ([28], [29], [30]) **[HOUR]:** [0] - [23] **[MINUTE]:** [0] - [59]
	[TIME ZONE]	Set the time zone. After setting the time, when changing the time zone setting, the displayed and registered times switch to the time with the time difference. **[−12:00] - [+13:00]** (30-minute interval, without [+12:30] and with [+12:45])
	[DATE FORMAT]	Sets the display order of year/month/day. This is also applied to the recording date displayed in the clip properties. **[Y-M-D]/[M-D-Y]/[D-M-Y]** ● Factory setting: [Y-M-D]
[INFORMATION]	[OPERATION TIME]	Displays the operation time of the camera.
	[VERSION]	Displays the information of the camera. **[VERSION]:** Displays the version. **[MODEL NAME]:** Displays the product name. **[SERIAL NO.]:** Displays the serial number.
	[UPDATE]	Performs an update of the camera firmware. (Enabled only when there is a dedicated update file on the SD memory card.)
	[USB]	Switches the camera to mode for USB device function.
	[TRACE LOG]	Reads the camera's execution log from an SD memory card.
	[SENSOR TEMP]	Displays the ambient temperature detected by the camera module's sensor.
[INITIALIZE]	[LOAD FACTORY DATA]	Returns the menu values to their factory settings. **[YES], [NO]**

[CAMERA SETTINGS]

Sets the fine quality adjustment of camera videos and camera operation.

ENHANCED is the extended menu. Set [MENU] → [CAMERA SETTINGS] → [Enhanced] → [Enhanced SW] to [ON] to display the extended menu.

Item		Description of settings
[Enhanced]	[Enhanced SW]	Enables/disables the [Enhanced] function. **[ON]:** Enables the [Enhanced] function and shows the menu related to the [Enhanced] function. **[OFF]:** Disables the [Enhanced] function and hides the menu related to the [Enhanced] function. ● Factory setting: [OFF]
[FPS]	[VFR SW]	Enables/disables the variable frame rate function. **[ON]:** Enables the variable frame rate function. The desired frame rate can be set using [PRESET VALUE]/[VARIABLE VALUE]. Audio cannot be recorded. **[OFF]:** Disables the variable frame rate function. [VFR SW] is fixed to [ON] when [SYSTEM SETTINGS] → [SYSTEM MODE] → [HIGH SPEED] is set to [ON (1-∗∗fps)]. ● Factory setting: [OFF]
	[FPS MODE]	Selects the frame rate setting method. **[PRESET]:** Selects the frame rate from preset frame rates (maximum of 12). Registration is done from the control panel. **[VARIABLE]:** Selects the frame rate from all available frame rates. ● Factory setting: [PRESET]
	[PRESET VALUE]	Selects a value from a maximum of 12 values set from the control panel. ● Factory setting: [24fps]

Item		Description of settings
	[VARIABLE VALUE]	Selects the frame rate from all available frame rates. Selectable values vary depending on [SYSTEM MODE] settings. ● Factory setting: [24fps]
[WHITE]	[AWB]	Executes automatic white balancing. **[EXECUTE], [CANCEL]** ● Factory setting: [CANCEL]
	[MODE]	Selects the white balance mode. **[PRESET]:** Selects the color temperature from preset color temperatures. Registration is done from the control panel. **[TEMP SHIFT]:** Selects the color temperature from all configurable color temperatures. ● Factory setting: [PRESET]
	[PRESET VALUE]	Selects a value from a maximum of 12 values set from the control panel. Preset values that can be selected in the factory setting are [3200K+0GMg], [4300K+0GMg], [5600(5500)K+0GMg], and [6300K+0GMg]. ● Factory setting: [3200K+0GMg]
	[TEMP SHIFT]	Selects the color temperature from all configurable color temperatures. **[2300K]…[15000K]** ● Factory setting: [3200K]
	[GMg]	Adjusts the balance between green and magenta. +: Adjusts toward green. −: Adjusts toward magenta. **[−10]…[10]** ● Factory setting: [0]
	[R GAIN] `ENHANCED`	Adjusts the Rch gain. **[−200]…[200]** ● Factory setting: [0]
	[B GAIN] `ENHANCED`	Adjusts the Bch gain. **[−200]…[200]** ● Factory setting: [0]
	[AWB OFFSET] `ENHANCED`	Sets the Rch gain and Bch gain value when performing automatic white balancing. **[ON]:** Maintains and adds the values of [R GAIN] and [B GAIN] after performing automatic white balancing. **[OFF]:** Resets the value of [R GAIN] and [B GAIN] after performing automatic white balancing. ● Factory setting: [OFF]
	[SHOCKLESS WHITE] `ENHANCED`	Sets the transition time when switching preset values. **[OFF]:** Values are immediately switched. **[1]:** Switches in approximately one second. **[2]:** Switches in approximately two seconds. **[3]:** Switches in approximately five seconds. ● Factory setting: [OFF]
[BLACK] `ENHANCED`	[ABB] `ENHANCED`	Executes automatic black balancing. When executing automatic black balancing, put the cap on the lens to keep any light from entering the image sensor. **[EXECUTE], [CANCEL]** ● Factory setting: [CANCEL]
	[M.PED] `ENHANCED`	Sets the master pedestal level. **[−100]…[100]** ● Factory setting: [0]
	[R PED] `ENHANCED`	Adjusts the Rch pedestal level. **[−100]…[100]** ● Factory setting: [0]
	[G PED] `ENHANCED`	Adjusts the Gch pedestal level. **[−100]…[100]** ● Factory setting: [0]
	[B PED] `ENHANCED`	Adjusts the Bch pedestal level. **[−100]…[100]** ● Factory setting: [0]
	[ABB OFFSET] `ENHANCED`	Sets the Rch, Gch, and Bch pedestal levels after adjusting the automatic black balance. **[ON]:** Maintains and adds the values of [R PED], [G PED], and [B PED] after performing the automatic black balance. **[OFF]:** Resets the values of [R PED], [G PED], and [B PED] after performing the automatic black balance. ● Factory setting: [OFF]
[FLARE] `ENHANCED`	[SW] `ENHANCED`	Switches the enable/disable of the flare correction function. **[ON], [OFF]** ● Factory setting: [OFF]
	[R FLARE] `ENHANCED`	Adjusts the Rch flare level. **[−100]…[100]** ● Factory setting: [0]
	[G FLARE] `ENHANCED`	Adjusts the Gch flare level. **[−100]…[100]** ● Factory setting: [0]
	[B FLARE] `ENHANCED`	Adjusts the Bch flare level. **[−100]…[100]** ● Factory setting: [0]
[NR]		Switches the noise reduction effect. **[ON], [OFF]** ● Factory setting: [OFF]

Item		Description of settings
[EI]	[MODE]	Switches the EXPOSURE INDEX control unit. **[ISO], [dB]** ● Factory setting: [ISO]
	[SETTING(ISO)]	Sets the value when [ISO] is selected. **[2500], [3200], [4000], [5000], [6400], [8000], [10000], [12800]** The following values can be selected when set to [V-Log] or [V-709] in [MENU] → [SYSTEM SETTINGS] → [COLOR SETTING] → [MAIN]. **[640], [800], [1000], [1250], [1600], [2000]** ● Factory setting: [2500]
	[SETTING(GAIN)]	Sets the value when [dB] is selected. **[0dB], [3dB], [6dB], [9dB], [12dB], [15dB], [18dB], [21dB], [24dB]** ● Factory setting: [0dB]
	[GAIN OFFSET SW] ENHANCED	Sets whether to perform fine adjustment of control when [dB] is selected. **[ON], [OFF]** ● Factory setting: [OFF]
	[OFFSET LEVEL] ENHANCED	Sets the fine adjustment level. **[0.0dB] - [0.9dB]** (0.1 dB step) ● Factory setting: [0dB]
[SHUTTER]	[SW]	Enables/disables the shutter function. **[ON], [OFF]** ● Factory setting: [ON]
	[DISPLAY MODE]	Sets the shutter display unit. **[sec]:** Displays in time. **[deg]:** Displays at shutter open angle. ● Factory setting: [deg]
	[MODE]	Switches the shutter control mode. **[PRESET]:** Selects the mode from 12 modes inside the memory. **[SYNCHRO]:** Selects the mode from the operable range. ● Factory setting: [PRESET]
	[SYNCHRO deg]	Sets the value of angle control ([deg]). **[1.0]…[358.0]** ● Factory setting: [180.0]
	[SYNCHRO sec]	Sets the value of time control ([sec]). The lowest value changes depending on the frame rate ([FPS]) value. **[1/60] - [1/250]** ● Factory setting: [1/48]
	[PRESET VALUE deg]	Selects the angle control ([deg]) value from the maximum of 12 values set in the control panel. Preset values that can be selected in the factory setting are [11.5], [22.5], [45.0], [90.0], [120.0], [144.0], [172.8], [180.0], [270.0], and [358.0]. ● Factory setting: [180.0]
	[PRESET VALUE sec]	Selects the time control ([sec]) value from the maximum of 12 values set in the control panel. Preset values that can be selected in the factory setting are [1/60], [1/100], [1/120], [1/250], [1/500], [1/1000], and [1/2000]. ● Factory setting: [1/60]
[TEST SIG]	[TEST SIG SEL]	Sets the test signal output. **[OFF]:** Does not output a test signal. **[BARS]:** Outputs the color bar set in [COLOR BARS TYPE]. ● Factory setting: [OFF]
	[COLOR BARS TYPE]	Set the color bar to be used. **[SMPTE]:** Uses the color bar in the SMPTE standard. **[FULL]:** Uses full color bars. ● Factory setting: [SMPTE]
[GAMMA]	[STEP GAMMA]	Sets the master gamma. **[0.35] - [0.90]** (0.01 step) ● Factory setting: [0.45]
	[INITIAL GAMMA]	Sets the starting coefficient of gamma. **[x4.0], [x4.5], [x5.0], [x5.5]** ● Factory setting: [x4.5]
	[BLACK GAMMA]	Sets the gamma curves of dark areas. **[−8]…[−1]:** Compresses the dark areas. **[OFF]:** Standard state **[1]…[8]:** Expands the dark areas. ● Factory setting: [OFF]
	[BLACK GAMMA RANGE]	Sets the maximum level of compression/expansion. **[10%], [20%], [30%]** ● Factory setting: [10%]
[KNEE]	[KNEE SW]	Enables/disables knee operation. **[ON], [OFF]** ● Factory setting: [OFF]
	[KNEE MODE]	Sets the knee operation mode. **[D RANGE]:** Determines the dynamic range that can be represented by the [KNEE SLOPE] value. The dynamic range that can be represented does not change even if the [KNEE POINT] value changes. **[PRESS]:** Determines the signal compression rate through the [KNEE SLOPE] value. The dynamic range that can be represented changes if the [KNEE POINT] value changes. ● Factory setting: [D RANGE]

Item		Description of settings
	[KNEE POINT]	Sets the knee point position in 0.5% steps. **[75%]…[109%]** ● Factory setting: [100%]
	[KNEE SLOPE]	Sets the knee inclination. **[0]…[100]** ● Factory setting: [85]
	[F-REC DYNAMIC LVL]	Sets the dynamic level for film recording gamma. **[200%], [300%], [400%], [500%], [600%]** ● Factory setting: [600%]
	[F-REC BLACK STR LVL]	Sets the black stretch level for film recording gamma. **[0%] - [30%]** ● Factory setting: [0%]
	[DRS SW] ENHANCED	Enables/disables the dynamic range stretcher function. **[ON], [OFF]** ● Factory setting: [OFF]
	[DRS TYPE] ENHANCED	Switches the dynamic range stretcher function mode. **[NORMAL]:** Effects are applied to the entire image. **[SKIN HOLD]:** Weakens the dynamic range stretcher effect on the skin color area. ● Factory setting: [NORMAL]
	[DRS EFFECT DEPTH] ENHANCED	Sets the dynamic range stretcher function effect. The higher the value, the more significant the effect. **[1] - [5]** ● Factory setting: [1]
[WHITE CLIP] ENHANCED	[SW] ENHANCED	Enables/disables the white clip function. **[ON], [OFF]** ● Factory setting: [OFF]
	[LEVEL] ENHANCED	Sets the white clip function level. **[90%] - [109%]** ● Factory setting: [109%]
[DETAIL] ENHANCED	[SW] ENHANCED	Enables/disables the detail function. **[ON], [OFF]** ● Factory setting: [OFF]
	[H.DTL LEVEL] ENHANCED	Sets the horizontal detail correction level. **[0] - [63]** ● Factory setting: [12]
	[H.DTL FREQ] ENHANCED	Sets the horizontal detail frequency. **[0] - [31]** ● Factory setting: [18]
	[DTL SOURCE] ENHANCED	Sets the combination of RGB signals that will create the detail. **[(R+G)/2], [(2G+R+B)/4], [(3G+R)/4], [R], [G]** ● Factory setting: [(R+G)/2]
	[V.DTL LEVEL] ENHANCED	Sets the vertical detail correction level. **[0] - [63]** ● Factory setting: [8]
	[V.DTL FREQ] ENHANCED	Sets the vertical detail frequency. **[0] - [31]** ● Factory setting: [12]
	[CORING] ENHANCED	Sets the coring amount for the detail signal. **[0] - [60]** ● Factory setting: [1]
	[GAIN(+)] ENHANCED	Sets the amount of gain for the forward direction detail signal. **[−31]…[31]** ● Factory setting: [0]
	[GAIN(−)] ENHANCED	Sets the amount of gain for the backward direction detail signal. **[−31]…[31]** ● Factory setting: [0]
	[CLIP] ENHANCED	Sets the level at which detail signals will be clipped. The higher the value, the higher amount of clipping and the smaller the detail signal becomes. **[0] - [63]** ● Factory setting: [0]
	[MASTER LEVEL] ENHANCED	Sets the effect level for the detail signal. **[−31]…[31]** ● Factory setting: [0]
	[LDP SW] ENHANCED	Enables/disables the level dependent function. **[ON], [OFF]** ● Factory setting: [OFF]
	[LDP LEVEL] ENHANCED	Sets the level dependent function level. The higher the value, the higher the luminance level of the level dependent effect. **[1] - [5]** ● Factory setting: [1]
	[DARK DTL SW] ENHANCED	Enables/disables the dark detail function. **[ON], [OFF]** ● Factory setting: [OFF]

Item		Description of settings
	[DARK DTL LEVEL] ENHANCED	Enables/disables the dark detail function level. **[1] - [5]** ● Factory setting: [2]
	[DARK DTL POINT] ENHANCED	Sets the level at which to start the dark detail function. **[1] - [5]** ● Factory setting: [1]
	[DARK DTL POINT(END)] ENHANCED	Sets the maximum level at which the dark detail function will operate. **[1] - [5]** ● Factory setting: [2]
[SKIN DETAIL] ENHANCED	[SW] ENHANCED	Enables/disables the skin tone detail function. **[OFF], [ON]** ● Factory setting: [OFF]
	[TABLE SELECT] ENHANCED	Selects the table for the skin tone detail. **[A], [B], [C], [A+B], [A+C], [B+C], [A+B+C]** ● Factory setting: [A]
	[GET] ENHANCED	Sets whether to register the screen center color as the color by which the skin tone detail is applied. **[EXECUTE], [CANCEL]**
	[ZEBRA SW] ENHANCED	Sets whether to superimpose the zebra signal to the color by which the skin tone detail is applied. **[ON], [OFF]** ● Factory setting: [OFF]
	[EFFECT LEVEL] ENHANCED	Sets the effective level of the skin tone detail. The higher the value, the more significant the effect. **[0] - [31]** ● Factory setting: [16]
	[DETECT TABLE] ENHANCED	Selects the skin tone table of the subject that displays the skin tone detail. **[A], [B], [C]** ● Factory setting: [A]
	[I CENTER] ENHANCED	Sets the center position of the upper I axis (setting the area that displays the skin tone). **[0]…[255]** ● Factory setting: [35]
	[I WIDTH] ENHANCED	Sets the width of the area that displays the skin tone of the upper I axis that focus on [I CENTER]. **[0]…[255]** ● Factory setting: [55]
	[Q WIDTH] ENHANCED	Sets the width of the area that displays the skin tone of the upper Q axis that focus on [I CENTER]. **[0]…[127]** ● Factory setting: [22]
	[Q PHASE] ENHANCED	Sets the phase of the area that displays the skin tone regarding to the Q axis. **[0]…[255]** ● Factory setting: [0]
[MATRIX] ENHANCED	[SW] ENHANCED	Enables/disables the matrix function. **[ON], [OFF]** ● Factory setting: [OFF]
	[(R-G)_N] ENHANCED	Adjusts the linear matrix. **[−127]…[127]** ● Factory setting: [0]
	[(R-G)_P] ENHANCED	Adjusts the linear matrix. **[−127]…[127]** ● Factory setting: [0]
	[(R-B)_N] ENHANCED	Adjusts the linear matrix. **[−127]…[127]** ● Factory setting: [0]
	[(R-B)_P] ENHANCED	Adjusts the linear matrix. **[−127]…[127]** ● Factory setting: [0]
	[(G-R)_N] ENHANCED	Adjusts the linear matrix. **[−127]…[127]** ● Factory setting: [0]
	[(G-R)_P] ENHANCED	Adjusts the linear matrix. **[−127]…[127]** ● Factory setting: [0]
	[(G-B)_N] ENHANCED	Adjusts the linear matrix. **[−127]…[127]** ● Factory setting: [0]
	[(G-B)_P] ENHANCED	Adjusts the linear matrix. **[−127]…[127]** ● Factory setting: [0]
	[(B-R)_N] ENHANCED	Adjusts the linear matrix. **[−127]…[127]** ● Factory setting: [0]
	[(B-R)_P] ENHANCED	Adjusts the linear matrix. **[−127]…[127]** ● Factory setting: [0]
	[(B-G)_N] ENHANCED	Adjusts the linear matrix. **[−127]…[127]** ● Factory setting: [0]

