

Solid-State Memory Camcorder

PXW-X180

PXW-X160

Operating Guide

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

XDCAM[™]

XAVC

SXS

N[™]

MPEG HD422

HDMI[™]
HIGH-DEFINITION MULTIMEDIA INTERFACE

AVCHD
Progressive

G

Exmor

Table of Contents

Overview

Location and Function of Parts	6
Wireless Remote Commander	14
On-Screen Indications	15
LCD/Viewfinder Screen	15

Preparations

Power Supply	17
Using a battery pack	17
Setting the Clock	19
Attaching Devices	19
Attaching the lens hood with lens cover	19
Adjusting the LCD screen and viewfinder	20
Using the Wireless Remote Commander	21
Using SxS Memory Cards	22
About SxS memory cards	22
Inserting an SxS memory card	22
Removing an SxS memory card	22
Switching between SxS memory cards	22
Formatting an SxS memory card	23
Checking the remaining time available for recording	23
Using Other Media	24
XQD memory cards	24
“Memory Stick” media/SD cards	24
Using a UTILITY SD card	25
Usable SD cards	25
Inserting an SD card	25
Removing an SD card	25
Formatting an SD card	26
Checking the Remaining Time	26

Basic Operation Procedure	27
Adjusting the focus manually	29
Monitoring audio	30
Cueing up	30
Switching the SxS memory cards	30
Changing Basic Settings	31
Recording format	31
Adjusting the Image brightness	31
Adjusting to natural color (White Balance)	32
Audio setup	34
Time data	35
Useful Functions	36
Assignable buttons	36
Slow & Quick Motion	36
Rec Review	37
Clip Continuous Rec	37
Planning Metadata	38
Acquiring positioning information (GPS) (PXW-X180 only)	40
Proxy Recording	
(PXW-X180 only)	41
Usable SD cards	41
Formatting an SD card	41
Checking the remaining time	41
Performing proxy recording	41
Changing the proxy recording setting	41
About the recorded file	41
Storage destination of the recorded file	42
About the file name	42
Connecting to Other Device via Wireless LAN (PXW-X180 only)	42
Attaching the IFU-WLM3	43
Connecting with the wireless LAN access point mode	43
Connecting with the wireless LAN station mode	45
Connecting to the Internet (PXW-X180 only)	46
Uploading a File (PXW-X180 only)	47
Preparations	47
Selecting the file and uploading	47
Using the Wi-Fi Remote Commander (PXW-X180 only) ...	49

About the Web Menu (PXW-X180 only)	51
Format settings	52
Wireless LAN settings (Station Settings)	52
Upload settings	54
Checking the file transferring (Job List)	55

Thumbnail Screens

Thumbnail Screens	56
Configuration of the Screen	56
Playing Clips	57
Playing a recorded clip	57
Playing the selected and subsequent clips in sequence	57
Clip Operations	57
Operations of the thumbnail menu	57
Displaying the detailed information of a clip	58
Deleting clips	59
Changing information on the thumbnail screen	59
Thumbnail Menu	60

Menu Configuration and Detailed Settings

Overview of the Setup menus	61
Setup menu layers	61
Setup Menu Operations	62
Setup Menu List	64
Camera menu	64
Paint menu	67
Audio menu	73
Video menu	74
LCD/VF menu	75
TC/UB menu	78
Recording menu	79
Media menu	80
File menu	82
System menu	83

External Devices Connection

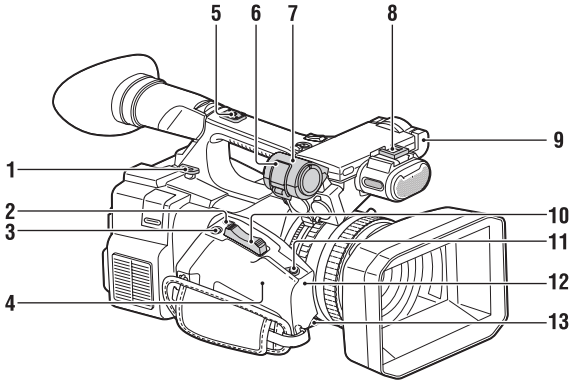
Connecting External Monitors and Recording Devices	87
External Synchronization	88
Operating Clips with a Computer	89
Connecting with a USB Cable	89

Important Notes on Operation	91
About Recording Media	91
Special Recording and Compatible Formats	92
Maximum Recording Time for a Clip	92
Using your Camcorder Abroad	93
Formats and Limitations of Outputs	97
Video Formats and Output Signals	97
Error/Warning Indications	100
Error Indications	100
Warning Indications	100
Caution and Operation Confirmation Indications	101
Licenses	102
On Accessing Software to which the GPL/ LGPL Applies	102
Open Software Licenses	102
Specifications	102
General	102
Lens	104
Camera Block	105
Inputs/Outputs	105
Displays	106
Internal Microphone	106
Media Slot Block	106
AC adaptor ACDP-060S01	106
Charger BC-U1	106
Rechargeable Battery Pack BP-U30	107
Package Configuration	107
Index	109

Overview

Location and Function of Parts


For functions and usage, see the pages in parentheses.



1. Hook for shoulder strap (10)

2. REC REVIEW button

3. ASSIGN 7/FOCUS MAGNIFIER button (36)

4.  (N mark) (PXW-X180 only)

- Hold a NFC-compatible smartphone near this mark when making wireless connection between the camcorder and smartphone. For details, refer to the operating instructions of the smartphone.
- NFC (Near Field Communication) is the international standard for the short range radio communication technique.

5. Accessory shoe mount

6. Microphone fixing clamber (35)

7. Microphone holder (35)

8. Multi Interface Shoe

 Multi Interface Shoe

For details about the compatible accessories with the Multi Interface Shoe, contact your dealer.

9. Remote sensor

10. Power zoom lever (28)

11. IRIS PUSH AUTO button

12. Air inlet

Notes

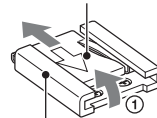
- Do not cover the air inlet.

13. ZOOM switch

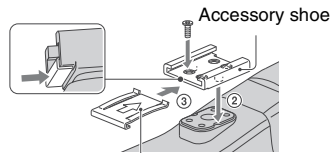
To mount the accessory shoe

Mount the accessory shoe on the accessory shoe mount as illustrated.

Accessory shoe plate



Accessory shoe



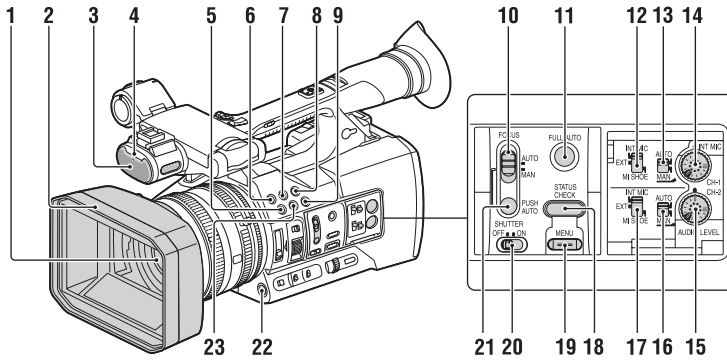
Accessory shoe plate

1. Lift the edge of the accessory shoe plate and pull it in the direction opposite to that of the arrow on the accessory shoe plate and remove it from the accessory shoe.

2. Place the accessory shoe so its protrusions match recesses of the accessory shoe mount, then fix it to the mount with four screws.
3. Insert the accessory shoe plate in the direction of the arrow on the plate surface until the end of the plate engages the end of the shoe.

To remove the accessory shoe

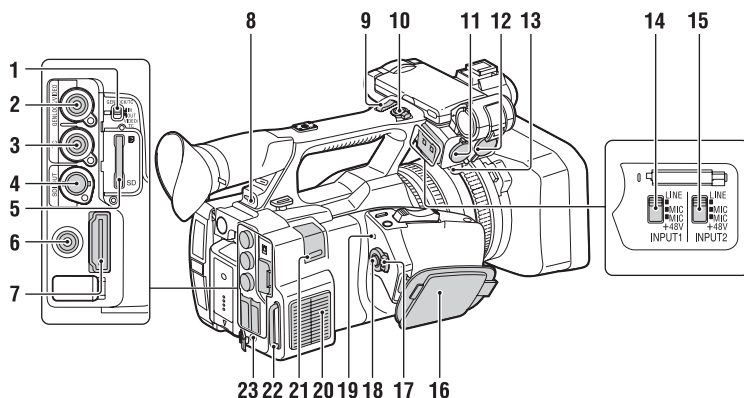
Remove the shoe plate in the same way as step 1 of “To mount the accessory shoe.” Loosen the 4 screws and remove the accessory shoe from the accessory shoe mount.



1. Lens (19)
2. Lens hood with lens cover (19)
3. Internal microphone (34)
4. Recording/tally lamp (84)
The recording/tally lamp flashes if the remaining capacity of recording media or battery is low.
5. ASSIGN 4/ZEBRA button
6. ASSIGN 1 button
7. ASSIGN 2 button*
8. ASSIGN 3/NFC button (PXW-X180 only)
9. ASSIGN 6/VIDEO SIGNAL MONITOR button
10. FOCUS switch (29)
11. FULL AUTO button
12. CH-1 (INT MIC/EXT/MI SHOE) switch (34)
13. AUTO/MAN (CH-1) switch (34)
14. AUDIO LEVEL (CH-1) dial (34)
15. AUDIO LEVEL (CH-2) dial (34)
16. AUTO/MAN (CH-2) switch (34)
17. CH-2 (INT MIC/EXT/MI SHOE) switch (34)
18. STATUS CHECK button (11)
19. MENU button** (62)
20. SHUTTER switch
21. PUSH AUTO button (29)
22. WB SET button
23. ASSIGN 5/PEAKING button*

* The ASSIGN 5/PEAKING button and the ASSIGN 2 button have raised tactile dots for your convenience in locating the button.

** MENU button has a raised tactile bar for your convenience in locating the button.



1. GENLOCK/TC IN/VIDEO/TC OUT switch

2. GENLOCK/VIDEO connector (87, 99)

3. TC connector

4. SDI OUT connector (87)

5. PROXY SD slot (41)

6. AUDIO OUT connector

7. HDMI connector (87)

8. REMOTE connector

The REMOTE connector is used for controlling start/stop of recording and other functions on the video device and peripherals connected to it.

9. Handle zoom lever (28)

10. Handle record button

When the lever is set to the HOLD position, the handle record button is not operable.

11. AUDIO INPUT1 connector (34)

12. AUDIO INPUT2 connector

13. Cable holder

Provided for securing a microphone cable, etc.

14. INPUT1 switch (34)

15. INPUT2 switch (34)

16. Grip belt

17. ⏻ (Power) switch (27)

18. Record button (27)

19. Power Lamp

20. Air outlet

Notes

- Areas around the air outlet may become hot.

- Do not cover the air outlet.

21. USB wireless LAN module retracting part (PXW-X180 only) (43)

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

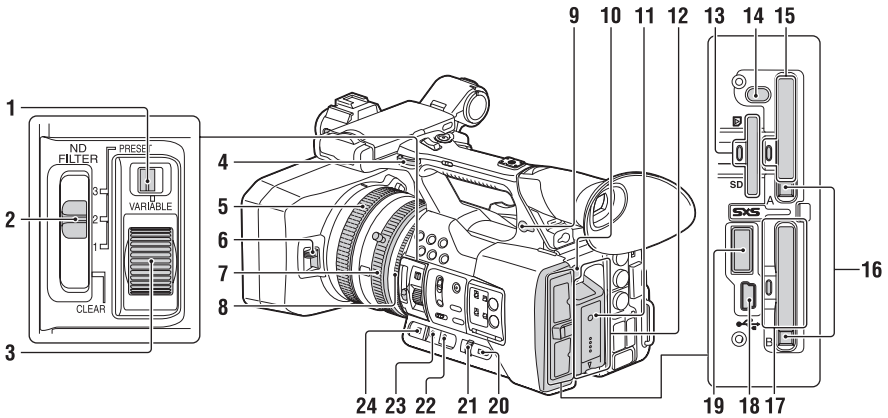
22. Cable clamp part

Used for fixing cables by using a strap to protect the connector part.

Notes

- Do not use the cable clamp part for purposes other than fixing cables.

