

# Solid-State Memory Camcorder

*PMW-F55*

*PMW-F5*

## Operating Instructions

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



**SxS**

**XAVC**

**HDMI**

**MPEG HD422**

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## Overview

# Features

The PMW-F55/F5 is a highly compact, lightweight and high-performance CineAlta 4K camera with a 4K Super 35mm equivalent Single-chip CMOS image sensor.

The PMW-F55's CMOS image sensor with frame image scan function allows you to shoot clear 4K images without rolling shutter distortion or flash band phenomenon, for perfect HD recording performance.

The PMW-F5's 4K image sensor allows you to record high quality HD pictures.

You can record in SR SStP/MPEG2 HD video format, in addition to the new 4K-compatible format, XAVC, by using an SxS memory card. 4K RAW data can be recorded by using the portable recorder, AXS-R5, which adopts the newly developed access memory card (AXSM). The camcorder adopts the same native FZ mount used by the PMW-F3. You can use a variety of cine lenses (PL mount) so that the PL/FZ conversion adaptor comes standard.

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### Compatible with multi format

The camcorder is compatible with the new format, XAVC (official name: MPEG4 AVC/H.264 Hi422 Profiles/Level 5.2), and can record 4K: 4096 × 2160, HD: 1920 × 1080.

The camcorder is also compatible with frame rates from 23.98P to 59.94P. For high-speed shooting, you can record 1 fps to 60 fps for XAVC HD recording in the S & Q mode. The recommended media for XAVC recording is the newly developed SxS PRO+ memory card. The camcorder is also compatible with SStP SR-SQ 444, SR-SQ 422, and SR-Lite 422 that are adopted for HDCAM-SR, or MPEG2 HD 422 that is adopted for XDCAM. Your workflow can be used.

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### Modular structure

The camcorder is a modular design that allows you to configure the camcorder according to shooting circumstances, whether for cinema production, drama, commercials, 3D shooting, documentary filming, interviews, etc. The handle, viewfinder, audio connector panel, and portable recorder can be removed according to shooting requirements. The body and handle of the camcorder have multiple 1/4" and 3/8" mount points, you can attach the standard accessories easily.

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### High camera technology

#### 4K Super 35mm equivalent CMOS image sensor

The camcorder has a 4K Super 35mm equivalent Single-chip CMOS image sensor of 11,600,000 pixels, with effective pixels count of 8,900,000, for 4K/HD recording.

The CMOS image sensor of the PMW-F55 includes a frame image scan function that allows you to shoot clear images without rolling shutter distortion or flash band phenomenon that occurs with a traditional film camera. The camcorder adopts a color filter that emphasizes color reproduction compatible with wide color area (exceeding that of color film), allowing for near human vision image representation capability.

#### Wide latitude, low noise

The camcorder has a 14-stop latitude that can reproduce images captured by the CMOS sensor with smooth gradation of black to white. Exmor Super35 CMOS technology provides low noise levels, even with 4K resolution and 14-stop latitude maintained.

#### Video signal processing

4K/HD simultaneous recording and high-speed recording with unlimited recording time is possible with single LSI chip processing of both camera signals and baseband video signals. Single-chip design provides stable, high-speed 4K 59.94P baseband video processing, low power consumption, and compact design.

## Hyper gamma

The hyper gamma can display the wide dynamic range images in smooth contrast without using the knee function. The PMW-F55/F5 provides the following six hyper gamma choices:

### Available hyper gamma choices

No.	Name*	Dynamic range	White limit	Video output with 18% gray card (video input 20%)
1	HG3250G36	325%	100%	36%
2	HG4600G30	460%	100%	30%
3	HG3259G40	325%	109%	40%
4	HG4609G33	460%	109%	33%
7	HG8009G40	800%	109%	40%
8	HG8009G33	800%	109%	33%

\* Name format: "HG" + 3 digits of dynamic range value + the unit digit of white limit + "G" + video output value with 18% gray card

You can select dynamic range from among 325%, 460%, and 800%. You can select 109% or 100% for the maximum value of video output (White Limit). You can select the video output value with 18% gray card from two values.

## Intuitive user interface

This camcorder has the color LCD panel on the inside panel, and direct access menu that assigns the commonly-used settings to 6 buttons.

Displaying the setting information large, makes visibility better.

By switching two screens (CAMERA, VIEW), you can perform setting speedy.

A LOCK switch allows you to prevent changing settings by accident.

By using the supplied IFU-WLM3 USB wireless LAN module, you can operate the camcorder from a Wi-Fi compatible device such as a tablet, with the wireless transmission.

## Assignable buttons

The inside panel has three assignable buttons, while the outside panel has one assignable button. You can operate the camcorder easily by assigning commonly-used functions to these buttons.

## Various input/output connectors

### Four types of SDI output

The camcorder has four types of SDI output that allows you to output 4K 59.94P signal as four 3G-SDI.

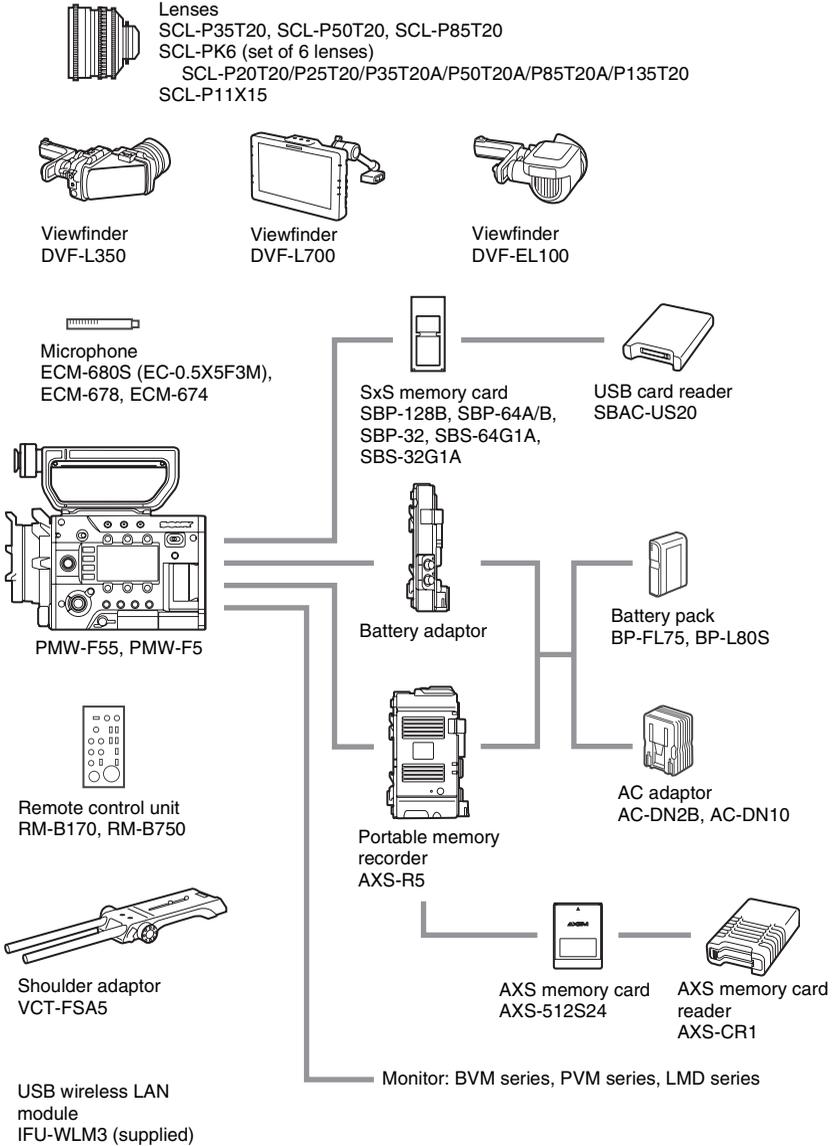
The SDI-1 and SDI-3 outputs are assignable as SDI-1 OUT to Main, and SDI-3 OUT to Sub. The camcorder also includes connections for Genlock IN, Timecode IN/OUT, HDMI OUT, Remote.

### Built-in ND filter

A rotary ND filter is built into the camcorder, and supports three types of filter: Clear, 0.9 (1/8), and 1.8 (1/64). This allows light adjustment without the need for external matte box.

# System Configuration

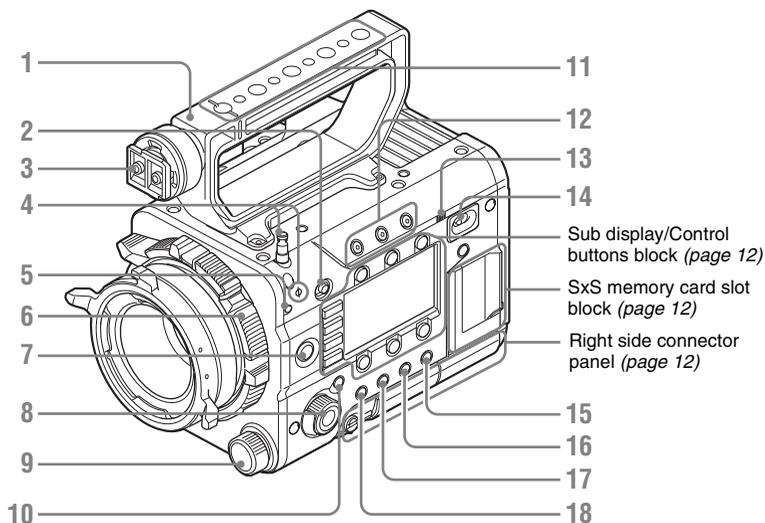
This section shows examples of the camera system configuration.



# Location and Function of Parts

For functions and usage, see the pages in parentheses.

The following illustrations are with the battery adaptor (page 14) removed.  
For removing the battery adaptor, see “Removing a battery pack” (page 19).



## 1. Handle

## 2. LOCK switch

Disables operations on the side operating panel.

## 3. Viewfinder shoe

## 4. Tape measure hook/Image sensor position index

The  $\Phi$  mark and tape measure hook are on a plane with the image sensor. To measure the precise distance between the camcorder and the subject, use this mark or tape measure hook as a reference.

You can attach the end of a tape measure to the hook, and measure the distance from the subject.

## 5. Flange focal length adjustment screw (page 22)

## 6. Lens mount (page 21)

## 7. REC (recording start/stop) button/lamp (page 34)

## 8. SEL/SET (select/set) dial (MENU dial) (pages 42, 44)

Selects the item in the menu or changes the setting value.

## 9. ND FILTER select switch

ND filters are available for keeping the aperture in a proper range.

Select the ND filter by turning the ND FILTER select switch while pulling it.

**Clear:** ND filter not used

**0.9:**  $1/8$ ND

**1.8:**  $1/64$ ND

## 10. CANCEL/BACK button (pages 42, 44)

## 11. Accessory mounting screw holes

Type of screw: 1/4-20UNC (× 4)

Type of screw: 3/8-16UNC (× 5)

Length of engagement: 9 mm ( $3/8$  inch) or less

### Note

Do not apply excessive force to the mounted accessory. It may damage the screw thread.

## 12. ASSIGN (assignable) 1/2/3 buttons (page 37)

## 13. Built-in speaker (page 34)

## 14. Power switch

Set to the ON position (I) to turn the power on.  
Set to the OFF position (⏻) to turn the power off.

### Notes

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

## 15. BRIGHTNESS button

Adjusts brightness of the sub display in 4 steps.

## 16. STATUS (status display on/off) button

Displays status screens on the LCD monitor/viewfinder/external video monitor.

Turn the MENU dial (*page 9*) to switch the screens in sequence.

### Camera status screen

Displays the electronic shutter settings or the status of the lens.

Gain	Amount of gain up (dB) or sensitivity (ISO)
Shutter	Electronic shutter settings
Gamma	Gamma category and curve
Zebra1	On/off and setting level of Zebra1
Zebra2	On/off and setting level of Zebra2
White	White balance mode and setting
Iris	T value of iris
Focal Length	Focal length (mm)
Focus Distance	Focus distance (m/feet)
Depth Of Field	Depth of field (m/feet)

### Audio status screen

Displays the input settings for each channel, audio level meter, and wind filter setting.

Level	Level meter
Source	Input source
Reference	Reference level setting

### System status screen

Displays the video signal settings.

System Frequency	System frequency
Picture Size	Picture size that is recorded on an SxS memory card

Rec Format	Recording format that is recorded on the SxS memory card
Gamma	Gamma category that is recorded on the SxS memory card
Rec Function	Special recording that is set to on, and its setting
MPEG2 Proxy	On/off setting of MPEG2 proxy (PMW-F55 only)

### Video output status screen

Displays the video output settings of SDI 1 to SDI 4, HDMI, and test video output.

Picture size	Output picture size
C.Space	Output form
Freq	Output rate
Gamma	Gamma

### Assignable button status screen

Displays the function that is assigned to each ASSIGN button.

1 to 4	Functions that are assigned to the Assign 1 to 4 buttons
--------	----------------------------------------------------------

### Battery status screen

Displays information of the battery or DC IN power.

Detected Battery	Battery type
Remaining	Remaining charge level (%)
Charge Count	Number of times that the battery is charged
Capacity	Remaining capacity (Ah)
Voltage	Voltage (V)
Manufacture Date	Manufacture date of the battery
Power Source	Power source
Supplied Voltage	Supplied voltage

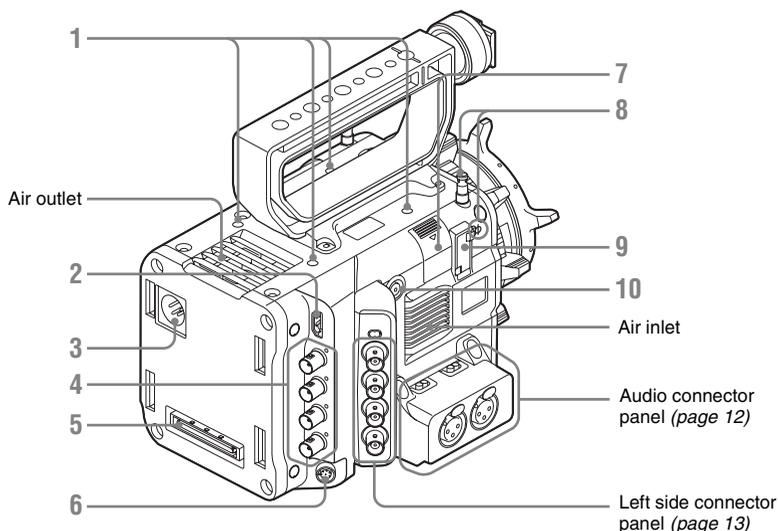
### Media status screen

Displays the remaining space, available recording time, and estimated service life of the recording media (SxS memory card A/SxS memory card B/SD card/AXS memory).

Protect information	
Remaining	Remaining space and available recording time
Life	Estimated service life

## 17. OPTION button (*page 39*)

## 18. MENU (menu display on/off) button (*page 44*)



### 1. Accessory mounting screw holes

Type of screw: 1/4-20UNC (× 4)

Length of engagement: 9 mm  
( $\frac{3}{8}$  inch) or less

#### Notes

- Do not apply excessive force to the mounted accessory. It may damage the screw thread.
- When attaching an accessory, do not cover the air inlet or air outlet.

### 2. HDMI OUT connector (page 66)

### 3. DC IN connector (page 20)

### 4. SDI OUT 1 to 4 (serial digital output) connectors (BNC type) (page 66)

### 5. Mounting terminal for an expansion unit (pages 19, 28)

### 6. REMOTE (remote control) connector (8-pin)

Connect an external device such as a remote control unit.

### 7. USB wireless LAN module retracting part (page 30)

Connecting the supplied IFU-WLM3 USB wireless LAN module allows communication with wireless LAN devices.

### 8. Tape measure hook/Image sensor position index

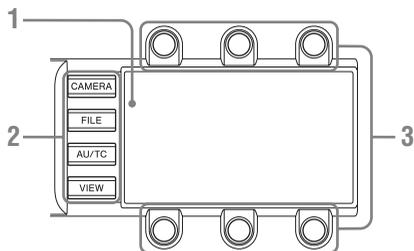
The mark  $\phi$  and tape measure hook are on a plane with the image sensor. To measure the precise distance between the camcorder and the subject, use this mark or tape measure hook as a reference.

You can attach the end of a tape measure to the hook, and measure the distance from the subject.

### 9. VF (viewfinder output) connector (page 22)

### 10. ASSIGN 4 (assignable 4) button (page 37)

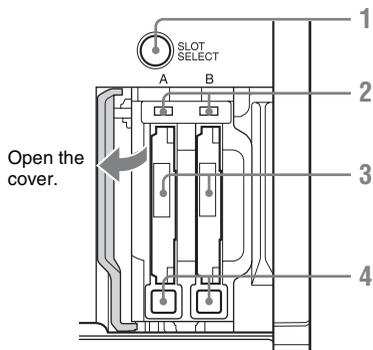
## Sub display/Control buttons block (page 42)



1. Sub display
2. Function buttons
  - CAMERA button
  - FILE button (To be supported by future upgrade.)
  - AU/TC (audio/time code) button (To be supported by future upgrade.)
  - VIEW button
3. Item button

## SxS memory card slot block (page 24)

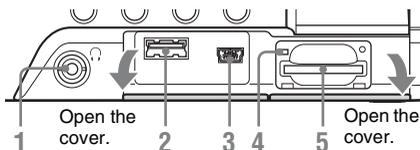
The SxS memory card slots are located behind the cover.



1. SLOT SELECT (SxS memory card select) button
2. ACCESS (SxS memory card access) lamps
3. SxS memory card slots
4. EJECT (SxS memory card eject) buttons

## Right side connector panel

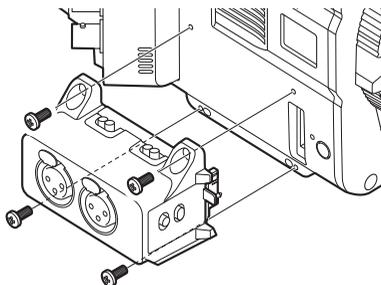
The USB connector and SD card slot are located behind the cover.



1. Headphones connector (stereo mini jack) (page 34)
2. USB connector (A)
3. USB connector (Mini B)
4. ACCESS (SD card access) lamp (page 27)
5. SD card slot (page 27)

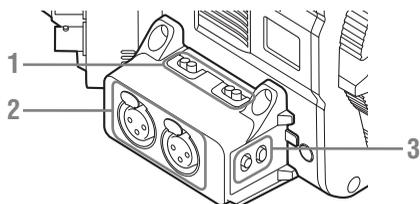
## Audio connector panel

Attach the supplied audio connector panel as follows.



### Notes

- Attach/remove the audio connector panel while the camcorder is turned off.
- When attaching the audio connector panel, make sure not to catch the cap.
- When removing the audio connector panel, pull it away slowly from the body of the camcorder, as shown in the diagram above.
- Applying excessive force to remove the audio connector panel may damage it.



### 1. AUDIO IN CH1/AUDIO IN CH2

#### (external audio input selection) switches

Switch input signal (external microphone, external audio device, etc.). (AES/EBU is supported by future upgrade.)

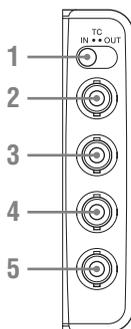
### 2. AUDIO IN (CH-1, CH-1/2) /AUDIO IN (CH-2, CH-3/4) connectors

Input external microphone or audio equipment signals.

### 3. CH1 MIC +48V/OFF, CH2 MIC +48V/OFF (external microphone input selection) switches

Supply phantom power (48 V) to the external microphone when you set this switch to "MIC +48V."