Item		Description of settings
	[(B-G)_P] ENHANCED	Adjusts the linear matrix. **[−127]…[127]** ● Factory setting: [0]
[COLOR CORRECTION] ENHANCED	[SW] ENHANCED	Enables/disables the color correction function. **[ON], [OFF]** ● Factory setting: [OFF]
	[R (SAT)] ENHANCED	Corrects red color saturation. **[−63]…[63]** ● Factory setting: [0]
	[R (PHASE)] ENHANCED	Corrects the red hue. **[−63]…[63]** ● Factory setting: [0]
	[R-Mg (SAT)] ENHANCED	Corrects the color saturation between red and magenta. **[−63]…[63]** ● Factory setting: [0]
	[R-Mg (PHASE)] ENHANCED	Corrects the hue between red and magenta. **[−63]…[63]** ● Factory setting: [0]
	[Mg (SAT)] ENHANCED	Corrects magenta color saturation. **[−63]…[63]** ● Factory setting: [0]
	[Mg (PHASE)] ENHANCED	Corrects the magenta hue. **[−63]…[63]** ● Factory setting: [0]
	[Mg-B (SAT)] ENHANCED	Corrects the color saturation between magenta and blue. **[−63]…[63]** ● Factory setting: [0]
	[Mg-B (PHASE)] ENHANCED	Corrects the hue between magenta and blue. **[−63]…[63]** ● Factory setting: [0]
	[B (SAT)] ENHANCED	Corrects blue color saturation. **[−63]…[63]** ● Factory setting: [0]
	[B (PHASE)] ENHANCED	Corrects the blue hue. **[−63]…[63]** ● Factory setting: [0]
	[B-Cy (SAT)] ENHANCED	Corrects the color saturation between blue and cyan. **[−63]…[63]** ● Factory setting: [0]
	[B-Cy (PHASE)] ENHANCED	Corrects the hue between blue and cyan. **[−63]…[63]** ● Factory setting: [0]
	[Cy (SAT)] ENHANCED	Corrects cyan color saturation. **[−63]…[63]** ● Factory setting: [0]
	[Cy (PHASE)] ENHANCED	Corrects the cyan hue. **[−63]…[63]** ● Factory setting: [0]
	[Cy-G (SAT)] ENHANCED	Corrects the color saturation between cyan and green. **[−63]…[63]** ● Factory setting: [0]
	[Cy-G (PHASE)] ENHANCED	Corrects the hue between cyan and green. **[−63]…[63]** ● Factory setting: [0]
	[G (SAT)] ENHANCED	Corrects green color saturation. **[−63]…[63]** ● Factory setting: [0]
	[G (PHASE)] ENHANCED	Corrects the green hue. **[−63]…[63]** ● Factory setting: [0]
	[G-Yl (SAT)] ENHANCED	Corrects the color saturation between green and yellow. **[−63]…[63]** ● Factory setting: [0]
	[G-Yl (PHASE)] ENHANCED	Corrects the hue between green and yellow. **[−63]…[63]** ● Factory setting: [0]
	[Yl (SAT)] ENHANCED	Corrects yellow color saturation. **[−63]…[63]** ● Factory setting: [0]
	[Yl (PHASE)] ENHANCED	Corrects the yellow hue. **[−63]…[63]** ● Factory setting: [0]

Item		Description of settings
	[YI-R (SAT)] ENHANCED	Corrects the color saturation between yellow and red. **[−63]…[63]** ● Factory setting: [0]
	[YI-R (PHASE)] ENHANCED	Corrects the hue between yellow and red. **[−63]…[63]** ● Factory setting: [0]
[SKIN CORRECTION] ENHANCED	[SKIN AREA SW] ENHANCED	Enables/disables the function which makes fine adjustments of near skin tone colors. **[ON], [OFF]** ● Factory setting: [OFF]
	[SKIN AREA HUE] ENHANCED	Makes fine adjustments in hue. **[−63]…[63]** ● Factory setting: [0]
	[SKIN AREA TONE] ENHANCED	Makes fine adjustments in tone. **[−63]…[63]** ● Factory setting: [0]
[EXT.FUNC]	[HI-COLOR SW] ENHANCED	Enables/disables the high color function (which leave the color for during high brightness). **[ON], [OFF]** ● Factory setting: [OFF]
	[HI-COLOR LVL] ENHANCED	Adjusts the degree of color left during high brightness. **[1] - [32]** ● Factory setting: [32]
	[CAC]	Enables/disables the chromatic aberration compensation function. **[ON], [OFF]** ● Factory setting: [ON]
	[FOCUS DISP]	Sets the unit that displays the focus distance. **[Meter], [Feet]** ● Factory setting: [Feet]
[LENS SETTING]	[A.IRIS TYPE] ENHANCED	Determines whether to set the speed control to the lens volume and use the value set in the menu. **[LENS], [CAM]** ● Factory setting: [LENS]
	[A.IRIS LEVEL EFFECT] ENHANCED	Sets the target value during auto iris operation. **[0] - [100]** ● Factory setting: [30]
	[A.IRIS SPEED] ENHANCED	Sets the speed when the [A.IRIS TYPE] is set to [CAM]. **[1] - [20]** ● Factory setting: [10]
	[A.IRIS WINDOW] ENHANCED	Selects the auto iris detection window. **[NORMAL1]:** Window that is near screen center. **[NORMAL2]:** Window that is near screen bottom. **[CENTER]:** Window that is a spot in the screen center. ● Factory setting: [NORMAL1]
	[A.IRIS PEAK/AVE] ENHANCED	Sets the ratio included in the peak for auto iris standard. **[0] - [100]** ● Factory setting: [30]
[WHITE SHADING] ENHANCED	[WHITE SHADING SW] ENHANCED	Enables/disables the white shading function. **[ON], [OFF]** ● Factory setting: [OFF]
	[WHITE SHADING CHANNEL SEL] ENHANCED	Selects the signal that will correct white shading. **[R], [G], [B]** ● Factory setting: [R]
	[H.SAW] ENHANCED	Adjusts in the horizontal direction using sawtooth wave forms. **[−255]…[255]** ● Factory setting: [0]
	[H.PARA] ENHANCED	Adjusts in the horizontal direction using parabolic wave forms. **[−255]…[255]** ● Factory setting: [0]
	[V.SAW] ENHANCED	Adjusts in the vertical direction using sawtooth wave forms. **[−255]…[255]** ● Factory setting: [0]
	[V.PARA] ENHANCED	Adjusts in the vertical direction using parabolic wave forms. **[−255]…[255]** ● Factory setting: [0]

[REC SETTINGS]

The various setting items of the recording function of the camera.

Item	Description of settings
[FILE NAME STYLE]	Sets the file name style. **[CINE]:** Records a file as a file name of cinema style. For details, refer to "File name style" (page 37). **[P2]:** Records a file as a file name style unique to P2. ● Factory setting:[CINE]

Item		Description of settings
[REC FUNCTION]	[REC MODE]	Selects the special recording function. **[NORMAL]:** Normal recording **[INTERVAL]:** Interval recording (function to perform intermittent recording in constant interval) **[ONE SHOT]:** One-shot recording (function to perform recording of specified duration every time the REC button is pressed) The setting is fixed to [NORMAL] when [SYSTEM SETTINGS] → [MON OUT INDICATOR] → [VFR] is set to [ON]. ● Factory setting: [NORMAL]
	[REC TIME]	Sets the recording duration of single one-shot recording. **[00s01f]…[59s23f]** ● The maximum value of the frame digit differs depending on the system frequency. ● Factory setting: [00s01f]
	[INTERVAL TIME]	Sets the intermittent recording frequency of single interval recording. **[0h00min00s02f]…[1h00min00s00f]** ● Factory setting: [0h05min00s00f]
	[START DELAY]	Sets the delay time to start recording for the interval recording and the one-shot recording. **[0s]…[10s]** ● Factory setting: [0s]
	[PRE REC MODE]	Selects the pre-recording (function to record few seconds earlier than when the REC button is pressed by accumulation into the internal memory). **[ON], [OFF]** The setting is fixed to [OFF] when [REC MODE] is set to [INTERVAL] or [ONE SHOT]. ● Factory setting: [OFF]
[FILE SPLIT]		Sets whether to split the recording file by units of 4 GB or just maintain one file, when the following two conditions are met: ● When OP-1b format codec is selected in [MENU] → [SYSTEM SETTINGS] → [SYSTEM MODE] → [MAIN CODEC]/[SUB CODEC]. ● When the recording size exceeds 4 GB **[ONE FILE]:** Records in one file. **[SPLIT]:** Splits the clip every 4 GB. ● Factory setting: [ONE FILE] When [MAIN CODEC] is set to OP-Atom format, [SUB CODEC] will also be fixed to [SPLIT]. When [MAIN CODEC] is set to ProRes format, it will be [ONE FILE] regardless of the setting.
[TC]	[SET TC]	Sets the default value of the time code to record. Hour: **[00] - [23]** Minute: **[00] - [59]** Second: **[00] - [59]** Frame: **[00]…[23]** (for [24p], [23.98p]), **[00]…[23]** (for [50i], [50p], [25p]), **[00]…[29]** (for [59.94i], [59.94p], [29.97p]) ● Factory setting: [00] (various items)
	[SET UB]	Sets user bits. Enabled only when [USER] is selected in [UB MODE]. This can be set by each digit from [00] to [FF]. ● Factory setting: [00]
	[TC/UB/Dur.]	Switches the time code display to the user bits and duration counter display. **[TC], [UB], [Dur.]** ● Factory setting: [TC]
	[FREE/REC RUN]	Sets the operation mode to advance the built-in time code generator. It will be fixed to [REC RUN] when [VFR] is set to [ON]. **[FREE RUN]:** Advances regardless of the operation mode. **[REC RUN]:** Advances when recording is in process. ● Factory setting: [FREE RUN]
	[DF/NDF]	Sets count method for the built-in time code generator of the camera. **[DF]:** Uses the drop frame mode. **[NDF]:** Uses the non-drop frame mode. ● Factory setting: [NDF] Enabled only when [59.94i], [59.94p], or [29.97p] is selected in [MENU] → [SYSTEM SETTINGS] → [SYSTEM MODE] → [FREQUENCY].
	[UB MODE]	Selects the user bits mode. **[FRAME RATE]:** Selects camera imaging information (such as frame rate). **[USER]:** Selects the user bits value that has been set. **[EXT INPUT]:** Records the user bits values currently input to the <TC IN/OUT> terminal. **[TIME]:** Selects the local time. (hh, mm, ss) **[DATE]:** Selects the local date and time. (YY, MM, DD, hh) ● Factory setting: [FRAME RATE]
	[TC IN/OUT SEL]	Sets the input/output of the <TC IN/OUT> terminal. **[TC IN], [TC OUT]** ● Factory setting: [TC IN]
	[TC OUT]	Selects the time code output to the <TC IN/OUT> terminal. **[TCG], [TCG/TCR]** ● Factory setting: [TCG]
	[TC OUT REF]	Sets the output delay of the time code output from the <TC IN/OUT> terminal. **[RECORDING], [SDI OUT]** ● Factory setting: [RECORDING]
[REC METADATA]	[LOAD]	Loads the metadata upload file saved to the SD memory card.

Item		Description of settings
	[RECORD]	Sets whether to add loaded metadata at a recording. **[ON]:** Adds metadata. **[OFF]:** Does not add metadata. ● Factory setting: [OFF]
	[USER CLIP NAME]	Sets data to be recorded to [USER CLIP NAME]. (When [RECORD] is [ON]) **[TYPE1]:** Records setting values of the loaded data. **[TYPE2]:** Records the loaded data and counter value. **[TYPE3]:** Records the setting value prescribed with CAM INDEX or REEL number. (When [RECORD] is [OFF]) **[TYPE1]:** Records the same value as [GLOBAL CLIP ID]. **[TYPE2]:** Records the same value as [CLIP NAME]. **[TYPE3]:** Records the setting value prescribed with CAM INDEX or REEL number. ● Factory setting: [TYPE3]
	[CAM INDEX]	Sets CAM INDEX used in [TYPE3] of [USER CLIP NAME]. **[A]…[Z]** ● Factory setting: [A]
	[NEXT REEL COUNT]	Sets REEL used in [TYPE3] of [USER CLIP NAME]. The REEL number for the card that the REEL number is already assigned would not change. **[001]…[999]** ● Factory setting: [001]
	[COUNTER RESET]	Resets the counter value when [USER CLIP NAME] is set to [TYPE2].
	[PROPERTY]	Checks loaded metadata. This cannot be modified.
[REC BEEP SOUND]	[MODE]	Sets if the beep sound is output at the time when the recording is started or stopped. **[OFF]:** It is not output for both starting and stopping of the recording. **[START]:** It is output at the start of recording. **[STOP]:** It is output at the stop of recording. **[START & STOP]:** It is output for both starting and stopping of the recording. The output time of the beep sound when the recording is stopped will be 1.5 times of when the recording is started. ● Factory setting: [OFF]
	[VOLUME]	Sets the volume of the beep sound that is output at the time when the recording is started or stopped. **[LOUD], [MEDIUM], [SMALL]** ● Factory setting: [MEDIUM]
[WINDOW BURN SW]		Text display is written to the image to be recorded in the sub recorder. **[ON], [OFF]** ● Factory setting: [OFF]
[WINDOW BURN SETTINGS]	[UPPER LEFT]	Selects the display at top left. **[NONE]/ [CUSTOM BURN DATA1]/ [CUSTOM BURN DATA2]/ [CUSTOM BURN DATA3]/ [CAM INDEX]/ [REEL COUNT]/[CLIP NAME]/ [USER CLIP NAME (TYPE3)]/ [SHOOT DATE]/ [SENSOR FPS]/ [SHUTTER]/[EI]/[COLOR TEMP]** ● Factory setting: [NONE]
	[UPPER CENTER]	Selects the display at top center. **[NONE]/ [CUSTOM BURN DATA1]/ [CUSTOM BURN DATA2]/ [CUSTOM BURN DATA3]/ [CAM INDEX]/ [REEL COUNT]/[CLIP NAME]/ [USER CLIP NAME (TYPE3)]/ [SHOOT DATE]/ [SENSOR FPS]/ [SHUTTER]/[EI]/[COLOR TEMP]** ● Factory setting: [NONE]
	[UPPER RIGHT]	Selects the display at top right. **[NONE]/ [CUSTOM BURN DATA1]/ [CUSTOM BURN DATA2]/ [CUSTOM BURN DATA3]/ [CAM INDEX]/ [REEL COUNT]/[CLIP NAME]/ [USER CLIP NAME (TYPE3)]/ [SHOOT DATE]/ [SENSOR FPS]/ [SHUTTER]/[EI]/[COLOR TEMP]** ● Factory setting: [NONE]
	[LOWER LEFT]	Selects the display at bottom left. **[NONE]/ [CUSTOM BURN DATA1]/ [CUSTOM BURN DATA2]/ [CUSTOM BURN DATA3]/ [CAM INDEX]/ [REEL COUNT]/[CLIP NAME]/ [USER CLIP NAME (TYPE3)]/ [SHOOT DATE]/ [SENSOR FPS]/ [SHUTTER]/[EI]/[COLOR TEMP]** ● Factory setting: [NONE]
	[LOWER CENTER]	Selects the display at bottom center. **[NONE]/ [CUSTOM BURN DATA1]/ [CUSTOM BURN DATA2]/ [CUSTOM BURN DATA3]/ [CAM INDEX]/ [REEL COUNT]/[CLIP NAME]/ [USER CLIP NAME (TYPE3)]/ [SHOOT DATE]/ [SENSOR FPS]/ [SHUTTER]/[EI]/[COLOR TEMP]** ● Factory setting: [NONE]
	[LOWER RIGHT]	Selects the display at bottom right. **[NONE]/ [CUSTOM BURN DATA1]/ [CUSTOM BURN DATA2]/ [CUSTOM BURN DATA3]/ [CAM INDEX]/ [REEL COUNT]/[CLIP NAME]/ [USER CLIP NAME (TYPE3)]/ [SHOOT DATE]/ [SENSOR FPS]/ [SHUTTER]/[EI]/[COLOR TEMP]/[TC]** ● Factory setting: [NONE]
	[CUSTOM BURN DATA1]	Sets [CUSTOM BURN DATA1] of the [WINDOW BURN] function. (20 characters or less) ● Factory setting: (blank)
	[CUSTOM BURN DATA2]	Sets [CUSTOM BURN DATA2] of the [WINDOW BURN] function. (20 characters or less) ● Factory setting: (blank)
	[CUSTOM BURN DATA3]	Sets [CUSTOM BURN DATA3] of the [WINDOW BURN] function. (20 characters or less) ● Factory setting: (blank)

Item		Description of settings
[WATER MARK SW]		Selects the watermark (transparent characters inserted to video to be recorded in the sub recorder). **[ON], [OFF]** ● Factory setting: [OFF]
[WATER MARK SETTINGS]	[MARK POSITION]	Selects the position to superimpose the watermark. **[UPPER LEFT], [UPPER CENTER], [UPPER RIGHT], [CENTER LEFT], [CENTER], [CENTER RIGHT], [LOWER LEFT], [LOWER CENTER], [LOWER RIGHT]** ● Factory setting: [CENTER]
	[MARK LEVEL]	Selects the transparency of the watermark. It becomes more transparent when the value is larger. It is not transparent when [0%] is selected. **[0%], [25%], [50%], [75%]** ● Factory setting: [0%]
	[CHAR EDIT]	Edits the characters of the watermark. (32 characters or less) ● Factory setting: (blank)
	[CHAR SIZE]	Selects the character size of the watermark. **[SMALL], [LARGE]** ● Factory setting: [LARGE]
[FRAME MARK SW]		Selects the frame mark (frame mark inserted to video to be recorded in the sub recorder). **[ON], [OFF]** ● Factory setting: [OFF]
[FRAME MARK SETTINGS]	[FRAME ASPECT]	Selects the aspect ratio of the frame mark. **[1.33:1], [1.44:1], [1.56:1], [1.78:1], [1.85:1], [2.00:1], [2.201:1], [2.35:1], [2.39:1]** ● Factory setting: [2.39:1]
	[FRAME LEVEL]	Sets the level outside the frame mark. Image becomes more transparent when the value is larger. It is not transparent and becomes black when [0%] is selected. **[0%], [25%], [50%], [75%]** ● Factory setting: [0%]

[AUDIO SETTINGS]

Various setting items for audio recording.