23. DC IN connector (18)

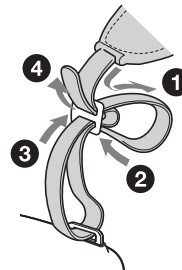


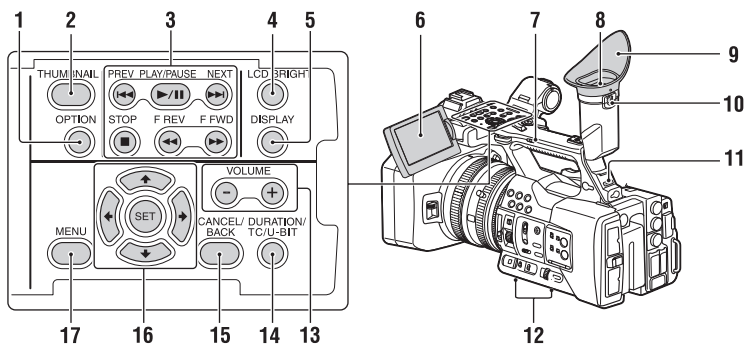
- 1. ND FILTER mode switch
- 2. ND FILTER switch
- 3. ND control dial
- 4. Hook for shoulder strap
- 5. Focus ring (29)
- 6. Lens cover lever (19)
- 7. Zoom ring (28)
- 8. Iris ring (31)
- 9. (headphones) connector
For stereo mini-jack headphones
- 10. BATT RELEASE button (17)
- 11. Battery pack (17)
- 12. Battery pack receptacle
- 13. UTILITY SD slot/access lamp
(Used for storing and loading the settings
(File function). To be supported by a
future upgrade (software update).)
- 14. SLOT SELECT button
- 15. SxS memory card A slot/access lamp (22)
- 16. EJECT button
- 17. SxS memory card B slot/access lamp (22)
- 18. USB connector (mini-B type) (89)
- 19. (USB) connector (A type)
(To be supported by a future upgrade.)
- 20. CANCEL/BACK button (62)
- 21. SEL/SET dial (62)
- 22. WHT BAL switch
- 23. GAIN switch (31)

24. IRIS switch

To attach a shoulder strap

Attach a shoulder strap to the hooks for the shoulder strap.





1. **OPTION** button (57)
2. **THUMB NAIL** button (56)
3. **Playback control buttons (PREV, PLAY/PAUSE*, NEXT, STOP, F REV, F FWD)** (57)
4. **LCD BRIGHT** button (20)
5. **DISPLAY** button (15)
6. **LCD screen** (20)
7. **Handle zoom switch** (28)
8. **Viewfinder** (20)
9. **Large eyecup**
10. **Viewfinder lens adjustment lever** (20)
11. **HEADPHONE MONITOR** switch (35)
12. **Air inlet**

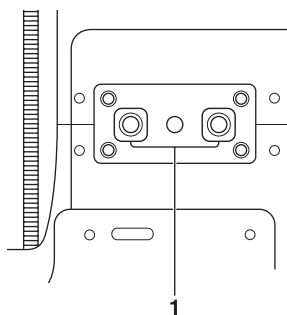
Notes

- Do not cover the air inlet.

13. **VOLUME** buttons*
14. **DURATION/TC/U-BIT** button (35)
15. **CANCEL/BACK** button (62)
16. **↑/▼/↔/↔/SET** buttons (62)
17. **MENU** button (62)

* VOLUME+ button and PLAY/PAUSE button have raised tactile dots for your convenience in locating the buttons.

Bottom



1. **Tripod receptacle (1/4 inch)**
This receptacle is compatible with 1/4-20UNC screws.
Attach a tripod (sold separately) to the tripod receptacle using a tripod screw (sold separately, the length of the screw must be less than 5.5 mm (7/32 in.)).

Status screen

- To display a status screen
- Press the STATUS CHECK button.
- To switch status screens
- Turn the SEL/SET dial.
- To hide the status screen
- Press the STATUS CHECK button.

Camera status screen

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

Gain<H>	Setting value of Gain <H> level
Gain<M>	Setting value of Gain <M> level
Gain<L>	Setting value of Gain <L> level
Preset White	Preset value of white balance
ND Filter <Preset1>	Setting value of Preset1 for ND Filter
ND Filter <Preset2>	Setting value of Preset2 for ND Filter
ND Filter <Preset3>	Setting value of Preset3 for ND Filter
Gamma	Gamma category and curve
AE Level	Setting value of AE level
AE Speed	Setting value of AE control speed
AGC Limit	Setting value of the maximum gain of AGC
A.SHT Limit	Fastest shutter speed of the auto shutter function
AE Mode	AE mode setting (Backlight/Standard/Spotlight)

Audio status screen

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

CH 1 level meter	Level meter for CH 1
CH 1 Source	Input source for CH 1
CH 1 Ref. / Sens.	Sensitivity of the internal microphone input to CH 1, or the reference level of audio input
CH 1 Wind Filter	Setting status of the wind filter for the microphone input to CH 1
CH 2 level meter	Level meter for CH 2
CH 2 Source	Input source for CH 2
CH 2 Ref. / Sens.	Sensitivity of the internal microphone input to CH 2, or the reference level of audio input
CH 2 Wind Filter	Setting status of the wind filter for the microphone input to CH 2
Audio Format	Audio format setting
Headphone Out	Headphone output setting

System status screen

Displays the video signal settings.

Country	Setting status of the region, NTSC region or PAL region
Rec Format	Recording format that is recorded on the SxS memory card
Picture Size	Picture size that is recorded on the SxS memory card
Frame Rate	Frame rate that is recorded on the SxS memory card
Rec Function	Special recording that is set to on, and its setting value
Simul Rec	On/off status of Simul Rec
Clip Continuous Rec	On/off status of Clip Continuous Rec
Video Light Set	Setting status of the on/off condition of the video light
Wi-Fi (PXW-X180 only)	Setting status of wireless LAN
Proxy Recording Mode (PXW-X180 only)	Setting status of Proxy
Proxy Recording Size (PXW-X180 only)	Picture size for Proxy

Video output status screen

Displays the SDI, HDMI, and video output settings.

SDI	Output picture size Output On/Off
HDMI	Output picture size Output On/Off
Video	Output picture size

Assignable button status screen

Displays the function that is assigned to each assignable button.

1	Function that is assigned to the Assign 1 button
2	Function that is assigned to the Assign 2 button
3	Function that is assigned to the Assign 3 button
4	Function that is assigned to the Assign 4 button
5	Function that is assigned to the Assign 5 button
6	Function that is assigned to the Assign 6 button
7	Function that is assigned to the Assign 7 button

Battery status screen

Displays the 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
Video Light Remaining	Remaining charge level of the video light 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).

Media information of Media A	Media icon displayed when recording media is inserted in slot A
Protect information of Media A	Protect icon displayed when recording media inserted in slot A is write-protected
Notes	
<ul style="list-style-type: none"> You cannot protect the SxS memory card on the camcorder. 	
Remaining meter of Media A	Remaining capacity of the recording media inserted in slot A, expressed with a bar indicator
Remaining time of Media A	Estimated remaining time in minutes of the recording media inserted in slot A with the same condition
Remaining life of Media A	Remaining life in percent (%) of the media inserted in slot A when the media has its remaining life data
Media information of Media B	Media icon displayed when recording media is inserted in slot B
Protect information of Media B	Protect icon displayed when recording media inserted in slot B is write-protected
Remaining meter of Media B	Remaining capacity of the recording media inserted in slot B, expressed with a bar indicator

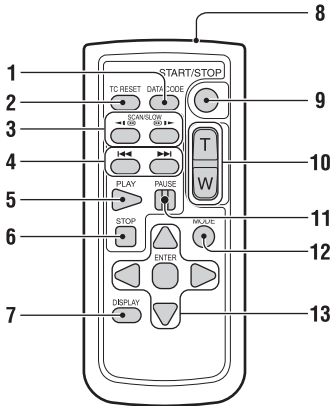
Remaining time of Media B	Estimated remaining time in minutes of the recording media inserted in slot B with the same condition
Remaining life of Media B	Remaining life in percent (%) of the media inserted in slot B when the media has its remaining life data
Media information of the proxy recording media (PXW-X180 only)	Media icon displayed when recording media is inserted in the PROXY SD slot
Protect information of the proxy recording media (PXW-X180 only)	Protect icon displayed when recording media inserted in the PROXY SD slot is write-protected
Remaining meter of the proxy recording media (PXW-X180 only)	Remaining capacity of the recording media inserted in the PROXY SD slot, expressed with a bar indicator
Remaining time of the proxy recording media (PXW-X180 only)	Estimated remaining time in minutes of the recording media inserted in the PROXY SD slot with the same condition
Remaining life of the proxy recording media (PXW-X180 only)	Remaining life in percent (%) of the recording media inserted in the PROXY SD slot when the media has its remaining life data
Media information of the UTILITY SD card	Media icon displayed when recording media is inserted in the UTILITY SD slot
Protect information of the UTILITY SD card	Protect icon displayed when recording media that is inserted in the UTILITY SD slot is write-protected
Remaining meter of the UTILITY SD card	Remaining capacity of the recording media inserted in the UTILITY SD slot, expressed by a bar indicator
Remaining capacity of the UTILITY SD card	Remaining capacity of the recording media inserted in the UTILITY SD slot, expressed in GB
Remaining life of the UTILITY SD card	Remaining life in percent (%) of the media inserted in the UTILITY SD slot when the media has its remaining life data

REC trigger setting status screen

Displays the setting status of the record button and handle record button.

Rec Button	Displays the slot for the recording target of the record button
Handle Rec Button	Displays the slot for the recording target of the handle record button

Wireless Remote Commander



1. DATA CODE button

This button does not work on the camcorder.

2. TC RESET button

3. SCAN/SLOW buttons

4. I, II (PREV/NEXT) buttons

5. PLAY button

6. STOP button

7. DISPLAY button

8. Transmitter

9. START/STOP button

10. Power zoom lever

11. PAUSE button

12. MODE button

13. ◀/▶/▼/ENTER buttons

On-Screen Indications

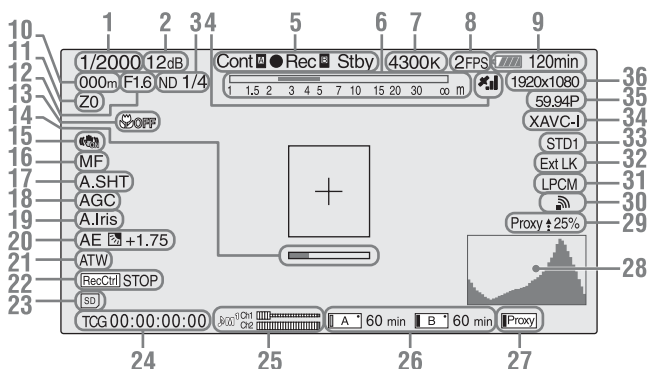
LCD/Viewfinder Screen

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

The statuses and settings of the camcorder can be turned on/off using the DISPLAY button.

The statuses and settings of the camcorder can be independently turned on/off (page 76).

Information displayed on the screen while recording



1. Shutter mode/shutter speed indication

2. Gain indication (page 31)

3. ND filter indication (page 32)

4. GPS status indication (PXW-X180 only)

Displays the GPS status.

5. Recording mode/slot A/B operation status indication

● Rec	Recording in progress
Stby	Standby for recording

6. Depth of field indication

Displays the depth of field.

7. Color temperature indication (page 32)

8. S&Q motion frame rate indication (page 79)

9. Battery remaining indication (page 17)

10. Focus position indication

Displays focus position.

11. Zoom position indication

Displays zoom position in the range of 0 (wide end) to 99 (tele end).

12. Iris position indication

Displays iris position.

13. Focus macro indication

14. Focus assist indication

15. SteadyShot indication

16. Focus mode indication

17. Auto shutter indication

18. AGC indication

19. Auto iris indication

20. AE mode indication

21. White balance mode indication (page 32)

ATW	Automatic mode
ATW Hold	Pause the automatic mode
W:P	Preset mode
W:A	Memory A mode
W:B	Memory B mode

22. Rec Control status of SDI output/HDMI output indication (page 79)

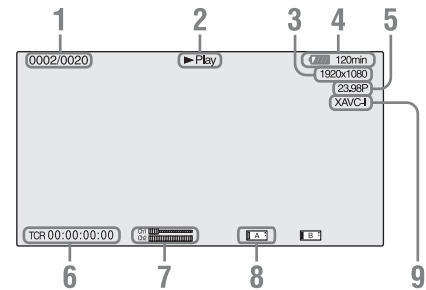
23. UTILITY SD slot media status indication


24. Time data indication (page 35)

- 25. Audio level meter**
- 26. A/B slot media status/remaining space indication (page 23)**
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.
- 27. PROXY SD slot media status indication (PXW-X180 only)**
- 28. VIDEO SIGNAL MONITOR indication (waveform monitor/vector scope/histogram indication)**
- 29. Proxy status indication (PXW-X180 only)**
- 30. Wireless LAN connection status indication (PXW-X180 only) (page 42)**
Displays the status when the wireless LAN function is on.
- 31. Audio format indication**
- 32. TC IN connection status indication (page 78)**
Displays the status when the timecode is input from an external device.
- 33. Gamma indication (page 68)**
Displays the gamma setting value.
- 34. Recording format (codec) indication (page 31)**
Displays the format that is recorded on an SxS memory card.
- 35. System frequency and scan method indication**
- 36. Recording format (picture size) indication (page 31)**
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 screen.



- 1. Clip no./total number of clips**
- 2. Playback mode**
- 3. Playback format (picture size)**
- 4. Battery remaining**
- 5. Playback format (frame rate)**
- 6. Time data**
The time data is displayed when the unit status/settings are displayed by pressing the DISPLAY button, and "Timecode" in "Display On/Off" of the LCD/VF menu is set to "On."
- 7. Audio levels**
The audio levels for the recording are displayed.
- 8. Media**
A  mark appears to the left if the memory card is write-protected.
- 9. Playback format (codec)**

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

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

Lithium-ion Battery Pack

BP-U30

BP-U60

BP-U60T

BP-U90

Charger

BC-U1

BC-U2

AC Adaptor (supplied)

ACDP-060S01

Notes

The BC-U1/BC-U2 Charger cannot be used as the external power source device for the camcorder. When connecting the camcorder to the wall outlet (wall socket), use the supplied AC adaptor.