## Left side connector panel



### 1. TC IN/OUT (timecode input/output selection) switch (page 68)

### 2. TC (timecode input/output) connector (BNC type) (page 68)

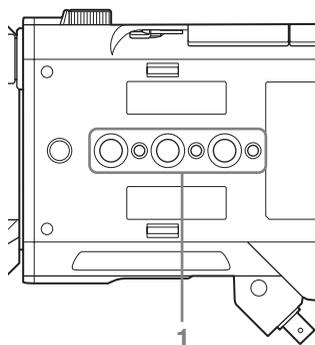
### 3. GENLOCK IN connector (BNC type) (page 68)

### 4. TEST OUT (analog video output) connector (BNC type) (page 66)

### 5. SHUTTER connector (BNC type)

To be supported by future upgrade.

## Bottom



### 1. Accessory mounting screw holes

Type of screw: 1/4-20UNC (× 3)

Type of screw: 3/8-16UNC (× 3)

Length of engagement: 9 mm

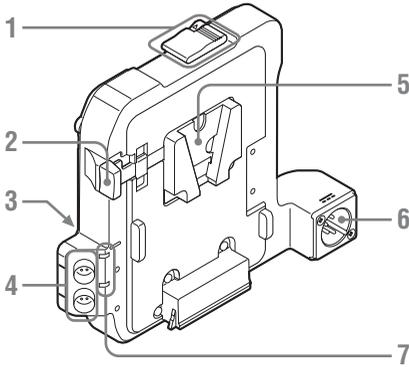
( $\frac{3}{8}$  inch) or less

#### Note

Do not apply excessive force to the mounted accessory. It may damage the screw thread.

## Battery adaptor

For attaching/removing the battery adaptor, see “Using a Battery Pack” (page 19).



1. Release button/ejection lever
2. Battery release lever
3. Expansion IF connector
4. DC OUT 1/2 connector

### Note

When connecting a device, use one with current consumption of 1.8 A or less.

5. Battery pack attaching part
6. DC IN connector (page 20)
7. DC OUT overcurrent indicator

Lights when the overcurrent protection activates.

In this case, disconnect any peripheral device from a DC OUT connector whose indicator is lit, then restart the PMW-F55/F5.

# On-Screen Indications

## Sub Display Screen

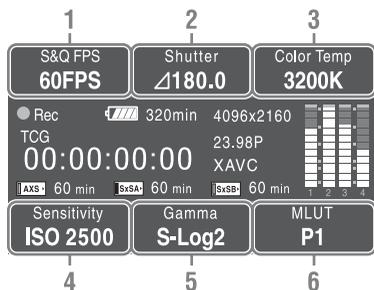
When turning on the camcorder, the sub display appears and you can check the status of the camcorder and set the basic items.

The screen is switched by pressing the function button on the left of the sub display (*page 12*).



### Item name/Setting value/Function display screen

#### CAMERA setting (*page 43*)



#### 1. S&Q FPS

Displays and sets Slow & Quick Motion/Frame Rate.

#### 2. Shutter

Displays and sets shutter speed/angle.

#### 3. Color Temp

Displays and sets color temperature.

#### 4. Sensitivity/Gain/Exposure Index

Displays and sets sensitivity/gain (ISO/dB/EI).

#### 5. Gamma

Displays and sets gamma category.

#### 6. MLUT

Displays and sets monitor LUT.

#### VIEW-1



#### 1. F Rev ◀◀

Fast reverse

#### 2. Play/Pause ▶▶

Play/pause

#### 3. F Fwd ▶▶

Fast forward

#### 4. Prev ◀◀

Previous clip jump

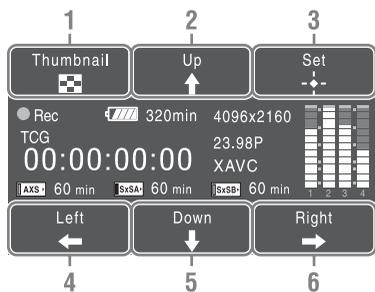
**5. Stop ■**

Stop

**6. Next ►►**

Clip directional jump

**VIEW-2**



**1. Thumbnail**

Displays and cancels the display of the thumbnail screen.

**2. Up**

Moves the cursor up.

**3. Set**

Confirms the selected item.

**4. Left**

Moves the cursor to the left.

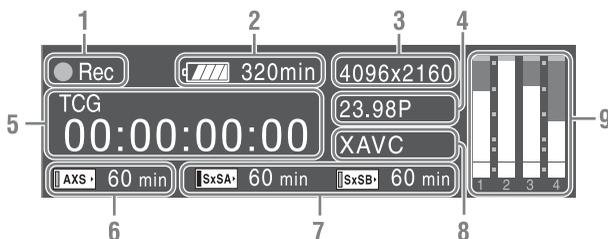
**5. Down**

Moves the cursor down.

**6. Right**

Moves the cursor to the right.

**Status screen**



**1. Special recording/operation status indication**

● Rec	Recording in progress
Stby	Standby for recording
● S&Q Rec	Slow & Quick Motion recording in progress
S&Q Stby	Standby for Slow & Quick Motion recording

**2. Battery remaining charge/DC IN voltage indication (page 20)**

**3. Recording format (picture size) indication (page 35)**

Displays the picture size that is recorded on an SxS memory card.

**4. System frequency and scan method indication (page 35)**

**5. Time data indication (page 36)**

**6. AXS memory status/remaining space indication (page 29)**

**7. A/B slot media status/remaining space indication (page 25)**

**8. Recording format (codec) indication (page 35)**

Displays the format that is recorded on an SxS memory card.

**9. Audio level meter (4CH)**

## Viewfinder Screen

While recording, standing by to record, or playback, the statuses and settings of this unit are superimposed on the LCD monitor/viewfinder screen.

The statuses and settings of this unit can be turned on/off using the setup menu or by the assignable button. The statuses and settings of this unit can be independently turned on/off (*page 58*).

### To turn on/off on the setup menu

Turn on/off the statuses and settings of this unit on “Setting” in “Display On/Off” (*page 58*) of the VF menu.

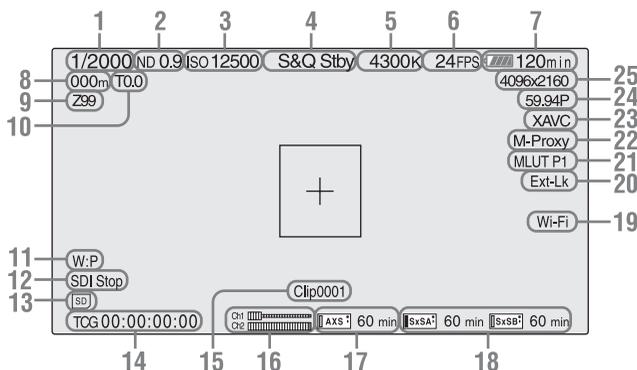
### To turn on/off by the assignable button

Assign “Display” to one of the assignable buttons (*page 37*). You can turn on/off the statuses and settings of this unit by pressing the assignable button.

#### Tip

When using the 1.3× or 2× anamorphic lens, set “Aspect” in “VF Setting” (*page 56*) of the VF menu to “Anamo ×1.3” or “Anamo ×2” to display the normal image without distortion on the LCD monitor/viewfinder screen.

### Information displayed on the screen while recording



**1. Shutter mode/shutter speed indication** (*page 48*)

**2. ND filter indication** (*page 9*)

**3. Gain indication** (*page 47*)

Displayed as the EI value when “Shooting Mode” in “Base Setting” (*page 62*) of the System menu is set to “Cine EI.”

**4. Special recording/operation status indication**

● Rec	Recording in progress
Stby	Standby for recording
● S&Q Rec	Slow & Quick Motion recording in progress
S&Q Stby	Standby for Slow & Quick Motion recording

**5. Color temperature indications** (*page 45*)

**6. S&Q motion frame rate indication** (*page 49*)

**7. Battery remaining charge/DC IN voltage indication** (*page 20*)

**8. Focus position indication**

Displays focus position (only when a lens that is compatible with the focus setting display function is attached).

**9. Zoom position indication**

Displays zoom position in the range of 0 (wide position) to 99 (tele position) (only when a lens that is compatible with the zoom setting display function is attached).

**10. Iris position indication**

Displays iris position (only when a lens that is compatible with the iris setting display function is attached).

**11. White balance mode indication (page 45)**

W:P	Preset mode
W:M	Memory mode

**12. Control status of SDI output indication (page 55)**

**13. SD card indication**

**14. Time data indication (page 36)**

**15. Clip name indication (page 35)**

**16. Audio level meter**

**17. AXS memory status/remaining space indication (page 29)**

When the left side of the icon is orange, recording is possible.

When the green lamp on the upper right of the icon lights, playback is possible.

**18. A/B slot media status/remaining space indication (page 25)**

When the left side of the icon is orange, recording is possible.

When the green lamp on the upper right of the icon lights, playback is possible.

**19. Wi-Fi connection status indication (page 30)**

Appears when “Wi-Fi” (page 65) is set to “Enable.”

**20. Timecode external lock indication**

When the unit is locked to the timecode of an external device, “Ext-Lk” appears.

**21. Gamma/Monitor LUT indication (pages 50, 55)**

Displays the gamma setting value. When “Shooting Mode” (page 62) is set to “Cine EI,” the Monitor LUT setting appears instead of the gamma setting.

**22. Simultaneous recording status indication (page 37)**

M-Proxy: Displayed when the function of simultaneous recording on one memory card is effective.

**23. Recording format (codec) indication (page 35)**

Displays the format that is recorded on an SxS memory card.

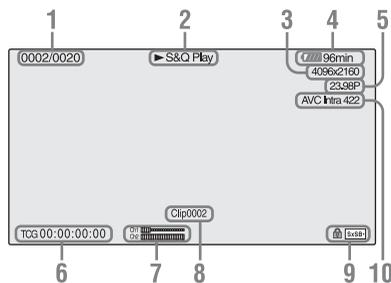
**24. System frequency and scan method indication (page 35)**

**25. Recording format (picture size) indication (page 35)**

Displays the picture size that is recorded on an SxS memory card.

**Information displayed on the playback screen**

The following information is superimposed on the playback picture.



**1. Clip no./total number of clips**

**2. Playback mode**

**3. Playback format (picture size)**

**4. Battery charge remaining/DC IN voltage**

**5. Playback format (frame rate)**

**6. Time data**

You can switch between timecode and duration by using “TC Display” (page 59) in the TC/UB menu.

**7. Audio levels**

The audio levels for the recording are displayed.

**8. Clip name**

**9. Media**

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

**10. Playback format (codec)**

## Power Supply

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

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

### Lithium-ion Battery Pack

BP-FL75

BP-L80S

### AC Adaptor

AC-DN2B

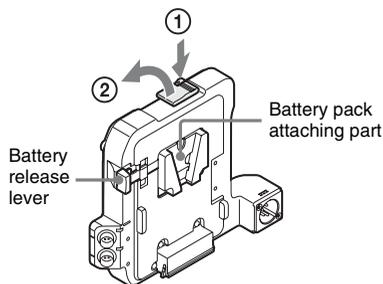
AC-DN10

## Using a Battery Pack

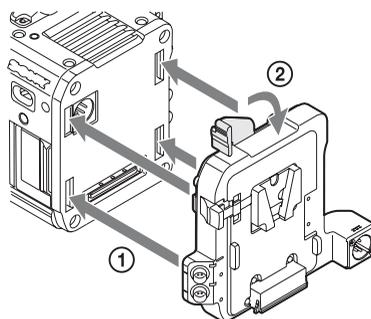
### Attaching a battery pack

#### 1 Attach the battery adaptor (supplied) to the camcorder.

Press the release button (①) of the battery adaptor to pop up the ejection lever, then raise the ejection lever (②).



Insert the projection of the battery adaptor into the slot on the rear of the camcorder (①), then lower the ejection lever (②).



#### Notes

- Before attaching the battery adaptor, make sure that the ejection lever is raised.
- Before lowering the ejection lever, make sure that the four hooks are attached securely. If the four hooks are not attached securely, it may cause the connection to be poor or damage the camcorder and battery adaptor.

#### 2 Attach a battery pack to the battery adaptor.

Insert the battery pack into the battery pack attaching part of the battery adaptor, then slide the battery pack down to lock it in place.

#### Notes

- Before use, charge the battery pack with the battery charger.
- A warm battery pack immediately after use may not be able to be fully recharged.

### Removing a battery pack

Unlock the battery pack by sliding it up while pressing the battery release lever, then remove it. Press the release button and raise the ejection lever, then remove the battery adaptor by pulling it out while sliding upward.

#### Note

Remove the battery adaptor while supporting the camcorder by hand.

## Checking remaining battery charge

When recording or playback is in progress on the battery pack, an icon to show the current battery remaining time and battery voltage are displayed on the sub display screen (*page 15*) and LCD monitor/viewfinder screen (*page 17*).

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

The camcorder indicates the remaining usage time in minutes by calculating the available time with the battery pack if operation is continued at the current rate of power consumption.

### If the remaining battery charge becomes low

If the remaining battery charge decreases to a certain level during operation, a low-battery message, flashing of the REC lamp, and a beep sound will warn you.

If the remaining charge further decreases to a level at which operation cannot be continued, a battery-empty message appears.

Replace the battery pack with one that is fully charged.

### To change the message levels

These settings can be changed with “Battery Alarm” (*page 64*) in the System menu.

## Using AC Power (DC IN Power)

The camcorder works with AC power by using the AC adaptor AC-DN2B/AC-DN10 (optional) and DC cable CCDD-X2 (optional).

## Setting the Clock

When you turn the camcorder on for the first time after purchasing or replacing the backup battery, the Initial Setting display appears on the viewfinder screen.

Set the date and time of the built-in clock, using this display.

### Time Zone

The value shows the time difference from UTC (Coordinated Universal Time).

Change the setting if needed.

### Setting the time and date

Turn the MENU dial (*page 9*) to move the cursor, then press the MENU dial to set each menu item. When you press the MENU dial when the cursor is on “Finish,” the setting display disappears, the clock setting is completed.

After the setting display disappears, “Clock Set” (*page 64*) in the System menu can be used to set “Time Zone” and date/time.

### Notes

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

# Attaching Optional Devices

## Attaching a Lens

### Recommended lenses

- SCL-P35T20 (Focal length: 35 mm)
- SCL-P50T20 (Focal length: 50 mm)
- SCL-P85T20 (Focal length: 85 mm)
- SCL-PK6 (set of 6 lenses)
  - SCL-P20T20 (Focal length: 20 mm)
  - SCL-P25T20 (Focal length: 25 mm)
  - SCL-P35T20A (Focal length: 35 mm)
  - SCL-P50T20A (Focal length: 50 mm)
  - SCL-P85T20A (Focal length: 85 mm)
  - SCL-P135T20 (Focal length: 135 mm)
- SCL-P11X15

For details about available lenses for the camcorder, contact a Sony service representative.

### Caution

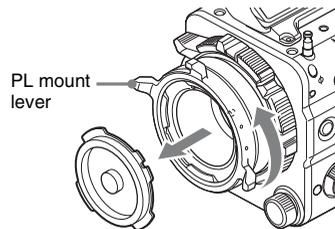
Do not leave the lens facing the sun. Direct sunlight can enter through the lens, be focused in the camcorder, and cause fire.

### Notes

- Attach/remove a lens while the camcorder is turned off.
- A lens is a precision part. Do not place the lens directly with the mount part down. Attach the cover supplied with the lens.
- The lens interface of the camcorder is set to “Type C,” to correspond with the lenses SCL-P35T20/P50T20/P85T20, SCL-P11X15 and lenses with a Cooke-type connector. When using a lens with an ARRI-type connector, set “Lens interface” (page 49) in the Camera menu to “Type A.” Set to “Off” for SCL-PK6 or other lenses. If this setting is not correct, an alert message appears when the camcorder is turned on after attaching the lens.

## Attaching a PL mount lens

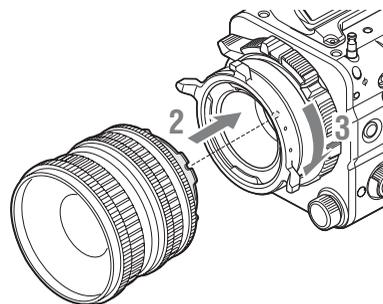
- 1 Remove the mount cover from the lens mount by turning the PL mount lever counterclockwise.



### Note

Turn the PL mount lever counterclockwise to the stopper position.

- 2 Insert the lens into the lens mount by matching the concave part of the lens to the locating pin on the upper right of the lens mount.
- 3 Fix the lens by turning the PL mount lever clockwise while holding the lens.

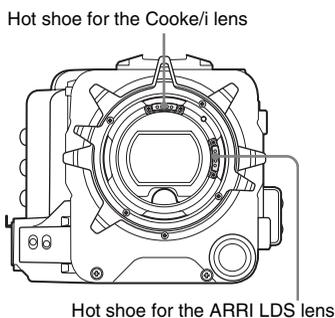


### Note

Do not turn the lens when attaching the PL mount lens. It may cause damage to the hot shoe pin.

## To attach an ARRI\* LDS lens or Cooke/i lens

Match the contact of the lens to the hot shoe of the camcorder.



\* ARRI Group

## Adjusting a flange focal length

You need to adjust the flange focal length (distance from the mounting flange to the film plane) for the following cases.

- When a lens is attached for the first time.
- When a lens is changed.
- When focus is not achieved for either tele or wide angle while using a zoom lens.

You can adjust the flange focal length by turning the screw for the flange focal length (*page 9*). Use a hex key (7/64) for adjusting.

When turning the screw to the left, the flange focal length becomes long. When turning the screw to the right, the flange focal length becomes short. Turn the screw slowly.

### Notes

- The camcorder will not work if the screw for the flange focal length is turned too much. Stop turning the screw when the amount of the flange focal length no longer changes. Approximate limit for turning the screw is 7 rotations to the right/left.
- Use a hex key of the specified size. Otherwise, the screw head may be damaged and you may be unable to turn the screw.

## Removing a lens

Remove a lens with the following steps.

- 1 Turn the lens mount frame counterclockwise while holding the lens from underneath.
- 2 Pull the lens forward.

### Note

If another lens will not be attached soon, attach the mount cover and fix the lens mount frame by turning it clockwise.

## Selecting the lens file

By storing the adjustment value of the attached lens as a file, you can easily perform adjustment for the lens by loading the file.

Load the file in “Lens File” (*page 61*) of the File menu.

## Attaching a Viewfinder

### Available viewfinders for the camcorder

- DVF-L350: LCD color viewfinder
- DVF-L700: LCD color viewfinder
- DVF-EL100: OELD color viewfinder

### Caution

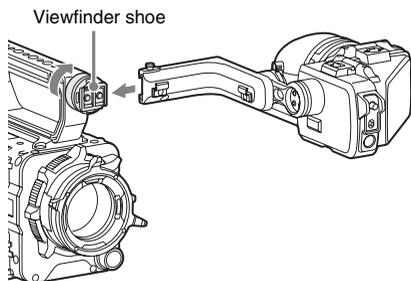
Do not leave the camcorder with the eyepiece of the viewfinder facing the sun. Direct sunlight can enter through the eyepiece, be focused in the viewfinder, and cause fire.

### Notes

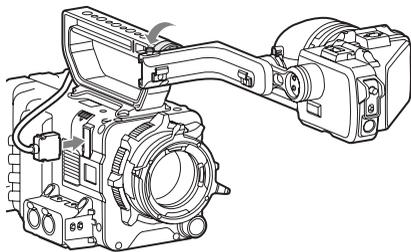
- Attach/remove the viewfinder while the camcorder is turned off.
- When using the camcorder with the DVF-L700 attached, turn the camcorder on while the POWER switch of the DVF-L700 is set to ON.

For details about attaching the viewfinder, refer to the operating instructions of the viewfinder.

- 1 Loosen the fixing ring of the viewfinder shoe, align the slot of the viewfinder, then attach the viewfinder by sliding it horizontally.



- 2 Tighten the fixing ring after determining the left and right position of the viewfinder, then connect the viewfinder cable to the VF connector of the camcorder.



### To remove the viewfinder

Loosen the fixing ring for the viewfinder, raise the stopper, then remove the viewfinder by sliding it in the reverse direction for when attaching.