Item		Description of settings
[AUDIO RECORD]		Sets whether to record the audio. The audio data itself is not recorded when set to [OFF]. (Audio data will not appear in the timeline of editing software) **[ON], [OFF]** ● Factory setting: [ON]
[AUDIO INPUT]	[AES/EBU IN]	If this is set to [ON], the digital audio (AES/EBU standard-compliant) input from the <AUDIO IN 1> terminal and <AUDIO IN 2> terminal is recorded in 4 channels. In this case, analog input selection and volume adjustment is not possible. **[ON], [OFF]** ● Factory setting: [OFF]
	[FRONT MIC POWER]	Enables/disables the front microphone phantom power. **[ON], [OFF]** ● Factory setting: [ON]
	[FRONT MIC LEVEL]	Sets the front microphone input level. **[−40dB], [−50dB]** ● Factory setting: [−40dB]
	[REAR1 MIC POWER]	Enables/disables the phantom power of the rear microphone connected to the <AUDIO IN 1> terminal. **[ON], [OFF]** ● Factory setting: [OFF]
	[REAR2 MIC POWER]	Enables/disables the phantom power of the rear microphone connected to the <AUDIO IN 2> terminal. **[ON], [OFF]** ● Factory setting: [OFF]
	[REAR MIC LEVEL]	Sets the input level of the rear microphone connected to the <AUDIO IN 1> and <AUDIO IN 2> terminals. **[−40dB], [−50dB], [−60dB]** ● Factory setting: [−60dB]
	[REAR LINE LEVEL]	Sets the line input level from the <AUDIO IN 1> terminal and <AUDIO IN 2> terminal. **[4dB], [0dB], [−3dB]** ● Factory setting: [4dB]
	[FRONT1 MIC LOWCUT]	Enables/disables the low-cut filter of front microphone 1. **[ON], [OFF]** ● Factory setting: [OFF]
	[FRONT2 MIC LOWCUT]	Enables/disables the low-cut filter of front microphone 2. **[ON], [OFF]** ● Factory setting: [OFF]
	[REAR1 MIC LOWCUT]	Enables/disables the low-cut filter of rear microphone 1. **[ON], [OFF]** ● Factory setting: [OFF]
	[REAR2 MIC LOWCUT]	Enables/disables the low-cut filter of rear microphone 2. **[ON], [OFF]** ● Factory setting: [OFF]

Item		Description of settings
	[CH IN SEL]	Sets the input of audio channels 1 to 4. **[1·2FRONT 3·4REAR], [1·2REAR 3·4FRONT]** ● Factory setting: [1·2FRONT 3·4REAR]
	[TEST TONE]	Sets whether to output a test signal when the video is made to a color bar. **[ON]:** Outputs a test tone. **[OFF]:** Does not output a test tone. ● Factory setting: [ON]
[AUDIO LEVEL]	[FRONT1 LEVEL]	Sets the level adjustment method of the front microphone 1 to manual or automatic. **[AUTO]:** Adjust automatically. **[MANUAL]:** Enables manual adjustment. ● Factory setting: [AUTO]
	[FRONT2 LEVEL]	Sets the level adjustment method of the front microphone 2 to manual or automatic. **[AUTO]:** Adjust automatically. **[MANUAL]:** Enables manual adjustment. ● Factory setting: [AUTO]
	[REAR1 LEVEL]	Sets the level adjustment method of the rear microphone 1 to manual or automatic. **[AUTO]:** Adjust automatically. **[MANUAL]:** Enables manual adjustment. ● Factory setting: [AUTO]
	[REAR2 LEVEL]	Sets the level adjustment method of the rear microphone 2 to manual or automatic. **[AUTO]:** Adjust automatically. **[MANUAL]:** Enables manual adjustment. ● Factory setting: [AUTO]
	[FRONT1 VOL]	Performs adjustments in this item when the level adjustment method of the front microphone 1 is set to [MANUAL]. **[0]…[100]** ● Factory setting: [70]
	[FRONT2 VOL]	Performs adjustments in this item when the level adjustment method of the front microphone 2 is set to [MANUAL]. **[0]…[100]** ● Factory setting: [70]
	[REAR1 VOL]	Performs adjustments in this item when the level adjustment method of the rear microphone 1 is set to [MANUAL]. **[0]…[100]** ● Factory setting: [70]
	[REAR2 VOL]	Performs adjustments in this item when the level adjustment method of the rear microphone 2 is set to [MANUAL]. **[0]…[100]** ● Factory setting: [70]
	[FRONT1 LIMITER]	Enables/disables the limiter of front microphone 1. **[ON], [OFF]** ● Factory setting: [OFF]
	[FRONT2 LIMITER]	Enables/disables the limiter of front microphone 2. **[ON], [OFF]** ● Factory setting: [OFF]
	[REAR1 LIMITER]	Enables/disables the limiter of rear microphone 1. **[ON], [OFF]** ● Factory setting: [OFF]
	[REAR2 LIMITER]	Enables/disables the limiter of rear microphone 2. **[ON], [OFF]** ● Factory setting: [OFF]
	[HEADROOM]	Sets the headroom (standard level). **[18dB], [20dB]** ● Factory setting: [20dB]
[AUDIO OUTPUT]	[MONITOR SEL1]	Sets the audio channel to be output from the <PHONES> terminal. **[CH1/2]:** Outputs audio channel 1/2. **[CH3/4]:** Outputs audio channel 3/4. ● Factory setting: [CH1/2]
	[MONITOR SEL2]	Sets the audio format (mono, stereo, mix) to be output from the <PHONES> terminal. When [MONITOR SEL1] is set to [CH1/2]: **[MONO CH1], [MONO CH2], [STEREO CH1/2], [MIX CH1/2]** When [MONITOR SEL1] is set to [CH3/4]: **[MONO CH3], [MONO CH4], [STEREO CH3/4], [MIX CH3/4]** ● Factory setting: [STEREO CH1/2] or [STEREO CH3/4]
	[MONITOR DELAY]	Sets whether to delay the audio from the <PHONES> terminal to match the monitor output. **[ON], [OFF]** ● Factory setting: [OFF]
	[MONITOR VOL]	Adjusts the level of audio to be output from the <PHONES> terminal. **[0]…[100]** ● Factory setting: [70]
	[ALARM]	Sets the volume of the warning sound to be output from the <PHONES> terminal. **[LOUD], [MEDIUM], [SMALL], [OFF]** ● Factory setting: [MEDIUM]

[OUTPUT SETTINGS]

Sets the display content of the output video from the viewfinder and <VF SDI> terminal.

Item		Description of settings
[SDI OUT]	[P to PsF]	Sets the segment frame for the output from terminals <SDI OUT1> to <SDI OUT4>. This is enabled only when both of the following items are set. ● When [MENU] → [SYSTEM SETTINGS] → [SYSTEM MODE] → [FREQUENCY] is set to [29.97p], [23.98p], or [25.00p]. ● When [MENU] → [SYSTEM SETTINGS] → [SYSTEM MODE] → [MAIN PIXEL] is set to [1920×1080]. **[ON], [OFF]** ● Factory setting: [OFF]
	[3G-SDI OUT]	Sets the 3G SDI signal format to be output from terminals <SDI OUT1> to <SDI OUT4>. **[LEVEL-A]:** Selects the LEVEL-A method. **[LEVEL-B]:** Selects the LEVEL-B DL method. ● Factory setting: [LEVEL-B]
	[SDI REC REMOTE]	Sets whether to use the control function of recording operation for an external device (such as a recorder) connected to the <SDI OUT> terminal, the <MON OUT1> terminal, and the <MON OUT2> terminal. It can be output from the <MON OUT2> terminal only when [MON OUT2 SIGNAL SEL] is set to [MON OUT1]. **[ON]:** Controls the recording operation of the external device. **[OFF]:** Does not control the recording operation of the external device. ● Factory setting: [OFF]
[MON OUT]	[MON OUT FORMAT]	Select the signal output from the <MON OUT1> terminal and <MON OUT2> terminal. 1920×1080: **[1920 over ∗∗p], [1920 over ∗∗i], [1920/∗∗PsF]** 1080i: **[1080i]** 720P: **[720p]** ∗∗ represents the frequency of the output signal. The signal that can be selected is limited depending on the [SYSTEM MODE] setting. The setting value will automatically change when the [SYSTEM MODE] setting is changed. ● Factory setting: [1920p over 60p]
	[3G-SDI OUT]	Sets the 3G SDI signal format to be output from the <MON OUT1> terminal and <MON OUT2> terminal. **[LEVEL-A]:** Selects the LEVEL-A method. **[LEVEL-B]:** Selects the LEVEL-B DL method. ● Factory setting: [LEVEL-B]
	[MON OUT2 SIGNAL SEL]	Sets the output from the <MON OUT2> terminal. **[VF SDI (1080p)]:** Selects the same output as the <VF SDI> terminal. The signal format will always be 1920×1080p. **[VF SDI (1080i)]:** Selects the same output as the <VF SDI> terminal. The signal format will always be 1920×1080i. **[MON OUT1]:** Selects the same output as the <MON OUT1> terminal. ● Factory setting: [VF (1080p)]
	[MON OUT1 STATUS]	Sets whether to show the status display on the output from the <MON OUT1> terminal. **[ON], [OFF]** ● Factory setting: [OFF]
	[MON OUT2 STATUS]	Sets whether to show the status display on the output from the <MON OUT2> terminal. **[ON], [OFF]** ● Factory setting: [OFF]
	[MENU DISP]	Sets whether to display [MENU] in the output from the <MON OUT1> terminal and <MON OUT2> terminal. **[ON], [OFF]** ● Factory setting: [ON]
	[PLAY DISP & CTRL]	Sets whether to display the PLAY screen in the output from the <MON OUT1> terminal and the <MON OUT2> terminal. **[ON], [OFF]** ● Factory setting: [OFF]
[VF OUT]	[VF SDI OUT FORMAT]	Selects the signal to output from the <VF SDI> terminal. **[1080P], [1080i]** ● Factory setting: [1080P]
	[PLAYBACK VF IMAGE]	Selects the image output from the <VF> terminal and the <VF SDI> terminal. **[PLAYBACK], [CAMERA]** ● Factory setting: [PLAYBACK]
	[SMOOTH MODE]	Enables/disables the smooth mode (function which smoothens the viewfinder image when 24P and half shutter function is running). **[ON], [OFF]** ● Factory setting: [OFF]
[MON OUT INDICATOR]	[SYSTEM PIXEL]	Displays/hides system pixels. **[ON], [OFF]** ● Factory setting: [ON]
	[SYSTEM FREQ]	Displays/hides system frequency. **[ON], [OFF]** ● Factory setting: [ON]
	[REC FORMAT]	Displays/hides recording format display. **[ON], [OFF]** ● Factory setting: [ON]

Item		Description of settings
	[REC MODE]	Displays/hides the status for the interval recording or the pre-recording. **[ON], [OFF]** ● Factory setting: [ON]
	[VFR]	Displays/hides the variable frame rate status. **[ON], [OFF]** ● Factory setting: [ON]
	[FPS]	Displays/hides frame rate. **[ON], [OFF]** ● Factory setting: [ON]
	[SHUTTER]	Displays/hides shutter speed. **[ON], [OFF]** ● Factory setting: [ON]
	[EI]	Displays/hides EXPOSURE INDEX. **[ON], [OFF]** ● Factory setting: [ON]
	[WHITE]	Displays/hides color temperature. **[ON], [OFF]** ● Factory setting: [ON]
	[IRIS]	Displays/hides iris value. **[ON], [OFF]** ● Factory setting: [ON]
	[FOCUS]	Displays/hides focus distance. **[ON], [OFF]** ● Factory setting: [ON]
	[ZOOM]	Displays/hides zoom value. **[ON], [OFF]** ● Factory setting: [ON]
	[FILTER]	Displays/hides the optical filter transmittance. **[ON], [OFF]** ● Factory setting: [ON]
	[EXTENDER]	Displays/hides the extender. **[ON], [OFF]** ● Factory setting: [ON]
	[Y GET]	Displays/hides brightness of Y GET. **[ON], [OFF]** ● Factory setting: [ON]
	[TC]	Displays/hides the time code, user bits, and duration counter displays. **[TCG/TCR], [TCG], [OFF]** ● Factory setting: [TCG/TCR]
	[P2 CARD REMAIN]	Displays/hides the display of the remaining recording free space of a P2 card. **[ON], [OFF]** ● Factory setting: [ON]
	[BATTERY REMAIN]	Displays/hides the estimated remaining battery charge level. **[ON], [OFF]** ● Factory setting: [ON]
	[PROXY]	Displays/hides proxy information. **[ON], [OFF]** ● Factory setting: [ON]
	[GPS]	Displays/hides GPS signal reception status. **[ON], [OFF]** ● Factory setting: [OFF]
	[CLIP NAME]	Displays/hides clip names. **[ON], [OFF]** ● Factory setting: [ON]
	[USER CLIP NAME (TYPE3)]	Displays/hides the user clip name when [REC SETTINGS] → [REC METADATA] → [USER CLIP NAME] is set to [TYPE3]. **[ON], [OFF]** ● Factory setting: [OFF]
	[REMOTE CTRL]	Displays/hides the ROP app control status. **[ON], [OFF]** ● Factory setting: [ON]
[MON OUT MARKER]	[MON OUT1 SW]	Displays/hides markers for the output from the <MON OUT1>. **[ON], [OFF]** ● Factory setting: [OFF]
	[MON OUT2 SW]	Displays/hides markers for the output from the <MON OUT2>. **[ON], [OFF]** ● Factory setting: [ON]
	[LCD SW]	Displays/hides markers for the control panel. **[ON], [OFF]** ● Factory setting: [ON]

Item		Description of settings
	[PB MARKER SW]	Sets whether to superimpose markers to the playback images. The markers to superimpose are the same markers to superimpose to the camera video that is set in [MON OUT MARKER]. **[ON], [OFF]** ● Factory setting: [OFF]
	[MARKER & CHAR LVL]	Sets the frame marker and character luminance. Enabled for [FRAME MARK] only when [FRAME COLOR] is set to [WHITE]. **[50%]…[100%]** (10% step) ● Factory setting: [70%]
	[CENTER MARKER]	Controls the center mark. **[1]:** + (large) **[2]:** Open center (large) **[3]:** + (medium) **[4]:** Open center (medium) **[5]:** + (small) **[6]:** Open center (small) **[7]:** + (very small) **[OFF]:** Does not display. ● Factory setting: [1]
	[SAFETY MARKER]	Selects the type of frame for the safety zone marker. **[1]:** Box **[2]:** Corners **[OFF]:** Does not display. ● Factory setting: [OFF]
	[SAFETY AREA]	Sets the size of the safety zone marker. **[80%] - [100%]** (1% step, fixed aspect ratio) ● Factory setting: [90%]
	[FRAME MARK]	Enables/disables frame marker. **[ON], [OFF]** ● Factory setting: [OFF]
	[FRAME SIG]	Sets frame marker aspect ratio. **[1.33:1], [1.44:1], [1.56:1], [1.78:1], [1.85:1], [2.00:1], [2.201:1], [2.35:1], [2.39:1]** ● Factory setting: [2.39:1]
	[FRAME COLOR]	Sets the color of the frame marker. **[WHITE], [BLACK], [RED], [GREEN], [BLUE], [YELLOW]** ● Factory setting: [WHITE]
	[FRAME LEVEL]	Sets the level of the outside of the frame marker. **[0%] - [100%]** (10% step) ● Factory setting: [100%]
	[USER BOX]	Displays/hides the user box. **[ON], [OFF]** ● Factory setting: [OFF]
	[USER BOX WIDTH]	Sets the width of the user box. **[1]…[100]** ● Factory setting: [13]
	[USER BOX HEIGHT]	Sets the height of the user box. **[1]…[100]** ● Factory setting: [13]
	[USER BOX H POS]	Sets the horizontal position of the center of the user box. **[−50]…[50]** ● Factory setting: [0]
	[USER BOX V POS]	Sets the vertical position of the center of the user box. **[−50]…[50]** ● Factory setting: [0]
[VF INDICATOR]	[INDICATOR SW]	Sets whether to display items that will be set by [INDICATOR] in the output from the <VF> terminal and <VF SDI> terminal. **[ON]:** Items are individually displayed/hidden. **[OFF]:** Hides all. ● Factory setting: [ON]
	[SYSTEM PIXEL]	Displays/hides system pixels. **[ON], [OFF]** ● Factory setting: [ON]
	[SYSTEM FREQ]	Displays/hides system frequency. **[ON], [OFF]** ● Factory setting: [ON]
	[REC FORMAT]	Displays/hides recording format display. **[ON], [OFF]** ● Factory setting: [ON]
	[REC MODE]	Displays/hides the status for the interval recording or the pre-recording. **[ON], [OFF]** ● Factory setting: [ON]
	[VFR]	Displays/hides the variable frame rate status. **[ON], [OFF]** ● Factory setting: [ON]

Item		Description of settings
	[FPS]	Displays/hides [FPS]. **[ON], [OFF]** ● Factory setting: [ON]
	[SHUTTER]	Displays/hides shutter speed. **[ON], [OFF]** ● Factory setting: [ON]
	[EI]	Displays/hides EXPOSURE INDEX. **[ON], [OFF]** ● Factory setting: [ON]
	[WHITE]	Displays/hides color temperature. **[ON], [OFF]** ● Factory setting: [ON]
	[IRIS]	Displays/hides iris value. **[ON], [OFF]** ● Factory setting: [ON]
	[FOCUS]	Displays/hides focus distance. **[ON], [OFF]** ● Factory setting: [ON]
	[ZOOM]	Displays/hides zoom value. **[ON], [OFF]** ● Factory setting: [ON]
	[FILTER]	Displays/hides the optical filter transmittance. **[ON], [OFF]** ● Factory setting: [ON]
	[EXTENDER]	Displays/hides the extender. **[ON], [OFF]** ● Factory setting: [ON]
	[Y GET]	Displays/hides brightness of Y GET. **[ON], [OFF]** ● Factory setting: [ON]
	[TC]	Displays/hides the time code, user bits, and duration counter displays. **[TCG/TCR], [TCG], [OFF]** ● Factory setting: [TCG/TCR]
	[P2 CARD REMAIN]	Displays/hides the display of the remaining recording free space of a P2 card. **[ON], [OFF]** ● Factory setting: [ON]
	[BATTERY REMAIN]	Displays/hides the estimated remaining battery charge level. **[ON], [OFF]** ● Factory setting: [ON]
	[PROXY]	Displays/hides proxy information. **[ON], [OFF]** ● Factory setting: [ON]
	[GPS]	Displays/hides GPS signal reception status. **[ON], [OFF]** ● Factory setting: [OFF]
	[REC TALLY]	Displays/hides the method of displaying the recording status. **[RED]:** The red tally lamp lights up. **[GREEN]:** The green tally lamp lights up. **[CHAR]:** The characters [REC] are displayed in the viewfinder. ● Factory setting: [RED]
	[CLIP NAME]	Displays/hides clip names. **[ON], [OFF]** ● Factory setting: [OFF]
	[USER CLIP NAME (TYPE3)]	Switches the display/hide of user clip name when [REC SETTINGS] → [REC METADATA] → [USER CLIP NAME] is set to [TYPE3]. **[ON], [OFF]** ● Factory setting: [OFF]
	[INDICATOR OUT SEL]	Selects the output destination of the item to set in the [INDICATOR] page. **[VF], [VF SDI], [VF & VF SDI]** ● Factory setting: [VF & VF SDI]
	[REMOTE CTRL]	Displays/hides the ROP app control status. **[ON], [OFF]** ● Factory setting: [ON]
[VF MARKER]	[MARKER SW]	Sets whether to display markers in the output from the <VF> terminal and <VF SDI> terminal. **[ON], [OFF]** ● Factory setting: [ON]
	[PB MARKER SW]	Sets whether to superimpose markers to the playback images. The markers to superimpose are the same markers to superimpose to the camera video that is set in [MON OUT MARKER]. **[ON], [OFF]** ● Factory setting: [OFF]