Using a battery pack







Fully insert the battery pack into the battery pack receptacle (*page 10*), then slide it down to lock it. To remove the battery pack, press and hold the BATT RELEASE button (*page 10*), slide the battery pack upward to unlock it, then pull it out.

Notes

- Before use, charge the battery pack with the supplied BC-U1 or BC-U2 Charger.
- A warm battery pack immediately after use may not be able to be fully recharged.
- The high-capacity BP-U90 Battery Pack is large, and protrudes from the camcorder when attached. When using the camcorder with the BP-U90 attached for extended recording periods, Sony recommends attaching the camcorder to a tripod for convenience.

Checking battery charge remaining

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

Icon	Remaining
	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 battery charge remaining becomes low

If the battery charge remaining decreases to a certain level during operation (Low BATT status), a low-battery message, flashing of the recording/tally lamp, and a beep sound will warn you.

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

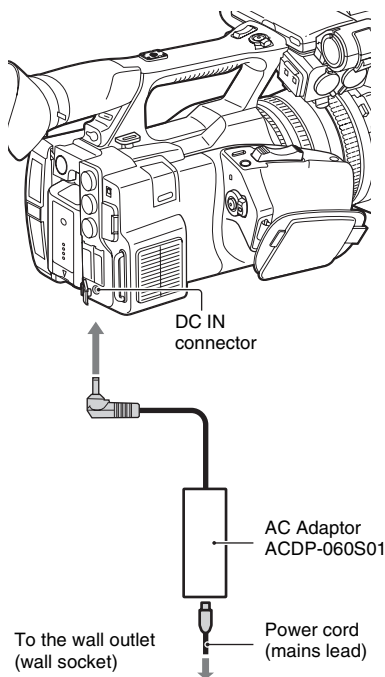
Replace the battery pack with one that is fully charged.

To change the message levels

The Low BATT level is set to 10% of full charge, and the BATT Empty level is set to 3% of full charge at the factory. These settings can be changed with “Battery Alarm” (*page 86*) in the System menu.

Using a wall outlet (wall socket) as a power source

You can use the AC Adaptor to obtain AC power.



1. Connect the power cord (mains lead) to the AC Adaptor.
2. Connect the AC Adaptor to the DC IN connector of the camcorder.
3. Connect the power cord (mains lead) to the wall outlet (wall socket).

On the AC Adaptor

- Use a nearby wall outlet (wall socket) when using the AC Adaptor. Disconnect the AC Adaptor from the wall outlet (wall socket) immediately if any malfunction occurs while using your camcorder.
- Do not use the AC Adaptor placed in a narrow space, such as between a wall and furniture.
- Do not short-circuit the plug of the AC Adaptor with any metallic objects. This may cause a malfunction.
- Even if your camcorder is turned off, AC power (house current) is still supplied to it while

connected to the wall outlet (wall socket) via the AC Adaptor.

- You cannot charge the camcorder by connecting it to the AC Adaptor.

Setting the Clock

When you turn the camcorder on for the first time after purchasing or the backup battery has completely discharged, the Initial Setting display appears on the viewfinder screen and LCD 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

The clock starts after you turn the SEL/SET dial (page 10) to select an item or value, then press the SEL/SET dial to set it.

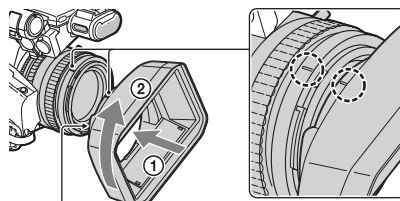
After the setting display disappears, “Clock Set” (page 85) of the System menu can be used to set “Time Zone” and date/time.

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 Devices

Attaching the lens hood with lens cover

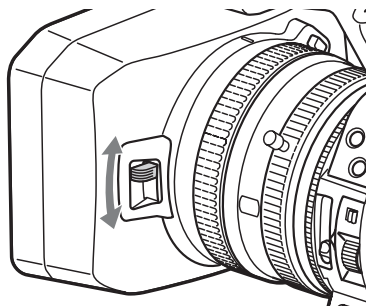


PUSH (lens hood release) button

Align the marks on the lens hood to those on the camcorder, and turn the lens hood in the direction of the arrow ② until it is locked.

Opening or closing the shutter of the lens hood with lens cover

Move the lens cover lever to OPEN to open the lens cover, and move the lever to CLOSE to close the lens cover.



Removing the lens hood with lens cover

Turn the lens hood in the opposite direction of the arrow ② in the illustration while pressing the PUSH (lens hood release) button.

Notes

- Remove the lens hood with lens cover when you attach/detach a ϕ 82mm polarized filter or protective filter.

Adjusting the LCD screen and viewfinder

You can switch the brightness of the viewfinder with “Brightness” in “VF Setting” of the LCD/VF menu (page 75).

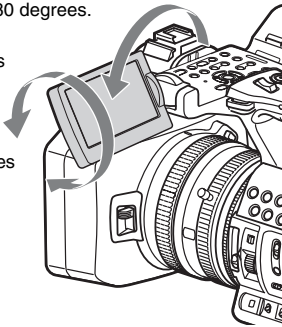
LCD screen

Open the LCD screen 180 degrees (①), then rotate it to the best angle to record or play back (②).

① Open 180 degrees.

② 90 degrees (max.)

② 180 degrees (max.)



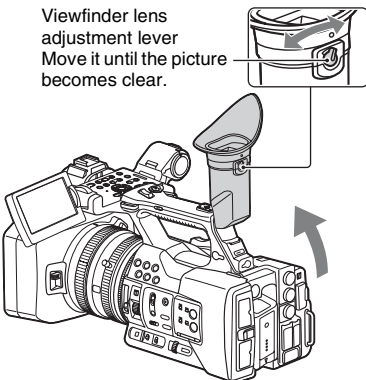
- Images are displayed as mirror images on the LCD screen, but are recorded as normal images.
- You can switch the brightness of the backlight of the LCD screen with the LCD BRIGHT button (page 11).

Viewfinder

Look through the viewfinder with the LCD screen closed when using the viewfinder.

If the viewfinder screen display is not clear, adjust by using the lens adjustment lever below the viewfinder.

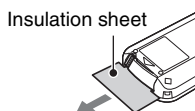
Viewfinder lens adjustment lever
Move it until the picture becomes clear.



Using the Wireless Remote Commander

Before use

Before you use the supplied Wireless Remote Commander for the first time, pull out the insulation sheet from the battery holder.



A CR2025 lithium battery is set in the holder at the factory.

Using the Wireless Remote Commander

For controlling the camcorder from the Wireless Remote Commander, activate the remote control function of the camcorder after turning the power on.

Activating/deactivating the remote control function can be achieved using the Setup menu.

To activate using the menu

Press the MENU button to set the camcorder to Menu mode, then set "IR Remote" (page 86) of the System menu to "On."

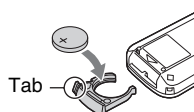
Notes

- Aim the Wireless Remote Commander towards the remote sensor to operate your camcorder.
- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Wireless Remote Commander may not function properly.
- When you are operating with the Wireless Remote Commander supplied with your camcorder, your video device may also operate. In that case, select a commander mode other than DVD2 for your video device, or cover the sensor of your video device with black paper.

Replacing the battery in the Wireless Remote Commander

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

1. While pressing on the tab, inset your fingernail into the slit to pull out the battery case.
2. Place a new battery with the + side facing up.
3. Insert the battery case back into the Wireless Remote Commander until it clicks.



WARNING

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

CAUTION

- Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. When you dispose of the battery, you must obey the law in the relative area or country.
- When the lithium battery becomes weak, the operating distance of the Wireless Remote Commander may shorten, or the Wireless Remote Commander may not function properly. In this case, replace the battery with a Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.

Using SxS Memory Cards

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

Notes

- If the video format is set to AVCHD, an SxS memory card cannot be used. Use “Memory Stick” media or an SD card (*page 24*).

About SxS memory cards

Usable SxS memory cards

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

SxS PRO+ series

SxS PRO series

SxS-1 series

These 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.

Notes

- An SxS memory card that is formatted in UDF cannot be used on the camcorder.

Inserting an SxS memory card

- 1 **Open the cover of the card slot block.**
- 2 **Insert the SxS memory card with the SxS label facing to the right.**

The access lamp (*page 10*) lights in red, then changes to green once the memory card is ready for use.

- 3 **Close the cover.**

Notes

- If you insert a memory card into the slot in the wrong direction, the memory card, the memory card slot, or image data may be damaged.

Removing an SxS memory card

- 1 **Open the cover of the card slot block, then pull the EJECT button out by pressing it.**
- 2 **Press the EJECT button to remove the SxS memory card.**

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.
- An SxS memory card removed from the camcorder after recording ended may be hot. This is not a malfunction.

Switching between SxS memory cards

When SxS memory cards are loaded in both card slots A and B, press the SLOT SELECT button (*page 10*) to select the card you wish to use. If a card becomes full during recording, switching to the other card is automatically executed.

Notes

- The SLOT SELECT button is disabled while playback is in progress. Switching is not executed even if you press the button. The button is enabled while the thumbnail screen is displayed (*page 56*).

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/viewfinder screen.

Format the card as follows.

Using “Format Media” (page 80) of the Media menu, specify “Media(A)” (slot A) or “Media(B)” (slot B), then select “Execute.” On the confirmation message, select “Execute” again.

The in-progress message is displayed, and the access lamp lights in red.

When formatting is complete, a completion message is displayed. Press the SEL/SET dial to hide the message.

If formatting fails

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

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

Notes


- 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 LCD/viewfinder screen (page 15).

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.

Notes

- 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 warning message “Media Near Full” is displayed, the recording/tally lamp flashes, and a beep sound is output to the headphones to 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.

Notes

- 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.

Using Other Media

XQD memory cards

By using the QDA-EX1 Media Adaptor (supplied with PXW-X180 NTSC model only), you can insert an XQD memory card into the SxS memory card slot and use it instead of an SxS memory card.

Usable XQD memory cards

XQD memory card S series
XQD memory card H series
XQD memory card N series

For details on using a QDA-EX1 Media Adaptor, refer to the instruction manual supplied with it.

Notes

- High-speed playback (*page 57*) may not be properly achieved with an XQD memory card.
- Not all XQD memory cards are guaranteed to work with this camcorder. For compatible memory cards, contact your dealer.
- If the video format is set to AVCHD, an XQD memory card cannot be used. Use “Memory Stick” media or an SD card (*page 24*).

Formatting

When you use an XQD memory card with this camcorder, formatting is required.

An XQD memory card to be used with this camcorder must be formatted using the format function of this camcorder.

It is also necessary to format an XQD memory card for use if a caution message is displayed when you mount the XQD memory card.

For an XQD memory card that was formatted with another system unsupported by this camcorder, the message “Unsupported File System” is displayed on the LCD/viewfinder screen.

Format the XQD memory card as instructed below.

To execute formatting

Using “Format Media” (*page 80*) of the Media menu, specify “Media(A)” (slot A) or “Media(B)” (slot B), then select “Execute.”

An in-progress message is displayed, and the access lamp lights in red.

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

Notes

- When formatting, all data in an XQD memory card, including protected images, is erased and cannot be restored.

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.

“Memory Stick” media/SD cards

Use of the MEAD-MS01 Media Adaptor (sold separately) or MEAD-SD02 Media Adaptor (supplied with PXW-X180 of other than the NTSC model and PXW-X160) permits you to insert a “Memory Stick” or an SD card to the SxS memory card slot and use it for recording and playback in the same way as with an SxS memory card.

Usable “Memory Stick”

“Memory Stick PRO-HG Duo”

“Memory Stick XC-HG Duo”

Usable SD card

SDHC card (SD speed class: Class 10)

SDXC card (SD speed class: Class 10)

For details on use of the MEAD-MS01/SD02 Media Adaptor, refer to the operating instructions supplied with the respective adaptor.

Notes

- High-speed playback (*page 57*) may not be properly achieved with a “Memory Stick” or an SD card.
- Not all “Memory Stick” or SD card are guaranteed for operation. About memory cards that have been verified for operation, contact the dealer.
- Slow & Quick Motion recording (*page 36*) cannot be made with a “Memory Stick” or an SD card.

Formatting

When you use a “Memory Stick” or an SD card with this camcorder, formatting is required.

A “Memory Stick” or an SD card to be used with this camcorder must be formatted using the format function of this camcorder.

It is also necessary to format a “Memory Stick” or an SD card for use if a caution message is displayed when you mount the “Memory Stick” or SD card.

For a “Memory Stick” or an SD card that was formatted with another system unsupported by this camcorder, the message “Unsupported File System” is displayed on the LCD/viewfinder screen.

Format the “Memory Stick” or SD card as instructed below.

To execute formatting

Using “**Format Media**” (*page 80*) of the **Media** menu, specify “**Media(A)**” (slot A) or “**Media(B)**” (slot B), then select “**Execute.**”

An in-progress message is displayed, and the access lamp lights in red.

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

Notes

- When formatting, all data in a “Memory Stick” or an SD card, including protected images, is erased and cannot be restored.