## Setting the Basic Action

Before recording, make the basic settings, as required.

### Shooting Mode

You can switch between the “Cine EI” mode (allows you to use the camcorder as a film camera, where the movie is edited post-production, rather than at the time of shooting), and the “Custom” mode (allows you to edit pictures as you make the movie, by accessing all the setting items).

Switch the mode by using “Shooting Mode” in “Base Setting” (*page 62*) of the System menu.

#### Note

The shooting mode can be selected if the AXS-R5 is attached. If the AXS-R5 is not attached, “Shooting Mode” is locked to “Custom.”

### Main Recorded Signal

Set the predominant signal format to be used. Set the format by using “Main Operation” in “Base Setting” (*page 62*) of the System menu. The RAW signal is recorded on the AXR-R5 attached to the camcorder, and the YPbPr or RGB signal is recorded on the SxS memory card in the camcorder. Since the RGB signal is output from the SDI 1 connector of the camcorder, record it on an external device such as SR-R1.

#### Note

The RAW signal can be selected only when attaching the AXS-R5. If the AXS-R5 is not attached, “Main Operation” is locked to “YPbPr” or “RGB.”

## Color Space

Select the color reproducibility. Select it by using “Color Space” in “Base Setting” (page 62) of the System menu.

**S-Gamut:** Allows you to record in a wider gamut that is comparable with a film camera. You can expand the color expression in the post-production process.

### Note

“White Switch” (page 45) of the Camera menu can be selected from among Preset 3200K/Preset 4300K/Preset 5500K. “Gamma” (page 50) of the Paint menu is locked to “S-Log2.”

**Normal:** Reproduces color as would be reproduced using a traditional camera, by the Matrix setting.

## Using SxS Memory Cards

This camcorder records audio and video on SxS memory cards (optional) inserted in the card slots.

### About SxS Memory Cards

Use the following Sony SxS memory cards. Available memory cards differ depending on the recording format.

#### SxS PRO+

SBP-128B, SBP-64B: Available for all recording formats.

#### SxS PRO

SBP-64A, SBP-32: SStP SR-Lite 422, XAVC 1920 × 1080P, MPEG 1920 × 1080P/i

#### SxS-1

SBS-64G1A, SBS-32G1A: MPEG 1920 × 1080P/i

Operations are not guaranteed with other memory cards.

These memory cards comply with the ExpressCard standard.

*For details on using SxS memory cards and usage-related precautions, refer to the instruction manual for the SxS memory card.*

SxS, SxS PRO, and SxS-1 are trademarks of Sony Corporation.

The ExpressCard word mark and logo are owned by Personal Computer Memory Card International Association (PCMCIA) and are licensed to Sony Corporation. All other trademarks are the property of their respective owners.

### Inserting an SxS Memory Card

- 1 **Open the cover of the card slot block (page 12).**

## 2 Insert the SxS memory card into the slot with the SxS label facing to the right.

The ACCESS lamp (*page 12*) lights in red then changes to green once the memory card is ready for use.

## 3 Close the cover.

### Status indications by the ACCESS lamps

Card slots A and B are accompanied by the respective ACCESS lamps to indicate their status.

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

## Removing an SxS memory card

### 1 Open the cover of the card slot block, press the EJECT button (*page 12*), then pull the button out.

### 2 Press the EJECT button again to remove the card.

#### Note

Data integrity is not guaranteed if the power is turned off or a memory card is removed while it is being accessed. Data on the card may be destroyed. Be sure that its ACCESS lamp is lit in green or off when you turn off the power or remove a memory card.

## Switching Between SxS Memory Cards

When SxS memory cards are loaded in both card slots A and B, press the SLOT SELECT button (*page 12*) to select the card you wish to use. If a card becomes full, recording continues after automatically switching to the second card.

#### Note

The SLOT SELECT button is disabled while recording/playback is in progress. Switching is not executed even if you press the button. The button is enabled while the thumbnail screen is displayed (*page 38*).

## Formatting an SxS Memory Card

If an SxS memory card is not formatted, or was formatted with another system, the message “Media Needs to be Formatted” is displayed on the LCD monitor/viewfinder screen. Format the card as instructed follows.

**Using “Format Media” (*page 60*) in the Media menu, specify “Media(A)” (slot A) or “Media(B)” (slot B) then select “Execute.” On a confirmation message, select “Execute” again.**

The in-progress message and status bar are displayed, and the ACCESS lamp lights in red. When formatting is complete, a completion message is displayed. Press the MENU dial to hide the message.

### Recording/playback during formatting

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

### If formatting fails

A write-protected SxS memory card or memory card that cannot be used with this camcorder will not be formatted.

As a warning message is displayed, replace the card with an appropriate SxS memory card, according to the instructions in the message.

#### Note

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

## Checking the Remaining Time Available for Recording

While recording (or standing by to record), you can check the remaining space for the SxS memory cards loaded in the card slots on the A/B slot media status/remaining space indication of the sub display (*page 15*) or LCD monitor/viewfinder screen (*page 17*).

The available time for recording with the current video format (recording bit rate) is calculated according to the remaining space of each card and displayed in time units of minutes.

#### Note

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

## Replacing an SxS memory card

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

### Note

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

## Restoring an SxS Memory Card

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

If an SxS memory card that needs to be restored is loaded, a message prompting you to execute the restore operation is displayed on the LCD monitor/viewfinder screen.

Restore the card as instructed follows.

### Select “Execute” by turning the MENU dial, then press the MENU dial.

During restoration, the in-progress message and status bar are displayed, and the ACCESS lamp lights in red.

When restoration is completed, the completion message is displayed, then press the MENU dial to disappear the message.

### If restoration fails

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

- 1 Copy necessary clips to another SxS memory card, using the dedicated application software (*page 81*).
- 2 Format the problem SxS memory card, using the format function of this camcorder.
- 3 Copy the clips back to the SxS memory card.

### Recording/playback during restoration

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

### Note

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

## Using an SD Card

You can store the setting value file of the camera on an SD card (optional). The stored file can be loaded from the SD card.

### Usable SD Cards

**SDHC memory card\*** (Speed Class: 4 to 10, UHS is not compatible, Capacity: 2 GB to 32 GB)

**SD memory card\*** (File system: FAT 16, Capacity: up to 2 GB)

\* Indicated as “SD card” in these Operating Instructions.

### Inserting an SD Card

- 1 **Open the cover of the card slot block** (*page 12*).
- 2 **Insert the SD memory card into the slot with the SD label facing up.**  
The ACCESS lamp (*page 12*) lights in red then changes to green once the memory card is ready for use.
- 3 **Close the cover.**

#### Status indications by the ACCESS lamp

Lamp	Slot statuses
Lights in red	Accessing the SD card (writing/reading data)
Lights in green	Standby
Off	<ul style="list-style-type: none"> <li>• No SD card is loaded.</li> <li>• The loaded card is invalid.</li> </ul>

### Removing an SD memory card

**Open the cover of the card slot block, remove the SD card by pressing the SD card once lightly.**

#### Notes

- Data integrity is not guaranteed if the power is turned off or a memory card is removed while it is being accessed. Data on the card may be destroyed. Be sure that its ACCESS lamp is lit in green or off when you turn off the power or remove a memory card.

- Make sure that the card does not pop out when inserting or removing it.

### Formatting an SD Memory Card

When you use an SD memory card with this camcorder, it must be formatted using the format function of this camcorder.

It is also necessary to format an SD memory card if a caution message is displayed when you mount it.

For an SD memory card that was formatted with another system unsupported by this camcorder, the message “File System Mismatch” is displayed on the LCD monitor/viewfinder screen. Format the card as instructed follows.

**Using “Format Media” (*page 60*) in the Media menu, specify “SD card” then select “Execute.” On a confirmation message, select “Execute” again.**

The in-progress message and status bar are displayed, and the ACCESS lamp lights in red. When formatting is complete, a completion message is displayed. Press the MENU dial to hide the message.

#### Note

All the data are erased when a memory card is formatted, and the data cannot be restored.

### Checking the Remaining Time

The remaining time can be checked on the Media status screen (*page 10*).

#### Note

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

**To use media formatted with this camcorder in the slots of other devices**

Make a backup of the media, then format it using the other device.

## Using an AXS-R5

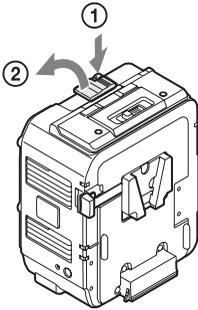
You can record image/audio (RAW format) data to the AXS (Access Memory Card System) recorder AXS-R5 (optional) by connecting the AXS recorder to the camcorder.

### Attaching the AXS-R5

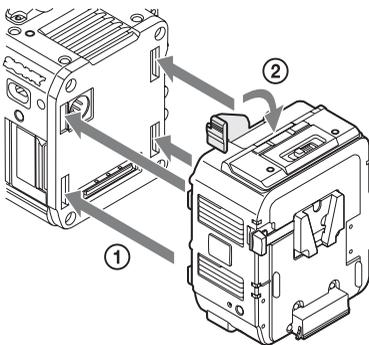
#### Note

Attach/remove the AXS-R5 while the camcorder is turned off.

- 1 Press the release button of the AXS-R5 (①) to pop up the ejection lever, then raise the ejection lever (②).



- 2 Insert the projection of the AXS-R5 into the slot on the rear of the camcorder (①), then lower the ejection lever (②).



#### Notes

- Before attaching the AXS-R5, make sure that the ejection lever is raised.

- Before lowering the ejection lever, make sure that the four hooks are attached securely. If the four hooks are not attached securely, it may cause the connection to be poor or damage the camcorder and AXS-R5.

### Removing the AXS-R5

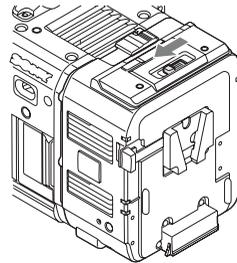
Press the release button and raise the ejection lever, then remove the AXS-R5 by pulling it out while sliding upward.

#### Note

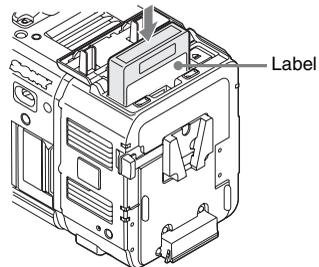
Remove the AXS-R5 while supporting the camcorder by hand.

### Inserting an AXS Memory Card

- 1 Open the cover by sliding the memory slot cover open/close button on the top of the AXS-R5.



- 2 Insert the AXS memory card into the card slot with the label facing as indicated below.



- 3 Close the cover.

## Removing an AXS Memory Card

Open the cover of the AXS-R5, press the **EJECT** button and remove the AXS memory card.

### Note

Data integrity is not guaranteed if the power is turned off or a memory card is removed while it is being accessed. Data on the card may be destroyed. Be sure that its ACCESS lamp is lit in green or off when you turn off the power or remove a memory card.

## Recording to an AXS Memory Card

Set “Shooting Mode” in “Base Setting” (page 62) to “Cine EI,” and “Main Operation” in “Base Setting” (page 62) to “RAW” of the System menu.

For settings of the AXS-R5, see “AXS Recorder” (page 65) of the System menu.

When storing the file name by the “Cam ID + Reel#” naming mode (page 60), the file name is created as follows:

- When there is already an F65 type file on the inserted AXS memory card, the new file inherits its information.

### Examples:

When “B002C003\_XXXXXXXX” is on the AXS memory card, the next created file name is “B002C004\_XXXXXXXX.” The Camera ID of “AXS Recorder” in the System menu is changed to “B,” and Reel Number is changed to “002.” The clip name on the information that is displayed during shooting flashes until the camera starts recording.

- When the inserted AXS memory card has no file, “1” is added to the Reel Number of the file that was recorded last.

### Examples:

When you record on empty card “2” after recording up to “D001CXXX\_XXXXXXXX” on card “1,” the next created file name is “D002C001\_XXXXXXXX.” The clip name on the information that is displayed during shooting flashes until the camera starts recording.

- When you set the Camera ID and Reel Number of “Clip Naming” in the Media menu, that information is applied.

### Examples:

When you change the Camera ID to “F” and Reel Number to “001” of the AXS memory card that is recorded up to “E003CXXX\_XXXXXXXX,” the next file name is “F001CXXX\_XXXXXXXX.” When you change the Camera ID only, the Reel Number is changed to “001.”

## Formatting an AXS Memory Card

When you use an AXS memory card with the AXS-R5 that is attached to the camcorder, it must be formatted using the format function of this camcorder.

It is also necessary to format an AXS memory card if a caution message is displayed when the camcorder is turned on with the AXS recorder attached.

For an AXS memory card that was formatted with another system unsupported by the AXS-R5, the message “Media Needs to be Formatted” is displayed on the LCD monitor/viewfinder screen. Format the AXS memory card as follows.

**Using “Format Media” (page 60) in the Media menu, specify “AXS Memory” (slot B), then select “Execute.”**

An in-progress message and status bar are displayed, and the ACCESS lamp lights in red. When formatting is complete, a completion message is displayed. Press the MENU dial to hide the message.

### Note

When formatting, all data in an AXS memory card are erased and cannot be restored.

## Checking the Remaining Time Available for Recording

While recording (or standing by to record), you can check the time remaining for the AXS memory cards on the AXS memory status/remaining space indication of the sub display (page 15) or LCD monitor/viewfinder screen (page 17).

The available time for recording with the current video format (recording bit rate) is calculated according to the remaining space of each card and displayed in time units of minutes.

### Note

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

## Restoring the AXS Memory Card

If a data error occurs on the AXS memory card for some reason, the card must be restored.

If an AXS memory card that needs to be restored is connected, a message prompting you to execute restoration is displayed on the LCD monitor/viewfinder screen.

Restore the card as instructed follows.

**Select “Execute” by turning the MENU dial, then press the MENU dial.**

During restoration, the in-progress message and status bar are displayed, and the ACCESS lamp lights in red.

When restoration is completed, the completion message is displayed, then press the MENU dial to disappear the message.

### If restoration fails

- A write-protected AXS memory card or one on which an error occurred cannot be restored. For such a card, a warning message is displayed. Release the write protection or replace the card, according to the instructions in the message.
- An AXS memory card on which an error occurred may become usable again through repeated formatting.
- In some cases, only parts of clips cannot be restored. Playback of the restored clips becomes possible again.

### Note

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

## Using a USB Wireless LAN Module

You can make the Wi-Fi connection between the camcorder and a device such as a smartphone, tablet, etc., by attaching the supplied IFU-WLM3 USB wireless LAN module.

### Note

You cannot use a USB wireless LAN module other than the IFU-WLM3.

Making a Wi-Fi connection between a device and the camcorder enables you to do the following.

- Operate the setup menu (displayed on the LCD monitor/viewfinder screen)
- Record and playback the camcorder
- Display the current status of the camcorder
- Switch between the recording settings and system settings
- Operate the assignable buttons of the camcorder

## Attaching the IFU-WLM3

- 1 **Open the cover of the USB wireless LAN module retracting part (page 11).**
- 2 **Insert the IFU-WLM3 to the USB connector.**
- 3 **Close the cover.**

## Making a Wi-Fi Connection

### Note

Only one Wi-Fi device can be connected at a time.

### To make a network setting

Change the “Basic Authentication” settings (page 65) of the System menu as required.

Item	Setting
User Name	User name for log-in (factory default setting: “admin”)
Password	Password for log-in (factory default setting: model name “pmw-f5” or “pmw-f55”)

For details about the menu settings and entering a character string, see “Setup Menu Operations” (page 44).

### To make a connection

**1** Set “Wi-Fi” in “Wi-Fi” (page 65) of the System menu to “Enable.”

**2** Make a Wi-Fi connection by inputting the SSID and Password onto the device, or by using the Wi-Fi direct connection function.

You can check the SSID and password of the camcorder on “SSID & Password” in “Wi-Fi” (page 65) of the System menu.

When using the Wi-Fi direct connection function, proceed to the following step.

**3** Select “Execute” for “Wi-Fi Direct Connection” in “Wi-Fi” of the System menu.

The setup menu disappears, and the connection wait message for the Wi-Fi direct connection function appears.

#### Using the Push-Button method

When you perform the Push-Button method on the device, the message for connection permission appears on the connection wait screen. Select “Execute.”

#### Using the PIN code method

When you perform the PIN code method on the device, the device name and PIN code appears on the connection wait screen.

Complete the connecting process by inputting the PIN code to the device.

## Using the Wi-Fi Remote Commander

When a Wi-Fi connection is established between a device such as smartphone, tablet, etc., and the camcorder, the Wi-Fi remote commander appears on the device screen and the device can be used as a remote commander.

You can start/stop recording and adjust the recording settings with a Wi-Fi connected device. This function is useful for setting the camcorder in a remote place, such as the top of a crane, etc.

### Note

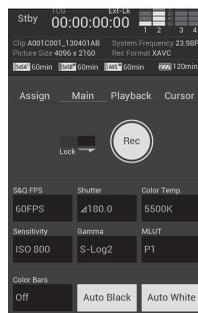
The Wi-Fi remote commander is not capable of the following functions.

- Zoom, Focus, and Iris control.
- Displaying the thumbnail screen.

### Wi-Fi remote commander displays

#### Smartphone

##### Main screen



- Status indication: operating status, time data, audio level meter, clip name, recording format, media status/remaining space, battery remaining charge/DC IN voltage
- Recording settings indication: S&Q FPS, Shutter, Color Temp., Sensitivity/Gain/Exposure Index, Gamma, MLUT, Color Bars, Auto Black, Auto White

### Playback screen



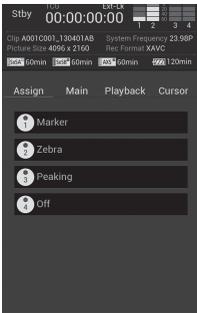
- Status indication
- Playback operation button:  
F Rev, Play/Pause, F Fwd, Prev, Stop, Next

### Cursor screen



- Status indication
- Cursor operation button, menu/status indication:  
Up, Left, Set, Right, Down, Cancel/Back, Menu, Status

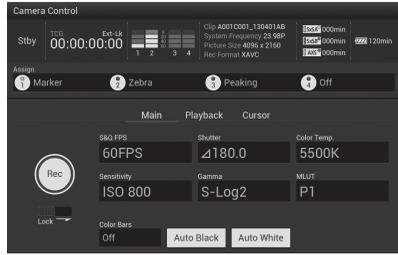
### Assign screen



- Status indication
- Assignable button indication:  
Assignable buttons 1 to 4

### Tablet

#### Main screen



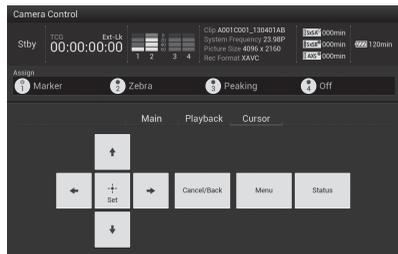
- Status indication:  
operating status, time data, audio level meter, clip name, recording format, media status/remaining space, battery remaining charge/DC IN voltage
- Assignable button indication:  
Assignable buttons 1 to 4
- Recording settings indication:  
S&Q FPS, Shutter, Color Temp., Sensitivity/Gain/Exposure Index, Gamma, MLUT, Color Bars, Auto Black, Auto White

#### Playback screen



- Status indication
- Assignable button indication
- Playback operation button:  
F Rev, Play/Pause, F Fwd, Prev, Stop, Next

#### Cursor screen



- Status indication
- Assignable button indication
- Cursor operation button, menu/status indication:  
Up, Left, Set, Right, Down, Cancel/Back, Menu, Status

## To display the Wi-Fi remote commander

The display size of the Wi-Fi remote commander changes according to the device screen size automatically.

**1 Make a Wi-Fi connection between the device and camcorder (page 31).**

**2 Launch the browser and input `http://<camcorder's IP address>` (“System menu” > “Wi-Fi” > “IP Address”)/`rm.html` in the address bar.**

Example: When the IP address is 10.0.0.1, input `http://10.0.0.1/` in the address bar.