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Item		Description of settings
	[MARKER & CHAR LVL]	Sets the frame marker and character luminance. Enabled for [FRAME MARK]/[SURROUND VIEW] only when [FRAME COLOR]/[-- COLOR SEL] is set to [WHITE]. **[50%], [60%], [70%]** ● Factory setting: [50%]
	[CENTER MARKER]	Switches the center marker. **[1]:** + (large) **[2]:** Open center (large) **[3]:** + (medium) **[4]:** Open center (medium) **[5]:** + (small) **[6]:** Open center (small) **[7]:** + (very small) **[OFF]:** Does not display. ● Factory setting: [1]
	[SAFETY MARKER]	Selects the type of frame for the safety zone marker. **[1]:** Box **[2]:** Corners **[OFF]:** Does not display. ● Factory setting: [OFF]
	[SAFETY AREA]	Sets the size of the safety zone marker. **[80] - [100%]** (1% step, fixed aspect ratio) ● Factory setting: [90%]
	[FRAME MARK]	Enables/disables frame marker. **[ON], [OFF]** ● Factory setting: [OFF]
	[FRAME SIG]	Sets frame marker aspect ratio. **[1.33:1], [1.44:1], [1.56:1], [1.78:1], [1.85:1], [2.00:1], [2.201:1], [2.35:1], [2.39:1]** ● Factory setting: [2.39:1]
	[FRAME COLOR]	Sets the color of the frame marker. **[WHITE], [BLACK], [RED], [GREEN], [BLUE], [YELLOW]** ● Factory setting: [WHITE]
	[FRAME LEVEL]	Sets the level of the outside of the frame marker. **[0%] - [100%]** (10% step) ● Factory setting: [100%]
	[USER BOX]	Sets whether to display/hide the user box display. **[ON], [OFF]** ● Factory setting: [OFF]
	[USER BOX WIDTH]	Sets the width of the user box. **[1]…[100]** ● Factory setting: [13]
	[USER BOX HEIGHT]	Sets the height of the user box. **[1]…[100]** ● Factory setting: [13]
	[USER BOX H POS]	Sets the horizontal position of the center of the user box. **[−50]…[50]** ● Factory setting: [0]
	[USER BOX V POS]	Sets the vertical position of the center of the user box. **[−50]…[50]** ● Factory setting: [0]
	[MARKER OUT SEL]	Selects the output destination of the marker display. **[VF], [VF SDI], [VF & VF SDI]** ● Factory setting: [VF & VF SDI]
[VF FOCUS ASSIST]	[EXPAND SW]	Displays/hides the enlargement display function. **[ON], [OFF]** ● Factory setting: [OFF]
	[- POS]	Adjusts the source signal position in an enlarged display. **[0]…[8]** ● Factory setting: [4]
	[- VALUE]	Adjusts the enlargement factor. **[x2], [x3], [x4]** ● Factory setting: [x2]
	[- MODE]	Sets the enlargement display function mode. **[10SEC], [HOLD], [UNTIL REC]** ● Factory setting: [10SEC]
	[IN COLOR/SQ./MONO SW]	Displays/hides the advanced assist function (peaking and focus square). **[ON], [OFF]** ● Factory setting: [OFF]
	[- FOCUS IN COLOR SW]	Displays/hides the peaking function. **[ON], [OFF]** ● Factory setting: [OFF]
	[-- PEAKING VALUE]	Sets the peaking function mode. **[LOW], [MID], [HIGH]** ● Factory setting: [MID]

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Item		Description of settings
	[-- COLOR SEL]	Sets the peaking function color. **[RED], [GREEN], [WHITE]** ● Factory setting: [RED]
	[- FOCUS SQUARES SW]	Displays/hides the focus square function. **[ON], [OFF]** ● Factory setting: [OFF]
	[- MONO SW]	Enables/disables the monochromatic display function when [IN COLOR/SQ./MONO SW] is set to [ON]. **[ON], [OFF]** ● Factory setting: [OFF]
	[FOCUS BAR SW]	Enables/disables the focus bar display function. **[ON], [OFF]** ● Factory setting: [ON]
	[IN COLOR/SQ./MONO OUT SEL]	Selects the output destination of the advanced assist function. **[VF], [VF SDI], [VF & VF SDI]** ● Factory setting: [VF & VF SDI]
	[FOCUS BAR OUT SEL]	Selects the output destination of the focus bar display. **[VF], [VF SDI], [VF & VF SDI]** ● Factory setting: [VF & VF SDI]
[VF EI ASSIST]	[ZEBRA SW]	Sets whether to superimpose the zebra signal on the output from the <VF> terminal and <VF SDI> terminal. **[ON], [OFF]** ● Factory setting: [OFF]
	[ZEBRA1 DETECT]	Sets the detection level of zebra pattern 1. **[0%] - [109%]** ● Factory setting: [80%]
	[ZEBRA2 DETECT]	Sets the extraction level of zebra pattern 2. **[0%] - [109%]** ● Factory setting: [100%]
	[ZEBRA2 MODE]	Enables/disables zebra pattern 2 and selects [SPOT]. **[ON], [SPOT], [OFF]** ● Factory setting: [OFF]
	[ZEBRA OUT SEL]	Selects the output destination of the zebra display. **[VF], [VF SDI], [VF & VF SDI]** ● Factory setting: [VF & VF SDI]
	[WFM SW]	Displays/hides waveform monitor. **[ON]/[OFF]** ● Factory setting: [OFF]
	[- TYPE]	Sets the display format of the waveform monitor. **[Y], [YGBR]** ● Factory setting: [Y]
	[- TRANSPARENCE]	Sets the transparency of the waveform monitor display. **[0%], [25%], [50%], [75%]** ● Factory setting: [50%]
	[Y GET SW]	Enables/disables the Y GET display function. The user box function will not operate when [Y GET SW] is set to [ON]. **[ON], [OFF]** ● Factory setting: [OFF]
	[- UNIT]	Sets the [Y GET] display unit when [MAIN COLOR] is set to [V-Log]. **[STOP], [%]** ● Factory setting: [STOP]
	[- AREA SIZE]	Sets the size of area to detect with the Y GET display function. **[S], [M], [L]** ● Factory setting: [M]
	[FALSE COLOR SW]	Sets the display of the false color. **[ON], [OFF]** ● Factory setting: [OFF]
	[WFM OUT SEL]	Selects the output destination of the waveform monitor display. **[VF], [VF SDI], [VF & VF SDI]** ● Factory setting: [VF & VF SDI]
	[FALSE COLOR OUT SEL]	Selects the output destination of the false color display. **[VF], [VF SDI], [VF & VF SDI]** ● Factory setting: [VF & VF SDI]

[FILE]

Performs file-related operations such as reading/writing menu settings data from/to an SD memory card, and handling lens chromatic aberration correction (CAC) files.

Item		Description of settings
[CAC FILE]	[LOAD(SD CARD)]	Selects the chromatic aberration compensation data file saved to the SD memory card and loads to the camera. Specifies the file number of chromatic aberration compensation data in the SD memory card read using [LOAD] and saves it in the camera.

Item		Description of settings
	[LIST/DELETE]	Selects and deletes the chromatic aberration compensation data file saved to the camera memory.
[SETUP FILE]	[LOAD(SD CARD)]	Selects the setup file saved to the SD memory card and to be read in the camera.
	[SAVE(SD CARD)]	Overwrites the current setting values in the camera to the file selected from the setup file file list saved to the SD memory card.
	[SAVE AS(SD CARD)]	Enters a file name or title name for the file containing the current setting values of the camera and saves it in the SD memory card as a new setup file.

[PERIPHERAL]

Applies settings related to functions used in conjunction with peripheral devices, such as network and GPS devices.

Item		Description of settings
[GPS]		Configures internal GPS settings. **[ON]:** Activates the GPS operation. Outputs the location information as a signal to the <SDI OUT> terminal and records it as clip metadata. **[OFF]:** Does not activate the GPS operation. Does not output and record the location information. ● Factory setting: [OFF]
[NETWORK SEL]		Sets the connection method when connecting the camera with an external device (such as a computer) via network. **[LAN]:** Connects via the <LAN> terminal. **[WLAN]:** Connects via wireless LAN. **[OFF]:** Does not connect. ● Factory setting: [OFF]
[NETWORK FUNC]	[USER ACCOUNT]	Sets the user account to be used for authentication in the network function of the camera.
	[ACCOUNT LIST]	Displays the currently set account name. Also registers new accounts and deletes accounts.
[LAN PROPERTY]	[MAC ADDRESS]	Displays the MAC address of the <LAN> terminal on the camera. (Cannot be changed.)
	[DHCP]	Sets whether to use automatic acquisition via DHCP. (Mutually exclusive with [DHCP SERVER] setting) **[ENABLE]:** Uses automatic acquisition. **[DISABLE]:** Does not use automatic acquisition. Set [IP ADDRESS], [SUBNET MASK], [DEFAULT GATEWAY], [PRIMARY DNS], and [SECONDARY DNS]. ● Factory setting: [ENABLE]
	[IP ADDRESS]	Sets the IP address when [DISABLE] is selected in [DHCP]. ● Factory setting: [192.168.0.1]
	[SUBNET MASK]	Sets the subnet mask when [DISABLE] is selected in [DHCP]. ● Factory setting: [255.255.255.0]
	[DEFAULT GATEWAY]	Sets the default gateway when [DISABLE] is selected in [DHCP]. ● Factory setting: [192.168.0.254]
	[PRIMARY DNS]	Sets the primary DNS server when [DISABLE] is selected in [DHCP]. ● Factory setting: [0.0.0.0]
	[SECONDARY DNS]	Sets the secondary DNS server when [DISABLE] is selected in [DHCP]. ● Factory setting: [0.0.0.0]
	[DHCP SERVER]	Sets whether to use the DHCP SERVER function when connected via wired LAN. (Mutually exclusive with [DHCP] setting) **[ENABLE]:** Uses the DHCP SERVER function. **[DISABLE]:** Does not use the DHCP SERVER function. ● Factory setting: [DISABLE]
[WIRELESS PROPERTY]	[MAC ADDRESS]	Displays the MAC address of the wireless LAN of the camera. (Cannot be changed.)
	[TYPE]	Sets the connection method. **[DIRECT]:** Accesses to the network function of the camera directly from a smartphone, tablet, or computer. **[INFRA]:** Connects to the wireless access point. ● Factory setting: [DIRECT]
	[SSID INPUT MODE]	Sets the setting method of SSID. When [TYPE] in [WIRELESS PROPERTY] is set to [INFRA], this item can be set. **[SELECT]:** Selects the setting from the access point list. **[MANUAL]:** Enters the setting manually. ● Factory setting: [SELECT]
	[SSID]	Displays network name (SSID). Factory setting: [AU-VREC1]
	[BAND]	Switches between two transmission methods (2.4 GHz or 5 GHz). **[2.4GHz], [5GHz]** ● Factory setting: [2.4GHz]
	[CHANNEL(2.4GHz)]	Sets the channels to be used when [DIRECT] is selected in [TYPE], [2.4GHz] is selected in [BAND], and the camera is connected via wireless LAN. **[AUTO], [CH1], [CH6], [CH11]** ● Factory setting: [AUTO]
	[CHANNEL(5GHz)]	Sets the channels to be used when [DIRECT] is selected in [TYPE], [5GHz] is selected in [BAND], and the camera is connected via wireless LAN. The selection differs depending on the installed wireless module. **[AUTO], [CH36], [CH40], [CH44], [CH48], [CH149], [CH153], [CH157], [CH161], [CH165]** ● Factory setting: [AUTO]
	[ENCRYPTION]	Sets the encryption format. **[WPA-TKIP], [WPA-AES], [WPA2-TKIP], [WPA2-AES], [NONE]** ● Factory setting: [WPA2-AES]

Item		Description of settings
	[ENCRYPT KEY]	Sets the encryption key. Set the key using a string of 8 to 63 characters or a hexadecimal number with 64 digits. ● Factory setting: [01234567890123456789abcdef]
	[DHCP]	Sets whether to use automatic acquisition via DHCP when [INFRA] is selected in [TYPE]. **[ENABLE]:** Uses automatic acquisition. **[DISABLE]:** Does not use automatic acquisition. Set [IP ADDRESS], [SUBNET MASK], [DEFAULT GATEWAY], [PRIMARY DNS], and [SECONDARY DNS]. ● Factory setting: [ENABLE]
	[IP ADDRESS]	Sets the IP address when [DISABLE] is selected in [DHCP]. ● Factory setting: [192.168.0.1]
	[SUBNET MASK]	Sets the subnet mask when [DISABLE] is selected in [DHCP]. ● Factory setting: [255.255.255.0]
	[DEFAULT GATEWAY]	Sets the default gateway when [INFRA] is selected in [TYPE] and [DISABLE] is selected in [DHCP]. ● Factory setting: [192.168.0.254]
	[PRIMARY DNS]	Sets the primary DNS server when [INFRA] is selected in [TYPE] and [DISABLE] is selected in [DHCP], or when [ENABLE] is selected in [DHCP] and the primary DNS server cannot be obtained. ● Factory setting: [0.0.0.0]
	[SECONDARY DNS]	Sets the secondary DNS server when [INFRA] is selected in [TYPE] and [DISABLE] is selected in [DHCP], or when [ENABLE] is selected in [DHCP] and the primary DNS server cannot be obtained. ● Factory setting: [0.0.0.0]
	[DHCP SERVER]	Sets if the DHCP SERVER function is to be used or not when [DIRECT] is selected in [TYPE]. **[ENABLE]:** Uses the DHCP SERVER function. **[DISABLE]:** Does not use the DHCP SERVER function. ● Factory setting: [ENABLE]
[NETWORK TOOLS]	[STATUS DISPLAY]	Displays the network status.
	[INITIALIZE]	Restores the network setting status to the factory settings.

Menu operations

■ **Operation**

● UI: Settings can be performed using the control panel

● SW: Settings can be performed using switches and buttons

● VF: Settings can be performed using viewfinder menu and buttons.

● ✓: Items for operation.

● —: Non-operation items.

[SYSTEM SETTINGS]

Item		Operation		
		UI	SW	VF
[SYSTEM MODE]	[FREQUENCY]	✓	—	—
	[MAIN PIXEL]	✓	—	—
	[MAIN CODEC]	✓	—	—
	[SUB CODEC]	✓	—	—
	[VFR SUB REC]	✓	—	—
	[HIGH SPEED]	✓	—	—
[COLOR SETTING]	[MAIN]	✓	—	—
	[GRADING]	✓	—	—
	[SUB]	✓	—	—
	[3D LUT]	✓	—	—
	[PLAYBACK GRADING]	—	—	—
	[CDL]	✓	—	—
	[MON 1]	✓	✓	—
	[MON 2]	✓	✓	—
	[VF]	✓	✓	—
	[VF SDI]	✓	—	—
[USER SWITCHES]	[USER1]	—	✓	—
	[USER2]	—	✓	—
	[USER3]	—	✓	—
	[USER4]	—	✓	—
	[USER5]	✓	✓	—
	[USER6]	✓	✓	—
	[USER7]	✓	✓	—
	[USER8]	✓	✓	—
	[USER9]	✓	✓	—
	[USER10]	✓	✓	—
	[LENS RET SW]	—	—	—
[CARDS/MEDIA]	[CPS PASSWORD]	✓	—	—
	[FORMAT MEDIA]	✓	—	—
	[MEDIA END ALARM]	—	—	—
[POWER MANAGEMENT]	[DC IN SOURCE]	—	—	—
	[DC IN BATTERY SETTINGS]	—	—	—
	[- FULL VOLT]	—	—	—
	[- NEAR END VOLT]	—	—	—
	[- END VOLT]	—	—	—
	[ONBORD BATTERY SETTINGS]	—	—	—
	[- BATTERY SELECT]	—	—	—
	[- FULL VOLT]	—	—	—
	[- NEAR END VOLT]	—	—	—
	[- END VOLT]	—	—	—
	[- NEAR END INFO]	—	—	—
	[- END INFO]	—	—	—
	[CAM DC IN SOURCE]	—	—	—
	[CAM BATTERY SETTINGS]	—	—	—
	[- FULL VOLT]	—	—	—
	[- NEAR END VOLT]	—	—	—
	[- END VOLT]	—	—	—
	[END ALARM]	—	—	—
[FAN]	[FAN SPEED]	—	—	—

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Item		Operation		
		UI	**SW**	**VF**
[GENLOCK]	[GENLOCK MODE]	—	—	—
	[H PHASE COARSE]	—	—	—
	[H PHASE FINE]	—	—	—
[CONTROL DISPLAY]	[BRIGHTNESS]	—	—	—
	[COLOR LEVEL]	—	—	—
	[CONTRAST]	—	—	—
	[BACK LIGHT]	—	—	—
	[BUTTON LED]	—	—	—
	[STATUS]	—	—	—
[CLOCK]	[CLOCK SETTING]	—	—	—
	[TIME ZONE]	—	—	—
	[DATE FORMAT]	—	—	—
[INFORMATION]	[OPERATION TIME]	✓	—	—
	[VERSION]	✓	—	—
	[UPDATE]	✓	—	—
	[USB]	✓	—	—
	[TRACE LOG]	✓	—	—
	[SENSOR TEMP]	✓	—	—
[INITIALIZE]	[LOAD FACTORY DATA]	—	—	—

[CAMERA SETTINGS]

Item		Operation		
		UI	**SW**	**VF**
[Enhanced]	[Enhanced SW]	—	—	—
[FPS]	[VFR SW]	✓	—	—
	[FPS MODE]	✓	—	—
	[PRESET VALUE]	✓	—	✓
	[VARIABLE VALUE]	✓	✓	✓
[WHITE]	[AWB]	✓	—	—
	[MODE]	✓	—	—
	[PRESET VALUE]	✓	✓	✓
	[TEMP SHIFT]	✓	✓	✓
	[GMg]	✓	—	—
	[R GAIN]	—	—	—
	[B GAIN]	—	—	—
	[AWB OFFSET]	—	—	—
	[SHOCKLESS WHITE]	—	—	—
[BLACK]	[ABB]	—	—	—
	[M.PED]	—	—	—
	[R PED]	—	—	—
	[G PED]	—	—	—
	[B PED]	—	—	—
	[ABB OFFSET]	—	—	—
[FLARE]	[SW]	—	—	—
	[R FLARE]	—	—	—
	[G FLARE]	—	—	—
	[B FLARE]	—	—	—
[NR]		—	—	—
[EI]	[MODE]	✓	—	—
	[SETTING(ISO)]	✓	✓	✓
	[SETTING(GAIN)]	✓	✓	✓
	[GAIN OFFSET SW]	—	—	—
	[OFFSET LEVEL]	—	—	—
[SHUTTER]	[SW]	✓	—	—
	[DISPLAY MODE]	✓	—	—
	[MODE]	✓	—	—
	[SYNCHRO deg]	✓	✓	✓
	[SYNCHRO sec]	✓	✓	✓
	[PRESET VALUE deg]	✓	✓	✓