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 a UTILITY SD card

You can store the setting value file of the camera on an SD card (sold separately). 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* (Capacity: up to 2 GB)

* Indicated as “SD card” in this Operating Guide.

Inserting an SD card

- 1 **Open the cover of the UTILITY SD slot** (*page 10*).
- 2 **Insert the UTILITY SD card into the slot with the UTILITY SD label facing right.**

The access lamp (*page 10*) lights in red, then turns off when the memory card is ready for use.

- 3 **Close the cover.**

Removing an SD card

Open the cover of the UTILITY SD slot (*page 10*), **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 off before 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 card

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

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

Using “Format Media” (page 80) in the Media menu, specify “SD Card” then select “Execute.” On the 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 SEL/SET dial to hide the message.


Notes

- All the data is 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 13).

Notes

- 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.

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 SxS memory cards, recording is continued by automatically switching to the second card when the first card becomes full.
- 3 Open the cover of the lens hood with lens cover.**
- 4 Slide the power switch to on while pressing the green button.**
The recording screen is displayed on the LCD/viewfinder screen.
- 5 Press the record button (page 9).**
The recording/tally lamp lights and recording begins.
- 6 To stop recording, press the record button again.**
Recording stops and the camcorder enters STBY (recording standby) mode.

Recording (Full Auto mode)

Press the FULL AUTO button so that the button indicator lights.

Full Auto mode is turned on, the TLCS (Total Level Control System) (page 65) is activated, Auto Iris, AGC (Auto Gain Control), and Auto Shutter, and ATW (Auto-Tracing White balance) are set to on. Then, the brightness and white balance will be automatically adjusted.

When you wish to adjust them manually, turn Full Auto mode off.

Shooting without suspending while changing a memory card (Relay Recording)

When SxS memory cards are loaded in both slot A and slot B, the camcorder switches automatically to the other card if the selected card becomes full during recording.

Notes

- Do not remove the memory card that is recording. Remove only the memory card in the slot whose access lamp is turned off during recording.
- If the recordable memory card is loaded into the other slot when the remaining time of the memory card that is recording is less than 1 minute, the message “Will Switch Slots Soon” is displayed. It goes out when the slot is switched.
- The relay recording function may not work if you start recording when the remaining time of the memory card is less than 1 minute. To perform the relay recording properly, make sure that the remaining time of the memory card is more than 1 minute.
- The video that is recorded by using the relay recording function on the camcorder cannot be played seamlessly on the camcorder.
- To combine the videos that are recorded by using the relay recording function, use the “Content Browser” software.

Recording on memory card A and memory card B simultaneously (Simultaneously Recording)

You can perform simultaneously recording by using memory cards in both the memory card A and memory card B slot.

Set “Setting” in “Simul Rec” of the Recording menu to “On.”

Notes

- The simultaneously recording function cannot be used during Slow & Quick Motion mode (page 36) or Clip Continuous Rec mode (page 37).
- There is a limit to selectable recording formats when simultaneously recording images to an SD card and “Memory Stick.” For details, see page 91.

Changing the setting of the record button and handle record button

You can start/stop recording on the memory card in each slot independently by using the record button and handle record button.

The default setting starts/stops recording on memory card A and memory card B simultaneously by using either of the buttons.

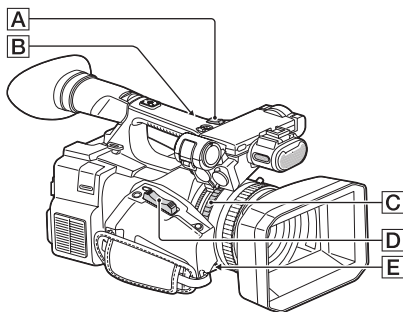
- Rec Button: A B
- Handle Rec Button: A B

To change the setting

Select “Rec Button Set” in “Simul Rec” of the Recording menu.

“Rec Button Set” setting	Operation
Rec Button: <input type="checkbox"/> A <input type="checkbox"/> B Handle Rec Button: <input type="checkbox"/> A <input type="checkbox"/> B	Starts/stops recording on memory card A and memory card B simultaneously by using either of the buttons.
Rec Button: <input type="checkbox"/> A Handle Rec Button: <input type="checkbox"/> B	Starts/stops recording on memory card A by using the record button, and memory card B by using the handle record button.
Rec Button: <input type="checkbox"/> B Handle Rec Button: <input type="checkbox"/> A	Starts/stops recording on the memory card B by using the record button, and memory card A by using the handle record button.

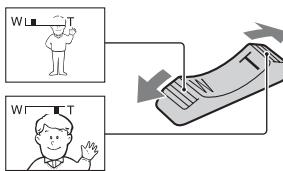
Adjusting the zoom



To use the power zoom lever

1. Set the ZOOM switch E to SERVO.
2. Zoom by pressing the power zoom lever D.
Lightly press the power zoom lever D for a slower zoom. Fully press it for a faster zoom.

Wide view: (Wide angle)



Close view: (Telephoto)

- The minimum distance required between your camcorder and the subject for focus is about 1 cm (about 13/32 in.) for wide angle and about 80 cm (about 2 5/8 feet) for telephoto.
- The focus may not be adjusted at certain zoom positions if the subject is within 80 cm (about 2 5/8 feet) from your camcorder.
- When “Focus Macro” in “Focus” of the Camera menu is set to “Off,” you cannot focus on a subject within 80 cm (about 2 5/8 feet) regardless of the zoom position (page 65).
- Be sure to keep your finger on the power zoom lever D. If you move your finger off the power zoom lever D, the operation sound of the power zoom lever D may also be recorded.
- You can change the zoom speed (normal/fast) of the power zoom lever D or the handle zoom lever A on “Setting” in “Speed Zoom” of the Camera menu (page 66).

To use the handle zoom

1. Set the handle zoom switch B to VAR or FIX.
 - When you set the handle zoom switch B to VAR, you can zoom in or out at a variable speed.
 - When you set the handle zoom switch B to FIX, you can zoom in or out at a fixed speed, which is set in “Setting” in “Handle Zoom” of the Camera menu (page 66).
2. Press the handle zoom lever A to zoom in or out.

Notes

- You cannot use the handle zoom lever A when the handle zoom switch B is set to OFF.
- You cannot change the zoom speed of the power zoom lever D with the handle zoom switch B.

To use the zoom ring

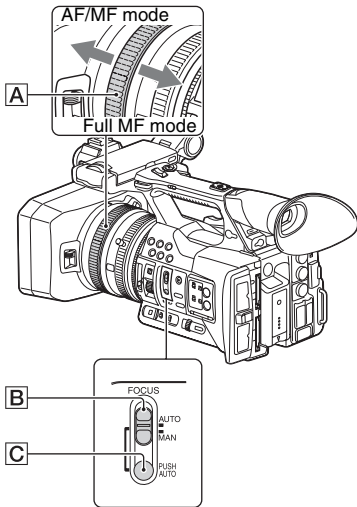
1. Set the ZOOM switch E to MANUAL.
2. Zoom by turning the zoom ring C.

You can zoom at the desired speed by turning the zoom ring **[C]**. Fine adjustment is also possible.

Notes

- Turn the zoom ring **[C]** at a moderate speed. If you turn it too fast, the zoom speed may lag behind the zoom ring rotation speed, or the operation sound of the zoom may also be recorded.

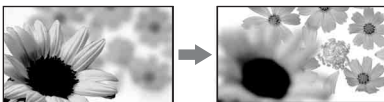
Adjusting the focus manually



You can adjust the focus manually for different recording conditions.

Use this function in the following cases.

- To record a subject behind a window covered with raindrops.
- To record horizontal stripes.
- To record a subject with little contrast between the subject and its background.
- When you want to focus on a subject in the background.



- To record a stationary subject using a tripod.

Adjusting focus manually in Full MF mode

In Full MF mode, you can manually adjust focus without automatic adjustment functions.

Set the focus ring **[A]** to the Full MF mode position and focus manually using the focus scale on the lens.

Notes

- Turn the focus ring slowly. If it is forced against either end, the focus ring may move toward the AF/MF mode position and move past the end, and make noise.
- While in Full MF mode, the auto focus and push auto focus function does not work.
- While in Full MF mode, macro is set to off regardless of the “Focus Macro” setting in “Focus” of the Camera menu.

Adjusting focus manually in AF/MF mode

In mode B, you can use the automatic adjustment functions during manual focus adjustment. Set the focus ring to the AF/MF mode position and do the following steps.

1. Set the FOCUS switch **[B]** to MAN.
2. Turn the focus ring to adjust the focus.

For focusing manually

- It is easier to focus on the subject when you use the zoom function. Move the power zoom lever towards T (telephoto) and adjust the focus, then, towards W (wide angle) to adjust the zoom for recording.
- When you want to record a close-up image of a subject, move the power zoom lever towards W (wide angle) to fully magnify the image, then adjust the focus.

To restore automatic adjustment

Set the FOCUS switch **[B]** to AUTO. The focus mode indication changes to “AF” and the automatic focus adjustment is restored.

To use automatic focus temporarily (Push auto focus)

Record the subject while pressing and holding the PUSH AUTO button **[C]**.

If you release the button, the setting returns to manual focusing.

Use this function to shift the focus on one subject to another during the manual focus mode.

Using the focus magnifier (Focus Magnifier)

In the default setting, “Focus Magnifier” is assigned to the ASSIGN 7 button (*page 36*). Press the ASSIGN 7 button.

The focus magnifier screen appears and the center of the screen is magnified by about 2.0 times. It will be easier to confirm the focus setting during manual focusing. The screen returns to the original size when you press the button again.

Notes

- Even though the image appears expanded on the screen, the recorded image is not expanded.

Monitoring audio

In normal playback mode, you can monitor the recorded audio signals through the connected headphones.

You can select the audio channel to be monitored and adjust the sound volume by using the HEADPHONE MONITOR switch and VOLUME buttons.

Cueing up

To start playback from the top of the clip

Press the PREV button or NEXT button of the playback control buttons (*page 11*). You can cue to the top of a desired clip by pressing either button repeatedly.

Switching the SxS memory cards

When two memory cards are loaded, press the SLOT SELECT button (*page 10*) to switch memory cards.

Notes

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

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” (*page 81*) of the Media menu.

Maximum duration of a clip

The maximum clip length differs depending on the recording format.

The maximum continuous recording time for a movie is same as it for a clip. If recording time reaches the maximum continuous recording time, the recording will stop.

For details about the maximum recording time of a clip for the recording format, see “Maximum Recording Time for a Clip” (*page 92*).

Changing Basic Settings

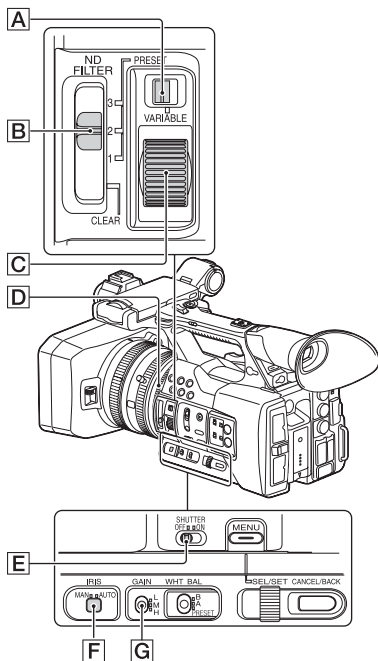
You can make changes to the settings based on the intended usage of the recorded video or recording conditions.

Recording format

Selectable format depends on the setting of the region where the camcorder is used (Country) or the codec (Codec).

To change the format, use “Video Format” in “Rec Format” (page 83) of the System menu.

Adjusting the Image brightness



You can adjust the image brightness by adjusting the iris, gain, or shutter speed, or by reducing the light volume with ND FILTER.

Adjusting the iris (Auto mode)

Adjust the brightness according to the subject.

When Full Auto mode (page 27) is set to on:

Iris is forcibly set to Auto mode.

When Full Auto mode is set to off:

Set the IRIS switch **[F]** to AUTO. The Auto Iris mode is set.

You can select the target level (to make the picture darker or brighter) for Auto Iris via the Setup menu. (The gain control in AGC mode and the shutter speed control in Auto Shutter mode are adjusted in synchronization.)

To adjust the target level with the Setup menu

Set “Level” in “Auto Exposure” (page 65) of the Camera menu.

Adjusting the iris (Manual mode)

If Full Auto mode is set to off, set the IRIS switch

[F] to MANUAL. The Manual Iris mode is set.

Rotate the iris ring **[D]** for the desired iris opening.

Adjusting the gain

You can adjust the gain manually when you do not want to use the AGC (automatic gain control).

1. Set Full Auto mode to off.
2. When the gain is automatically adjusted, set “AGC” in “Auto Exposure” of the Camera menu (page 65) to “Off.” “AGC” disappears.
3. Set the GAIN switch **[G]** to H, M or L. The gain value set for the selected gain switch position appears on the screen. You can set the gain value for H/M/L from “Gain” of the Camera menu (page 64).

To adjust the gain automatically

Set “AGC” in “Auto Exposure” of the Camera menu (page 65) to “On.”

The gain value disappears, and “AGC” appears.

Notes

- When you set Full Auto mode to on, other manually adjusted items (iris, shutter speed, white balance) also become automatic.