**3 Input the user name and password (“System menu” > “Basic Authentication” > “User Name” or “Password”) on the browser.**

When completing the connection, the display of the Wi-Fi remote commander appears on the device.

Operate the Wi-Fi remote commander by following the display.

The REC button becomes unavailable when the Lock switch is dragged to the right.

### Notes

- Depending on the device, the Wi-Fi remote commander may not appear properly on the device's screen even though you input `http://<camcorder's IP address>/rm.html` in the address bar. In this case, input “rms.html” for a smartphone or “rmt.html” for a tablet instead of “rm.html” at the end of the address to display the Wi-Fi remote commander properly.
- The Wi-Fi remote commander on the device's screen may no longer match the actual status of the camcorder in the following cases. When this happens, refresh the browser on the device.
  - when the camcorder is restarted while the Wi-Fi connection is established
  - when the camcorder is controlled directly while the Wi-Fi connection is established
  - when the device is reconnected
  - when you operate forward/backward on the device's browser.
- If the Wi-Fi signal is poor, the Wi-Fi remote commander may not work properly.

## Compatible devices

The following devices, using the specified versions or higher, can be used as Wi-Fi remote commanders.

Device	OS	Browser
Smartphone	Android 4.0/4.1/ 4.2	Chrome V26
	iOS 5	Safari 5
	iOS 6	Safari 6
Tablet	Android 4.0/4.1/ 4.2	Chrome V26
	iOS 5	Safari 5
	iOS 6	Safari 6

## Basic Operation Procedure

Basic recording can be performed with the following procedures.

- 1 Make sure that the necessary devices are attached to the camcorder and power is supplied to them.**
- 2 Load the memory card(s).**  
If you load two cards, recording is continued by automatically switching to the second card when the first card becomes full.
- 3 Set the power switch (*page 10*) to the ON position.**  
The recording screen is displayed on the LCD monitor/viewfinder screen.
- 4 Press the REC button (*page 9*).**  
The REC lamp lights and recording begins.
- 5 To stop recording, press the REC button again.**  
Recording stops and the camcorder enters STBY (recording standby) mode.

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### Playing a recorded clip

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You can play the recorded clip while the camcorder is in standby mode.

- 1 Insert the SxS memory card.**
- 2 Press the VIEW button in the function button (*page 12*) once to display the VIEW-1 screen.**
- 3 Search the desired clip by pressing Prev or F Rev button on the sub display.**
- 4 Press the Play/Pause button on the sub display.**  
The playback image appears on the viewfinder.

Playback operation is performed by the buttons on the sub display.

Play/Pause button: Pauses playback. To resume playback, press this button again.

F Fwd button/F Rev button: Plays fast. To return to normal playback, press the Play/Pause button.

Stop button: Stops playback or recording.

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### Monitoring audio

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In normal playback mode, you can monitor the recorded audio signals through the built-in speaker (*page 9*) or connected headphones.

When connecting the headphones to the headphones connector (*page 12*), the built-in speaker is turned off.

You can select audio channel to be monitored and adjust the sound volume with “Audio Output” (*page 54*) in the Audio menu.

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### Cueing Up

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

Press the Prev button or Next button on the sub display (*page 15*). You can cue to the top of the desired clip by pressing the button repeatedly.

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### Switching the SxS memory cards

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When two memory cards are loaded, press the SLOT SELECT button (*page 12*) to switch memory cards.

#### Note

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

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### Switching to the AXS memory card

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You can play the picture that is recorded on the AXS memory card in the AXS-R5 by developing simply. To switch to the AXS memory card, press the SELECT button of the AXS-R5. The playback signal is output from the AUX OUT connector of the AXS-R5.

**Clip (recording data)**

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

**Clip name**

For each clip recorded with this camcorder, a clip is named by the naming mode that is set in “Clip Naming” (page 60) of the Media menu. The Shot Number and clip number are automatically incremented.

**Maximum duration of a clip**

The maximum clip length is 6 hours. If you exceed the maximum clip length, a new clip will be automatically created. You can check the new clip on the thumbnail screen.

## Changing Basic Settings

You can make changes to the settings based on the intended usage of the recorded video or recording conditions.

### System Frequency

Switch by setting “Frequency” in “System Setting” (page 62) of the System menu. After switching this setting, the camcorder will automatically restart, depending on the setting value.

**Note**

The system frequency setting cannot be changed during recording or playback.

### Recording Format

Selectable formats vary, depending on the system frequency setting.

To change the format, use “Format” in “Rec Format” (page 63) of the System menu. Signals from the SDI OUT and HDMI OUT connectors are also output according to the format selected with this menu.

### Electronic Shutter

Set the shutter speed (cache time). When you set “Setting” in “Shutter” (page 48) of the Camera menu to “On,” the shutter mode and speed you specified with “Shutter” are turned on.

#### Setting the shutter mode and speed

Select “Mode” and “Select” in “Shutter” (page 48) of the Camera menu, then set the speed in “Shutter Value.”

#### Shooting in slow shutter

The shutter speed is specified in the number of accumulated frames. This function allows you to obtain low-noise clear pictures in low light levels or surreal pictures with afterimages.

Set “Setting” in “Slow Shutter” (page 48) of the Camera menu to “On,” and specify the number of accumulated frames with “Number of Frames.”

## Sensitivity/Gain/Color Temperature/White Balance

The setting items differ, depending on the shooting mode or color space setting. These items can be set on the setup menu and sub display.

### While in “Cine EI” mode: Selecting the sensitivity (EI value) and color temperature

Set the sensitivity by using “Exposure Index” in “Gain” (*page 47*) of the Camera menu. When you set MLUT to on, the brightness of the LCD monitor/viewfinder screen changes according to the EI value. This does not affect the recorded image.

You can set the following values for the sensitivity (EI value)

PMW-F5: 640EI, 800EI, 1250EI, 2000EI

PMW-F55: 400EI, 640EI, 800EI, 1250EI

Select the color temperature from among “Preset 3200K” (tungsten), “4300K” (tungsten), and “5500K” (daylight), in “White” (*page 45*) of the Camera menu.

### While in “Custom” and “S-Gamut” mode: Selecting the sensitivity or gain, and color temperature

Select the sensitivity (ISO) or gain (dB) in “Gain” (*page 47*) of the Camera menu.

Select the color temperature from among “Preset 3200K” (tungsten), “4300K” (tungsten), and “5500K” (daylight), in “White” (*page 45*) of the Camera menu.

### While in “Custom” and “Normal” mode: Selecting the sensitivity or gain, and color temperature or white balance

Select the sensitivity (ISO) or gain (dB) in “Gain” (*page 47*) of the Camera menu.

Select the color temperature or white balance in “White” of the Camera menu.

For the color temperature, select it from among “Preset 3200K” (tungsten), “4300K” (tungsten), and “5500K” (daylight), in “White” (*page 45*) of the Camera menu, and you can select any color temperature by using “Color Temp.” in “White” (*page 45*) of the Camera menu.

For the white balance, adjust automatically by using “Auto White Balance,” or adjust manually by using “Color Temp. Balance,” “R Gain,” or “B Gain,” in “White” of the Camera menu.

## Audio

### To adjust the audio levels

When “CH-1 Audio Select/CH-2 Audio Select” in “Audio Level” (*page 54*) of the Audio menu is set to “Auto,” the audio recording levels are automatically adjusted.

To adjust the audio recording levels manually, set to “Manual.” Adjust the audio recording levels on “CH-1 Audio Level/CH-2 Audio Level” in “Audio Level” of the Audio menu.

## Time Data

### Setting the Timecode

Specify the timecode to be recorded with “Timecode” in the TC/UB menu (*page 59*).

# Useful Functions

## Assignable Buttons

The camcorder has four assignable buttons (pages 9, 11) to which you can assign various functions for convenience.

## Changing functions

Use “Assignable Button” (page 63) in the System menu.

The assigned functions can be viewed on the Assignable button status screen (page 10).

### Assigned functions

Function name	Function
Marker	Turning on/off the Center Marker, Safety Zone, Aspect Marker.
Zebra	Turning on/off the Zebra function.
Peaking	Turning on/off the Peaking function.
Display	Turning on/off the monitor display of status/setting value.
VF Mode	Switching viewfinder screen between color and mono.
Rec	Starting/stopping recording.
S&Q Motion	Turning on/off the Slow & Quick Motion.

## Slow & Quick Motion

When the video format (page 35) is set to the following setting, you can set the recording frame rate and playback frame rate to different values. XAVC 1920 × 1080 29.97P/25P/23.98P

### Notes

- Slow & Quick Motion mode cannot be used while recording, playing, or displaying thumbnail.
- Slow & Quick Motion mode cannot be used while the Slow Shutter mode.
- Audio cannot be recorded while in the Slow & Quick Motion mode.

## Simultaneously Recording

You can record the two sizes of pictures simultaneously on an SxS memory card in one slot. You can also record HD signal on the SxS memory card in the camcorder while recording

picture and audio of RAW format on the AXS-R5.

## Recording simultaneously on one memory card – MPEG2 Proxy function (PMW-F55 only)

Set “Setting” in “MPEG2 Proxy” (page 59) of the Recording menu to “On” while the recording format is set to XAVC 4096 × 2160 29.97P/25P/23.98P.

The picture of XAVC 4096 × 2160, and the picture signal of MPEG2 1920 × 1080 are recorded simultaneously on one SxS memory card.

The clip of XAVC 4096 × 2160 is recorded under the XDROOT/Clip directory on the SxS memory card, the clip of MPEG2 1920 × 1080 is recorded under the XDROOT/Sub directory on the SxS memory card, and the suffix “S02” is added to the end of the clip name.

### Note

This function cannot be used while in the Slow & Quick Motion mode.

## Recording on the AXS and SxS memory simultaneously

Set “Setting” in “Rec Control” (page 59) of the Recording menu to “SxS & AXS,” while “Main Operation” in “Base Setting” (page 62) of the System menu is set to “RAW.”

You can simultaneously record pictures of RAW format and pictures with formats set by “Rec Format.”

## Focus Magnifier

By pressing the FOCUS MAG button of the viewfinder (DVF-L350, DVF-EL100, DVF-L700) that is attached to the camcorder, you can expand the center part of the viewfinder, and it is easy to adjust the focus. After adjusting the focus, press the button again to return to the normal (recording) screen.

It does not affect the recorded image or output signal in the focus magnifier mode.

# Thumbnail Screens

When you press the Thumbnail button of the sub display (*page 15*), clips recorded on the SxS memory card are displayed as thumbnails on the screen.

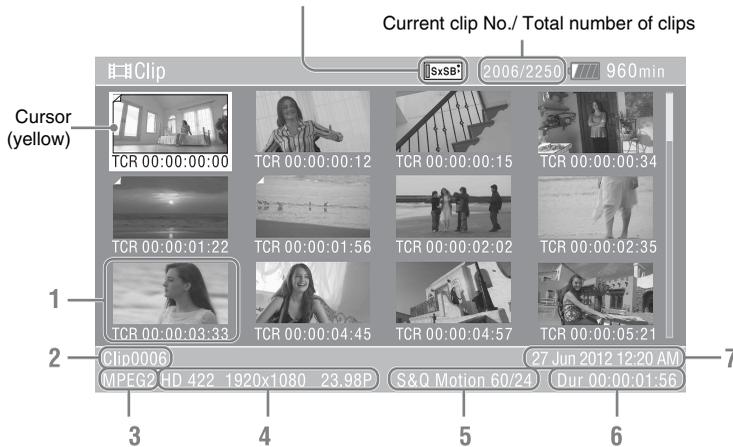
You can start playback from the clip selected on the thumbnail screen. The playback picture can be seen on the LCD monitor/viewfinder screen and external monitors.

Press the Thumbnail button of the sub display to exit the thumbnail screen and return to the recording screen.

## Configuration of the Screen

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

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



### 1. Thumbnail

The thumbnail image for each clip is an index frame from the clip. When recording, the first frame of a clip is automatically set as the index frame.

Below each thumbnail, the clip/frame information is displayed. You can change the displayed item on "Thumbnail Caption" in "Customize View" (*page 39*) of the thumbnail menu.

### 2. Clip name/title

The clip name or title of the selected clip is displayed.

### 3. File format

The file format of the selected clip is displayed.

### 4. Recording video format

### 5. Special recording information

If the selected clip was recorded in a special recording mode, the mode is displayed.

Clips recorded in Slow & Quick Motion display the frame rate to the right.

### 6. Duration of the clip

### 7. Creation date and time

## Playing Clips

### Playing the Selected and Subsequent Clips in Sequence

- 1 Turn the MENU dial (*page 9*) to move the cursor to the thumbnail image of the clip with which you wish to start playback.
- 2 Press the MENU dial.  
Playback starts from the beginning of the selected clip.

#### Notes

- To start playback by pressing the MENU dial, set “Set Key on Thumbnail” in “Switch/Lamp” (*page 63*) of the System menu to “Play.”
- The playback picture may be momentarily distorted or frozen between clips. You cannot operate the camcorder during this condition.
- When you select a clip on the thumbnail screen and start playback, the playback picture at the beginning of the clip may be distorted. To start playback without distortion, pause playback once after starting it, press the Prev button on the sub display (VIEW-1) to return to the top of the clip, then restart playback.

## Clip Operations

On the thumbnail screen, you can operate the clips or confirm the subsidiary data for clips using the thumbnail menu. The thumbnail menu appears when you press the OPTION button (*page 10*) on the thumbnail menu.

### Operations of the Thumbnail Menu

Turn the MENU dial (*page 9*) to select a menu item, then press the MENU dial. Pressing the CANCEL/BACK button (*page 9*) restores to the previous condition. Pressing the OPTION button while the thumbnail menu is displayed turns the thumbnail menu off.

#### Notes

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

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### Clip operation menu

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#### Display Clip Properties

Displays the detailed information of a clip screen (*page 40*).

#### Copy MPEG2 Proxy (PMW-F55 only)

Copy All Clips: Copies all the MPEG2 Proxy data to the destination media as a clip (*page 40*).

#### Delete Clip

Select Clip: Deletes the selected clip (*page 41*).

#### Customize View

Thumbnail Caption: Changes the items that are displayed under the thumbnail screen. (*page 41*)

## Displaying the Detailed Information of a Clip

Select "Display Clip Properties" from the thumbnail menu.



### 1. Image of the current clip

### 2. Timecode

TC Index: Timecode of the displayed frame  
Start: Timecode at the recording starting point  
End: Timecode at the recording ending point  
Duration: Duration of the clip

### 3. Date of recording/modifying

### 4. Clip name

### 5. Clip title 1/2

### 6. Recording format

Video Codec: Video codec  
Size: Picture size  
FPS: Frame rate  
Audio Codec: Audio codec  
Ch/Bit: Number of the recorded audio channel/  
audio recording bit

### 7. Special recording information

### 8. Recording device name

## Copying MPEG2 Proxy Data (PMW-F55 only)

You can copy all the MPEG2 Proxy data recorded on the clip to another SxS memory card as a clip. Each clip is copied to the destination SxS memory card and given the same name as the MPEG2 Proxy data with its suffix "S02" deleted.

### Notes

- If there is another clip having the same name on the destination SxS memory card, the clip is copied under a name adding a single-digit number in parentheses to the end of the original clip name. The parenthetical number is the minimum value that does not exist in the destination memory card.  
**Examples:**  
ABCD0002(1) if ABCD0002 exists  
ABCD0002(2) if ABCD0002(1) exists  
ABCD0005(4) if ABCD0005(3) exists
- You cannot copy a file 1000 times or more if clips with the same clip name followed by parenthetical numbers (1) to (999) already exist on the card.
- A warning message is displayed if there is not sufficient space on the destination SxS memory card. Replace the SxS memory card with one with sufficient space.

## Deleting Clips

You can delete clips from the SxS memory card. Select “Select Clip” from “Delete Clip” on the thumbnail menu.

You can select multiple clips to be deleted. Press the OPTION button (*page 10*) after selecting the clip to be deleted.

## Changing Information on the Thumbnail Screen

You can change information of the clip/frame that is displayed under thumbnail.

Select the displayed item from “Thumbnail Caption” in “Customize View” on the thumbnail menu.

Date Time: Creation date or modified time

Time Code: Timecode

Duration: Duration

Sequential Number: Thumbnail number

## Sub Display Operation

You can check the status of the camcorder, set basic settings for the camcorder, and operate playback on the sub display. In the CAMERA screen, basic setting of the camcorder can be performed. In the VIEW screen, playback and operation on the thumbnail screen can be performed.

For details about the screen of the sub display, see “Sub Display Screen” (page 15) in “On-Screen Indications.”

### Controls

#### Function buttons (page 12)

Switches the screen of the sub display. If there are multiple screens for a function, press the function button repeatedly.

- CAMERA button
- FILE button (To be supported by future upgrade.)
- AU/TC (audio/timecode) button (To be supported by future upgrade.)
- VIEW button

#### Item button (page 12)

Selects the item of the sub display.

#### SEL/SET dial (MENU dial) (page 9)

When you turn it, the cursor moves in the corresponding direction, permitting you to select menu items or setting values.

Press the MENU dial to select the item.

#### CANCEL/BACK button (page 9)

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

#### Note

When operating the setup menu, the settings of the setup menu take priority.

### Setting the basic items

- 1 Press the function button to select the screen of the function to be set.
- 2 Press the item button to select the item to be set.  
Setting value of the item that can be set is orange.
- 3 Turn the MENU dial to move the cursor to the item to be set.

S&Q FPS 60FPS	Shutter 1/180.0	Color Temp 3200K
On	320min	4096x2160
Off		23.98P
00:00:00:00		XAVC
AXS 60 min	SxA 60 min	SxB 60 min
Sensitivity ISO 2500	Gamma S-Log2	MLUT P1

- 4 Press the MENU dial to enter the selected item.

### Using the sub display as the operation button

Press the VIEW button (page 12) to display the VIEW-1/VIEW-2 screen (page 15), then operate the displayed function with the item button. The cursor operation on the sub display is used on the setup menu (page 44) and the clip operation (page 39).

# Sub Display Setting Items

The item names and its settings are listed below.

## CAMERA Screen

Item name	Setting
<b>S&amp;Q FPS</b>	On: Turns the Slow & Quick motion mode on, and sets the frame rate. (See page 49 for the selectable item.) Off: Turns the Slow & Quick motion mode off.
<b>Shutter</b>	Sets the electronic shutter speed and shutter angle. Depending on the mode of the electronic shutter (page 48), displays differ. Step: Selects from 8 types of preset time/angle. (See page 48 for the selectable item.) Continuous: Can be selected for any of the available speeds. (See page 48 for the selectable item.)
<b>Color Temp</b>	Sets the color temperature of the white balance. Preset 3200K/4300K/5500K: Sets the white balance to the preset value of color temperature 3200K/4300K/5500K. Memory: Sets the color temperature of the white balance that is stored on the white memory.
	<b>Note</b> “Manual” cannot be selected when “Shooting Mode” (page 62) is set to “Cine EI.”
<b>Sensitivity/Gain/ Exposure Index</b>	Sets the sensitivity/gain. The item name (Sensitivity/Gain) and setting value differ, depending on the “Mode” setting in “Gain” (page 47). (See page 47 for the selectable item.)
	<b>Note</b> This item cannot be set when “Shooting Mode” (page 62) is set to “Cine EI.” In this case, the item name becomes “Exposure Index.”
<b>Gamma</b>	Sets the gamma category and gamma table. STD: Selects the standard gamma. STD1 DVW / STD2 $\times 4.5$ / STD3 $\times 3.5$ / STD4 240M / STD5 R709 / STD6 $\times 5.0$ HG: Selects the hyper gamma. HG1 3250G36 / HG2 4600G30 / HG3 3259G40 / HG4 4609G33 / HG7 8009G40 / HG8 8009G33 S-Log2: Selects S-Log2.
	<b>Note</b> This setting is displayed as a blank when “Shooting Mode” (page 62) is set to “Cine EI.” (“Gamma” is locked to “S-Log2” for the video output signal and recorded signal on an SxS memory card.)
<b>MLUT</b>	Sets Monitor LUT that is used for the picture of SDI (Main) output, viewfinder output, internal record, SDI (sub) output, HDMI output, and video output when “Shooting Mode” (page 62) is set to “Cine EI.” P1: 709(800%) P2: HG8009G40 P3: HG8009G33

# Setup Menu Operations

The Setup menu allowing you to perform various settings that are needed for recording and playing, appears on the LCD monitor/viewfinder screen by pressing the MENU button. (You can display the Setup menu on the external video monitor.)