Item		Operation		
		UI	SW	VF
	[PRESET VALUE sec]	✓	✓	✓
[TEST SIG]	[TEST SIG SEL]	—	—	—
	[COLOR BARS TYPE]	—	—	—
[GAMMA]	[STEP GAMMA]	—	—	—
	[INITIAL GAMMA]	—	—	—
	[BLACK GAMMA]	—	—	—
	[BLACK GAMMA RANGE]	—	—	—
[KNEE]	[KNEE SW]	—	—	—
	[KNEE MODE]	—	—	—
	[KNEE POINT]	—	—	—
	[KNEE SLOPE]	—	—	—
	[F-REC DYNAMIC LVL]	—	—	—
	[F-REC BLACK STR LVL]	—	—	—
	[DRS SW]	—	—	—
	[DRS TYPE]	—	—	—
	[DRS EFFECT DEPTH]	—	—	—
[WHITE CLIP]	[SW]	—	—	—
	[LEVEL]	—	—	—
[DETAIL]	[SW]	—	—	—
	[H.DTL LEVEL]	—	—	—
	[H.DTL FREQ]	—	—	—
	[DTL SOURCE]	—	—	—
	[V.DTL LEVEL]	—	—	—
	[V.DTL FREQ]	—	—	—
	[CORING]	—	—	—
	[GAIN(+)]	—	—	—
	[GAIN(−)]	—	—	—
	[CLIP]	—	—	—
	[MASTER LEVEL]	—	—	—
	[LDP SW]	—	—	—
	[LDP LEVEL]	—	—	—
	[DARK DTL SW]	—	—	—
	[DARK DTL LEVEL]	—	—	—
	[DARK DTL POINT]	—	—	—
	[DARK DTL POINT(END)]	—	—	—
[SKIN DETAIL]	[SW]	—	—	—
	[TABLE SELECT]	—	—	—
	[GET]	—	—	—
	[ZEBRA SW]	—	—	—
	[EFFECT LEVEL]	—	—	—
	[DETECT TABLE]	—	—	—
	[I CENTER]	—	—	—
	[I WIDTH]	—	—	—
	[Q WIDTH]	—	—	—
	[Q PHASE]	—	—	—
[MATRIX]	[SW]	—	—	—
	[(R-G)_N]	—	—	—
	[(R-G)_P]	—	—	—
	[(R-B)_N]	—	—	—
	[(R-B)_P]	—	—	—
	[(G-R)_N]	—	—	—
	[(G-R)_P]	—	—	—
	[(G-B)_N]	—	—	—
	[(G-B)_P]	—	—	—
	[(B-R)_N]	—	—	—
	[(B-R)_P]	—	—	—
	[(B-G)_N]	—	—	—
	[(B-G)_P]	—	—	—
[COLOR CORRECTION]	[SW]	—	—	—
	[R (SAT)]	—	—	—

Item		Operation		
		UI	SW	VF
	[R (PHASE)]	—	—	—
	[R-Mg (SAT)]	—	—	—
	[R-Mg (PHASE)]	—	—	—
	[Mg (SAT)]	—	—	—
	[Mg (PHASE)]	—	—	—
	[Mg-B (SAT)]	—	—	—
	[Mg-B (PHASE)]	—	—	—
	[B (SAT)]	—	—	—
	[B (PHASE)]	—	—	—
	[B-Cy (SAT)]	—	—	—
	[B-Cy (PHASE)]	—	—	—
	[Cy (SAT)]	—	—	—
	[Cy (PHASE)]	—	—	—
	[Cy-G (SAT)]	—	—	—
	[Cy-G (PHASE)]	—	—	—
	[G (SAT)]	—	—	—
	[G (PHASE)]	—	—	—
	[G-Yl (SAT)]	—	—	—
	[G-Yl (PHASE)]	—	—	—
	[Yl (SAT)]	—	—	—
	[Yl (PHASE)]	—	—	—
	[Yl-R (SAT)]	—	—	—
	[Yl-R (PHASE)]	—	—	—
[SKIN CORRECTION]	[SKIN AREA SW]	—	—	—
	[SKIN AREA HUE]	—	—	—
	[SKIN AREA TONE]	—	—	—
[EXT.FUNC]	[HI-COLOR SW]	—	—	—
	[HI-COLOR LVL]	—	—	—
	[CAC]	—	—	—
	[FOCUS DISP]	—	—	—
[LENS SETTING]	[A.IRIS TYPE]	—	—	—
	[A.IRIS LEVEL EFFECT]	—	—	—
	[A.IRIS SPEED]	—	—	—
	[A.IRIS WINDOW]	—	—	—
	[A.IRIS PEAK/AVE]	—	—	—
[WHITE SHADING]	[WHITE SHADING SW]	—	—	—
	[WHITE SHADING CHANNEL SEL]	—	—	—
	[H.SAW]	—	—	—
	[H.PARA]	—	—	—
	[V.SAW]	—	—	—
	[V.PARA]	—	—	—

[REC SETTINGS]

Item		Operation		
		UI	SW	VF
[FILE NAME STYLE]		—	—	—
[REC FUNCTION]	[REC MODE]	—	—	—
	[REC TIME]	—	—	—
	[INTERVAL TIME]	—	—	—
	[START DELAY]	—	—	—
	[PRE REC MODE]	—	—	—
[FILE SPLIT]		—	—	—
[TC]	[SET TC]	✓	—	—
	[SET UB]	—	—	—
	[TC/UB/Dur.]	✓	—	—
	[FREE/REC RUN]	✓	—	—
	[DF/NDF]	✓	—	—
	[UB MODE]	—	—	—
	[TC IN/OUT SEL]	—	—	—

Item		Operation		
		UI	SW	VF
	[TC OUT]	—	—	—
	[TC OUT REF]	—	—	—
[REC METADATA]	[LOAD]	—	—	—
	[RECORD]	—	—	—
	[USER CLIP NAME]	✓	—	—
	[CAM INDEX]	✓	—	—
	[NEXT REEL COUNT]	✓	—	—
	[COUNTER RESET]	—	—	—
	[PROPERTY]	—	—	—
[REC BEEP SOUND]	[MODE]	—	—	—
	[VOLUME]	—	—	—
[WINDOW BURN SW]		✓	—	—
[WINDOW BURN SETTINGS]	[UPPER LEFT]	✓	—	—
	[UPPER CENTER]	✓	—	—
	[UPPER RIGHT]	✓	—	—
	[LOWER LEFT]	✓	—	—
	[LOWER CENTER]	✓	—	—
	[LOWER RIGHT]	✓	—	—
	[CUSTOM BURN DATA1]	✓	—	—
	[CUSTOM BURN DATA2]	✓	—	—
	[CUSTOM BURN DATA3]	✓	—	—
[WATER MARK SW]		✓	—	—
[WATER MARK SETTINGS]	[MARK POSITION]	✓	—	—
	[MARK LEVEL]	✓	—	—
	[CHAR EDIT]	✓	—	—
	[CHAR SIZE]	✓	—	—
[FRAME MARK SW]		✓	—	—
[FRAME MARK SETTINGS]	[FRAME ASPECT]	✓	—	—
	[FRAME LEVEL]	✓	—	—

[AUDIO SETTINGS]

Item		Operation		
		UI	SW	VF
[AUDIO RECORD]		—	—	—
[AUDIO INPUT]	[AES/EBU IN]	—	—	—
	[FRONT MIC POWER]	—	—	—
	[FRONT MIC LEVEL]	—	—	—
	[REAR1 MIC POWER]	—	—	—
	[REAR2 MIC POWER]	—	—	—
	[REAR MIC LEVEL]	—	—	—
	[REAR LINE LEVEL]	—	—	—
	[FRONT1 MIC LOWCUT]	—	—	—
	[FRONT2 MIC LOWCUT]	—	—	—
	[REAR1 MIC LOWCUT]	—	—	—
	[REAR2 MIC LOWCUT]	—	—	—
	[CH IN SEL]	✓	—	—
	[TEST TONE]	—	—	—
[AUDIO LEVEL]	[FRONT1 LEVEL]	✓	—	—
	[FRONT2 LEVEL]	✓	—	—
	[REAR1 LEVEL]	✓	—	—
	[REAR2 LEVEL]	✓	—	—
	[FRONT1 VOL]	✓	—	—
	[FRONT2 VOL]	✓	—	—
	[REAR1 VOL]	✓	—	—
	[REAR2 VOL]	✓	—	—
	[FRONT1 LIMITER]	—	—	—
	[FRONT2 LIMITER]	—	—	—
	[REAR1 LIMITER]	—	—	—
	[REAR2 LIMITER]	—	—	—

Item		Operation		
		UI	SW	VF
	[HEADROOM]	—	—	—
[AUDIO OUTPUT]	[MONITOR SEL1]	✓	—	—
	[MONITOR SEL2]	✓	—	—
	[MONITOR DELAY]	—	—	—
	[MONITOR VOL]	✓	—	—
	[ALARM]	✓	—	—

[OUTPUT SETTINGS]

Item		Operation		
		UI	SW	VF
[SDI OUT]	[P to PsF]	—	—	—
	[3G-SDI OUT]	—	—	—
	[SDI REC REMOTE]	—	—	—
[MON OUT]	[MON OUT FORMAT]	—	—	—
	[3G-SDI OUT]	—	—	—
	[MON OUT2 SIGNAL SEL]	—	—	—
	[MON OUT1 STATUS]	—	—	—
	[MON OUT2 STATUS]	—	—	—
	[MENU DISP]	—	—	—
	[PLAY DISP & CTRL]	—	—	—
[VF OUT]	[VF SDI OUT FORMAT]	—	—	—
	[PLAYBACK VF IMAGE]	—	—	—
	[SMOOTH MODE]	—	✓	✓
[MON OUT INDICATOR]	[SYSTEM PIXEL]	—	—	—
	[SYSTEM FREQ]	—	—	—
	[REC FORMAT]	—	—	—
	[REC MODE]	—	—	—
	[VFR]	—	—	—
	[FPS]	—	—	—
	[SHUTTER]	—	—	—
	[EI]	—	—	—
	[WHITE]	—	—	—
	[IRIS]	—	—	—
	[FOCUS]	—	—	—
	[ZOOM]	—	—	—
	[FILTER]	—	—	—
	[EXTENDER]	—	—	—
	[Y GET]	—	—	—
	[TC]	—	—	—
	[P2 CARD REMAIN]	—	—	—
	[BATTERY REMAIN]	—	—	—
	[PROXY]	—	—	—
	[GPS]	—	—	—
	[CLIP NAME]	—	—	—
	[USER CLIP NAME (TYPE3)]	—	—	—
	[REMOTE CTRL]	—	—	—
[MON OUT MARKER]	[MON OUT1 SW]	—	—	—
	[MON OUT2 SW]	—	—	—
	[LCD SW]	—	—	—
	[PB MARKER SW]	—	—	—
	[MARKER & CHAR LVL]	—	—	—
	[CENTER MARKER]	—	—	—
	[SAFETY MARKER]	—	—	—
	[SAFETY AREA]	—	—	—
	[FRAME MARK]	—	—	—
	[FRAME SIG]	—	—	—
	[FRAME COLOR]	—	—	—
	[FRAME LEVEL]	—	—	—
	[USER BOX]	—	—	—

Item		Operation		
		UI	SW	VF
	[USER BOX WIDTH]	—	—	—
	[USER BOX HEIGHT]	—	—	—
	[USER BOX H POS]	—	—	✓
	[USER BOX V POS]	—	—	—
[VF INDICATOR]	[INDICATOR SW]	—	—	—
	[SYSTEM PIXEL]	—	—	—
	[SYSTEM FREQ]	—	—	—
	[REC FORMAT]	—	—	—
	[REC MODE]	—	—	—
	[VFR]	—	—	—
	[FPS]	—	—	—
	[SHUTTER]	—	—	—
	[EI]	—	—	—
	[WHITE]	—	—	—
	[IRIS]	—	—	—
	[FOCUS]	—	—	—
	[ZOOM]	—	—	—
	[FILTER]	—	—	—
	[EXTENDER]	—	—	—
	[Y GET]	—	—	—
	[TC]	—	—	—
	[P2 CARD REMAIN]	—	—	—
	[BATTERY REMAIN]	—	—	—
	[PROXY]	—	—	—
	[GPS]	—	—	—
	[REC TALLY]	—	—	—
	[CLIP NAME]	—	—	—
	[USER CLIP NAME (TYPE3)]	—	—	—
	[INDICATOR OUT SEL]	—	—	—
	[REMOTE CTRL]	—	—	—
[VF MARKER]	[MARKER SW]	—	—	✓
	[PB MARKER SW]	—	—	—
	[MARKER & CHAR LVL]	—	—	—
	[CENTER MARKER]	—	—	✓
	[SAFETY MARKER]	—	—	✓
	[SAFETY AREA]	—	—	—
	[FRAME MARK]	—	—	✓
	[FRAME SIG]	—	—	—
	[FRAME COLOR]	—	—	—
	[FRAME LEVEL]	—	—	—
	[USER BOX]	—	—	✓
	[USER BOX WIDTH]	—	—	—
	[USER BOX HEIGHT]	—	—	—
	[USER BOX H POS]	—	—	—
	[USER BOX V POS]	—	—	—
	[MARKER OUT SEL]	—	—	—
[VF FOCUS ASSIST]	[EXPAND SW]	—	✓	✓
	[- POS]	—	—	—
	[- VALUE]	—	—	—
	[- MODE]	—	—	—
	[IN COLOR/SQ./MONO SW]	—	✓	✓
	[- FOCUS IN COLOR SW]	—	—	—
	[-- PEAKING VALUE]	—	—	—
	[-- COLOR SEL]	—	—	—
	[- FOCUS SQUARES SW]	—	—	—
	[- MONO SW]	—	—	—
	[FOCUS BAR SW]	—	—	—
	[IN COLOR/SQ./MONO OUT SEL]	—	—	—
	[FOCUS BAR OUT SEL]	—	—	—
[VF EI ASSIST]	[ZEBRA SW]	—	—	✓

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Item		Operation		
		UI	SW	VF
	[ZEBRA1 DETECT]	—	—	—
	[ZEBRA2 DETECT]	—	—	—
	[ZEBRA2 MODE]	—	—	—
	[ZEBRA OUT SEL]	—	—	—
	[WFM SW]	—	✓	✓
	[- TYPE]	—	—	—
	[- TRANSPARENCE]	—	—	—
	[Y GET SW]	—	✓	—
	[- UNIT]	—	—	—
	[- AREA SIZE]	—	—	—
	[FALSE COLOR SW]	—	✓	✓
	[WFM OUT SEL]	—	—	—
	[FALSE COLOR OUT SEL]	—	—	—

[FILE]

Item		Operation		
		UI	SW	VF
[CAC FILE]	[LOAD(SD CARD)]	—	—	—
	[LIST/DELETE]	—	—	—
[SETUP FILE]	[LOAD(SD CARD)]	—	—	—
	[SAVE(SD CARD)]	—	—	—
	[SAVE AS(SD CARD)]	—	—	—

[PERIPHERAL]

Item		Operation		
		UI	SW	VF
[GPS]		✓	—	—
[NETWORK SEL]		✓	—	—
[NETWORK FUNC]	[USER ACCOUNT]	—	—	—
	[ACCOUNT LIST]	✓	—	—
[LAN PROPERTY]	[MAC ADDRESS]	—	—	—
	[DHCP]	—	—	—
	[IP ADDRESS]	—	—	—
	[SUBNET MASK]	—	—	—
	[DEFAULT GATEWAY]	—	—	—
	[PRIMARY DNS]	—	—	—
	[SECONDARY DNS]	—	—	—
	[DHCP SERVER]	—	—	—
[WIRELESS PROPERTY]	[MAC ADDRESS]	—	—	—
	[TYPE]	—	—	—
	[SSID INPUT MODE]	—	—	—
	[SSID]	—	—	—
	[BAND]	—	—	—
	[CHANNEL(2.4GHz)]	—	—	—
	[CHANNEL(5GHz)]	—	—	—
	[ENCRYPTION]	—	—	—
	[ENCRYPT KEY]	—	—	—
	[DHCP]	—	—	—
	[IP ADDRESS]	—	—	—
	[SUBNET MASK]	—	—	—
	[DEFAULT GATEWAY]	—	—	—
	[PRIMARY DNS]	—	—	—
	[SECONDARY DNS]	—	—	—
	[DHCP SERVER]	—	—	—
[NETWORK TOOLS]	[STATUS DISPLAY]	—	—	—
	[INITIALIZE]	—	—	—

Chapter 11 Network Connection

This chapter describes how to use the camera by connecting to network.
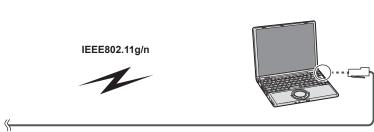
Network connection

The camera can be connected to the network via wireless LAN or wired LAN.

To use wireless LAN, attach AJ-WM30/AJ-WM50 (optional) to the <USB HOST> terminal.

To use wired LAN, connect a LAN cable to the <LAN> terminal on the right side.

IEEE802.11g/n

100BASE-TX/10BASE-T

Available functions

When the camera is connected to network, the following functions are available.

● Third party color grading application
● Remote control with the remote operation panel AK-HRP200G (optional)

📝 *NOTE*

・ For the latest information, visit the following website.
  https://pro-av.panasonic.net/

Preparing for connection

For wireless LAN

Attach the wireless module AJ-WM30/AJ-WM50 (optional) to the camera.

| **Fig. 1** | **Fig. 2** | **Fig. 3** |

1 **Push the lever down, and open the cover. (Fig. 1, Fig. 2)**

2 **Connect the wireless module to the <USB HOST> terminal. (Fig. 3)**

Insert it all the way.

3 **Close the cover.**

📝 *NOTE*

・ When removing the wireless module, pull it down straight.
・ When connected with the wireless LAN, attach the wireless module securely and close the cover.