Shooting with a fixed shutter

Set the shutter speed (cache time).

When you set the SHUTTER switch **E** to ON, the fixed shutter is turned on in the mode and with the shutter speed you specified with “Shutter” (page 66) of the Camera menu.

Notes

- When “Auto Shutter” in “Auto Exposure” (page 65) of the Camera menu is set to “On,” the fixed shutter cannot be selected. Set “Auto Shutter” to “Off.”

Setting with the Camera menu

The shutter mode and shutter speed can be set with “Shutter” (page 66) of the Camera menu.

Shooting in slow shutter (SLS) mode

The shutter speed is specified in the number of accumulated frames. Up to 16 frames can be accumulated in this mode, permitting you to obtain low-noise clear pictures in low light levels or surreal pictures with afterimages. Select “Shutter” (page 66) of the Camera menu and set the number of accumulated frames with “SLS Frame.”

Shooting in Auto Shutter mode

The shutter speed is automatically adjusted according to the picture brightness. When you set the camcorder to Full Auto mode (page 27), Auto Shutter is forcibly selected. When Full Auto mode is off, you can independently turn Auto Shutter mode on by setting “Auto Shutter” in “Auto Exposure” (page 65) of the Camera menu to “On.”

Adjusting the volume of light (ND filter)

You can record a subject with the proper brightness by using the ND FILTER switch **B** when the recording environment is too bright. The camcorder has two ND filter modes. You can switch the mode by using the ND FILTER mode switch **A**.

Preset mode

Set the ND FILTER mode switch **A** to PRESET, then set the ND FILTER switch **B** to the following.
CLEAR: ND filter is not used.

- 1: Filter level that is set with “Preset1” in “ND Filter” of the Camera menu. The default setting is 1/4.
- 2: Filter level that is set with “Preset2” in “ND Filter” of the Camera menu. The default setting is 1/16.
- 3: Filter level that is set with “Preset3” in “ND Filter” of the Camera menu. The default setting is 1/64.

Variable mode

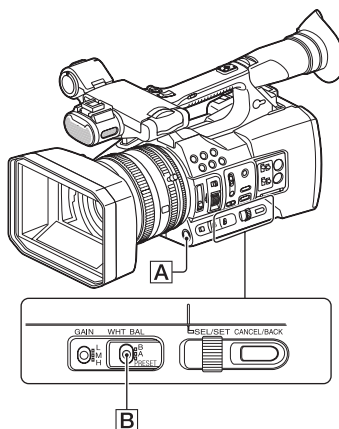
Set the ND FILTER mode switch **A** to VARIABLE, then set the ND FILTER switch **B** to the following.

CLEAR: ND filter is not used.

1, 2, 3: You can set the filter level from 1/4 to 1/128 continuously by using the ND control dial **C**.

The ND FILTER switch **B** position (1/2/3) does not affect the filter level adjustment.

Adjusting to natural color (White Balance)



You can select the adjustment mode according to the shooting conditions.

Preset mode

The color temperature is adjusted to the preset value (factory setting: 3200K) in this mode. Select this mode when there is no time to adjust the white balance or when you wish to fix the white balance that is set with “Preset White” in “White” of the Paint menu (page 67).

Memory A mode, Memory B mode

The white balance is adjusted to the value stored in memory A or memory B.

Pressing the WB SET button **A** executes auto white balance and stores the adjusted value in memory A or memory B.

ATW (Auto-Tracing White balance) mode

In this mode, the camcorder automatically adjusts the white balance to the appropriate condition.

When the color temperature of the light source changes, the white balance adjustment is automatically executed.

Five steps of adjustment speed can be selected with “ATW Speed” in “White” (page 67) of the Paint menu.

When the ATW Hold function is assigned to an assignable button (page 36), you can momentarily hold the ATW value to fix the white balance, even in ATW mode, by pressing the button.

Notes

- Under some conditions of lighting or the shooting subject, adjustment by ATW may fail to provide proper colors.
Examples:
 - When the subject that occupies most of the frame is mostly one color, like the sky, sea, ground, grass, or certain kinds of flowers.
 - When the subject is under a light source of extremely high or extremely low color temperature.
 If execution of automatic tracing by the ATW function takes an unacceptably long time or only results in an inadequate effect, execute the Auto White Balance function.

Using the switch

Make a selection with the WHT BAL switch **B**.

B: ATW mode or Memory B mode

A: Memory A mode

PRESET: Preset mode

The B position of the WHT BAL switch is assigned to ATW mode at the factory. The setting can be changed with “White Switch” in “White” (page 67) of the Paint menu to select Memory B mode.

Setting the camcorder to Full Auto mode (page 27) forcibly activates ATW mode.

Assigning the ATW on/off function to an assignable button (page 36) permits you to independently activate/deactivate ATW when Full Auto mode is off.

Executing Auto White Balance

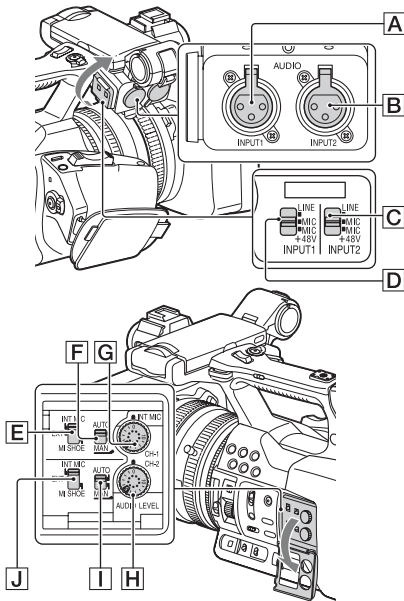
- 1 To store the adjustment value in memory, select Memory A or Memory B mode.**
- 2 Place a white subject under the same lighting condition and zoom in on it so that a white area is obtained on the screen.**
- 3 Adjust the brightness.**
Adjust Iris as instructed in “Adjusting the iris (Manual mode)” (page 31).
- 4 Press the WB SET button **A**.**
When you execute the adjustment in a memory mode, the adjusted value is stored in memory (A or B) selected in step 1.
When you execute the adjustment in ATW mode, adjustment in ATW is resumed.

Notes

- Auto white balance adjustment cannot be performed when in Preset mode.
- If auto white balance adjustment fails, an error message is displayed on the screen for approximately 3 seconds. If the error message continues to be displayed after several attempts, consult your Sony service representative.

Audio setup

The following connectors, switches and dials allow you to set the sound to be recorded.



External audio input connectors and switches

AUDIO INPUT1 connector **A**

AUDIO INPUT2 connector **B**

INPUT1 switch **D**

INPUT2 switch **C**

Audio source switches

CH-1 (INT MIC/EXT/MI SHOE) switch **E**

CH-2 (INT MIC/EXT/MI SHOE) switch **J**

Recording level controls

AUTO/MAN (CH-1) switch **F**

AUTO/MAN (CH-2) switch **I**

AUDIO LEVEL (CH-1) dial **G**

AUDIO LEVEL (CH-2) dial **H**

Using the internal microphone

The sound will be recorded in stereo when using the internal microphone. To adjust the input volume of the internal microphone, perform the following steps.

1. Set the CH-1 (INT MIC/EXT/MI SHOE) switch **E** and CH-2 (INT MIC/EXT/MI SHOE) switch **J** to INT MIC.
The left and right channels can be controlled together by using the CH-1 switch and dial for setting the recording level.
2. Set the AUTO/MAN (CH-1) switch **F** of the channel to be adjusted to MAN.
♪M₂ appears on the screen.
3. Adjust the microphone volume by turning the AUDIO LEVEL (CH-1) dial **G** of the channel to be adjusted during recording or standby.

To return to auto level adjusting

Set the AUTO/MAN (CH-1) switch **F** of the channel that is adjusted manually to AUTO.

- If the recording level is low, set “INT MIC Sensitivity” in “Audio Input” of the Audio menu to “High” (page 73).
- To reduce wind roar, set “INT MIC Wind Filter” in “Audio Input” of the Audio menu to “On” (page 73).

Recording sound via an external microphone or audio device

ECM-673 Electret Condenser Microphone or other devices can be connected and used for recording.

1. Select the input source.
Set the INPUT1/INPUT2 switch according to the devices connected to the AUDIO INPUT1/AUDIO INPUT2 connector.

Audio devices	Switch position
External audio device (mixer, etc.)	LINE
Dynamic microphones or microphones with a built-in battery	MIC
+48V power (Phantom power) microphone	MIC+48V

- If you connect a device that does not support +48V phantom power, a

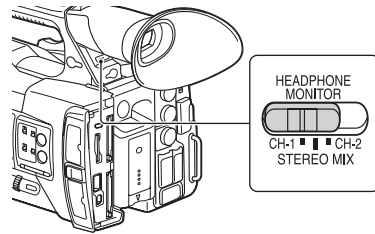
malfunction may result from setting this switch to MIC+48V. Check before connecting the device.

- When there is no audio device connected to an input connector, set the INPUT1/ INPUT2 switch of that connector to LINE to prevent noise.

To record by using an external microphone

1. Open the cover by pulling the handle of the microphone fixing clamber/microphone holder.
2. Attach a microphone, then fix it by closing the cover of the microphone fixing clamber/microphone holder.
3. Connect the microphone cable to the AUDIO INPUT1/AUDIO INPUT2 connector (**A**/**B**).
4. Set the CH-1 (INT MIC/EXT/MI SHOE) switch **E** and CH-2 (INT MIC/EXT/MI SHOE) switch **J** to EXT.
When “INPUT CH Select” in “Audio Input” of the Audio menu is set to “INPUT1/ INPUT2,” the sound from the AUDIO INPUT1 connector will be recorded on CH-1 and the sound from the AUDIO INPUT2 connector will be recorded on CH-2.
When “INPUT CH Select” is set to “INPUT1/INPUT1,” the sound from the AUDIO INPUT1 connector will be recorded on both CH-1 and CH-2.
5. Set the INPUT1/INPUT2 switch.
6. Set the input level of the microphone.
 - Set the input level of the microphone with “INPUT1 Reference/INPUT2 Reference” in “Audio Input” of the Audio menu (*page 73*). Adjust according to the sensitivity of the microphone.
 - When you use a stereo microphone (2 XLR plugs), connect the L (left) channel plug to the AUDIO INPUT1 connector, and the R (right) channel plug to the AUDIO INPUT2 connector. Set the CH-1 (INT MIC/EXT/ MI SHOE) and CH-2 (INT MIC/EXT/MI SHOE) switches to EXT.

Setting the headphone sound



You can select the channel to output from the headphone by setting the HEADPHONE MONITOR switch to CH-1 or CH-2, to output from the headphone.
See “Headphone Out” in “Audio Output” of Audio menu for details about the sound when set to STEREO MIX (*page 73*).

Time data

Setting the timecode

Specify the timecode to be recorded with “Timecode” in the TC/UB menu (*page 78*).

Displaying the time data

Pressing the DISPLAY button displays the time data on the screen (*page 15*).

The indication is switched among the timecode, user bits, and recording duration each time you press the DURATION/TC/U-BIT button (*page 11*).

Display	Contents
TCG **.*.*.*.*	Timecode
CLK **.*.*.*.*	Timecode (Clock mode)
UBG **.*.*.*.*	User bits
DUR **.*.*.*	Duration from the beginning of recording

Useful Functions

Assignable buttons

The camcorder has seven assignable buttons (*pages 6, 8*) to which you can assign various functions for convenience.

Changing functions

Use “Assignable Button” (*page 84*) in the System menu.

The assigned functions can be viewed on the assignable button status screen (*page 12*).

Default assigned functions

- Button 1 Off
- Button 2 Off
- Button 3 NFC (PXW-X180) / Off (PXW-X160)
- Button 4 Zebra
- Button 5 Peaking
- Button 6 Video Signal Monitor
- Button 7 Focus Magnifier

Assignable functions

- Off
- Marker (*page 75*)
- Zebra (*page 76*)
- Peaking (*page 75*)
- Video Signal Monitor (*page 84*)
- Focus Magnifier (*page 30*)
- Focus Macro (*page 65*)
- VF Mode (*page 84*)
- Auto Exposure Level (*page 65*)
- Spotlight (*page 84*)
- Backlight (*page 84*)
- ATW (*page 33*)
- ATW Hold (*page 33*)
- SteadyShot (*page 66*)
- Color Bars (*page 66*)
- NFC (PXW-X180 only)
- Rec Lamp (*page 84*)
- Rec Review (*page 37*)
- Thumbnail (*page 60*)
- Shot Mark1 (*page 84*)
- Shot Mark2 (*page 84*)
- Clip Flag OK (*page 84*)
- Clip Flag NG (*page 84*)
- Clip Flag Keep (*page 84*)

Slow & Quick Motion

When the video format (*page 31*) is set to the following settings, you can set the recording frame rate and playback frame rate to different values.

XAVC-L	1920 × 1080/59.94p, 29.97p, 23.98p, 50p, 25p 1280 × 720/59.94p, 50p
XAVC-I	1920 × 1080/29.97p, 23.98p, 25p 1280 × 720/59.94p, 50p
MPEG HD422	1920 × 1080/29.97p, 23.98p, 25p 1280 × 720/59.94p, 29.97p, 23.98p, 50p, 25p

Notes

- Slow & Quick Motion mode cannot be used while recording, playing, or displaying thumbnails.
- Audio cannot be recorded while in Slow & Quick Motion mode.
- If you record at a frame rate faster than 60 fps at a resolution of 720, the following will occur.
 - The imaging field becomes narrower than usual.
 - Automatic focus is not available.
 - Focus assist indication, depth of field indication, focus position indication, iris position indication, and zoom position indication are set to OFF.