## Menu controls

### MENU button (page 10)

To turn the menu mode to use the setup menus on/off.

### SEL/SET dial (MENU dial) (page 9)

When you turn the dial, the cursor moves up or down, permitting you to select menu items or setting values.

Press the MENU dial to select the highlighted item.

### CANCEL/BACK button (page 9)

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

### Up/Down/Left/Right buttons, SET button (page 16)

When you press the up/down/left/right buttons on the sub display (VIEW-2), the cursor moves in the corresponding direction, permitting you to select menu items or setting values.

Press the SET button to enter the highlighted item.

#### Note

In the focus magnifier mode (page 37), the setup menu cannot be used.

## Setting the Setup menus

Turn the MENU dial to set the cursor to the item of the menu you wish to set, then press the MENU dial to select that item.

- The menu item selection area can show 9 lines at maximum. When all the selectable items cannot be displayed at one time, you can scroll the display up or down by moving the cursor.
- For items having a wide range of available values (example: -99 to +99), the available value area is not displayed. The current setting is highlighted instead, indicating that the setting is ready for change.

- When you select “Execute” for an execution item, the corresponding function is executed.
- When you select an item that you must confirm before execution, the menu display temporarily disappears, and a confirmation message is displayed. Follow the instructions of the message, and specify whether to execute or cancel.

## Entering a character string

When you select an item for which a character string, such as a filename, is to be specified, the character input screen appears.



### 1 Select character type by turning the MENU dial, then press the MENU dial to enter.

ABC: Uppercase alphabetical  
abc: Lowercase alphabetical  
123: Numerical  
!#\$: Special

### 2 Select a character from the selected character type.

The cursor moves to the next column.  
Space: Inputs space on the position of the cursor.  
←/→: Moves the cursor.  
BS: Deletes a character on the left of the cursor.

### 3 Select “Done” after inputting characters.

The input characters are entered and the character input screen disappears.

# Setup Menu List

The functions and available settings of menus are listed below.

The default settings set at the factory are shown in bold face (example: **Preset 3200K**).

## Camera Menu

Camera		
Menu items	Sub items and setting values	Contents
<b>White</b> Setting for white balance	Auto White Balance	Performs the auto white balance function.
	Execute / Cancel	Execute: Executes this function. (This setting is available only when “White Switch” is set to “Memory.”)
	White Switch	Sets the operation mode for “White.”
	<b>Preset 3200K</b> / Preset 4300K / Preset 5500K / Memory	Preset 3200K/4300K/5500K: Set the white balance to the preset value of the color temperature 3200K/4300K/5500K. Memory: Adjusts the white balance manually. Perform the auto white balance function (one push). (“Memory” is available only when “Shooting Mode” in “Base Setting” of the System menu is set to “Custom,” and “Color Space” in “Base Setting” of the System menu is set to “Normal.”)
	Color Temp.	Displays and sets the color temperature of white balance that is stored in the white memory.
	1500K to 50000K ( <b>3200K</b> )	(This setting is available only when “White Switch” is set to “Memory.”)
	Color Temp. Balance	Sets the color temperature more precisely, if the result is not as you desire, even though you set “Color Temp.”
	-99 to +99 ( <b>±0</b> )	(This setting is available only when “White Switch” is set to “Memory.”)
	R Gain	Sets the R gain value of white balance that is stored in the memory.
-99 to +99 ( <b>±0</b> )	(This setting is available only when “White Switch” is set to “Memory.”)	
B Gain	Sets the B gain value of white balance that is stored in the memory.	
-99 to +99 ( <b>±0</b> )	(This setting is available only when “White Switch” is set to “Memory.”)	
Shockless White	Sets the speed of change in white balance when the white balance mode is switched.	
Off / <b>1</b> / 2 / 3	Off: Changes instantly. 1 to 3: Select a larger number to change the white balance more slowly through interpolation.	
Filter White Memory	Turns on/off “Filter White Memory” that sets the memory area of the white balance for each position number of the ND filter.	
On / <b>Off</b>		

Camera		
Menu items	Sub items and setting values	Contents
<b>Offset White</b> Setting for the offset white balance	Setting On / Off	Turns on/off "Offset White" that is for the auto white balance function (one push). (This setting is available only when "White Switch" is set to "Memory.")
	Offset <Memory> -99 to +99 ( $\pm 0$ )	Adjusts the volume of the offset white for the auto white balance function (one push). (This setting is available only when "White Switch" is set to "Memory.")
<b>Black</b> Setting for the black	Auto Black Balance Execute / Cancel	Performs the auto black balance function. Execute: Executes this function.
	Master Black -99 to +99 ( $\pm 0$ )	Sets the master black level. (This setting is available only when "Shooting Mode" in "Base Setting" of the System menu is set to "Custom.")
	R Black -99 to +99 ( $\pm 0$ )	Sets the R black level. (This setting is available only when "Shooting Mode" in "Base Setting" of the System menu is set to "Custom.")
	B Black -99 to +99 ( $\pm 0$ )	Sets the B black level. (This setting is available only when "Shooting Mode" in "Base Setting" of the System menu is set to "Custom.")
<b>Flare</b> Setting the flare correction	Setting On / Off	Turns the flare correction function on/off. (This setting is available only when "Shooting Mode" in "Base Setting" of the System menu is set to "Custom," and this setting is locked to "Off" when "Shooting Mode" is set to "Cine EL.")
	Master Flare -99 to +99 ( $\pm 0$ )	Sets the user adjustment value for master flare of the flare correction that is caused by the camcorder.
	R Flare -99 to +99 ( $\pm 0$ )	Sets the user adjustment value for R flare of the flare correction that is caused by the camcorder.
	G Flare -99 to +99 ( $\pm 0$ )	Sets the user adjustment value for G flare of the flare correction that is caused by the camcorder.
	B Flare -99 to +99 ( $\pm 0$ )	Sets the user adjustment value for B flare of the flare correction that is caused by the camcorder.

Camera		
Menu items	Sub items and setting values	Contents
Gain Setting for the Gain	Mode <b>ISO</b> / dB	Selects the gain setting mode. (This setting is available only when “Shooting Mode” in “Base Setting” of the System menu is set to “Custom.”)
	Gain • PMW-F5 When “Mode” in “Gain” is set to “ISO,” and “Gamma Category” is set to “STD” or “HG (HG1/HG2/HG3/HG4)” <b>ISO 800</b> to ISO 6400 When “Mode” in “Gain” is set to “ISO,” and “Gamma Category” is set to “HG (HG7/HG8)” <b>ISO 1600</b> to ISO 12500 When “Mode” in “Gain” is set to “ISO,” and “Gamma Category” is set to “S-Log2” <b>ISO 2000</b> to ISO 16000 • PMW-F55 When “Mode” in “Gain” is set to “ISO,” and “Gamma Category” is set to “STD” or “HG (HG1/HG2/HG3/HG4)” <b>ISO 500</b> to ISO 4000 When “Mode” in “Gain” is set to “ISO,” and “Gamma Category” is set to “HG (HG7/HG8)” <b>ISO 1000</b> to ISO 8000 When “Mode” in “Gain” is set to “ISO,” and “Gamma Category” is set to “S-Log2” <b>ISO 1250</b> to ISO 10000 When “Mode” in “Gain” is set to “dB” –3dB / <b>0dB</b> / 3dB / 6dB / 9dB / 12dB / 18dB	Sets the gain. (This setting is available only when “Shooting Mode” in “Base Setting” of the System menu is set to “Custom.”)
	Exposure Index • PMW-F5 640EI / 800EI / 1250EI / 2000EI • PMW-F55 400EI / 640EI / 800EI / 1250EI	Sets the EI value. (This setting is available only when “Shooting Mode” in “Base Setting” of the System menu is set to “Cine EI,” and “Main, Sub & Internal Rec” in “Monitor LUT” of the Video menu is set to “MLUT On.”)
		<b>Note</b> The Highlight Latitude values for each EI value are follows: • PMW-F5 640EI: 4.4E / 800EI: 4.7E / 1250EI: 5.4E / 2000EI: 6.0E • PMW-F55 400EI: 4.4E / 640EI: 5.0E / 800EI: 5.4E / 1250EI: 6.0E
	Remote Gain L –3dB / <b>0dB</b> / 3dB / 6dB / 9dB / 12dB / 18dB	Sets the gain switch L level for RM (such as RM-B15, etc.). (This setting is available only when “Shooting Mode” in “Base Setting” of the System menu is set to “Custom.”)
	Remote Gain M –3dB / 0dB / 3dB / <b>6dB</b> / 9dB / 12dB / 18dB	Sets the gain switch M level for RM (such as RM-B15, etc.). (This setting is available only when “Shooting Mode” in “Base Setting” of the System menu is set to “Custom.”)

Camera																																			
Menu items	Sub items and setting values	Contents																																	
	Remote Gain H -3dB / 0dB / 3dB / 6dB / 9dB / <b>12dB</b> / 18dB	Sets the gain switch H level for RM (such as RM-B15, etc.). (This setting is available only when "Shooting Mode" in "Base Setting" of the System menu is set to "Custom.")																																	
<b>Shutter</b> Specifying operating conditions of the electronic shutter	Setting <b>On</b> / Off	Turns the electronic shutter function on/off.																																	
	Mode <b>Speed</b> / Angle	Selects modes of the electronic shutter.																																	
	Select <b>Step</b> / Continuous	Selects the setting method for the electronic shutter speed.																																	
	Shutter Value	Sets the shutter speed/angle. Speed mode: Shutter speed Angle mode: Shutter angle. Setting value differs depending on the format setting and the "Select" setting in "Shutter."																																	
	When "Mode" is set to "Speed"																																		
	<table border="1"> <thead> <tr> <th>Format setting</th> <th>Step</th> <th>Continuous</th> </tr> </thead> <tbody> <tr> <td>59.94P</td> <td>1/100 / 1/120 / 1/125 / 1/250 / 1/500 /</td> <td>1/60.07 to 1/8000</td> </tr> <tr> <td>59.94i</td> <td>1/1000 / 1/2000 / 1/4000</td> <td>1/60.1 to 1/7000</td> </tr> <tr> <td>50P</td> <td>1/60 / 1/100 / 1/120 / 1/125 / 1/250 /</td> <td>1/50.03 to 1/7000</td> </tr> <tr> <td>50i</td> <td>1/500 / 1/1000 / 1/2000</td> <td>1/50.14 to 1/7000</td> </tr> <tr> <td>29.97P</td> <td>1/50 / 1/60 / 1/120 / 1/125 / 1/250 /</td> <td>1/29.99 to 1/8000</td> </tr> <tr> <td></td> <td>1/500 / 1/1000 / 1/2000</td> <td></td> </tr> <tr> <td>25P</td> <td>1/30 / 1/50 / 1/60 / 1/100 / 1/250 /</td> <td>1/25.02 to 1/7000</td> </tr> <tr> <td></td> <td>1/500 / 1/1000 / 1/2000</td> <td>When "S&amp;Q Motion" is set to "On" 1/30.01 to 1/7000</td> </tr> <tr> <td>24P</td> <td>1/48 / 1/50 / 1/60 / 1/120 / 1/250 /</td> <td>1/23.99 to 1/6000</td> </tr> <tr> <td>23.98P</td> <td>1/500 / 1/1000 / 1/2000</td> <td>When "S&amp;Q Motion" is set to "On" 1/30.02 to 1/6000</td> </tr> </tbody> </table>	Format setting	Step	Continuous	59.94P	1/100 / 1/120 / 1/125 / 1/250 / 1/500 /	1/60.07 to 1/8000	59.94i	1/1000 / 1/2000 / 1/4000	1/60.1 to 1/7000	50P	1/60 / 1/100 / 1/120 / 1/125 / 1/250 /	1/50.03 to 1/7000	50i	1/500 / 1/1000 / 1/2000	1/50.14 to 1/7000	29.97P	1/50 / 1/60 / 1/120 / 1/125 / 1/250 /	1/29.99 to 1/8000		1/500 / 1/1000 / 1/2000		25P	1/30 / 1/50 / 1/60 / 1/100 / 1/250 /	1/25.02 to 1/7000		1/500 / 1/1000 / 1/2000	When "S&Q Motion" is set to "On" 1/30.01 to 1/7000	24P	1/48 / 1/50 / 1/60 / 1/120 / 1/250 /	1/23.99 to 1/6000	23.98P	1/500 / 1/1000 / 1/2000	When "S&Q Motion" is set to "On" 1/30.02 to 1/6000	
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23.98P																																			
	Step Select Execute / Cancel	Changes the preset value for "Shutter Value" (8 types) of the "Step" setting in "Select." Add: Adds a step shutter value. When 8 steps are already registered, delete a step shutter value by using "Delete" to make the space for adding the new step shutter value. Delete: Deletes a registered step shutter value. Step 1~8: Displays a registered step shutter value.																																	
<b>Slow Shutter</b> Setting the slow shutter	Setting <b>On</b> / <b>Off</b>	Turns the slow shutter function on/off.																																	
	Number of Frames <b>2 / 3 / 4 / 5 / 6 / 7 / 8</b>	Sets the number of frames to accumulate for the slow shutter.																																	

Camera		
Menu items	Sub items and setting values	Contents
<b>S&amp;Q Motion</b> Setting the Slow & Quick Motion function	Setting <b>On / Off</b>	Turns the Slow & Quick Motion function on/off. (This setting is available only when “Format” in “Rec Format” of the System menu is set to “XAVC 1920 × 1080P.”)
	Frame Rate 1 to 60 ( <b>24</b> )	Sets the frame rate for the Slow & Quick Motion recording when “Setting” is set to “On.”
<b>Color Bars</b> Setting the Color Bars	Setting <b>On / Off</b>	Turns the color bars on/off.
	Type <b>ARIB / SMPTE / 75% / 100%</b>	Selects the type of color bar.
<b>Noise Suppression</b> Setting the noise suppression	Setting <b>On / Off</b>	Turns the noise suppression function on/off. (This setting is available only when “Shooting Mode” in “Base Setting” of the System menu is set to “Custom.”)
	Level Low / <b>Mid</b> / High	Sets the noise suppression level.
<b>Image Inversion</b> Setting the image inversion function	Setting <b>Normal / V Inv</b>	Sets the image inversion.
<b>Lens Interface</b> Setting the lens interface	Setting <b>Type C / Type A / Off</b>	Sets the lens interface according to the connected lens type.

## Paint Menu

The Paint menu settings are available only when “Shooting Mode” in “Base Setting” (page 62) of the System menu is set to “Custom.”

Paint		
Menu items	Sub items and setting values	Contents
<b>Gamma</b> Adjusting the gamma compensation	Setting <b>On / Off</b>	Turns the gamma compensation function on/off. (This setting is available only when “Color Space” in “Base Setting” of the System menu is set to “Normal.”)
	Step Gamma 0.35 to 0.90 ( <b>0.45</b> )	Sets the gamma compensation value in 0.05 steps.
	Master Gamma -99 to +99 ( <b>±0</b> )	Adjusts the master gamma level.
	Gamma Category <b>STD / HG / S-Log2</b>	Select from among “STD” (standard gamma), “HG” (hyper gamma), or “S-Log2.”
	Gamma Select	Selects the gamma table that is used for the gamma compensation.
	When “Gamma Category” is set to “STD” STD1 DVW / STD2 ×4.5 / STD3 ×3.5 / STD4 240M / <b>STD5 R709</b> / STD6 ×5.0 When “Gamma Category” is set to “HG” HG1 3250G36 / HG2 4600G30 / HG3 3259G40 / <b>HG4 4609G33</b> / HG7 8009G40 / HG8 8009G33 When “Gamma Category” is set to “S-Log2” <b>S-Log2</b>	
<b>Knee</b> Adjusting the knee compensation	Setting <b>On / Off</b>	Turns the knee compensation function on/off. (This setting is available only when “Gamma Category” in “Gamma” is set to “STD.”)
	Point 75% to 109% ( <b>90%</b> )	Sets the knee point.
	Slope -99 to +99 ( <b>±0</b> )	Sets the knee slope.
	Knee Saturation <b>On / Off</b>	Turns the knee saturation function on/off.
	Knee Saturation Level -99 to +99 ( <b>±0</b> )	Adjusts the knee saturation level.

Paint			
Menu items	Sub items and setting values	Contents	
<b>White Clip</b> Adjusting the white clipping	Setting <b>On / Off</b>	Turns the white clipping adjustment on or off. (This setting is available only when “Gamma Category” in “Gamma” is set to “STD” or “HG.”)	
	Level	Sets the white clip level.	
	When the system frequency setting is 59.94, 29.97, or 23.98. 90.0%~109.0% ( <b>108.0%</b> ) When the system frequency setting is 50, 25, or 24. 90.0%~109.0% ( <b>105.0%</b> )		
<b>Detail</b> Setting the detail adjusting	Setting <b>On / Off</b>	Turns the detail adjusting function on/off.	
	Level -99 to +99 ( <b>±0</b> )	Adjusts the detail level.	
	H/V Ratio -99 to +99 ( <b>±0</b> )	Adjusts the ratio between the H detail level and V detail level.	
	Crispening -99 to +99 ( <b>±0</b> )	Adjusts the crispening level.	
	Level Depend <b>On / Off</b>	Turns the level depend adjustment function on/off.	
	Level Depend Level -99 to +99 ( <b>±0</b> )	Adjusts the level depend level.	
	Frequency -99 to +99 ( <b>±0</b> )	Sets the center frequency of the H details signal. (Setting the center frequency higher decreases the details.)	
	Knee Aperture <b>On / Off</b>	Turns the knee aperture compensation function on/off.	
	Knee Aperture Level -99 to +99 ( <b>±0</b> )	Adjusts the knee aperture level.	
	Limit -99 to +99 ( <b>±0</b> )	Adjusts both the white and black detail limiter.	
	White Limit -99 to +99 ( <b>±0</b> )	Adjusts the white detail limiter.	
	Black Limit -99 to +99 ( <b>±0</b> )	Adjusts the black detail limiter.	
	V Black Limit -99 to +99 ( <b>±0</b> )	Adjusts the black V detail limiter.	
	V Detail Creation NAM / <b>Y</b> / G / G+R	Selects the source signal to generate the V detail signal. NAM: Highest level signal of V detail signal that is generated by R signal, G signal, or B signal. Y: Y signal G: G signal G+R: Synthesized signal from G and R signal with a same ratio.	
	<b>Aperture</b> Setting the aperture compensation	Setting <b>On / Off</b>	Turns the aperture compensation function on/off.
		Level -99 to +99 ( <b>±0</b> )	Adjusts the aperture level.