Cautions when using wireless module AJ-WM30/AJ-WM50

Read the operating manual of the wireless module thoroughly and understand it before using.

For the latest information, visit the following website:

https://pro-av.panasonic.net/

For wired LAN

Connect a LAN cable (optional).

1 **Connect the LAN cable to the <LAN> terminal on the right side.**

Network settings

Configuration of various settings are required to use the wireless LAN or the wired LAN. Configure the settings according to the function to use.

Wireless LAN settings

This section describes the settings to connect the camera to mobile devices (iPad/iPhone), computers, or wireless access point via wireless LAN.

[DIRECT] mode

Use the following procedures when accessing to the network function of the camera directly from a smartphone, tablet, or computer.

The camera may restart as necessary when the setting is changed.

1 Select [DIRECT] in [MENU] → [PERIPHERAL] → [WIRELESS PROPERTY] → [TYPE].

2 Set each item in [MENU] → [PERIPHERAL] → [WIRELESS PROPERTY] as necessary.

[MAC ADDRESS]: MAC address of wireless LAN (cannot be changed)

[SSID]: Network name of the camera (SSID) ([AU-VREC1])

[BAND]: Setting for switching between two transmission methods (2.4 GHz or 5 GHz) (Factory setting: [2.4GHz]) (for AJ-WM30: [2.4GHz], for AJ-WM50: [2.4GHz] or [5GHz])

[CHANNEL(2.4GHz)]: Channel used when set to 2.4 GHz (Factory setting: [AUTO])

[CHANNEL(5GHz)]: Channel used when set to 5 GHz (Factory setting: [AUTO])

[ENCRYPTION]: Encryption to be used (Factory setting: [WPA2-AES]) (cannot be set)

[ENCRYPT KEY]: WPA2 encryption key (Factory setting: [01234567890123456789abcdef])

[DHCP]: Setting whether to use automatic acquisition via DHCP (**[ENABLE]:** Use automatic acquisition/**[DISABLE]:** Does not use automatic acquisition) (Factory setting: [ENABLE]) (cannot be set)

[IP ADDRESS]: IP address of the camera (Factory setting: [192.168.0.1]).

[SUBNET MASK]: Subnet mask (Factory setting: [255.255.255.0])

[DEFAULT GATEWAY]: Default gateway (Factory setting: [192.168.0.254]) (cannot be set)

[PRIMARY DNS]: Primary DNS server setting (Factory setting: [0.0.0.0]) (cannot be set)

[SECONDARY DNS]: Secondary DNS server setting (Factory setting: [0.0.0.0]) (cannot be set)

[DHCP SERVER]: Setting whether to use DHCP SERVER function (**[ENABLE]:** Use DHCP SERVER function/**[DISABLE]:** Does not use DHCP SERVER function) (Factory setting: [ENABLE])

3 From [MENU] → [PERIPHERAL] → [NETWORK SEL], select [WLAN].

The changed setting will be valid after rebooting the camera.

4 Select SSID from the list of the access points for mobile devices or computers and enter the password (encryption key).

Display the access point list screen in wireless setting and select [SSID] of the camera.

● Factory setting: [AU-VREC1]

When the password confirmation screen appears, enter the password (encryption key).

● Factory setting: [01234567890123456789abcdef]

5 Check the network connection.

When the setting is completed, confirm that network connection of mobile devices (iPad/iPhone) or computers is made properly.

The application using the network can be used when it is correctly connected to the network.

📝 *NOTE*

· AJ-WM30 can only operate when the communication method is 2.4 GHz. It will operate after automatically setting to CH1 of 2.4 GHz when [BAND] is set to [5GHz].

· The startup time after turning on the power may be longer due to starting of the network.

· When you change the settings of [NETWORK SEL], the changes will not be reflected until the camera is restarted. After the settings have been changed, the setting screen termination may take time due to the restart of the network service.

· All of the IP address, subnet mask, and default gateway must be correctly set.

Contact the network administrator if the [CANNOT ACCESS GATEWAY!] warning is displayed when closing the setting screen.

· If you do not use default gateway and DNS, set them to [0.0.0.0].

· DHCP and DNS may not function properly depending on the network environment.

[INFRA] mode (when SSID is manually entered)

This is the setting to manually connect to the wireless access point.

1 Select [INFRA] in [MENU] → [PERIPHERAL] → [WIRELESS PROPERTY] → [TYPE].

2 Set each item in [MENU] → [PERIPHERAL] → [WIRELESS PROPERTY] as necessary.

[MAC ADDRESS]: MAC address of the wireless LAN (cannot be changed)

[BAND]: Setting for switching between two transmission methods (2.4 GHz or 5 GHz) (Factory setting: [2.4GHz]) (cannot be set)

[CHANNEL(2.4GHz)]: Channel used when set to 2.4 GHz (Factory setting: [AUTO]) (cannot be set)

[CHANNEL(5GHz)]: Channel used when set to 5 GHz (Factory setting: [AUTO]) (cannot be set)

[DHCP]: Setting whether to use automatic acquisition via DHCP (**[ENABLE]:** Use automatic acquisition/**[DISABLE]:** Does not use automatic acquisition) (Factory setting: [ENABLE])

[IP ADDRESS]: IP address of the camera (Factory setting: [192.168.0.1])

[SUBNET MASK]: Subnet mask (Factory setting: [255.255.255.0])

[DEFAULT GATEWAY]: Default gateway (Factory setting: [192.168.0.254])

[PRIMARY DNS]: Primary DNS server setting (Factory setting: [0.0.0.0]) (When [DHCP] is set to [ENABLE] and the value can be acquired from the DNS server, the DNS server value which is acquired externally is overwritten. When the value is [0.0.0.0], the server is not set.)

[SECONDARY DNS]: Secondary DNS server setting (Factory setting: [0.0.0.0]) (When [DHCP] is set to [ENABLE] and the value can be acquired from the DNS server, the DNS server value which is acquired externally is overwritten. When the value is [0.0.0.0], the server is not set.)

3 Select [WLAN] in [MENU] → [PERIPHERAL] → [NETWORK SEL].

If the setting is changed, the camera will restart as necessary.

4 Enter the information of the destination wireless access point in [MENU] → [PERIPHERAL] → [WIRELESS PROPERTY].

Select [MANUAL] in [SSID INPUT MODE].
Enter SSID of the destination wireless access point for destination in [SSID] of the camera.
Select the encryption method to be used from [ENCRYPTION] of the camera.
● Factory setting: [WPA2-AES]
Enter a password of the wireless access point for destination in [ENCRYPT KEY] of the camera.

5 Check the network connection.

When the setting is completed, confirm that network connection between the camera and the wireless access point is made properly.
The network status display in the camera status display area of the HOME screen will turn into yellow when the network is correctly connected.

📝 **NOTE**

・ The startup time after turning on the power may be longer due to starting of the network.
・ When you change the settings of [NETWORK SEL], the changes will not be reflected until the camera is restarted. After the settings have been changed, the setting screen termination may take time due to the restart of the network service.
・ All of the IP address, subnet mask, and default gateway must be correctly set.
  If a warning [CANNOT ACCESS GATEWAY!] appears at the termination of the setting screen, contact the administrator of the network you use.
・ If you do not use default gateway and DNS, set them to [0.0.0.0].
・ DHCP and DNS may not function properly depending on the network environment.

[INFRA] mode (when SSID is selected from the list)

Use the following procedures when the wireless access point to connect to is selected from a list.

1 Select [INFRA] in [MENU] → [PERIPHERAL] → [WIRELESS PROPERTY] → [TYPE].

2 Set each item in [MENU] → [PERIPHERAL] → [WIRELESS PROPERTY] as necessary.

[MAC ADDRESS]: MAC address of the wireless LAN (cannot be changed)
[BAND]: Setting for switching between two transmission methods (2.4 GHz or 5 GHz) (Factory setting: [2.4GHz]) (cannot be set)
[CHANNEL(2.4GHz)]: Channel used when set to 2.4 GHz (Factory setting: [AUTO]) (cannot be set)
[CHANNEL(5GHz)]: Channel used when set to 5 GHz (Factory setting: [AUTO]) (cannot be set)
[DHCP]: Setting whether to use automatic acquisition via DHCP ([ENABLE]: Use automatic acquisition/[DISABLE]: Does not use automatic acquisition) (Factory setting: [ENABLE])
[IP ADDRESS]: IP address of the camera (Factory setting: [192.168.0.1])
[SUBNET MASK]: Subnet mask (Factory setting: [255.255.255.0])
[DEFAULT GATEWAY]: Default gateway (Factory setting: [192.168.0.254])
[PRIMARY DNS]: Primary DNS server setting (Factory setting: [0.0.0.0]) (When [DHCP] is set to [ENABLE] and the value can be acquired from the DNS server, the DNS server value which is acquired externally is overwritten. When the value is [0.0.0.0], the server is not set.)
[SECONDARY DNS]: Secondary DNS server setting (Factory setting: [0.0.0.0]) (When [DHCP] is set to [ENABLE] and the value can be acquired from the DNS server, the DNS server value which is acquired externally is overwritten. When the value is [0.0.0.0], the server is not set.)
[DHCP SERVER]: Setting to use the DHCP SERVER function (**[ENABLE]:** Use the DHCP SERVER function/**[DISABLE]:** Does not use the DHCP SERVER function) (Factory setting: [ENABLE]) (cannot be set)

3 Select [WLAN] in [MENU] → [PERIPHERAL] → [NETWORK SEL].

If the setting is changed, the camera will restart as necessary.

4 Enter the information of the destination wireless access point in [MENU] → [PERIPHERAL] → [WIRELESS PROPERTY].

1) Select [SELECT] in [SSID INPUT MODE].

2) Select SSID with the jog dial button and press the jog dial button.

  ● "SSID connection destination list screen" (page 133) is displayed.
  ● The delete list is displayed when the SSID is selected and the jog dial button is pressed and held, which allows to delete the selected SSID or all the connection history from the connection history.
  ● The selected SSID connection history can be deleted by selecting [DELETE HISTORY] and pressing the jog dial button.
  ● All the SSID connection history can be deleted by selecting [DELETE ALL HISTORY] and pressing the jog dial button.

3) Enter the password of the wireless access point for destination to connect to the [ENCRYPT KEY] of the camera.

5 Check the network connection.

When the setting is completed, confirm that network connection between the camera and the wireless access point is made properly.
The network status display in the camera status display area of the HOME screen will turn into yellow when the network is correctly connected.

📝 **NOTE**

・ The startup time after turning on the power may be longer due to starting of the network.
・ When you change the settings of [NETWORK SEL], the changes will not be reflected until the camera is restarted. After the settings have been changed, the setting screen termination may take time due to the restart of the network service.
・ All of the IP address, subnet mask, and default gateway must be correctly set.
  If a warning [CANNOT ACCESS GATEWAY!] appears at the termination of the setting screen, contact the administrator of the network you use.
・ If you do not use default gateway and DNS, set them to [0.0.0.0].

- DHCP and DNS may not function properly depending on the network environment.
- A maximum of 20 connections will be saved in the connection history. When this number is exceeded, the oldest entries are deleted.
- The status of SSID connection destination list is current at the time the list was displayed and is not automatically refreshed.
- Connections to all routers are not guaranteed. For the routers that the connection was verified, visit the following website:
  https://pro-av.panasonic.net/

■ **SSID connection destination list screen**

1 **Selection status**

A checkmark [✓] is displayed on the currently selected SSID. (This does not show the connection status).

2 **SSID**

Detected SSIDs and SSIDs registered in the connection history is displayed in a list. SSIDs are displayed in order from the one with the strongest signal.

3 **Connection history status**

[H] is displayed in the SSID that has a past connection history. SSIDs with past connection histories are displayed even if the camera is outside the service area.

4 **Encryption format**

This is the encryption method used by the access point.

5 **Radio wave strength**

This shows the signal strength of the access point.

Wired LAN settings

The settings to connect to computers using the wired LAN are as follows.

1 Set each item in [MENU] → [PERIPHERAL] → [LAN PROPERTY] as necessary.

[DHCP] and [DHCP SERVER] are mutually exclusive.
[MAC ADDRESS]: MAC address of wired LAN (cannot be changed)
[DHCP]: Setting whether to use automatic acquisition via DHCP (**[ENABLE]:** Use automatic acquisition/**[DISABLE]:** Does not use automatic acquisition (Factory setting: [ENABLE])
[IP ADDRESS]: IP address (Factory setting: [192.168.0.1]) (cannot be set when [DHCP] is set to [ENABLE])
[SUBNET MASK]: Subnet mask (Factory setting: [255.255.255.0]) (cannot be set when [DHCP] is set to [ENABLE])
[DEFAULT GATEWAY]: Default gateway (Factory setting: [192.168.0.254]) (cannot be set when [DHCP] is set to [ENABLE])
[PRIMARY DNS]: Primary DNS server setting (Factory setting: [0.0.0.0])
[SECONDARY DNS]: Secondary DNS server setting (Factory setting: [0.0.0.0])
[DHCP SERVER]: DHCP SERVERSetting whether to use the function (**[ENABLE]:** Use the DHCP SERVER function/**[DISABLE]:** Do not use the DHCP SERVER function) (Factory setting: [DISABLE]) (cannot set when [DHCP] is set to [ENABLE])

2 Select [LAN] in [MENU] → [PERIPHERAL] → [NETWORK SEL].

3 Configure the settings of wired LAN of your computer.

(For Windows)
Display [Properties] in [Internet Protocol Version 4 (TCP/IPv4)] and configure the settings. For details on how to display the screen, refer to [Start] → [Help and Support].

- When [DHCP SERVER] is set to [ENABLE] on the camera

  Select [Obtain an IP address automatically] and [Obtain DNS server address automatically] in the [General] tab. Select [Automatic private IP address] in the [Alternate Configuration] tab.

- When [DHCP SERVER] is set to [DISABLE] on the camera

  Select [Use the following IP address] in the [General] tab.

  - [IP address]: Enter the same address as that of the camera.
  - [Subnet mask]: Enter the same value as that of the camera.
  - [Default gateway]: Enter the same address as that of the camera.
  - [Preferred DNS server]/[Alternate DNS server]: Not necessarily to be entered.

(For Mac OS)

- When [DHCP SERVER] is set to [ENABLE] on the camera

  [Configure IPv4]: Select [Using DHCP].

  [Configure IPv6]: Select [Automatically].

- When [DHCP SERVER] is set to [DISABLE] on the camera

  [Configure IPv4]: Select [Manually] and enter the following items.

  - [IP Address]
  - [Subnet Mask]
  - Entering [Router] is not required. Leave it blank.

  [Configure IPv6]: Select [Automatically].

NOTE

· [IP ADDRESS] cannot be set between [192.168.155.1] and [192.168.155.255], inclusive.

Checking network setting

Check in the MENU screen

Fig. 1

1 **Select [STATUS DISPLAY] in [MENU] → [PERIPHERAL] → [NETWORK TOOLS].**

Displays the current status of the network device. (Fig. 1)

Check in the INFO screen

Fig. 1

1 **Press the <INFO> button to display the INFO screen.**

2 **Select [PERIPHERAL].**

Displays the current status of the network device. (Fig. 1)

Changing network setting

Switching network

Switches wireless LAN and wired LAN.

Fig. 1

1 **Press the <INFO> button to display the INFO screen.**

2 **Select [NETWORK] in [PERIPHERAL].**

3 **Select [LAN], [WLAN], or [OFF].**

The setting is switched. (Fig. 1)
[LAN]: Wired LAN
[WLAN]: Wireless LAN
[OFF]: The network function is not used.

Operating user account

Registration of user account can be performed.

■ **Setting user account**

1 **Select [MENU] → [PERIPHERAL] → [NETWORK FUNC] → [USER ACCOUNT].**

■ **Checking user account**

1 **Select [MENU] → [PERIPHERAL] → [NETWORK FUNC] → [ACCOUNT LIST].**

Checking and deleting of the user account list can be performed.
To delete, select the user account to delete by turning the jog dial button, and press the jog dial button.

NOTE
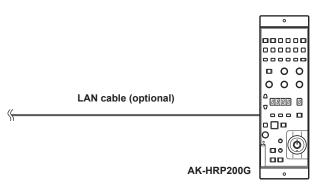
・ [guest] for [USER NAME] and [p2guest] for [PASSWORD] are the factory setting values.
・ Password cannot be changed. To change, delete the account once and perform new register again.
・ The upper limit for user account registration is 3.

■ **Initializing network settings**

1 **Select [INITIALIZE] in [MENU] → [PERIPHERAL] → [NETWORK TOOLS].**

Initialize is completed.

Connecting the remote operation panel (AK-HRP200G)

Part of the function can be remotely controlled by connecting the remote operation panel AK-HRP200G (optional) via IP connection.
Playback operation is not possible from the remote operation panel AK-HRP200G. Playback can only be performed from the camera.

LAN cable (optional)

AK-HRP200G

Setting for connection with the remote operation panel (AK-HRP200G)

To connect AK-HRP200G via network to set the camera to the remote control mode, configure the settings in the following procedure.

1 **Set each item in [MENU] → [PERIPHERAL] → [LAN PROPERTY] in the camera.**

  [IP ADDRESS]: Sets the address set at AK-HRP200G.
  [DHCP]: Sets to [DISABLE].

2 **Set each item in [MENU] → [PERIPHERAL] → [NETWORK FUNC] → [USER ACCOUNT] in the camera.**

  [USER NAME]: Sets the user account name. (Factory setting: [guest])
  [PASSWORD]: Sets the password. (Factory setting: [p2guest])
  Enter up to 31 characters for a user account, and characters between 6 and 15 for a password.

3 **Configure the network settings of AK-HRP200G.**

  For the network settings, use the ROP setup software application supplied with AK-HRP200G.

Limitation with the remote control

There are following limitations when controlling from the remote operation panel.