Format	Resolution	Frame rate
XAVC-L	1080	1 to 60 fps (59.94p, 29.97p, 23.98p, 50p, 25p)
	720	1 to 120 fps (59.94p, 50p)
XAVC-I	1080	1 to 60 fps (29.97p, 23.98p, 25p)
	720	1 to 60 fps (59.94p, 50p)
MPEG HD422	1080	1 to 30 fps (29.97p, 23.98p, 25p)
	720	1 to 60 fps (59.94p, 29.97p, 23.98p, 50p, 25p)

Rec Review

You can review the last recorded clip on the screen (Rec Review).

Press the REC REVIEW button (page 6) after you stop recording.

You can use an assignable button (page 36) by assigning the Rec Review function to an assignable button.

Rec Review stops at the end of the clip, then resumes the STBY (recording standby) status.

To stop Rec Review

Press the REC REVIEW button, STOP button, or assignable button assigned to the Rec Review function.

Notes

- The playback control buttons other than the record button do not work during the Rec Review playback.
- Rec Review does not work when changing the video format after recording.
- The Setup menus cannot be operated during Rec Review.

Clip Continuous Rec

Normally, a clip is created as an independent file each time you start and stop recording. However, this function allows you to start and stop recording while continuously recording to the same clip, for as long as the function remains enabled. This is convenient when you do not want to generate a large number of short clips, and when you want to record without worrying about exceeding the clip limit. It is still easy to find recording start points, because a Rec Start mark is recorded at the recording start point each time you start recording.

For details about the recording format that is compatible with Clip Continuous Rec, see “*Special Recording and Compatible Formats*” (page 92).

Settings before shooting

Perform the setting with “Clip Continuous Rec” (page 79) of the Recording menu in advance. The Clip Continuous Rec function is enabled and “Cont” appears on the screen (page 15) by setting “Setting” to “On.”

Notes

- The Clip Continuous Rec function cannot be used at the same time as the Slow & Quick Motion function.

When you set Clip Continuous Rec to on, the Slow & Quick Motion function is disabled.

- The Clip Continuous Rec function cannot be set to on during recording.

To shoot in Clip Continuous Rec mode

Start the recording after completing the required setting.

Press the record button.

When recording starts, the “Cont” indication on the screen changes to the “●Rec” indication (● is red).

Notes

- During recording or in recording standby mode (when the “Cont” indication is lit), if you remove the SxS memory card, the battery, or the power source, the SxS memory card needs to be restored. Exit Clip Continuous Rec mode and then remove the SxS memory card. When the “Cont” indication is flashing (at 1 flash/s), you can remove the SxS memory card.
- Stop the recording after the recording continues for two or more seconds.

To exit Clip Continuous Rec mode

With the camcorder in recording standby mode, set “Setting” in “Clip Continuous Rec” (page 79) of the Recording menu to “Off.”

Limitations

A single continuous clip cannot be created if you perform one of the following operations while the camcorder is recording or in recording standby mode. A new clip will be created when you next start recording.

- Operate on a clip (lock, delete, or rename a clip)
- Change the memory card slot
- Change the recording format
- Turn the camcorder off by setting the power switch to off
- Display the thumbnail screen
- Play a clip
- Stop the Clip Continuous Rec mode

Planning Metadata

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

Example of a planning metadata file

```
<?xml:version="1.0"spencoding="UTF-8"?>
<PlanningMetadata
xmlns="http://xmins.sony.net/pro/metadata/planningmetadata"
assignId="P0001" creationDate="2011-08-20T17:00:00+09:00"
lastUpdate="2011-08-28T10:30:00+09:00" load="false" version="1.00">
<PropertyssppropertyId="assignment" update="2011-08-20T09:00:00+09:00"
modifiedBy="Chris">
<TitlesplusAscii="Typhoon" xml:lang="ja">Typhoon_Strikes_Tokyo</Title>
</Properties>
</PlanningMetadata>
```

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

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

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

Notes

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

Loading a Planning Metadata file

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

Notes

- The Planning metadata cannot be loaded from an SDXC card.

To use an SxS memory card

Insert the SxS memory card with the planning metadata file (.xml) saved to the directory below into the camcorder's card slot, then select and load the file via "Load Media(A)" or "Load Media(B)" in "Planning Metadata" (page 82) of the File menu.

/XDROOT/General/Sony/Planning

Confirming the detailed information in planning metadata

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

Select "Properties" in "Planning Metadata" (page 82) of the File menu, then select "Execute."

Clearing the loaded planning metadata

To clear the planning data loaded in the camcorder's memory, proceed as follows:

Select "Clear Memory" in "Planning Metadata" (page 82) of the File menu, then select "Execute."

Defining a clip name in Planning Metadata

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

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

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

Example of clip name strings

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

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

"Typhoon_Strikes_Tokyo" is described in UTF-8-format (up to 44 bytes).

Here, "sp" indicates a space, and ↵ indicates a carriage return.

```
<?xml:spversion="1.0"spencoding="
UTF-8"?>↵
```

```

<PlanningMetadata_sp xmlns="http://
xmlns.sony.net/pro/metadata/
planningmetadata" _spassignId="
P0001" _spcreationDate="
2011-08-20T17:00:00+09:00" _sp
lastUpdate="
2011-09-28T10:30:00+09:00" _sp
version="1.00">←←
  <Properties_sp propertyId="
assignment" _spupdate="
2011-09-28T10:30:00+09:00" _sp
modifiedBy="Chris">←←
    <Title_sp usAscii="Typhoon" _sp
xml:lang="en">Typhoon_Strikes_Tokyo
  </Title>←←
</Properties>←←
</PlanningMetadata>←←

```

Notes

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

Using a clip name defined in planning metadata

Load a planning metadata file that contains the clip name into the memory of the camcorder, then select “Plan” in “Auto Naming” in “Clip” (page 81) of the Media menu.

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

Example: Typhoon_Strikes_Tokyo_00001,
Typhoon_Strikes_Tokyo_00002, ...

Notes

- If the serial number reaches 99999, it returns to 00001 upon the next recording.
- When you load another planning metadata file, the 5-digit serial number returns to 00001.

Defining Shot Mark names in Planning Metadata

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

Example of shot mark name strings

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

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

Names can be either in ASCII-format (up to 32 characters) or UTF-8-format (up to 16 characters).

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

Notes

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

```


<?xml_sp version="1.0" _spencoding="
UTF-8" ?>←←
<PlanningMetadata xmlns="http://
xmlns.sony.net/pro/metadata/
planningmetadata" _spassignId="
H00123" _spcreationDate="
2011-04-15T08:00:00Z" _splastUpdate="
2011-04-15T15:00:00Z" _spversion="
"1.00">←←
  <Properties_sp propertyId=
"assignment" _spclass="original" _sp
update="2011-04-15T15:00:00Z" _sp
modifiedBy="Chris">←←
    <Title_sp usAscii="Football
Game" _spxml:lang="en">
Football Game 15/04/2011
  </Title>←←
    <Meta_sp name="_ShotMark1" _sp
content="Goal"/>←←
    <Meta_sp name="_ShotMark2" _sp
content="Shoot"/>←←
  </Properties>←←
</PlanningMetadata>←←

```

Notes






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

Acquiring positioning information (GPS) (PXW-X180 only)

1. Press the MENU button during standby.
2. Set “GPS” of the System menu to “On.”
 appears and the camcorder prepares for acquiring positioning.
 The positioning information is recorded while recording video when acquiring positioning.

Notes

- The icon that is displayed on the screen changes depending on the reception status of the signals from the satellite.

Positioning status	Display	GPS reception status
Off	Not displayed	GPS is set to off or an error occurs.
Difficult to acquire positioning		Positioning information cannot be acquired because the GPS signal cannot be received. Move to a place with a clear view of the sky.
Detecting the satellite		The camcorder is detecting the satellite. It may takes several minutes to acquire positioning.
Positioning		Weak GPS signal is being received.
		GPS signal is being received. Positioning information can be acquired.
		Strong GPS signal is being received. Positioning information can be acquired.

- In the default setting, “GPS” is set to “On.” When “GPS” is set to “On,” location information and positioning time of the video that is recorded are also recorded. To record positioning information, set “GPS” to “On.”
- It may take time to start positioning after turning the camcorder on.
- If the icon does not indicate the positioning status after several minutes, the GPS signal reception status is poor. Move to a place with a clear view of the sky. If recording starts in that

status, positioning information cannot be recorded.

- The GPS signal may not be received well indoors or near a tall building. Move to a place with a clear view of the sky.
- Even though the icon indicates positioning, the GPS information recording may cut off depending on the signal reception status.

Proxy Recording (PXW-X180 only)

You can record proxy data on an SD card simultaneously while recording on an SxS memory card.

Usable SD cards

SDHC memory card* (Speed Class: Higher than 4, Capacity: Up to 32 GB)

* Indicated as “SD card” in this Operating Guide.

Formatting an SD card

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

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

Using “Format Media” (page 80) in the Media menu, specify “Proxy” then select “Execute.” On the 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 SEL/SET dial to hide the message.


Notes

- All the data is erased when an SD 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 13).

Notes

- A  icon appears if the SD 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.

Performing proxy recording

- 1 Set “Setting” in “Proxy Recording Mode” of the Recording menu to “On.”
- 2 Open the cover of the PROXY SD (page 9).
- 3 Insert the SD card into the slot with the label facing right.
The access lamp (page 9) lights in red, then turns off when the memory card is ready for use.
- 4 Close the cover.
- 5 Start recording.
When the recording on an SxS memory card is stopped, proxy recording is also stopped.

Notes

- Data integrity is not guaranteed if the power is turned off or an SD card is removed while it is being accessed. Data on the SD card may be destroyed. Be sure that its access lamp is off before you turn off the power or remove an SD card.
- Make sure that the SD card does not pop out when inserting or removing it.

Changing the proxy recording setting

Setting the picture size

Select the picture size with “Size” in “Proxy Recording Mode” of the Recording menu.

Checking the frame rate

Check the frame rate with “Frame Rate” in “Proxy Recording Mode” of the Recording menu.

Checking the bit rate

Check the bit rate with “Bit Rate” in “Proxy Recording Mode” of the Recording menu.

About the recorded file

The file system of the recorded file is FAT32, and the file extension is “.mp4.”
The timecode is also recorded simultaneously.

Storage destination of the recorded file

The recorded file is stored under the “/PRIVATE/PXROOT/Clip” directory.

About the file name

The file name is automatically generated as “a character string that is set on the Setup menu” + serial number.

- Number of characters is 1 to 46. Usable characters are as follows.
 - Alphabet (A to Z, a to z), Numerals (0 to 9), Symbols (! # \$ % () + , - . : ; = @ [] ^ _ ~ (space))
- The serial number is kept even if the camcorder is turned off. The serial number returns to 0001 by performing All Reset.

Connecting to Other Device via Wireless LAN (PXW-X180 only)

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

Notes

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

Making a wireless LAN connection between a device and the camcorder enables you to do the following.

- Remote operation via a wireless LAN
You can control the camcorder from a smartphone, tablet, or computer that is connected to the camcorder via the wireless LAN.
- File transferring via a wireless LAN
You can transfer a proxy file (low resolution) that is recorded on an SD card in the camcorder or original file (high resolution) that is recorded by the camcorder to the server via the wireless LAN.
- Video/audio streaming via a wireless LAN
You can create a stream (H.264/AAC-LC compression) from the video/audio of a camcorder, and watch the video/audio streaming by using the “Content Browser Mobile” application that is installed on a smartphone, tablet, or computer via the wireless LAN.

“Content Browser Mobile” application

You can operate the camcorder remotely while streaming the audio/video of the camcorder, and perform the settings of the camcorder by using the “Content Browser Mobile” application.

For details about the “Content Browser Mobile” application, contact your Sony dealer or a Sony service representative.

Compatible devices

You can use a smartphone, tablet, or computer for setting and operating the camcorder. Compatible devices, operating systems, and browsers are as follows.

Device	OS	Browser
Smartphone	Android 4.3	Chrome
	iOS 7	Safari
Tablet	Android 4.3	Chrome
	iOS 7	Safari
Computer	Microsoft Windows 7/	Chrome
	Microsoft Windows 8	
	Mac OS 10.8/	Safari
	10.9	

Attaching the IFU-WLM3

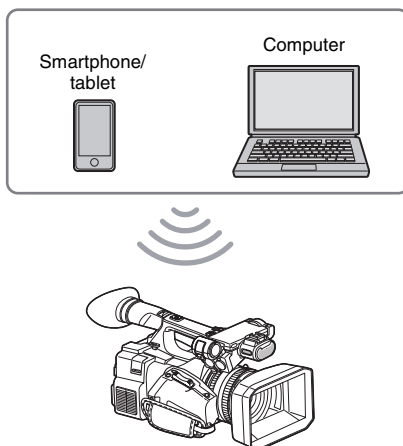
- 1 Open the cover of the USB wireless LAN module retracting part (*page 9*).
- 2 Insert the IFU-WLM3 to the USB connector.
- 3 Close the cover.