Paint		
Menu items	Sub items and setting values	Contents
<b>Skin Detail</b> Adjusting the skin detail compensation	Setting On / <b>Off</b>	Turns the skin detail compensation function on/off.
	Area Detection Execute/Cancel	Detects the color for the skin detail compensation. Execute: Executes this function.
	Area Indication On / <b>Off</b>	Turn on/off the function that displays the zebra pattern in the target area for the skin detail compensation.
	Level -99 to +99 ( $\pm 0$ )	Adjusts the skin detail level.
	Saturation -99 to +99 ( $\pm 0$ )	Adjusts the color (saturation) level for the skin detail compensation.
	Hue <b>0</b> to 359	Adjusts the color hue for the skin detail compensation.
	Width 0 to 90 ( <b>40</b> )	Adjusts the width of the color hue for the skin detail compensation.
	<b>Matrix</b> Setting of the Matrix correction	Setting <b>On</b> / Off
Preset Matrix <b>On</b> / Off		Turns the preset matrix function on/off.
Preset Select • PMW-F5: <b>Standard</b> / High SAT / FL Light / Cinema / F55 709 Like • PMW-F55: 1: SMPTE240M / <b>2: ITU-709</b> / 3: SMPTE Wide / 4: NTSC / 5: EBU		Selects the preset matrix.
User Matrix On / <b>Off</b>		Turns the user matrix correction function on/off.
Level -99 to +99 ( $\pm 0$ )		Adjusts the color saturation for the entire picture area.
Phase -99 to +99 ( $\pm 0$ )		Adjusts the color phase for the entire picture area.
User Matrix R-G -99 to +99 ( $\pm 0$ )		Finely adjusts the color phase for the entire picture area by independently setting each of the factors.
User Matrix R-B -99 to +99 ( $\pm 0$ )		
User Matrix G-R -99 to +99 ( $\pm 0$ )		
User Matrix G-B -99 to +99 ( $\pm 0$ )		
User Matrix B-R -99 to +99 ( $\pm 0$ )		
User Matrix B-G -99 to +99 ( $\pm 0$ )		

**Paint**

<b>Menu items</b>	<b>Sub items and setting values</b>	<b>Contents</b>
<b>Multi Matrix</b> Settings for the multi-matrix correction	Setting On / <b>Off</b>	Turns on/off the multi-matrix correction, which allows specific colors to be selected for saturation correction in a 16-axis hue space. (This setting is available only when “Color Space” in “Base Setting” of the System menu is set to “Normal.”)
	Area Indication On / <b>Off</b>	Displays a zebra pattern in the areas of the specified color for multi-matrix correction.
	Color Detection Execute/Cancel	Detects the target color on the screen for multi-matrix correction. Execute: Executes this function.
	Axis B / B+ / MG- / MG / MG+ / R / R+ / YL- / YL / YL+ / G- / G / G+ / CY / CY+ / B-	Specifies a color targeted by multi-matrix correction (16-axis mode).
	Hue -99 to +99 ( <b>±0</b> )	Sets the color hue of the color targeted by multi-matrix correction for each 16-axis mode.
	Saturation -99 to +99 ( <b>±0</b> )	Sets the saturation of the color targeted by multi-matrix correction for each 16-axis mode.

# Audio Menu

Audio		
Menu items	Sub items and setting values	Contents
<b>Audio Input</b> Setting for audio inputs	MIC CH1 Ref -60dB / <b>-50dB</b> / -40dB	Selects the reference input level for when the AUDIO IN CH1 switch is set to MIC.
	MIC CH2 Ref -60dB / <b>-50dB</b> / -40dB	Selects the reference input level for when the AUDIO IN CH2 switch is set to MIC.
<b>Note</b> This item cannot be selected when removing the audio connector panel.	Limiter Mode <b>Off</b> / -6dB / -9dB / -12dB / -15dB / -17dB	Selects the limiter level when a loud signal is input while setting audio input level manually. When you do not use the limiter, select "Off."
	1KHz Tone On / <b>Off</b>	Turn the 1-kHz reference tone signal on/off.
	<b>Audio Level</b> Setting for audio recording level	CH-1 Audio Select <b>Auto</b> / Manual
<b>Note</b> This item cannot be selected when removing the audio connector panel.	CH-2 Audio Select <b>Auto</b> / Manual	The audio recording level is adjusted automatically when you set to "Auto."
	CH-1 Audio Level -99 to +99 ( <b>±0</b> )	Adjusts the audio recording level when "CH-1 Audio Select" is set to "Manual."
	CH-2 Audio Level -99 to +99 ( <b>±0</b> )	Adjusts the audio recording level when "CH-2 Audio Select" is set to "Manual."
	AGC Spec <b>-6dB</b> / -9dB / -12dB / -15dB / -17dB	Selects the AGC level.
	AGC Mode <b>Mono</b> / Stereo	Selects auto adjusting method for the input level of an analog audio signal recorded to CH-1/CH-2 from "Mono" (performs for each channel) and "Stereo" (performs in stereo mode).
	<b>Audio Output</b> Setting for audio outputs	Output CH <b>CH-1/CH-2</b> CH-3/CH-4
	Monitor CH	Selects the audio channel(s) to be fed to the headphones and the built-in speaker.
	When "Output CH" is set to "CH1/CH2" <b>CH-1/CH-2</b> CH-1 CH-2	CH-1/CH-2 (CH-3/CH-4): Stereo CH-1 (CH-3): CH-1 (CH-3) only CH-2 (CH-4): CH-2 (CH-4) only
	When "Output CH" is set to "CH3/CH4" <b>CH-3/CH-4</b> CH-3 CH-4	
	Headphone Out Mono / <b>Stereo</b>	Selects the headphones output, "Mono" or "Stereo."
	Monitor Level <b>0</b> to 99	Adjusts the monitor level.

## Video Menu

Video		
Menu items	Sub items and setting values	Contents
<b>Output On/Off</b> Setting the video output	SDI (Sub) <b>On / Off</b>	Turns the SDI (Sub) output on/off.
	HDMI <b>On / Off</b>	Turns the HDMI output on/off.
<b>Output Format</b> Setting for the output format	SDI (Main)	Selects the SDI (Main) output format. The setting value differs, depending on the settings of “Frequency” in “System Setting” and “Rec Format” of the System menu ( <i>page 71</i> ).
	SDI (Sub)	Selects the SDI (sub) output format. The setting value differs, depending on the settings of “Frequency” in “System Setting” of the System menu and “SDI (Main)” in “Output Format” of the Video menu ( <i>page 71</i> ).
	HDMI	Selects the HDMI output format. The setting value differs, depending on the settings of “Frequency” in “System Setting” and “Rec Format” of the System menu ( <i>page 72</i> ).
	EXT IF	Displays the extend IF output signal.
	Test	Displays the video output signal.
<b>Output Setting</b> Setting for the output conversion mode	4K/2K to HD Conv. <b>Letter Box</b> / Edge Crop / Anamo ×1.3 / Anamo ×2	Sets the output conversion mode for 17:9 → 16:9 signal. (This setting is available only when “Format” in “Rec Format” of the System menu is set to “XAVC 4096 × 2160P.”) Anamo ×1.3 / Anamo ×2: Corrects the distortion of the images that are output from the video output when using an anamorphic lens. (This setting is available only when “Main Operation” in “Base Setting” of the System menu is set to “RAW.”)
<b>Note</b>		
The HD output signal when “Main Operation” in “Base Setting” of the System menu is set to “RAW,” or the internal recorded signal when “Setting” in “Rec Control” of the Recording menu is set to “SxS & AXS,” is “Letter Box”-equivalent signal.		
<b>Monitor LUT</b> Setting for the monitor LUT	MLUT Select <b>P1: 709 (800%)</b> P2: HG8009G40 P3: HG8009G33	Sets MLUT that is used for the picture of SDI (Main) output, viewfinder output, internal record, SDI (sub) output, HDMI output, and video output when “Shooting Mode” in “Base Setting” ( <i>page 62</i> ) of the System menu is set to “Cine EI.”
	Main, Sub & Internal Rec MLUT On / <b>MLUT Off</b>	Turns on/off Monitor LUT of the SDI (Main, Sub) & Internal Rec output. (This setting is available only when “Shooting Mode” in “Base Setting” of the System menu is set to “Cine EI.”)
	HDMI & VF MLUT On / <b>MLUT Off</b>	Turns on/off Monitor LUT of the HDMI & VF output. (This setting is available only when “Shooting Mode” in “Base Setting” of the System menu is set to “Cine EI.”)

## Video

Menu items	Sub items and setting values	Contents
<b>Output Display</b> Setting for the output signal	VF Out <b>On / Off</b>	Selects whether to overlaps characters and markers on the viewfinder output signal.
	4K SDI/HDMI Out (PMW-F55 only) <b>On / Off</b>	Selects whether to overlaps characters and markers on the SDI or HDMI output signal when the picture size of SDI or HDMI output is 4K.
	HD SDI (Sub) Out <b>On / Off</b>	Selects whether to overlaps characters and markers on the SDI (Sub) output signal when the SDI (Sub) output picture quality is less than HD.
	HD/SD HDMI Out <b>On / Off</b>	Selects whether to overlaps characters and markers on the HDMI output signal when the HDMI output picture quality is less than HD.

## VF Menu

When there is SW or VR for an item on the attached viewfinder, that item is not available.

### VF

Menu items	Sub items and setting values	Contents
<b>VF Setting</b> Setting the viewfinder	Color -99 to +99 ( $\pm 0$ )	Adjusts the color of pictures on the viewfinder.
	Contrast -99 to +99 ( $\pm 0$ )	Adjusts the contrast of pictures on the viewfinder.
	Brightness -99 to +99 ( $\pm 0$ )	Adjusts the brightness of pictures on the viewfinder.
	Color Mode <b>Color</b> / B&W	Selects the display mode of the viewfinder while E-E display/recording.
	Aspect <b>Auto</b> / Full / Anamo $\times 1.3$ / Anamo $\times 2$	Selects the displayed area of pictures for the viewfinder. Anamo $\times 1.3$ / Anamo $\times 2$ : Corrects the distortion of the images on the viewfinder screen when using an anamorphic lens. (This setting is available only when "Main Operation" in "Base Setting" of the System menu is set to "RAW.")
<b>Peaking</b> Setting the peaking function	Setting <b>On / Off</b>	Turns the peaking function on/off.
	Peaking Type <b>Normal</b> / Color	Selects the peaking type. Normal: Normal peaking. Color: Color peaking.
	Frequency <b>Normal</b> / High	Selects the peaking frequency from "Normal" (normal frequency) or "High" (high frequency).
	Normal Peaking Level 0 to 99 ( <b>50</b> )	Sets the normal peaking level.
	Color <b>White</b> / Red / Yellow / Blue	Selects the color of the peaking signal when "Peaking Type" is set to "Color."
	Color Peaking Level 0 to 99 ( <b>50</b> )	Sets the color peaking level.

VF		
Menu items	Sub items and setting values	Contents
<b>Marker</b> Setting the marker indications	Setting <b>On / Off</b>	Turn all marker indications on the viewfinder on/off.
	Center Marker 1 / 2 / 3 / 4 / <b>Off</b>	Selects the center marker type when displaying the center marker. Select "Off" to turn off the center marker.
	Safety Zone <b>On / Off</b>	Turns the safety zone marker on/off.
	Safety Area 80% / <b>90%</b> / 92.5% / 95%	Selects the size (ratio to the entire screen) of the safety zone marker.
	Aspect Marker Line / Mask / <b>Off</b>	Selects the aspect marker. Line: To show white lines Mask: To lower the video signal level of areas outside the marker range. Off: To not display.
	Aspect Select 4:3 / 13:9 / 14:9 / 15:9 / <b>16:9</b> / 17:9 / 1.66:1 / 1.85:1 / 2.35:1 / 2.4:1	Select the ratio of the aspect marker.
	Aspect Mask 0 to 15 ( <b>12</b> )	When "Aspect Marker" is set to "Mask," select the brightness of images outside the aspect marker.
	Aspect Safety Zone <b>On / Off</b>	Turns the aspect safety zone marker on/off.
	Aspect Safety Area 80% / <b>90%</b> / 92.5% / 95%	Selects the size (ratio to the entire screen) of the aspect safety zone marker.
	<b>Zebra</b> Setting the zebra pattern	Setting <b>On / Off</b>
Zebra Select <b>1</b> / 2 / Both		Select the zebra pattern(s) (Zebra 1, Zebra 2, or both of Zebra 1 and Zebra 2) to be displayed.
Zebra1 Level 50% to 107% ( <b>70%</b> )		Sets the display level of zebra 1.
Zebra1 Aperture Level 1% to 20% ( <b>10%</b> )		Sets the aperture level of zebra 1.
Zebra2 Level 52% to 109% ( <b>100%</b> )		Sets the display level of zebra 2.

Menu items	Sub items and setting values	Contents
<b>Display On/Off</b> Selecting the items to be displayed	Setting <b>On / Off</b>	Turns all the indications of the viewfinder GUI on/off.
	Shutter Setting <b>On / Off</b>	Selects the item to be displayed on the viewfinder.
	ND Filter Position <b>On / Off</b>	
	Gain Setting <b>On / Off</b>	
	Rec/Play Status <b>On / Off</b>	
	Color Temp. <b>On / Off</b>	
	Frame Rate <b>On / Off</b>	
	Battery Remain <b>On / Off</b>	
	Timecode <b>On / Off</b>	
	Audio Level Meter <b>On / Off</b>	
	Media Status <b>On / Off</b>	
	Focus Position <b>Meter / Feet / Off</b>	
	Iris Position <b>On / Off</b>	
	Zoom Position <b>On / Off</b>	
	White Balance Mode <b>On / Off</b>	
	SDI Rec Control <b>On / Off</b>	
	Rec Format <b>On / Off</b>	
	Gamma <b>On / Off</b>	
	Timecode Lock <b>On / Off</b>	
	Wi-Fi Condition <b>On / Off</b>	
	Clip Name <b>On / Off</b>	
	Clip Number <b>On / Off</b>	

## TC/UB Menu

TC/UB		
Menu items	Sub items and setting values	Contents
<b>Timecode</b> Setting the timecode	Mode <b>Preset</b> / Regen	Selects the timecode mode. Preset: To start the timecode from the specified value Regen (regeneration): To start the timecode by continuing the timecode of the previous clip.
	Run <b>Rec Run</b> / Free Run	Rec Run: To advance the timecode during recording only. Free Run: The timecode keeps advancing regardless of the state of recording.
	Setting	Sets the timecode to a desired value. SET: Sets the value.
	Reset Execute / Cancel	Resets the timecode to 00:00:00:00. Execute: Execute this function.
	TC Format <b>DF</b> / NDF	Selects the timecode format. DF: Drop frame NDF: Non drop frame
	<b>TC Display</b> Setting the time data indication	Display Select <b>Timecode</b> / Duration

## Recording Menu

Recording		
Menu items	Sub items and setting values	Contents
<b>MPEG2 Proxy</b> Setting the MPEG2 proxy function (PMW-F55 only)	Setting <b>On / Off</b>	Turns the MPEG2 proxy function on/off. (This setting is available only when "Format" in "Rec Format" of the System menu is set to "XAVC 4096 × 2160P.")
<b>Rec Control</b> Setting the recording control function	Setting <b>SxS &amp; AXS</b> / AXS	Selects the target (internal recording memory or external recording memory (AXS memory)) for performing the recording control when "Main Operation" in "Base Setting" of the System menu is set to "RAW."
<b>SDI Rec Control</b> Setting the SDI recording control function	Setting <b>Off</b> / On	Turns on/off this function that controls recording/stop recording of the external device by the SDI output signal.

## Media Menu

This menu is not available when the media is not loaded.

Media		
Menu items	Sub items and setting values	Contents
<b>Format Media</b> Formatting a memory	Media (A) Execute / Cancel	Formats the SxS memory card in the slot A. Execute: Executes format.
	Media (B) Execute / Cancel	Formats the SxS memory card in the slot B. Execute: Executes format.
	SD card Execute / Cancel	Formats the SD card. Execute: Executes format.
	AXS Memory Execute / Cancel	Formats the AXS memory card. Execute: Executes format.
<b>Clip Naming</b> Setting for the clip name	Mode <b>Cam ID + Reel#</b> / Standard	Sets the naming mode for the clip name. Cam ID + Reel#: Camera ID + Reel Number + Shot Number + date + random string Standard: "Clip" (fixed string) + clip number
	Camera ID <b>A</b> to Z	Sets the camera ID when "Mode" is set to "Cam ID + Reel#."
	Reel Number <b>001</b> to 999	Sets the numeric portion of the Reel Number when "Mode" is set to "Cam ID + Reel#."
	Camera Position <b>C</b> / L / R	Sets the first character part of the Shot Number when "Mode" is set to "Cam ID + Reel#."

## File Menu

File		
Menu items	Sub items and setting values	Contents
<b>All File</b> Setting for the All file	Load SD Card	Loads the All file from the SD card that is inserted into the SD card slot.
	Save SD card	Stores the All file onto the SD card that is inserted into the SD card slot.
	File ID	Names the All file.
<b>Scene File</b> Setting for the Scene file (This setting is available only when "Shooting Mode" in "Base Setting" of the System menu is set to "Custom.")	Recall Internal Memory	Loads the Scene file from the internal memory.
	Store Internal Memory	Stores the Scene file on the internal memory.
	File ID	Names the Scene file.

File		
Menu items	Sub items and setting values	Contents
<b>Lens File</b> Setting for the lens file (This setting is available only when “Shooting Mode” in “Base Setting” of the System menu is set to “Custom.”)	Recall Internal Memory	Loads the lens file from the internal memory.
	Store Internal Memory	Stores the lens file on the internal memory.
	File ID	Names the lens file.
	File Source	Displays the selected file number.
	Clear Lens Offset	Clear the lens file.
	Execute / Cancel	Execute: Execute clearing.
	Lens Center H -40 to +40 ( $\pm 0$ )	Sets the horizontal position of the center marker to the lens file.
	Lens Center V -40 to +40 ( $\pm 0$ )	Sets the vertical position of the center marker to the lens file.
	Flare R -99 to +99 ( $\pm 0$ )	Sets the user adjusting value of the R flare correction that is caused by the lens to the lens file.
	Flare G -99 to +99 ( $\pm 0$ )	Sets the user adjusting value of the G flare correction that is caused by the lens to the lens file.
	Flare B -99 to +99 ( $\pm 0$ )	Sets the user adjusting value of the B flare correction that is caused by the lens to the lens file.
	White Offset R -99 to +99 ( $\pm 0$ )	Sets the R ch correction value of the white balance offset by lens to the lens file.
	White Offset B -99 to +99 ( $\pm 0$ )	Sets the B ch correction value of the white balance offset by lens to the lens file.
	Shading Ch Select <b>Red</b> / Green / Blue	Selects the channel for the white shading correction that is caused by the lens.
	Shading H SAW -99 to +99 ( $\pm 0$ )	Sets the Saw white shading correction value (caused by the lens) of the selected channel by “Shading Ch Select” and horizontal direction to the lens file.
	Shading H PARA -99 to +99 ( $\pm 0$ )	Sets the Para white shading correction value (caused by the lens) of the selected channel by “Shading Ch Select” and horizontal direction to the lens file.
Shading V SAW -99 to +99 ( $\pm 0$ )	Sets the Saw white shading correction value (caused by the lens) of the selected channel by “Shading Ch Select” and vertical direction to the lens file.	
Shading V PARA -99 to +99 ( $\pm 0$ )	Sets the Para white shading correction value (caused by the lens) of the selected channel by “Shading Ch Select” and vertical direction to the lens file.	

## Maintenance Menu

### Maintenance

Menu items	Sub items and setting values	Contents
<b>APR</b> Executing APR	APR Execute / Cancel	Executes APR (Auto Pixel Restoration: auto adjusting of the image sensor).
<b>Test Saw</b> Setting the test signal output	Setting On / Off	Turns the test signal on/off.
<b>Camera Config</b> Sharing settings when connecting the remote control unit	RM Common Memory On / Off	Sets whether to share the settings of when connecting the remote control unit and using the camcorder alone.

#### Note

This item cannot be selected when connecting the remote control unit.