■ **When the [MENU] → [CAMERA SETTINGS] → [Enhanced] → [Enhanced SW] is set to [ON]**

● Camera power button <HEAD POWER>: Control is not possible

● Automatic white balance button <WHITE>: Aborting during adjustment is not possible

● Automatic black balance button <BLACK>: Aborting during adjustment is not possible

● Automatic setup button <SETUP>: Not used

● 5600 K button <5600 K>: Not used

● Knee off button <KNEE OFF>: Enabled

● Scene/user file switching button <SHIFT>: Disabled

● Scene/user file selection buttons <SCENE1/USER1> - <SCENE3/USER3>/<SCENE4>: Disabled

● Scene/user file registration button<STORE>: Disabled

● Volume lock button <VR LOCK>: Enabled

● R flare/pedestal volume <FLARE/PED R>: Enabled

● B flare/pedestal volume <FLARE/PED B>: Enabled

● Dataset buttons <UP>/<DOWN>: Enabled

● Adjusted value display area (4 digits): Enabled

● Camera number display area <No.>: Enabled

● Camera selection button <SELECT>: Enabled

● Memory card slot: Disabled

● Red/green tally display area, call button <TALLY/CALL>: Disabled

● Iris/master pedestal lock button <IRIS/M.PED LOCK>: Enabled

● Iris lever <IRIS>: Enabled when the lens can operate

● Sense volume <SENSE>: Disabled

● Coarse volume <COARSE>: Disabled

● Auto iris button <AUTO>: Enabled when the lens can operate

● Iris close button <CLOSE>: Enabled when the lens can operate

● Fader full button <FULL>: Disabled

● Alarm display area <ALM>: Warning is displayed

● Light alarm display area <OPT>: Disabled

● Lens extender display <EXT>: Enabled when the lens can operate

● Digital extender display <D.EXT>: Disabled

∎ **When the [MENU] → [CAMERA SETTINGS] → [Enhanced] → [Enhanced SW] is set to [OFF]**

Following buttons are disabled in addition to limitation when [Enhanced SW] is set to [ON].

● Matrix button <MATRIX>
● Skin tone detail button <SKINDTL>
● Detail off button <DTL OFF>
● Detail volume <DTL>
● RGain volume <GAIN R>
● BGain volume <GAIN B>
● RFlare/pedestal volume <FLARE/PED R>
● BFlare/pedestal volume <FLARE/PED B>
● Master pedestal volume <M.PED>

About adjusted value display area (4 digits)

Zoom, focus, and auto focus are not supported.

When the VFR is set to [ON], it is displayed as [✳✳✳P] (✳✳✳ is the frame rate value).

When the VFR is set to [OFF], it is displayed as [FroF].

When the setting of the camera is set to [ISO], it is displayed as [iSo].

📝 *NOTE*

・ To connect the camera and AK-HRP200G directly, use a crossover LAN cable.
・ For details, refer to the Operating Instructions of AK-HRP200G.
・ The following information is required to connect to AK-HRP200G.
  - User account name
  - Password
  - IP address
  - Port number: 49152
・ For AK-HRP200G, use Ver.4.01.00 or later versions.
・ For details on the operations of ROP setup software application, refer to the Operating Instructions of AK-HRP200G.
・ For the ROP setup software application, use Ver.3.0.0.0 or later versions.

Chapter 12 Extension module

This chapter describes how to connect the extension module and the names, functions, and operations of each of its parts.

Before using the extension module

■ **This device is a module that extends the distance between the camera module (optional) and the recording module (optional).**

The distance between the camera module and the recording module can be extended by using the extension cable (optional).

■ **A power supply to the camera extension module and recording module (optional) is required.**

When using the device, a power supply to both the camera extension module and recording module is required.

■ **To use the extension module, update to the latest firmware that is compatible with the extension module.**

Update the firmware of the camera module (optional) and recording module (optional) before using the device. An error will be displayed if an incompatible firmware is used. For details on how to update the firmware of the camera module and recording module, refer to "Updating the camera firmware" (page 154).

■ **You cannot update the firmware of the camera module (optional) and recording module (optional) if the extension module is connected.**
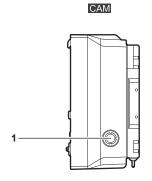
To update the firmware, remove the extension module and perform the update with the camera module directly connected to the recording module.
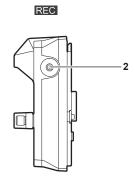
Description of parts

Left side

CAM: Camera extension module
REC: Recording extension module

CAM   REC

1   <DC OUT> terminal
This is the DC12 V output terminal. The DC output provides a maximum current of 1.0 A.
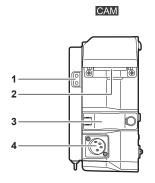
2   <SIX USER BUTTONS> button
This button sets the control panel operation buttons of the recording module (optional) to be used as USER buttons. You can operate the functions allocated from [USER5] to [USER10] in [MENU] → [SYSTEM SETTINGS] → [USER SWITCHES].
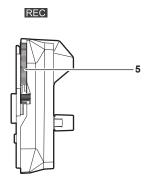
Right side

CAM: Camera extension module
REC: Recording extension module

CAM   REC

1   Light output terminal
Power supply terminal for connecting a light.

2   <EXT> terminal
This is the terminal to connect the extension cable (optional). This connects to the recording extension module.

3   Extension cable securing fitting
Secures the extension cable connected to the <EXT> terminal.

4   <DC IN> terminal
Input terminal for connecting an external DC power supply.
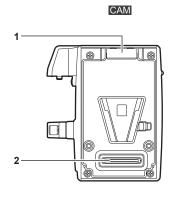
5   Recording extension module release lever
Lever for removing the recording module (optional) from the recording extension module.
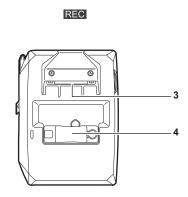
Front

CAM: Camera extension module
REC: Recording extension module

CAM   REC

1 Lock angle
Fitting which secures the camera module (optional) in place when connected.

2 Camera module connection terminal
Terminal for connecting the camera module (optional).

3 <EXT> terminal
This is the terminal to connect the extension cable (optional). This connects to the camera extension module.
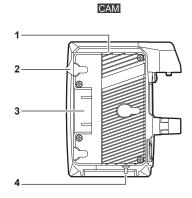
4 Extension cable securing fitting
Secures the extension cable connected to the <EXT> terminal.
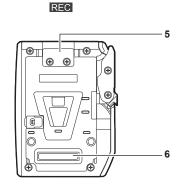
Rear

CAM: Camera extension module
REC: Recording extension module

1 Battery holder
For mounting Anton/Bauer batteries.

2 Battery release lever
Pull this lever down to release the battery.

3 Battery contact terminals
Contact terminals for the battery.

4 <LIGHT CONTROL> switch
Control switch when light is connected to the light output terminal.

5 Lock plate
Fitting which secures the recording module (optional) in place when connected.

6 Recording module connection terminal
Terminal for connecting the recording module (optional).

Assembling Extension Modules

Removing the camera extension module and recording extension module

Before assembly, remove the 2 modules.
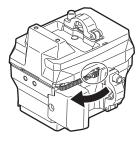
Fig. 1
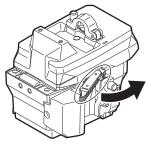
Fig. 2

1 **While raising the lock knob (red) of the recording extension module release lever (Fig. 1), pull the recording extension module release lever. (Fig. 2)**

The rear part of the recording extension module will slightly come up.

2 **Lift the recording extension module.**

3 **Remove the lock angle of the camera extension module from the lock plate of the recording extension module.**

Assembling the camera module and the camera extension module

Fig. 1

Fig. 2

Fig. 3

Fig. 4
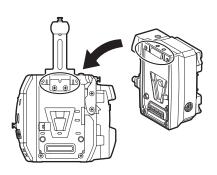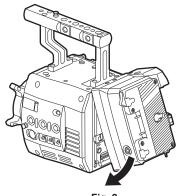
1 **Align the upper lock angle at the front of the camera extension module with the upper lock plate at the rear of the camera module. (Fig. 1)**

2 **Firmly push in the camera extension module and connect the connection terminals of the camera module and camera extension module. (Fig. 2)**

📝 *NOTE*

· You cannot join the modules together if the V edge of the camera module is down. (Fig. 3) Push down the recording module release lever of the camera module to raise the V edge. (Fig. 4)

· Do not touch the mechanical parts near the V edge. The V edge will move quickly, which may cause injury.

Disassembling

Fig. 1

Fig. 2

1 **Push down the recording module release lever (Fig. 2) while pulling up the lock knob (red) of the recording module release lever (Fig. 1).**

The rear part of the camera extension module will come up.

It will be difficult for the rear part to come up when heavy items such as batteries are mounted.

2 **Lift the camera extension module.**

3 **Remove the upper lock angle in front of the camera extension module from the upper lock plate at the rear of the camera module.**

Assembling the recording module and the recording extension module
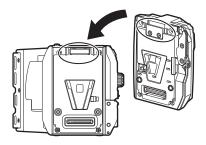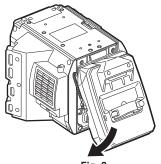
Fig. 1

Fig. 2

Fig. 3

Fig. 4

1 **Align the upper lock angle at the front of the recording module with the upper lock plate at the rear of the recording extension module. (Fig. 1)**

2 **Firmly push in the recording module and connect the connection terminals of the recording extension module and recording module. (Fig. 2)**

📖 *NOTE*

· You cannot join the modules together if the V edge of the recording extension module is down. (Fig. 3) Push down the recording extension module release lever of the recording extension module to raise the V edge. (Fig. 4)

· Do not touch the mechanical parts near the V edge. The V edge will move quickly, which may cause injury.

Disassembling

Fig. 1

Fig. 2

1 **Push down the recording extension module release lever (Fig. 2) while pulling up the lock knob (red) of the recording extension module release lever. (Fig. 1)**

The rear part of the recording module will slightly come up.
It will be difficult for the rear part to come up when heavy items such as batteries are mounted.

2 **Lift the recording module.**

Do not hold the control panel part. Doing so may cause the control panel to detach and fall.

3 **Remove the upper lock angle at the front of the recording module from the upper lock plate at the rear of the recording extension module.**

Mounting extension cables

How the extension cable is connected is the same for the camera extension module and the recording extension module.

Fig. 1

Fig. 2

Fig. 3

1 **Loosen the screw on the extension cable securing fitting. (Fig. 1)**

2 **Connect the extension cable to the <EXT> terminal. (Fig. 2)**

Confirm the shape of the connector and insert the extension cable.
Securely tighten the screw on the extension cable after inserting.

3 **Tighten the screw on the extension cable securing fitting. (Fig. 3)**

Power supply

A battery or external DC power supply can be used as the camera extension module's power supply.

This section describes the power supply to the camera extension module.

For details on the power supply of the recording module, refer to "Power supply" (page 26). After supplying power to the camera extension module and recording module, set the <POWER> switch of the recording module to <ON>. After setting the <POWER> switch to <ON> to supply power to the recording module, an error may occur if power is supplied to the camera extension module.

Using batteries

Connection of the following batteries to the device has been verified.

■ Anton/Bauer batteries

HYTRON140

DIONIC HC/DIONIC HCX/DIONIC HD

■ IDX batteries

ENDURA HL9

📝 NOTE
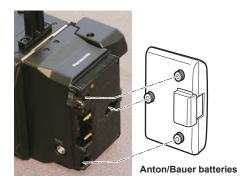
· You can also use other batteries. Use of batteries that are already verified as connectable to the device is recommended.
· Before you use a battery, charge it with a battery charger. (For details on charging, refer to each operating instructions.)
· The percent (%) display will not be available for batteries with a battery level indicator function.

Battery attachment and setting

Using Anton/Bauer batteries

Release lever

Anton/Bauer batteries

1 Mount the Anton/Bauer battery.

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

3 Set the battery features.

Select [CAM BATT FULL]/[CAM BATT NEAR END]/[CAM BATT END] in [MENU] → [SYSTEM SETTINGS] → [BATTERY] to set the voltage at which the battery level and warning will be displayed.

📝 NOTE

· To remove the battery, keep the release lever of the battery holder completely down, slide the battery in the opposite direction when you mounted it.

Using V-mount type batteries

Mount the V-mount type battery plate. As shown in the illustration, insert and slide in the direction of the arrow.

Release lever

1 Mount the V-mount type battery plate.

2 Slide in the direction of the arrow.

3 Set the battery features.

- Select [CAM BATT FULL]/[CAM BATT NEAR END]/[CAM BATT END] in [MENU] → [SYSTEM SETTINGS] → [BATTERY] to set the voltage at which the battery level and warning will be displayed.

📝 *NOTE*

- Contact your dealer for information about the V-mount type battery plate.
- When removing the plate, remove by sliding the release lever.

Using the external DC power supply

External DC power supply

<DC IN> terminal

DC cable

1 Connect the external DC power supply to the <DC IN> terminal of the camera extension module.

2 Turn on the power switch of the external DC power supply (if the external DC power supply has a power switch).

3 Supply power to the recording module.

4 Set the <POWER> of the recording module to <ON>.

■ **External DC power supply**

Connect after making sure that the output voltage of the external DC power supply is compatible with the rated voltage of the device.
Select an output amperage for the external DC power supply with a margin above the total amperage of the connected devices.
The total amperage of connected devices can be calculated with the following formula.
Total power consumption ÷ voltage
When the power of the camera is turned on, inrush current is generated. Insufficient power supply when turning on the power may cause a malfunction. We recommend that you use an external DC power supply that can assure double the capacity of the total power consumption of this device and connected devices that are turned on by interlock when the power of the device is turned on (such as lenses). For the DC cable, use a dual-core shielded wire of AWG16 (nominal cross section area 1.309 mm^2) or thicker.

- Make sure of the pin alignment of the DC output terminal of the external DC power supply and the <DC IN> terminal of the device, and connect the polarity correctly.
  Making the mistake of connecting a +12 V power supply to the GND terminal may cause fire or malfunction.

DC IN	
1	GND
2	NC
3	NC
4	+12 V
Panasonic Part No.: K1AA104H0038 Manufacturer Part No.: HA16RX-4P (SW1) (76) (Hirose Electric Co.)	

📝 *NOTE*

- When both the battery and the external DC power supply are connected, the power supply from the external DC power supply has priority. The battery may be removed while using the external DC power supply.
- When using an external DC power supply, always turn the power switch of the external DC power supply on before setting the <POWER> switch of the recording module to <ON>. If the operations are performed in reverse, the camera may malfunction because the external DC power supply output voltage rises too slowly.
- When switching the power supply from an external DC power supply to the battery, carefully remove the DC cable from the <DC IN> terminal. Removing the cable quickly may temporarily stop the operation of the device.
- When power is supplied from the <DC IN> terminal, the light circuit does not function. The light circuit can be used only when power is supplied from the Anton/Bauer battery plate.

- When a battery is connected to the <DC IN> terminal, set [MENU] → [SYSTEM SETTINGS] → [BATTERY] → [CAM EXT DC IN SEL] to [BATTERY], then set [CAM BATT END], [CAM BATT NEAR END], and [CAM BATT FULL] according to the features of the battery. The percent (%) display will not be available for batteries with a battery level indicator function.

Displaying of the power supply condition

Extension module	The module with lowest power supply level	Battery charge level indicator
No	—	—
Yes	Recording module	
Yes	Camera module	

Connecting to the DC output terminal

Connecting to the <DC OUT> terminal

It is possible to get a 1.0 A current from the <DC OUT> terminal of the camera extension module.

1 ○

2 ○

Cable connector

0B.302

LEMO

1   GND

2   +12 V

📝 *NOTE*
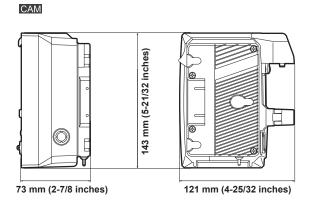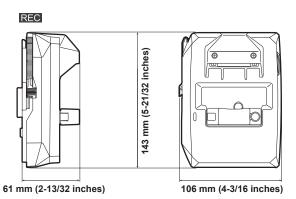
・ Make sure that polarity is correct before connecting an external device. Otherwise, it may result in a malfunction.

Specifications

Dimensions

CAM

143 mm (5-21/32 inches)

73 mm (2-7/8 inches)　　　121 mm (4-25/32 inches)

REC

143 mm (5-21/32 inches)

61 mm (2-13/32 inches)　　　106 mm (4-3/16 inches)

Specifications

General

Power
DC === 12 V (11.0 V - 17.0 V)
Power consumption
33 W (body only)
63 W (with all optional accessories connected and maximum power supplied from each output terminal)

▢ indicates safety items.

Ambient operating temperature	0 °C - 40 °C (32 °F - 104 °F)
Ambient operating humidity	10% - 85% (no condensation)
Storage temperature	−20 °C - 60 °C (−4 °F - 140 °F)
Weight	Camera extension module: Approx. 0.95 kg (2.09 lbs.) Recording extension module: Approx. 0.65 kg (1.43 lbs.)
Dimensions (W×H×D)	Camera extension module: 121 mm×143 mm×73 mm (4-25/32 inches×5-21/32 inches×2-7/8 inches) Recording extension module: 106 mm×143 mm×61 mm (4-3/16 inches×5-21/32 inches×2-13/32 inches)

● Make sure that the total current from the <DC OUT> terminal, <VF> terminal, and <LENS> terminal of the camera module (optional), and the <DC OUT> terminal of the camera extension module does not exceed 30 W.

Chapter 13   Maintenance

Maintenance and warning system of the camera are described.

Warning system

If an error is detected immediately after the camera is turned on or during operation, the viewfinder and warning lamp indicate the error. Deal with the error by following the indications.

Cases indicated by error codes

Error code	Display	Description	Behavior and cause
[E-30]	[TURN POWER OFF]	An error occurred in the camera built-in memory because the P2 card being accessed was ejected. • Warning lamp flashes four times per second.	• Cannot operate. • Follow the message to turn off the power once and turn on the power again. • Ensure that there is no error in the clips on the ejected card, and restore the clips as necessary.
[E-31]	[TURN POWER OFF]	System mode error occurred. • Warning lamp flashes four times per second.	• Cannot operate. • Follow the message to turn off the power once, turn on the power again, and check that there is no error display.
[E-33]	[SYSTEM ERROR]	Camera unit error occurred. • Warning lamp flashes four times per second.	• The operation stops. • Contact your dealer.
[E-35]	[SYSTEM ERROR]	Codec control error occurred. • Warning lamp flashes four times per second.	• The operation stops. • Contact your dealer.
[E-36]	[SYSTEM ERROR]	P2 system error occurred. • Warning lamp flashes four times per second.	• The operation stops. • Contact your dealer.
[E-37]	[SYSTEM ERROR]	P2CS microcomputer error occurred. • Warning lamp flashes four times per second.	• The operation stops. • Contact your dealer.
[E-39]	[SYSTEM ERROR]	Video initialization error occurred. • Warning lamp flashes four times per second.	• The operation stops. • Contact your dealer.
[E-64]	[SYSTEM ERROR] (or no display)	Reference signal error occurred. • Warning lamp flashes four times per second.	• The operation stops. • Contact your dealer.
[E-65]	[No Camera Module Detected]	The camera module cannot be recognized. • Warning lamp flashes four times per second.	• The operation will stop. • Contact your dealer.
[E-67]	[Check Camera Module Connection]	There is a connection error between the camera module and the recording module. • Warning lamp flashes four times per second.	• The operation will stop. • Confirm if the cable connectors are connected correctly when the extension module is used. • Contact your dealer.