Notes

- Attach/remove the IFU-WLM3 while the camcorder is turned off.

Connecting with the wireless LAN access point mode

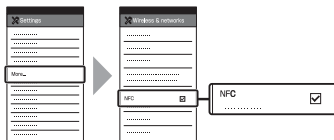
The camcorder works as an access point, and connects to a device via a wireless LAN.




Connecting to an NFC-compatible device with one-touch operation

You can connect the camcorder to an NFC-compatible device with one-touch operation by using the NFC function.

- 1 Start “Settings” on the device, select “Other Settings,” then mark the “NFC” checkbox.



- 2 Turn the camcorder on.
- 3 Activate the NFC function.

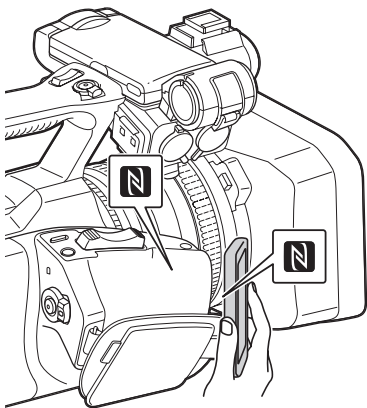
Set the camcorder to the NFC connection mode by pressing and holding the ASSIGN 3/NFC button (for 3 seconds), or activate “NFC” in “Wi-Fi” of the System menu. The NFC function is available while  appears on the screen.

Notes

- It may take a time (for 30 to 60 seconds) until **N** appears on the screen. Wait until the flashing “AP” indication for the wireless LAN connection status on the LCD/viewfinder screen (page 16) is turned on.

4 Hold the smartphone near the camcorder.

The smartphone is connected to the camcorder and “Content Browser Mobile” starts.

**Notes**

- Cancel the sleep or screen lock function of the smartphone in advance.
- Hold the device near to the camcorder without moving the device until “Content Browser Mobile” starts (1 to 2 seconds).

Connecting to a WPS-compatible device

You can connect the camcorder to a WPS-compatible device by using the WPS function.

1 Set the camcorder’s wireless LAN operation mode to the access point mode by setting “Setting” in “Wi-Fi” of the System menu to “Access Point.”

Notes

- It may take a time (for 30 to 60 seconds) until the camcorder is in the access point mode. Wait until the flashing “AP” indication for the wireless LAN connection status on the LCD/viewfinder screen (page 16) is turned on.

2 Activate “WPS” in “Wi-Fi” of the System menu.

3 Select “Network Setting” > “Wi-Fi Setting” on the device, then set “Wi-Fi” to on.

4 Select the camcorder’s SSID from the SSID list in “Wi-Fi Network” on the device, then select “WPS Push Button” in “Option” on the device.

Notes

- The operation method differs depending on the device.

5 Start the browser on the device, then access “http://192.168.1.1:8080/index.html.”

The screen for inputting “User Name” and “Password” appears.

6 Input the user name and password, then select “OK.”

For the user name and password of the access authentication, check “Basic Authentication” of the System menu (page 85).

Connecting by inputting an SSID and password on a device

You can connect the camcorder to a device by inputting an SSID and password on a device.

1 Set the camcorder’s wireless LAN operation mode to the access point mode by setting “Setting” in “Wi-Fi” of the System menu to “Access Point.”

Notes

- It may take time (for 30 to 60 seconds) until the camcorder is in the access point mode. Wait until the flashing “AP” indication for the wireless LAN connection status on the LCD/viewfinder screen (page 16) is turned on.

2 Select “Network Setting” > “Wi-Fi Setting” on the device, then set “Wi-Fi” to on.

3 Connect the device to the camcorder by selecting the camcorder’s SSID from the SSID list in “Wi-Fi Network” and inputting the password on the device.

For the SSID and password of the camcorder, check “SSID & Password” in “Wi-Fi” of the System menu (page 85).

Notes

- The operation method differs depending on the device.

4 Start the browser on the device, then access “<http://192.168.1.1:8080/index.html>.”

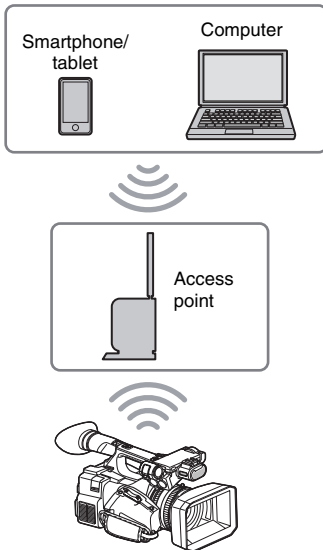
The screen for inputting “User Name” and “Password” appears.

5 Input the user name and password, then select “OK.”

For the user name and password of the access authentication, check “Basic Authentication” of the System menu (page 85).

Connecting with the wireless LAN station mode

The camcorder connects to an existing access point of the wireless LAN as a client. The camcorder and device connect via the access point.



Connecting to the access point with the WPS function

If the access point is compatible with the WPS function, you can connect to the access point with simple settings. If the access point is not compatible with the WPS function, see “*To connect to the access point in the station mode without the WPS function*” (page 53).

1 Turn the access point on.

2 Turn the camcorder on.

3 Set the camcorder’s wireless LAN operation mode to the station mode by setting “Setting” in “Wi-Fi” of the System menu to “Station.”

Notes

- It may take a time (for 30 to 60 seconds) until the camcorder is in the station mode. Wait until the flashing signal status indication for the wireless LAN connection status on the LCD/viewfinder screen (page 16) is turned on.

4 Activate “WPS” in “Wi-Fi” of the System menu.

5 Press the WPS button of the access point.

For the operation of the WPS button, refer to the operating instructions of the access point. When the connection is completed, the signal status indication for the wireless LAN connection status (page 16) lights at a strength of more than 1.

Notes

- If the connection fails, perform steps from step 1 again.

6 Connect the device to the access point.

For connecting, refer to the operating instructions of the device.

7 Start the browser on the device, then access to “<http://<IP address that the access point assigns to the camcorder>:8080/index.html>.”

For the camcorder’s IP address, check “IP Address” in “Wi-Fi” of the System menu. The screen for inputting “User Name” and “Password” appears.

8 Input the user name and password, then select “OK.”

The Web menu of the camcorder appears on the browser. For details, see “About the Web Menu (PXW-X180 only)” (page 51).

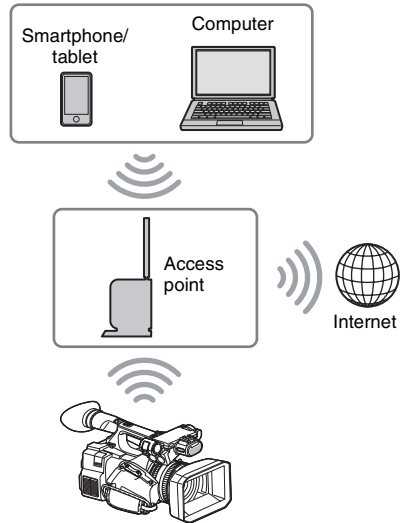
For the user name and password of the access authentication, check “Basic Authentication” of the System menu (page 85).

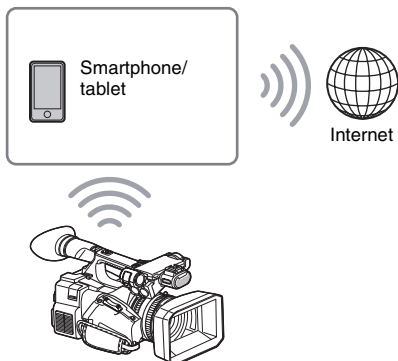
Connecting to the Internet (PXW-X180 only)

You can connect the camcorder to the Internet via an optional 3G/4G/LTE access point or by tethering to a device.

Connecting to the Internet in the wireless LAN station mode

You can connect the camcorder to the Internet in the station mode via the optional 3G/4G/LTE access point or by tethering to a smartphone or tablet.





Connecting

If the access point or device is compatible with the WPS function, connect the camcorder to the Internet by performing procedures of “Connecting to the access point with the WPS function” (page 45). If the access point or device is not compatible with the WPS function, connect the camcorder to the Internet by performing procedures of “To connect to the access point in the station mode without the WPS function” (page 53).

Before connecting, turn the access point or device on, and activate its tethering function.

Uploading a File (PXW-X180 only)

You can upload a proxy file or original file that is recorded on the camcorder to the server on the Internet via a 3G/4G/LTE line or access point.

Preparations

To connect to the Internet

Connect the camcorder to the Internet by following the procedure of “Connecting to the Internet (PXW-X180 only)” (page 46).

To register the server for uploading

Register the server for uploading in advance. For details about registering the server, see “Register the server for uploading” (page 54).

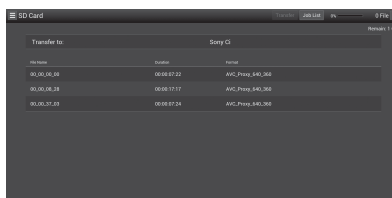
Selecting the file and uploading

Upload the file that is recorded on an SD card, or the original file that is recorded on an SxS memory card, to the server.

Uploading a proxy file on an SD card

- 1 **Connect a device to the camcorder via a wireless LAN, start the browser on the device, then access the camcorder from the browser (page 42).**
- 2 **Display the file list screen to select the file.**

Touch “☰” > “Media Info” > “SD Card.” The “SD Card,” “Slot A,” or “Slot B” screen appears.
Example: “SD Card” screen



3 Select the file.

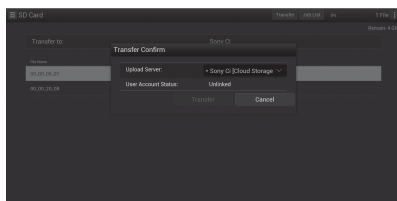
Select the file by touching the file. To cancel, touch the file again.

You can check the file by double touching the file to play back (SD card only).

4 Touch “Transfer.”

The server that you set to the default server at “Default Server” in “Register the server for uploading” (page 54) appears.

To change the server, touch the server to display the server list, then select a server. Input the directory for the server to “Directory” if necessary.



5 Touch “Transfer.”

The camcorder starts uploading the selected file.

To cancel uploading, touch “Cancel.”

Uploading an original file on an SxS memory card

- 1 **Connect a device to the camcorder via a wireless LAN, start the browser on the terminal device, then access the camcorder from the browser (page 42).**

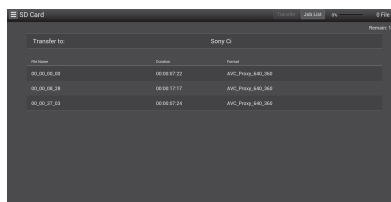
- 2 **Display the file list screen to select the file.**

Perform “File Transfer” in “File Transfer” of the System menu to change the camcorder to the dedicated mode for uploading the original file.

Touch “☰” > “Media Info” > “Slot A” (for a memory card in the slot A) or “Slot B” (for a memory card in the slot B).

The “SD Card,” “Slot A,” or “Slot B” screen appears.

Example: “SD Card” screen



- 3 **Select the file.**

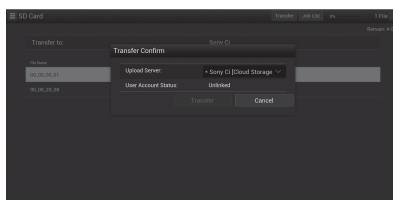
Select the file by touching the file. To cancel, touch the file again.

You can check the file by double touching the file to play back (SD card only).

- 4 **Touch “Transfer.”**

The server that you set to the default server at “Default Server” in “Register the server for uploading” (page 54) appears.

To change the server, touch a server to display the server list, then select the server. Input the directory for the server to “Directory” if necessary.



- 5 **Touch “Transfer.”**

The camcorder starts uploading the selected file.

To cancel uploading, touch “Cancel.”

Checking the file uploading

You can check the upload status on the “Job List” screen that is displayed by touching “Job List” on the “SD Card,” “Slot A,” or “Slot B” screen (page 55).

Using the Wi-Fi Remote Commander (PXW-X180 only)

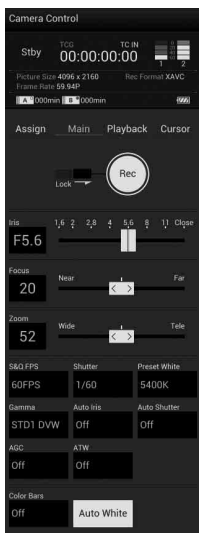
When a wireless LAN connection is established between a device, such as smartphone, tablet, and the camcorder, the Wi-Fi remote commander appears on the device screen and the device can be used as a remote commander.

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.