## System Menu

### System

Menu items	Sub items and setting values	Contents
<b>System Setting</b>	Frequency 59.94 / 50 / 29.97 / 25 / 24 / <b>23.98</b>	Selects the system frequency.
<b>Base Setting</b>	Shooting Mode <b>Custom</b> / Cine EI	Selects the shooting mode. (Locked to “Custom” when the AXS recorder (AXS-R5) is not attached.)
	Main Operation <b>YPbPr</b> / RGB / RAW	Sets the operation mode for recording mainly. (“YPbPr” or “RGB” is can be selected when “Shooting Mode” in “Base Setting” of the System menu is set to “Custom.” Locked to “RAW” when “Shooting Mode” in “Base Setting” of the System menu is set to “Cine EI.”) (“RGB” is available only when “Frequency” in “System Setting” of the System menu is set to 29.97 / 25 / 24 / 23.98.)
	Color Space S-Gamut / <b>Normal</b>	Sets the color space. (This setting is available only when “Shooting Mode” in “Base Setting” of the System menu is set to “Custom.”)

System		
Menu items	Sub items and setting values	Contents
<b>Rec Format</b> Setting the recording format	Format  When "Frequency" is set to "59.94" or "50" XAVC 4096 × 2160P (PMW-F55 only) XAVC 1920 × 1080P MPEG 1920 × 1080i  When "Frequency" is set to "29.97," "25," or "23.98" XAVC 4096 × 2160P (PMW-F55 only) XAVC 1920 × 1080P MPEG 1920 × 1080P SStP SR-SQ 444 (RGB) SStP SR-SQ 422 (YPbPr) SStP SR-Lite 422 (YPbPr)  When "Frequency" is set to "24" SStP SR-SQ 444 (RGB) SStP SR-SQ 422 (YPbPr) SStP SR-Lite 422 (YPbPr)	Sets the video format to be recorded on the SxS memory card.
<b>Genlock</b> Setting Genlock operation	Reference <b>Internal</b> / External (HD) / External (SD)	Displays the genlock status. When genlocked, the signal type is displayed. Internal: Not genlocked. External (HD): Genlocked by the HD signal. External (SD): Genlocked by the SD signal.
<b>Assignable Button</b> Assigning functions to the assignable buttons	<1> to <4> <b>Off</b> / Marker / Zebra / Peaking / Display / VF Mode / Rec / S&Q Motion	Assign a function to the ASSIGN 1/2/3/4 buttons. Marker: Turns the center marker, safety zone, aspect marker, and guide frame functions on/off as a group. Zebra: Turns the zebra function on/off. Peaking: Turns the peaking function on/off. Display: Turns the indications of status/setting on the monitor on/off. VF Mode: Switches between color and mono display on the viewfinder. Rec: Executes the start/stop recording. (The lamp of the ASSIGN button lights up while recording.) S&Q Motion: Turns the Slow & Quick motion function on/off.
<b>Switch/Lamp</b> Setting for the switch/lamp	Rec Lamp <b>On</b> / Off  Lock Switch Setting <b>without Rec Button</b> / with Rec Button  Menu Dial Scroll <b>Normal</b> / Loop  Menu Dial Direction <b>Normal</b> / Reverse  Set Key on Thumbnail <b>Pause</b> / Play	Turns the Rec lamp on/off.  Sets whether to include the Rec button on the buttons that are locked by the LOCK switch. (When the Rec function is assigned to the assignable button, the button is treated as the Rec button.)  Selects the scroll method for the menu operation.  Selects the scroll direction for the menu operation.  Sets the behavior when pressing the MENU dial while selecting a thumbnail.

System			
Menu items	Sub items and setting values	Contents	
<b>Fan Control</b> Setting the fan control mode	Setting <b>Auto</b> / Minimum / Off in Rec	Sets the fan control mode of the camcorder and AXS recorder that is connected to the camcorder.	
<b>Battery Alarm</b> Setting for the battery	Near End:Info Battery <b>5%</b> to 100% (in steps of 5%)	Sets the battery level at which the low battery warning is generated.	
	End:Info Battery <b>0%</b> to 5%	Sets the battery level at which the battery empty warning is generated.	
	Near End:Sony Battery <b>11.5V</b> to 17V (in steps of 0.1V)	Sets the battery level at which the low battery warning is generated.	
	End:Sony Battery <b>11.0V</b> to 11.5V (in steps of 0.1V)	Sets the battery level at which the battery empty warning is generated.	
	Near End:Other Battery 11.5V to 17V ( <b>11.8V</b> ) (in steps of 0.1V)	Sets the battery level at which the low battery warning is generated.	
	End:Other Battery <b>11.0V</b> to 14V (in steps of 0.1V)	Sets the battery level at which the battery empty warning is generated.	
	Detected Battery Sony Info Battery / Sony Battery / Other Battery / DC IN	Displays the type of power supply.	
<b>DC Voltage Alarm</b> Setting the warning of the input voltage	DC Low Voltage1 <b>11.5V</b> to 17.0V	Sets the DC IN voltage at which the low input voltage warning is generated.	
	DC Low Voltage2 <b>11.0V</b> to 14.0V	Sets the DC IN voltage at which the lack of any input voltage warning is generated.	
<b>Clock Set</b> Setting the built-in clock	Time Zone UTC -12:00 Kwajalein to UTC +14:00	Sets the time-zone difference from UTC in steps of 30 minutes.	
	Date Mode <b>YYMMDD</b> / MMDDYY / DDMMYY	Selects the display mode of the date. YYMMDD: In sequence of year, month, day MMDDYY: In sequence of month, day, year DDMMYY: In sequence of day, month, year	
	12H/24H <b>12H</b> / <b>24H</b>	Selects the display mode of time. 12H: 12-hour mode 24H: 24-hour mode	
	Date	Sets the current date. SET: Sets the date.	
	Time	Sets the current time. SET: Sets the time.	
	<b>Hours Meter</b> Displaying the hours meter	Hours(System)	Displays the non-resettable accumulated time of use.
		Hours(Reset)	Displays the resettable accumulated time of use.
Reset Execute / Cancel		Resets the "Hours(Reset)" value to 0. Execute: Execute resetting.	

System		
Menu items	Sub items and setting values	Contents
<b>AXS Recorder</b> Setting for the AXS recorder	Chunk <b>Off</b> / 16GB / 8GB / 4GB	This setting is for dividing the clip to the specified size while recording on the AXS memory card.
	Version	Displays the software version of AXS-R5.
<b>Note</b> This item cannot be selected when the AXS recorder (AXS-R5) is not attached.	Hours Meter (System)	Displays the non-resettable accumulated time of use for AXS-R5.
	Hours Meter (Reset)	Displays the resettable accumulated time of use for AXS-R5.
	Reset Hours Meter Execute / Cancel	Resets the "Hours Meter (Reset)" value to 0. Execute: Executes resetting.
	User Name <b>(admin)</b>	Set a desired user name in 1 to 31 alphanumeric characters.
<b>Basic Authentication</b> Setting for the basic authentication of the network	Password <b>(pmw-f5 or pmw-f55)</b>	Sets a password in 1 to 31 alphanumeric characters.
	Wi-Fi Enable / <b>Disable</b>	Select whether to enable or disable Wi-Fi connection.
<b>Wi-Fi</b> Setting for Wi-Fi connection	SSID & Password	Displays the SSID and password of the camcorder.
	Wi-Fi Direct Connection Execute / Cancel	Starts connecting process by the Wi-Fi Direct function. Execute: Executing.
	Client	Displays the status of the connected client device (device name or Mac address).
	IP Address 10.0.0.1	Displays the IP address.
	Subnet Mask 255.255.0.0	Displays the subnet mask.
	MAC Address	Display the MAC address.
	Regenerate Password Execute / Cancel	Regenerates the password. Execute: Executing.
	<b>All Reset</b> Resetting to the factory status	Reset Execute/Cancel
<b>Version</b> Showing the version of this camcorder	Number Vx.xx	Displays the current software version of the camcorder.
	Version Up Execute / Cancel	Upgrades the camcorder. Execute: Executes.

## Connecting External Monitors and Recording Devices

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

An output signal from the camcorder can be recorded when a recording device is connected. The same status information and menus can be displayed on the external monitor as those on the viewfinder screen.

According to the signal fed to the monitor, set “Output Display” (page 56) in the Video menu to “On.”

### SDI OUT connector (BNC type)

Set the on/off setting of the output, and output format in the Video menu (page 55).

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

**Note**

Be sure to ground between the camcorder and external device before turning the power on. (We recommend to turn on the camcorder and external device after connecting a 75-ohm coaxial cable.)

When connecting an external device to the camcorder while the camcorder is turned on, connect the external device after connecting a 75-ohm coaxial cable to the external device.

### To start synchronized recording on an external device

With SDI signal output selected, synchronized recording is possible by feeding a REC trigger signal to an external recording device connected via the SDI OUT connector. To enable synchronized recording, set “SDI Rec Control” (page 59) in the Recording menu to “On.”

**Note**

When a connected external device does not correspond to a REC trigger signal, the device cannot be operated.

### HDMI OUT connector (Type A connector)

Set the on/off setting of the output, and output format in the Video menu (page 55).

Use a commercially available HDMI cable for connection.

### TEST OUT connector (BNC type)

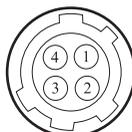
Use a commercially available BNC cable for connection.

### DC OUT connector (4-pin)

Supplies DC 12 V power to an accessory when the power switch is set to ON.

You can output the REC Tally signal and input the REC Trigger signal through the DC OUT connector.

4-pin, Female



- External View -

No.	Signal	I/O	Specification
1	UNREG GND	-	GND for UNREG
2	REC TALLY	OUT	Open Collector output (Max. 50 mA) Low: REC
3	REC TRIGGER	IN	Open or +5 V dc: Normal GND: Active (REC)
4	UNREG +12 V OUT	OUT	+11 V to 17 V dc output

# Operating Clips With a Computer

## To use the ExpressCard slot of a computer

If the computer is equipped with an ExpressCard/34 or ExpressCard/54 slot, you can directly insert the SxS memory card containing clips recorded with this camcorder and access the files.

### Notes

- The SxS Device Driver Software must be installed on your computer.
- Operation is not guaranteed with all computers.

*For support information for the driver, visit the following URL:*

<http://www.sony.net/SxS-Support/>

With a Windows computer, check that a Removable Disk appears in My Computer. This indicates normal status.

With a Macintosh computer, an icon is displayed on the menu bar.

## To connect with a USB cable

When you connect the camcorder or the SBAC-US20 SxS Memory Card USB Reader/Writer (optional) using a USB cable, the memory card in the slot is acknowledged as an extended drive by the computer.

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

### Note

The camcorder and the SBAC-US20 do not work on the bus power from the computer. Supply the operating power independently.

## To check the connection to the camcorder

### 1 Set the power switch to ON to turn on the camcorder.

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

### Note

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

### 2 Select “Execute” by turning the MENU dial.

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

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

### Notes

- The following operations must be avoided when the ACCESS lamp is lit in red.
  - Turning the power off or disconnecting the power cord
  - Removing the SxS memory card
  - Disconnecting the USB cable
- When removing an SxS memory card from a Macintosh, do not select “Card Power Off” from the SxS memory card icon displayed on the menu bar.
- Operation is not guaranteed with all computers.

## Using a nonlinear editing system

For a nonlinear editing system, optional editing software that corresponds to the recording formats used with this camcorder is required. Store the clips to be edited on the HDD of your computer in advance, using the dedicated application software.

# External Synchronization

When multiple units of the camcorder are used in the same shooting location, synchronized recording can be made with a specific reference signal, and the timecode can be matched among all the units.

## Aligning the phase of the video signal (Genlock)

Genlock operation is enabled by supplying a reference signal to the GENLOCK IN connector (page 13) of the camcorder.

Valid reference signals depend on the system frequency setting.

System frequency	Valid reference signal
59.94P	1920 × 1080 59.94i 720 × 486 59.94i
59.94i	1920 × 1080 59.94i 720 × 486 59.94i
50P	1920 × 1080 50i 720 × 576 50i
50i	1920 × 1080 50i 720 × 576 50i
29.97P	1920 × 1080 59.94i 720 × 486 59.94i
25P	1920 × 1080 50i 720 × 576 50i
24P	1920 × 1080 48i (24PsF)
23.98P	1920 × 1080 47.95i (23.98PsF)

You can check the genlock status on “Reference” in “Genlock” (page 63) of the System menu.

### Notes

- If the reference signal is unstable, genlock is not possible.
- The subcarrier is not synchronized.

## Synchronizing the timecode of your camcorder with that of another unit

Set the unit that supplies the timecode to a mode in which the timecode output keeps advancing (Free Run mode).

### 1 Set “Timecode” in the TC/UB menu as follows:

Mode: Preset  
Run: Free Run

### 2 Confirm that the TC IN/OUT switch (page 13) is set to IN, then supply an HD or SD reference video signal to the GENLOCK IN connector (page 13) and the reference timecode to the TC connector (page 13).

The built-in timecode generator of your camcorder locks to the reference timecode, and the message “Ext-Lk” is displayed on the screen. About 10 seconds after locking, even if the reference timecode from the external device is disconnected, the external lock will be kept.

### Notes

- Check that the reference timecode and the reference video signal are in a phase relation that complies with the SMPTE timecode standards.
- When you finish the above procedure, the timecode is immediately synchronized with the external timecode, and the time data indication will show the value of the external timecode. However, wait for a few seconds until the timecode generator stabilizes before recording.
- If the frequency of the reference video signal and the frame frequency are not the same, a lock cannot be acquired, and the camcorder will not operate properly. In such a case, the timecode will not be correctly locked to the external timecode.
- When the connection is removed, the timecode advance may shift one frame per hour with respect to the reference timecode.

### To release the external timecode synchronization

Change the “Timecode” setting in the TC/UB menu.

External synchronization is also released when you start recording in a special recording mode.

## Important Notes on Operation

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### Use and Storage

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

The internal mechanism may be damaged or the body warped.

#### Do not cover the unit while operating

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

#### After use

Always set the power switch to OFF.

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

Remove the battery pack.

#### Do not leave the camcorder with the lenses facing the sun

Direct sunlight can enter through the lenses, be focused in the camcorder, and cause fire.

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### Shipping

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

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### Care of the unit

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

#### In the event of operating problems

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

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### Note about the battery terminal

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

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

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

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

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### Use and storage locations

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

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

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

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

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

#### Note on laser beams

Laser beams may damage the CMOS image sensors. If you shoot a scene that includes a laser beam, be careful not to let the laser beam be directed into the lens of the camcorder.

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## About the LCD monitor

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- Do not leave the LCD monitor facing direct sunlight, as this may damage the LCD monitor.
- Do not press/swipe the LCD monitor forcefully, or leave objects on the LCD monitor, as it may cause a malfunction, such as picture irregularity, etc.
- The LCD monitor may become warm in use. This is not a malfunction.

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## About the stuck pixels

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The LCD panel fitted to this unit is manufactured with high precision technology, giving a functioning pixel ratio of at least 99.99%. Thus a very small proportion of pixels may be “stuck”, either always off (black), always on (red, green, or blue), or flashing. In addition, over a long period of use, because of the physical characteristics of the liquid crystal display, such “stuck” pixels may appear spontaneously. These problems are not a malfunction, and will not be recorded on recording media.

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## Phenomena specific to CMOS image sensors

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The following phenomena that may appear in images are specific to CMOS (Complementary Metal Oxide Semiconductor) image sensors. They do not indicate malfunctions.

### White flecks

Although the CMOS image sensors are produced with high-precision technologies, fine white flecks may be generated on the screen in rare cases, caused by cosmic rays, etc. This is related to the principle of CMOS image sensors and is not a malfunction.

The white flecks especially tend to be seen in the following cases:

- when operating at a high environmental temperature
- when you have raised the master gain (sensitivity)
- when operating in Slow-Shutter mode

### Aliasing

When fine patterns, stripes, or lines are shot, they may appear jagged or flicker.

## Focal plane (PMW-F5 only)

Owing to the characteristics of the pickup elements (CMOS sensors) for reading video signals, subjects that quickly move across the screen may appear slightly skewed.

## Flash band (PMW-F5 only)

The luminance at the top and bottom of the screen may change when shooting a flashlight beam or a light source that quickly flashes.

## Flicker (PMW-F5 only)

Shooting under the lights of a discharge lamp such as a fluorescent lamp, sodium-vapor lamp, mercury-vapor lamp, etc., may cause flickering, color change, or vertical stripes.

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## Note on the display

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- Pictures on the LCD monitor and viewfinder screen may be distorted by the following operations:
  - Changing the video format
  - Starting playback from the Thumbnail screen
  - Reversing the LCD monitor
- When you change the eye direction in the viewfinder, you may see primary colors red, green, and blue, but this is not a defect of the camcorder. These primary colors are not recorded on any recording media.

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## Fragmentation

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If pictures cannot be recorded/reproduced properly, try formatting the recording medium. While repeating picture recording/playback with a certain recording medium for an extended period, files in the medium may be fragmented, disabling proper recording/storage. In such a case, make a backup of clips in the medium then perform formatting of the medium using “Format Media” (*page 60*) in the Media menu.

# Formats and Limitations of Outputs

## Video Formats and Output Signals

### Tip

When using the 1.3× or 2× anamorphic lens, set “Aspect” in “VF Setting” (page 56) of the VF menu to “Anamo ×1.3” or “Anamo ×2” to output the normal image without distortion from the SDI OUT (Sub), HDMI OUT, and TEST OUT connectors.

### Output formats for the SDI OUT connector

Serial digital signals from the SDI OUT connector are output depending on the settings of the setup menu and format of the clip being played.

#### When outputting one type of SDI output by using the SDI OUT 1 to 4 connectors (PMW-F55 only)

The “Frequency” setting in “System Setting” of the System menu	The “Format” setting in “Rec format” of the System menu	Output format	
		SDI (Main)	
59.94 / 50 / 29.97 / 25 / 23.98	XAVC 4096 × 2160P	4096 × 2160 YPbPr 59.94P / 50P 3.0G / 29.97P / 25P / 23.98P 1.5G	

#### When outputting two types of SDI output by using the SDI OUT 1 (MAIN) and SDI OUT 3 (SUB) connectors

The “Frequency” setting in “System Setting” of the System menu	The “Format” setting in “Rec format” of the System menu	Output format	
		SDI (Main)	SDI (Sub)
59.94 / 50	XAVC 4096 × 2160P (PMW-F55 only)	2048 × 1080 YPbPr 59.94P / 50P 3.0G	1920 × 1080 YPbPr 59.94P / 50P 3.0G
		2048 × 1080 YPbPr 59.94P / 50P 3.0G	1920 × 1080 YPbPr 59.94i / 50i 1.5G
	XAVC 1920 × 1080P MPEG 1920 × 1080i	1920 × 1080 YPbPr 59.94P / 50P 3.0G	1920 × 1080 YPbPr 59.94P / 50P 3.0G
		1920 × 1080 YPbPr 59.94P / 50P 3.0G	1920 × 1080 YPbPr 59.94i / 50i 1.5G
		1920 × 1080 YPbPr 59.94i / 50i 1.5G	1920 × 1080 YPbPr 59.94i / 50i 1.5G
	29.97 / 25 / 23.98	XAVC 4096 × 2160P (PMW-F55 only)	2048 × 1080 YPbPr 29.97PsF / 25PsF / 23.98PsF 1.5G
XAVC 1920 × 1080P MPEG 1920 × 1080i SSiP SR-SQ 422 SSiP SR-Lite 422			1920 × 1080 YPbPr 29.97PsF / 25PsF / 23.98PsF 1.5G
XAVC 1920 × 1080P MPEG 1920 × 1080i SSiP SR-SQ 444		1920 × 1080 RGB 29.97PsF / 25PsF / 23.98PsF 3.0G	1920 × 1080 YPbPr 29.97PsF / 25PsF / 23.98PsF 1.5G
		1920 × 1080 YPbPr 24PsF 1.5G	1920 × 1080 YPbPr 24PsF 1.5G
24	SSiP SR-SQ 422 SSiP SR-Lite 422	1920 × 1080 YPbPr 24PsF 1.5G	1920 × 1080 YPbPr 24PsF 1.5G
		1920 × 1080 RGB 24PsF 3.0G	1920 × 1080 YPbPr 24PsF 1.5G

## Output formats from the HDMI OUT connector

Serial digital signals from the HDMI OUT connector are output depending on the settings of the setup menu and format of the clip being played.