Cases indicated by error messages

During recording/playback

Display	Description	Behavior and cause
[AUTH NG CARD] (slot number)	CPS authentication of microP2 memory card has failed. The microP2 memory card whose CPS authentication failed cannot be recorded or played back.	• The current operation will continue.
[BACKUP BATT EMPTY]	Displays any reduced voltage detected on the backup battery in the internal clock when the power is turned on.	• The current operation will continue. • Charge the built-in battery.
[CARD ERROR] (slot number)	Displayed when an data error caused by the P2 card occurs during recording. Displayed after recording stops until the next operation. Also displayed for three seconds during playback when a P2 card error causes playback to stop. • If the error occurs during recording, the warning lamp flashes four times per second for approx. three seconds after recording stops. • Warning lamp does not light up when an error occurs during playback.	• The operation will stop. • After it stops, the P2 card on which the error occurred is write-protected. Replace the P2 card of the slot where the error occurred.
[DIR NG CARD] (slot number)	The directory position is not correct.	• The current operation will continue. • Make a card backup immediately and format the card to use it again.
[FAN STOPPED]	Displayed when the fan motor is stopped.	• The current operation will continue. • If the fan has stopped with error, stop using the camera immediately and consult your dealer. • If the fan has stopped, temperature of the camera will rise. Therefore, do not use the camera for a long period of time.
[HIGH TEMPERATURE]	The temperature inside the camera is higher than that of the normal conditions.	• The current operation will continue. • Turn off the power of the camera, turn it on again, and check recording and playback operations. If the problem persists, consult your dealer.

Display	Description	Behavior and cause
[PB INTERMITTENT] (slot number)	Playback is interrupted on the SDHC/SDXC memory card. A card whose playback performance cannot be assured is inserted.	• The current operation will continue. • Use of microP2 or P2 memory card is recommended.
[PROXY ERROR]	An error occurred in the internal proxy module.	• The current operation will continue. • Turn off the camera and turn on it again to check the recording and playback. If the error continues to occur, please consult your dealer.
[PROXY REC WARNING]	A proxy data recording error occurred.	• The current operation will continue. • Turn off the camera and turn on it again to check the recording and playback. If the error continues to occur, please consult your dealer.
[REC IMPOSSIBLE] (slot number)	An SDHC/SDXC memory card is inserted into the microP2 memory card slot. Recording to the SDHC/SDXC memory card is disabled.	• The current operation will continue. • Record to microP2 or P2 memory cards.
[REC WARNING] [FRAME SIGNAL]	Displayed when a video or audio error occurs during recording. • Warning lamp flashes four times per second during continuous recording.	• The current operation will continue. When input signals are disrupted, recording continues while disrupted images are recorded. Check the signal to be input to the camera. • Turn off the power and on before using it again.
[REC WARNING] [OVER MAX# CLIPS]	Displayed when attempting to record in excess of the maximum total number of clips allowed for one P2 card. • Warning lamp flashes four times per second during continuous recording.	• The operation will stop. • Replace the P2 card or delete unnecessary clips.
[REC WARNING] [PULL DOWN]	(Occurs during recording) The video pull-down sequence and time code values are not synchronized. • Warning lamp flashes four times per second during continuous recording.	• The current operation will continue. • Check the signal.
[REC WARNING] [PULL DOWN ERROR]	(Occurs at times other than during recording) The video pull-down sequence and time code values are not synchronized.	• The current operation will continue. • Check the signal.
[REC WARNING] [REC DATA]	Displayed when an error occurs in recorded data during recording. • Warning lamp flashes four times per second during continuous recording.	• The operation will continue or stop. • Turn off the power and on before using it again.
[RUN DOWN CARD] (slot number)	The maximum number of overwrites has been exceeded.	• The current operation will continue. • Replacement of the P2 card is recommended.
[SD CARD] (slot number)	An SDHC/SDXC memory card is inserted into the microP2 memory card slot.	• The current operation will continue. • Use of microP2 or P2 memory card is recommended.
[TEMPORARY PAUSE] [IRREGULAR SIG]	Recording is temporary suspended due to correct recording not possible because of the disruption of input signal from the <GENLOCK IN> terminal. The clip will be divided. • Warning lamp flashes four times per second during continuous recording.	• The operation will pause. • Recording will resume when the signal returns to normal.

During thumbnail and menu operation

Display	Description	Behavior and cause
[AUTHENTICATION ERROR!]	Manual authentication failed.	Enter the correct password.
[CANNOT ACCESS!]	Data cannot be accessed due to a content defect or some other reason.	Ensure the health of the media and the clips.
[CANNOT CHANGE!]	For a clip with the ![] mark, where a thumbnail cannot be generated, the thumbnail cannot be modified in the text memo position.	Correct the settings and content to enable display of the thumbnail.
[CANNOT DELETE!]	The content versions do not match. Cannot delete.	Match the device and contents version.
[CANNOT FORMAT!]	A P2 card problem or some other reason prevents formatting.	Check the P2 card.
[CANNOT RE-CONNECT!]	Clips cannot be remerged because either clips not recorded across multiple P2 cards are selected or other reasons.	Check the selected content.
[CANNOT REPAIR IN SELECTION!]	Some of the selected clips cannot be repaired.	Check the selected content.
[CANNOT REPAIR!]	Content that cannot be repaired is selected.	Check the selected content.
[CANNOT SAVE! FILE NAME IN USE]	A settings file of the same name exists on the SD memory card.	Use another name to save the file.
[CARD FULL!]	The P2 card or SD memory card is full.	Insert a card with free space available.
[COPY IMPOSSIBLE. TOO LARGE CLIP CONTAINED! (CLIP NAME: XXXXXX)]	Files exceeding 4 GB cannot be copied to P2 memory card or microP2 memory card with 32 GB or smaller capacity.	Copy to a microP2 memory card with 32 GB or larger capacity.
[INVALID VALUE!]	The data value you entered is invalid.	Enter data within the normal range.
[LACK OF CAPACITY!]	There is not enough recording capacity left on the card.	Insert a card with sufficient recording capacity.

Display	Description	Behavior and cause
[MISSING CLIP!]	Shot marks cannot be attached to the clips unless all clips recorded over multiple P2 cards are present.	Insert all P2 cards over which recording extended.
[NO CARD!]	No P2 or SD memory card is inserted.	Insert the relevant media.
[NO COPY TO SAME CARD!]	A clip cannot be copied to the card storing the original clip.	Copy the selected clip to a card that does not contain the original clip.
[NO FILE!]	The specified file does not exist.	Check the file.
[NO INPUT!]	No data is entered.	Enter data and then set.
[NO SD CARD!]	No SD memory card.	Insert an SD memory card.
[NOT SELECTED!]	Attempted to delete without selecting clips.	Select clips to delete.
[SAME CLIP IS SELECTED!]	Multiple instances of the same clip (copies) are included in the clips selected.	Multiple instances of the same clip (copies) cannot be copied simultaneously. Remove instances of the same clip from selected items.
[TOO MANY CLIPS!]	Too many clips are selected.	Reduce the number of selected clips.
[UNKNOWN CONTENTS FORMAT!]	This is a warning of the contents for the version that is not supported by the camera.	Match the device and content versions.
[UNKNOWN DATA!]	The metadata character code is invalid.	The metadata character code is UTF-8. Enter valid characters using a viewer.
	There is a problem with data in the file.	Create the file again.
[USER CLIP NAME MODIFIED!]	When adding a counter value to the clip name, characters must be deleted.	For the counter addition setting, the user clip name plus the counter value can only contain up to 100 bytes. Characters in the clip name are automatically deleted when the total number of characters exceeds this limit.
[WRITE PROTECTED!]	The P2 card or SD memory card is write-protected.	Insert write-accessible media.

During soft keyboard operation

Display	Description	Behavior and cause
[AUTHENTICATION ERROR!]	Manual authentication failed.	Enter the correct password.
[CANNOT CHANGE!]	An attempt is made to enter the [PERSON] item (user who enters the memo) when there is no text memo.	Enter the [TEXT] (text information) first.
[CANNOT SET!] [INVALID VALUE!]	The entered value is invalid.	Change the input value.
[CANNOT SET!] [NO INPUT!]	There is not input to the software keyboard.	Enter the password.
[CANNOT SET!] [RETRY PASSWORD IS DIFFERENT!]	The re-entered password is different.	Enter the correct reference password.

Updating the camera firmware

The firmware versions of the camera module and the recording module must match to operate this system.

If they do not match, update the firmware before using the camera. Firmware of the camera module can be updated only when the recording module is connected.

Updating the firmware

To update the firmware, an SD memory card is required.

Use the camera or P2 Viewer Plus to format the SD memory card.

Fig. 1

1 **Download the firmware from the website.**

https://pro-av.panasonic.net/

2 **Save the downloaded firmware to an SD memory card.**

3 **Insert the SD memory card containing the firmware into the SD memory card slot of the recording module.**

4 **Turn the power on.**

5 **Press the <INFO> button to display the INFO screen. (Fig. 1)**

6 **Select [VERSION].**

7 **Press the jog dial button.**

8 **When [UPDATE] appears, select [UPDATE] → [OK].**

This starts the firmware update. Do not turn the power off until the update is completed.

📝 *NOTE*

・ The time required for update is approximately 60 minutes. It is necessary to supply power without interruption during the update. Use the external DC power supply instead of battery.

・ Do not remove the SD memory card during the update (while the card access LED is flashing). The communication with the camera may be discontinued, which may cause malfunction to the camera.

・ Disconnect the connection cable of the viewfinder when updating the camera module and the recording module.

Cleaning and storing

Cleaning the camera recorder

● Either remove the battery or disconnect the DC cable from the power outlet before cleaning.

● Do not use benzine or thinner to clean the camera. Using benzine or thinner may cause deformation or peeling off of the paint of the camera recorder body.

● Wipe the camera recorder with a soft and clean cloth. If there is heavy dirt attached, wipe the camera recorder using a cloth soaked in kitchen detergent diluted with water, and then wipe it with a dry cloth.

Cautions when storing the camera recorder

Remove the battery when storing the camera recorder. Store them in a place where humidity is low and temperature is relatively constant.

■ Camera body

● Wrap the camera recorder with a soft cloth so that dust does not get into it.

■ Battery

● The battery life shortens where the temperature is extremely high or low.

● Storing in a place where there is heavy oil smoke or dust may lead to malfunctions due to rust on terminal connectors, etc.

● Do not let the battery terminal contact a metal object (such as a necklace or hairpin). Short circuit may occur between terminals and it may lead to heat generation. Touching on a heated part may cause severe burns.

● Store the battery with electrically discharged. If you store it for a long period of time, it is recommended that you charge it once a year, use the camera recorder until the battery runs out, and then storing it again.

■ expressP2 memory card, P2 memory card

● If you remove it from the camera recorder, be sure to attach the dedicated cap so that sand and dust do not adhere to the connector part. Also, put it in the dedicated case when storing or carrying it.

● Do not place it in a place where there is corrosive gas.

■ microP2 memory card, SD memory card
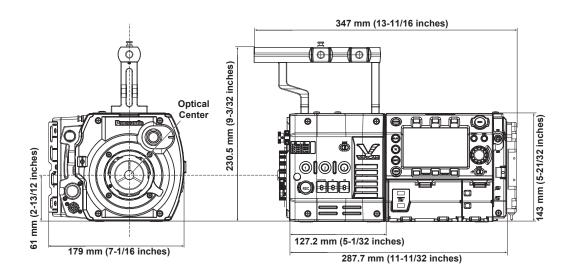
● If you remove it from the camera recorder, be sure to put it in its case.

● Do not place it in a place where there is corrosive gas.

● Do not place it in a place where temperature gets high, such as in a car or under direct sunlight.

● Do not place it in a dusty place or where humidity is high.

Chapter 14   Specification
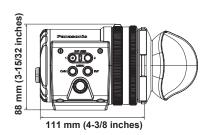
This chapter describes the specifications of this product.
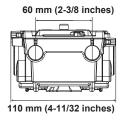
Specifications
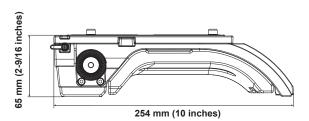
Dimensions

Specifications

General

Power
DC === 12 V (11.0 V - 17.0 V)
Power consumption
90 W (with all optional accessories connected and maximum power supplied from each output terminal)

☐ indicates safety information.

Ambient operating temperature	0 °C - 40 °C (32 °F - 104 °F)
Ambient operating humidity	10% - 85% (relative humidity)
Storage temperature	−20 °C - 60 °C (−4 °F - 140 °F)
Weight	Approx. 4.5 kg (9.92 lbs.) (excluding accessories)
Dimensions (W×H×D)	Body only 179.0 mm×230.5 mm×347.0 mm (7-1/16 inches×9-3/32 inches×13-11/32 inches) (excluding protrusions and accessories)

● Ensure that the total current from the <DC OUT> terminal, <VF> terminal, and <LENS> terminal of the camera module, and the <DC OUT/RS> terminal and <USB HOST> terminal of the recording module does not exceed 30 W.

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Camera unit

Pickup device	2/3-type 2.2 million pixels, MOS×3
Lens mount	2/3-type bayonet
Optical filter	• CC filter <A>: <3200 K>, <B>: <4300 K>, <C>: <5600 K>, <D>: <0.3ND> • ND filter <1>: <CLEAR>, <2>: <0.6ND>, <3>: <1.2ND>, <4>: <1.8ND>
Gain setting	• [ISO] mode ISO640 - ISO12800 • [dB] mode 0 dB - 18 dB (3 dBstep)
Shutter speed	• [deg] mode 1.0 deg - 360 deg (0.5 deg step) • [sec] mode 1/24 seconds - 1/250 seconds (for 23.98p)
Sensitivity	F9 (2000 lx, 3200 lx, 89.9% reflection, 1080/59.94p) F10 (2000 lx, 3200 lx, 89.9% reflection, 1080/50p)

Memory card recorder

Recording media	expressP2 memory card, P2 memory card, microP2 memory card
Number of recording pixels	1920×1080, 1280×720
Recording frame rate (max)	240p/200p
System frequency	59.94p, 50p, 29.97p, 25p, 23.98p, 59.94i, 50i
Recording format (main recorder)	AVC-Intra 444/AVC-Intra 200/AVC-Intra 422/AVC-Intra 100/ProRes 4444 XQ/ProRes 4444/ProRes 422 HQ/ProRes 422/ProRes 422 LT
Recording format (sub recorder)	AVC-Intra 422/AVC-Intra 100/AVC-LongG 50/AVC-LongG 25
Recording video signal	1080/59.94p, 50p, 29.97p, 25p, 23.98p, 59.94i, 50i 720/59.94p, 50p
Recording and playback time ([MAIN CODEC])	When using a 256 GB expressP2 memory card • AVC-Intra 444, [VFR]: [ON], 50 fps/60 fps Approx. 64 min • AVC-Intra 200, [VFR]: [ON], 50 fps/60 fps Approx. 64 min • AVC-Intra 100, [VFR]: [ON], 50 fps/60 fps Approx. 128 min • AVC-Intra 100, 200 fps/240 fps Approx. 32 min • ProRes 422 HQ, [VFR]: [ON], 60 fps Approx. 60 min Figures are for continuous recording as one clip. Depending on the number of clips, the overall recording time may be shorter than the above.
Recording and playback time ([SUB CODEC])	When using a 64 GB microP2 memory card • AVC-Intra 100, 25.00p/29.97p Approx. 64 min • AVC-LongG 50, 25.00p/29.97p Approx. 128 min • AVC-LongG 25, 25.00p/29.97p Approx. 256 min Figures are for continuous recording as one clip. Depending on the number of clips, the overall recording time may be shorter than the above.

Digital video

Number of quantizing bits	12 bit (AVC-Intra 444), 10 bit (others)
Video compression format	• AVC-Intra 444/AVC-Intra 200/AVC-Intra 422/AVC-Intra 100 MPEG-4 AVC/H.264 Intra Profile • AVC-LongG 50/AVC-LongG 25 MPEG-4 AVC/H.264 • ProRes 4444 XQ/ProRes 4444/ProRes 422 HQ/ProRes 422/ProRes 422 LT Apple ProRes

Digital audio

Recording audio signal	48 kHz/24 bits, 4CH
Headroom	18 dB/20 dB switchable menu

Proxy

File format	MOV
Video compression format	H.264/AVC High Profile
Audio compression format	LPCM
Approximate recording time (1 GB)	Approx. 25 min
	Reference value for continuous recording. The recording time may differ depending on the scene or the number of clips.

Video input/output

<SDI OUT1>/<SDI OUT2>/<SDI OUT3>/<SDI OUT4> terminal	HD (1.5G)/3G-SDI: 0.8 V [p-p], 75 Ω (1 set, 4 pieces)
<MON OUT1> terminal	HD (1.5G)/3G-SDI: 0.8 V [p-p], 75 Ω
<MON OUT2> terminal	HD (1.5G)/3G-SDI: 0.8 V [p-p], 75 Ω
<VF SDI> terminal	HD (1.5G)/3G-SDI: 0.8 V [p-p], 75 Ω

Audio input/output

<AUDIO IN 1>/<AUDIO IN 2> terminal	XLR×2, 3-pin <LINE>/<MIC>/<MIC+48V>/<AES> switchable type
<MIC IN> terminal	XLR×1, 5-pin
<PHONES> terminal	Stereo mini jack
Speaker	20 mm diameter, round ×1

Viewfinder

Display panel	OLED (organic EL) 0.7 type, 2760000 dots
Video input method	1080/59.94p, 1080/50p, 1080/60p

Other input/output

<GENLOCK IN> terminal	HD (1.5G)/3G-SDI: 0.8 V [p-p], 75 Ω
<TC IN/OUT> terminal	BNC×1 Input/output switching • Input: 0.5 V - 8 V [p-p], 10 kΩ • Output: 2.0 V±0.5 V [p-p], low impedance
<DC IN> terminal	XLR×1, 4-pin, DC 12 V (DC 11.0 V - 17.0 V)
<DC OUT/RS> terminal	4-pin, DC 12 V (DC 11.0 V - 17.0 V), maximum output current 1.0 A
<DC OUT> terminal	2-pin, DC 12 V (DC 11.0 V - 17.0 V), maximum output current 1.0 A
<LENS> terminal	12-pin
<VF> terminal	14-pin
<LAN> terminal	100BASE-TX/10BASE-T
<USB2.0> terminal (device)	Type B connector, 4-pin
<USB2.0> terminal (host)	Type A connector, 4-pin
<EXT> terminal	50-pin, exclusive for external recording (to be supported)
Control panel (LCD)	3.5-type QHD color monitor (approx. 1.56 million dots)

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