### When the output format of SDI (Main) is 4096 × 2160P Square (PMW-F55 only)

The “Frequency” setting in “System Setting” of the System menu	The “SDI (Main)” setting in “Output Format” of the Video menu	Output format
59.94 / 50	4096 × 2160P Square	1920 × 1080 59.94P / 50P
		1920 × 1080 59.94i / 50i
29.97 / 25	4096 × 2160P Square	1920 × 1080 29.97PsF / 25PsF
23.98	4096 × 2160P Square	1920 × 1080 23.98P

### When the output format of SDI (Main) is Off (HDMI 4K Enable) (PMW-F55 only)

The “Frequency” setting in “System Setting” of the System menu	The “SDI (Main)” setting in “Output Format” of the Video menu	Output format
59.94 / 50	Off (HDMI 4K Enable)	4096 × 2160 59.94P / 50P
		1920 × 1080 59.94P / 50P
		1920 × 1080 59.94i / 50i
29.97 / 25	Off (HDMI 4K Enable)	1920 × 1080 29.97PsF / 25PsF
23.98	Off (HDMI 4K Enable)	4096 × 2160 23.98P

### When the output format of SDI (Main) is less than 2048 × 1080

The “Frequency” setting in “System Setting” of the System menu	The “Format” setting in “Rec format” of the System menu	Output format
59.94	XAVC 4096 × 2160P (PMW-F55 only)	1920 × 1080 59.94P 1920 × 1080 59.94i
	XAVC 1920 × 1080P	1920 × 1080 59.94P
	MPEG 1920 × 1080i	1920 × 1080 59.94i 720 × 480 59.94P
50	XAVC 4096 × 2160P (PMW-F55 only)	1920 × 1080 50P 1920 × 1080 50i
	XAVC 1920 × 1080P	1920 × 1080 50P
	MPEG 1920 × 1080i	1920 × 1080 50i 720 × 576 50P
29.97	XAVC 4096 × 2160P (PMW-F55 only) XAVC 1920 × 1080P MPEG 1920 × 1080P SSiP SR-SQ 422 SSiP SR-Lite 422 SSiP SR-SQ 444	1920 × 1080 29.97PsF
25	XAVC 4096 × 2160P (PMW-F55 only) XAVC 1920 × 1080P MPEG 1920 × 1080P SSiP SR-SQ 422 SSiP SR-Lite 422 SSiP SR-SQ 444	1920 × 1080 25PsF

The “Frequency” setting in “System Setting” of the System menu	The “Format” setting in “Rec format” of the System menu	Output format
24	SSiP SR-SQ 422 SSiP SR-Lite 422 SSiP SR-SQ 444	1920 × 1080 24P
23.98	XAVC 4096 × 2160P (PMW-F55 only) XAVC 1920 × 1080P MPEG 1920 × 1080P SSiP SR-SQ 422 SSiP SR-Lite 422 SSiP SR-SQ 444	1920 × 1080 23.98P

### Output formats from the TEST OUT connector

Signals output from the TEST OUT connector are either the HD-Y or HD SYNC signals output from the SDI OUT connector/HDMI OUT connector.

The output signal differs depending on the setting of setup menu or output format setting of SDI (Main)/SDI (Sub).

The “Frequency” setting in “System Setting” of the System menu	Output format of SDI (Main)	Output format of SDI (Sub)	Output format
59.94	4096 × 2160 59.94P (PMW-F55 only)	×	HD SYNC 1920 × 1080 59.94i
	2048 × 1080 59.94P 1920 × 1080 59.94P 1920 × 1080 59.94i	1920 × 1080 59.94P	HD SYNC 1920 × 1080 59.94i
	2048 × 1080 59.94P 1920 × 1080 59.94P 1920 × 1080 59.94i	1920 × 1080 59.94i	HD Y 1920 × 1080 59.94i
50	4096 × 2160 50P (PMW-F55 only)	×	HD SYNC 1920 × 1080 50i
	2048 × 1080 50P 1920 × 1080 50P 1920 × 1080 50i	1920 × 1080 50P	HD SYNC 1920 × 1080 50i
	2048 × 1080 50P 1920 × 1080 50P 1920 × 1080 50i	1920 × 1080 50i	HD Y 1920 × 1080 50i
29.97	4096 × 2160 29.97P (PMW-F55 only)	×	HD SYNC 1920 × 1080 29.97PsF
	2048 × 1080 29.97PsF 1920 × 1080 29.97PsF	1920 × 1080 29.97PsF	HD Y 1920 × 1080 29.97PsF
25	4096 × 2160 25P (PMW-F55 only)	×	HD SYNC 1920 × 1080 25PsF
	2048 × 1080 25PsF 1920 × 1080 25PsF	1920 × 1080 25P	HD Y 1920 × 1080 25PsF
24	1920 × 1080 24PsF	1920 × 1080 24P	HD Y 1920 × 1080 24PsF
23.98	4096 × 2160 23.98P (PMW-F55 only)	×	HD SYNC 1920 × 1080 23.98PsF
	2048 × 1080 23.98PsF 1920 × 1080 23.98PsF	1920 × 1080 23.98P	HD Y 1920 × 1080 23.98PsF

# Error/Warning Indications

The camcorder informs you of situations where warning, caution, or an operation check is required, through messages on the LCD monitor/viewfinder screen, the REC lamp, and a buzzer. The buzzer is output to the built-in speaker or to the headphones connected via the headphone connector. The message for prompting the APR function appears on the viewfinder screen if the image sensor is defective when the camcorder is turned on, or if the auto adjustment for the image sensor (APR) has not performed for a period of time. In this case, perform “APR” (page 62) by following the displayed message.

## Error Indications

The camcorder stops operation after the following indications.

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

## Warning Indications

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

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

<b>Warning indication on LCD/viewfinder</b>	<b>Buzzer</b>	<b>REC lamp</b>	<b>Cause and measures</b>
Backup Battery End Please Change			The remaining power of the backup battery is insufficient. Replace the battery pack.
Unknown Media(A) <sup>1)</sup> Please Change			A partitioned memory card or one that contains recorded clips exceeding the number permitted with this camcorder is loaded. This card cannot be used with this camcorder. Remove it and load a compatible card.
Media Error Media(A) <sup>1)</sup> Needs to be Restored			An error occurred with the memory card. The card requires restoration. Remove the card, load it again, and restore it.
Media Error Cannot Record to Media(A) <sup>1)</sup>			Recording cannot be done, because the memory card is defective. Because playback may be possible, it is recommended to replace it with another card after copying the clips, as required.
Media Error Cannot Use Media(A) <sup>1)</sup>			Neither recording nor playback can be done, because the memory card is defective. It cannot be operated with this camcorder. Replace it with another card.
Will Switch Slots Soon			This is an advanced notice that the camcorder will switch from the current memory card to the other memory card for continuous recording.
No Clip			There are no clips in the memory card. Check the selected card.
Cannot Use Media(A) <sup>1)</sup> Unsupported File System			A card of a different file system or an unformatted card was inserted. It cannot be used with this camcorder. Replace it or format it with this camcorder.
Same File Already Exists Change Media(A) <sup>1)</sup>			A clip with the same name exists in the memory card to which you want to copy. Replace the card.
Media Error Playback Halted			An error occurred in reading data from the memory card, and playback cannot be continued. If this frequently occurs, change the memory card after copying the clips, as required.
Media(A) <sup>1)</sup> Error			Recording cannot be done, because an error occurred with the memory card. If this frequently occurs, change the memory card.
Media Reached Rewriting Limit Change Media (A) <sup>1)</sup>			The memory card comes to the end of its service life. Make a backup copy and replace the card with another one as soon as possible. Recording/playback may not be performed properly if you continue to use the card. <i>For details, refer to the operating instructions of the memory card.</i>
Reached Clip Number Limit Copy Completed: xx/xx			The maximum number of clips for 1 memory card is reached, so copying cannot continue. (xx/xx indicates the completed copies.) Replace the card.
Not Enough Capacity Copy Completed: xx/xx			There is not enough capacity for copying. (xx/xx indicates the completed copies.) Replace the card.
Reached Duplication Limit Copy Completed: xx/xx			There are already 10 or more clips with the same name as the clip that you want to copy, so copying cannot continue. (xx/xx indicates the completed copies.) Replace the card.

Warning indication on LCD/viewfinder	Buzzer	REC lamp	Cause and measures
Copy Error! (CANCEL:Abort) No Media!			There is no memory card inserted in the slot. Insert a card.
Copy Error! (CANCEL:Abort) Cannot Use Media(A) <sup>1)</sup>			A memory card that cannot be used with the camcorder is inserted. Replace the card in the respective slot.
Cannot Use Media(A) <sup>1)</sup> Unsupported File System			A memory card with different file system is inserted. Replace the card, format it with the camcorder.

<sup>1)</sup>“Media(B)” for the card in slot B, “AXS Memory” for the AXS memory card.

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## Specifications

### General

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#### Power Requirements

DC 12 V (11 V to 17.0 V)

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#### Power Consumption

##### PMW-F55

Approx. 25 W (body only, while recording XAVC 4K 59.94P, 4K SDI: On)

##### PMW-F5

Approx. 24 W (body only, while recording XAVC HD 59.94P, HD-SDI: On)

#### Notes

- When connecting a device to the DC OUT connector, use one with current consumption of 1.8 A or less.
- When using the camcorder with peripheral devices attached, make sure that the total power consumption of the attached devices is 60 W or less.

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#### Operating Temperature

0°C to 40°C (32°F to 104°F)

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#### Storage Temperature

-20°C to +60°C (-4°F to +140°F)

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#### Mass

Approx. 2.2 kg (4 lb 14 oz) (without lens, handle, audio box, and accessories)

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#### Dimensions

See "Dimensions" on page 82.

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#### Battery Operating Time

##### PMW-F55

Approx. 150 min with BP-FL75

##### PMW-F5

Approx. 160 min with BP-FL75

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## Recording Format (Video)

### XAVC

AVC/H.264 High 4:2:2 Intra Profile  
4K: VBR, 600 Mbps max.

HD: SMPTE RP2027 Class100  
compliant

### MPEG HD422

MPEG-2 Long GOP  
HD 422 mode: CBR, 50 Mbps max.,  
MPEG-2 422P@HL

### SR SStP

MPEG-4 Simple Studio Profile  
HD: SR-SQ 444, SR-SQ 422, SR-Lite  
422

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## Recording Format (Audio)

LPCM 8CH (2CH recording/playback),  
24-bit, 48-kHz

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## Recording Frame Rate

### PMW-F55

XAVC 4K: 4096 × 2160, 23.98P/25P/  
29.97P/50P/59.94P

XAVC HD: 1920 × 1080, 23.98P/25P/  
29.97P/50P/59.94P

MPEG2 HD: 1920 × 1080, 50i/59.94i/  
23.98P/25P/29.97P

SR-SStP: 1920 × 1080, 23.98P/24P/25P/  
29.97P

### PMW-F5

XAVC HD: 1920 × 1080, 23.98P/25P/  
29.97P/50P/59.94P

MPEG2 HD: 1920 × 1080, 50i/59.94i/  
23.98P/25P/29.97P

SR-SStP: 1920 × 1080, 23.98P/24P/25P/  
29.97P

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## Recording/Playback Time

When SBS-32G1A is used  
MPEG2 HD: Approx. 60 min

When SBS-64G1A is used  
MPEG2 HD: Approx. 120 min

When SBP-32 is used  
XAVC HD 29.97P: Approx. 30 min  
SR-Lite 422 29.97P: Approx. 14 min

When SBP-64A is used  
XAVC HD 29.97P: Approx. 60 min  
SR-Lite 422 29.97P: Approx. 27 min

When SBP-64B is used  
XAVC 4K 29.97P: Approx. 20 min  
SR-SQ 422/444 29.97P: Approx. 14  
min

When SBP-128B is used  
XAVC 4K 29.97P: Approx. 40 min  
SR-SQ 422/444 29.97P: Approx. 27  
min

### Note

These approximate recording/playback times  
depend on operating conditions, available  
memory, etc.

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## Camera Section

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### Imaging Device

#### PMW-F55

Super 35mm equivalent Single-chip  
CMOS with the frame image scan  
function

#### PMW-F5

Super 35mm equivalent Single-chip  
CMOS

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### Imaging Device (Pixel Count)

11.6 M (total), 8.9 M (effective)

---

### Built-in Filters

Clear, 0.9 (1/8ND), 1.8 (1/64ND)

---

### Sensitivity (2000 lx, 89.9% reflectance)

#### PMW-F55

Video Gamma: T12@24p (3200K Light  
source)

#### PMW-F5

Video Gamma: T14@24p (3200K Light  
source)

---

### ISO Sensitivity

#### PMW-F55

S-Log<sub>2</sub> Gamma: ISO 1250 (D55 Light  
source)

#### PMW-F5

S-Log<sub>2</sub> Gamma: ISO 2000 (D55 Light  
source)

---

**Lens Mount**

PL mount (with supplied lens mount adaptor)

---

**Flange Focal Length**

FZ mount (without supplied lens mount adaptor)

---

**Latitude**

14-stop

---

**S/N Ratio**

57 dB (Video Gamma, 24p, Noise Suppression: OFF)

---

**Shutter Speed**

1/24s to 1/6,000s (23.98P)

---

**Shutter Angle**

4.2° to 359.7° (electronic shutter)

---

**Slow Shutter (SLS)**

2, 3, 4, 5, 6, 7, and 8-frame accumulation

---

**Slow & Quick Motion Function**

XAVC HD: 1-60P

---

**White Balance**

Preset (3200K, 4300K, 5500K),  
Memory

---

**Gain**

-3, 0, 3, 6, 9, 12, 18 dB, AGC

---

**Gamma Curve**

STD1, STD2, STD3, STD4, STD5,  
STD6  
HG1, HG2, HG3, HG4, HG7, and HG8  
S-Log2

---

**Input/Output**

---

---

**Audio Input**

CH-1/CH-2: XLR-type 3-pin (female)  
(×2), LINE/MIC/MIC +48V selectable

---

**Video Output**

TEST OUT: BNC (×1)

---

**DC Input**

XLR-type 4-pin (male), 11 V to 17 V  
DC

---

**DC Output**

4-pin (×2), 11 V to 17 V DC (MAX  
1.8 A) w/ battery adaptor

You can output the REC Tally signal and  
input the REC Trigger signal through the  
DC OUT connector.

**Note**

When connecting a device to the DC OUT  
connector, use one with current consumption  
of 1.8 A or less.

---

**SDI Output**

BNC (×4)

---

**PMW-F55**

HD mode:

SDI 1/2: Line Output

SDI 3/4: Monitor Output

4K mode:

SDI 1/2/3/4: Line Output

Display On/Off switchable

---

**PMW-F5**

SDI 1/2: Line Output

SDI 3/4: Monitor Output

---

**Timecode Input/Output**

TC IN/OUT: BNC (×1) switchable

---

**Genlock Input**

BNC (×1)

---

**Remote**

8-pin (×1)

---

**HDMI Output**

A Type (×1)

---

**USB**

USB device, Mini-B (×1)

USB host, type-A (×1)

---

**USB Wireless LAN Module Connector**

USB host, type-A (×1)

---

**Headphone Output**

Stereo mini jack (×1)

---

**Speaker Output**

Monaural

---

## Media

### Type

ExpressCard/34 slot (×2)  
SD card slot (×1)

## Package Configuration

Lens mount adaptor (1)  
Battery adaptor (1)  
Audio input connector (1)  
Screws for the audio input connector (4)  
Tape measure hook (1)  
USB wireless LAN module IFU-WLM3 (1)  
Before Using this Unit (1)  
Operating Instructions (CD-ROM) (1)

## Software Downloads

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

Sony Professional products web site homepage:

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

Although the data regarding recorded materials are stored over multiple files and folders, you can easily handle the clips without considering its data and directory structure, by using the dedicated application software.

### Note

If you perform operations, such as copy, on clips on the SxS memory card by using the Explorer (Windows) or Finder (Macintosh), the subsidiary data contained by the clips may not be maintained.

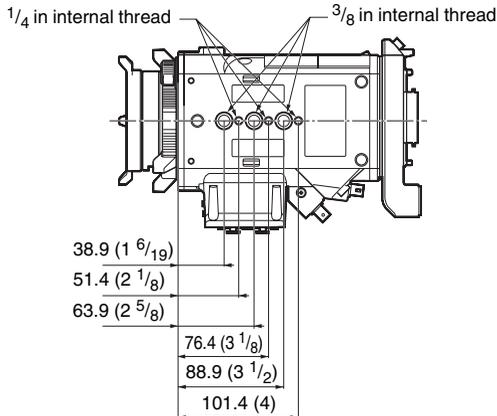
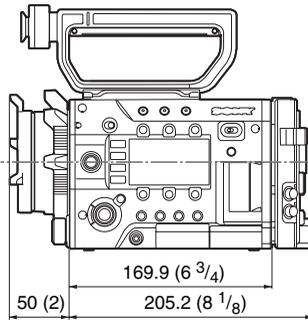
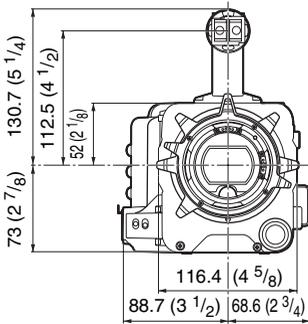
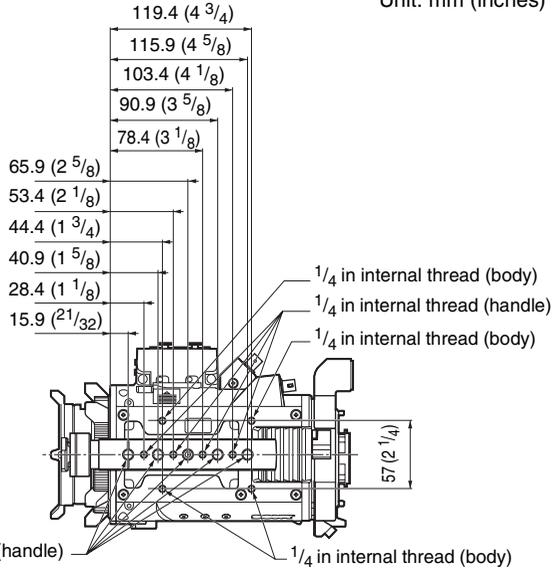
## Optional Accessories

PL mount wide angle zoom lens  
SCL-P11X15  
PL lens  
SCL-P35T20, SCL-P50T20, SCL-P85T20,  
SCL-PK6 (set of 6 lenses)  
LCD color viewfinder  
DVF-L350, DVF-L700  
OLED color viewfinder  
DVF-EL100  
Microphone  
ECM-680S (EC-0.5X5F3M), ECM-678,  
ECM-674  
Shoulder adaptor  
VCT-FSA5  
Battery pack  
BP-FL75, BP-L80S  
AC adaptor  
AC-DN2B, AC-DN10  
SxS memory card  
SxS PRO+ Series  
SxS PRO Series  
SxS-1 Series  
SD card  
SDHC memory card, SD memory card  
Portable memory recorder  
AXS-R5  
AXS memory card  
AXS-512S24  
SxS memory card USB reader/writer  
SBAC-US20  
AXS memory card reader  
AXS-CR1  
Remote control unit  
RM-B170, RM-B750

Design and specifications are subject to change without notice.

# Dimensions

Unit: mm (inches)



## Notes

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

SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF FAILURE OF THIS UNIT OR ITS RECORDING MEDIA, EXTERNAL STORAGE SYSTEMS OR ANY OTHER MEDIA OR STORAGE SYSTEMS TO RECORD CONTENT OF ANY TYPE.

- Always verify that the unit is operating properly before use. SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS DUE TO FAILURE OF THIS UNIT, EITHER DURING THE WARRANTY PERIOD OR AFTER EXPIRATION OF THE WARRANTY, OR FOR ANY OTHER REASON WHATSOEVER.

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