Wi-Fi remote commander displays

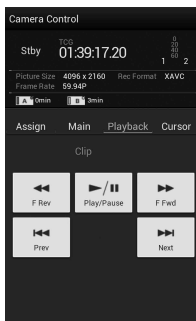
Smartphone

Main screen



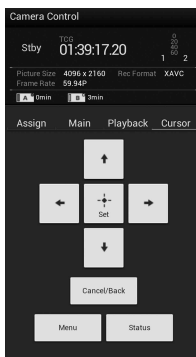
- Recording settings indication: S&Q FPS, Shutter, Preset White, Gamma, Auto Iris, Auto Shutter, AGC, ATW, Color Bars, Auto White

Playback screen



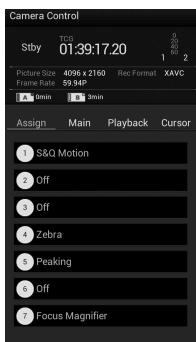
- Status indication
- Playback operation button: F Fwd, Play/Pause, F Rev, Prev, Stop, Next

Cursor screen



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

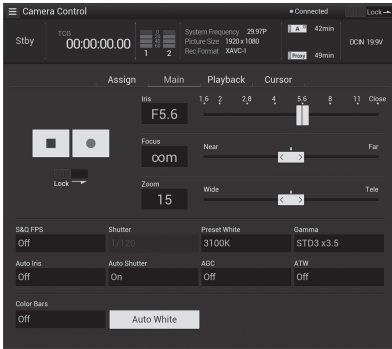
Assign screen



- Status indication
- Assignable button indication: Assignable buttons 1 to 7

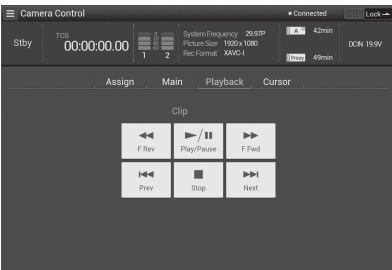
Tablet

Main screen



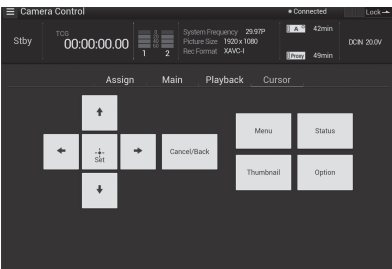
- Assignable button indication: Assignable buttons 1 to 7
- Recording settings indication: S&Q FPS, Shutter, Preset White, Gamma, Auto Iris, Auto Shutter, AGC, ATW, Color Bars, Auto White

Playback screen



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

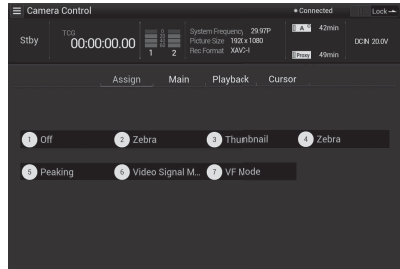
Cursor screen



- Status indication
- Assignable button indication

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

Assign screen



- Assignable button indication: Assignable buttons 1 to 7

Displaying 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 wireless LAN connection between the device and camcorder (page 43).**
- 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 192.168.1.1, input `http://192.168.1.1/rm.html` 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.

You can display the Wi-Fi remote commander with “Cam Remote Control” of the Web menu (page 52).

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 not 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.


About the Web Menu (PXW-X180 only)

The Web menu of the camcorder appears by accessing the camcorder from the browser of a device that is connected to the camcorder via a wireless LAN. You can perform the settings for the wireless function or the operation of the file transfer.

Initial screen

When connecting the camcorder and device, and accessing the camcorder from the browser on the device, the “SD Card” screen in “Media Info” of the camcorder appears on the browser.

About the setting menu

The setting menu appears by touching  at the upper left of the screen. Touch the item that you want to set.

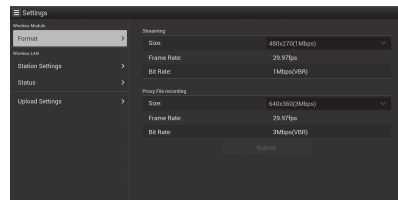
“Settings”

Displays the screen for the settings of the camcorder.

- “Wireless Module”
- “Format”: Format settings (*page 52*)
- “Wireless LAN”
 - “Station Settings”: Wireless LAN settings (*page 52*)
 - “Status”: Status for the wireless LAN settings (*page 53*)
- “Upload Settings”
 - Upload settings (*page 54*)

Notes

- When the “Settings” screen is displayed, the desired setting screen appears by touching the following.



“Media Info”

Displays the screen for displaying the status of the media, or selecting the file that is uploaded (page 47).

- “SD Card”: Media that is inserted into the PROXY SD slot of the camcorder.
- “Slot A”: Media that is inserted into card slot A of the camcorder.
- “Slot B”: Media that is inserted into card slot B of the camcorder.

“Job List”

Displays the screen for managing the uploaded files (page 55).

“Cam Remote Control”

Displays the Wi-Fi remote commander (page 49).

Format settings

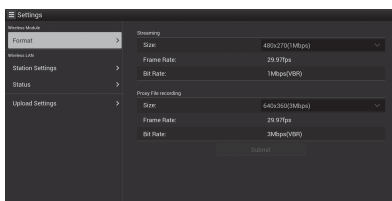
You can set the format of the proxy file that is recorded on the SD card of the camcorder or the format for the stream that is played on a device.

Video

- XAVC Proxy (AVC/H.264 Main Profile, 4:2:0 Long GOP)
- Size is selected in the following settings.

Audio

- AAC-LC compression
- Sampling frequency: 48 kHz
- Bit rate: 128 kbps for Stereo

**“Size” (“Streaming”)**

Set the size and bit rate of the video for the stream.

“640 × 360”: 3 Mbps (VBR)

“480 × 270”: 1 Mbps (VBR)

“480 × 270”: 0.5 Mbps (VBR)

“Size” (“Proxy File recording”)

Set the size and bit rate of the video for the proxy file.

“1280 × 720”: 9 Mbps (VBR)

“640 × 360”: 3 Mbps (VBR)

“480 × 270”: 1 Mbps (VBR)

“480 × 270”: 0.5 Mbps (VBR)

Notes

- This bit rate is the average value. The actual bit rate may be more than the average value.

“Frame Rate”

Displays the frame rate of the video.

“23.98 fps”: 23.975 fps

“25 fps”: 25 fps

“29.97 fps”: 29.97 fps

“50 fps”: 50 fps

“59.94 fps”: 59.94 fps

Notes

- “24 fps” is not supported.

“Bit Rate”

Displays the bit rate of the video.

“9 Mbps (VBR)”: 1280 × 720

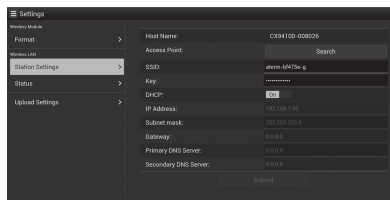
“3 Mbps (VBR)”: 640 × 360

“1 Mbps (VBR)”: 480 × 270

“0.5 Mbps (VBR)”: 480 × 270

Wireless LAN settings (Station Settings)

You can perform the settings for connecting to a wireless LAN.

**“Host Name”**

Displays the host name of the camcorder. (Cannot be changed).

“Access Point”

When touching “Search,” the camcorder starts detecting the wireless LAN access point or device for tethering, then the list of the detected SSIDs is displayed.

Select the SSID from the list.

“SSID”

Displays the SSID that is selected at “Access Point.”

“Key”

Input the password for the access point.

“DHCP”

Set the DHCP setting.

When you set to “On,” the IP address is assigned to the camcorder automatically.

To assign the IP address to the camcorder manually, set to “Off.”

“IP Address”

Input the IP address of the camcorder. This setting is available only when “DHCP” is set to “Off.”

“Subnet mask”

Input the subnet mask of the camcorder. This setting is available only when “DHCP” is set to “Off.”

“Gateway”

Input the default gateway for the access point. This setting is available only when “DHCP” is set to “Off.”

“Primary DNS Server”

Input the primary DNS server for the access point. This setting is available only when “DHCP” is set to “Off.”

“Secondary DNS Server”

Input the secondary DNS server for the access point. This setting is available only when “DHCP” is set to “Off.”

“Submit”

Confirms the wireless LAN settings.

To connect to the access point in the station mode without the WPS function

- 1 Connect the device to the camcorder in the access point mode (page 43).**
- 2 Set the items on the “Station Settings” screen.**

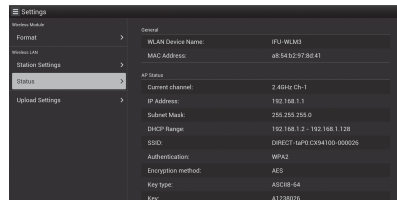
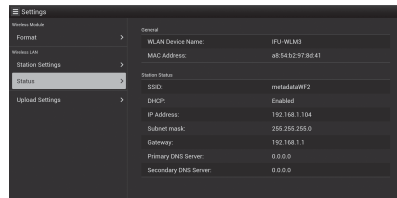
Perform settings in accordance with the access point settings.
For details about the access point settings, see the operating instructions of the access point.
- 3 Touch “Submit.”**

The set items are confirmed.
- 4 Set the camcorder’s wireless LAN operation mode to the station mode by setting “Setting” in “Wi-Fi” of the System menu to “Station.”**

The camcorder starts connecting in the station mode. Access the camcorder from the device by performing procedure from step 7 of “Connecting to the access point with the WPS function” (page 45).

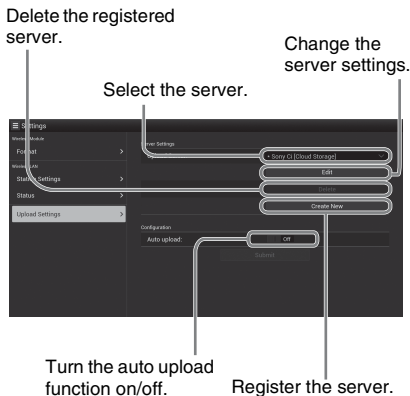
Checking the wireless LAN settings

Display the screen for checking the wireless LAN settings by touching “Wireless LAN” > “Status.” The displayed items differ depending on the wireless LAN mode of the camcorder.

Access point mode**Station mode**

Upload settings

You can register the server for uploading a proxy file or an original file that is recorded on the camcorder, or change the server setting that is registered.



“Auto Upload On/Off”

When “Auto Upload On/Off” is set to “On” and the camcorder is connected to the Internet, the camcorder automatically uploads a proxy file to the server that is set to the default server at “Upload Setting” after recording.

“Sony Ci” is set for the server as the default. Sony Ci is “Media Cloud Services” that is provided by Sony. You can upload files to the Sony cloud service, Sony Ci.

Notes

- To use Sony Ci, registration is required. For more details, please visit www.SonyMCS.com/wireless

To register “Sony Ci”

- 1 **Make sure that “Sony Ci” is displayed on the “Upload Settings” screen, then touch “Edit.”**

The setting screen for Sony Ci appears.

- 2 **Input the user name in “User” and password in “Password.”**

For more details, please visit www.SonyMCS.com/wireless

3 Touch “Link.”

After a few moments, the completion message appears.

Notes

- “Link” is the operation to associate the user with the camcorder. To perform “Link,” you need to connect the camcorder to the Internet.

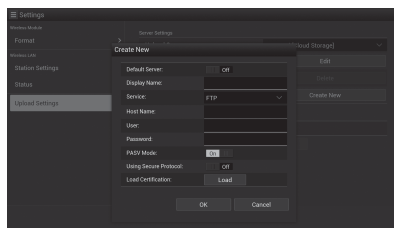
4 Touch “OK.”

Notes

- After registering with Sony Ci, “Unlink” will appear on the setting screen. If you touch “Unlink,” the current user account will be unlinked, and you can link with a different user account.

Register the server for uploading

The setting screen appears by touching “Create New.”



The setting is applied by touching “OK.” To cancel, touch “Cancel.”

“Default Server”

When you set to “On,” the server takes priority for displaying the server name on the list when uploading.

“Display Name”

Input the server name that is displayed on the list.

“Service”

Displays the server type.

“FTP”: FTP server

“Host Name”

Input the address of the server.

“User”

Input the user name of the server.

“Password”

Input the password of the server.

“PASV Mode”

Turn the PASV mode on/off.

“Using Secure Protocol”

Set whether to perform secure FTP uploading.

“Load Certification”

Reads the CA certificate.

- Format the certificate that is read in PEM format and store it on the root directory of an SD card with the file name, “certification.pem.”

“Clear Certification”

Clear the CA certificate.

Changing the registered server settings

Touch “Edit” after selecting the server for which you want to change the settings on the “Upload Settings” screen. Change the settings on the screen for changing the settings.

For details about the setting items, see “*Register the server for uploading*” (page 54).

Deleting the registered server

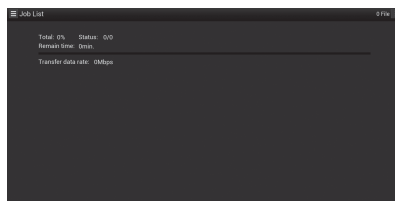
Touch “Delete” after selecting the server that you want to delete on the “Upload Settings” screen. When the confirmation screen appears, touch “OK.” The selected server is deleted and the display returns to the previous screen.

Checking the file transferring (Job List)

You can check the list of the files to be uploaded, the file that is being uploaded, cancel or start the file upload, and delete the file from the file list. The camcorder is compatible with the FTP resume function (re-upload function for a file whose transfer was suspended).

Notes

- The FTP resume function is available for the compatible server only.



- “Total”: Progress of all the files to be uploaded.
- “Status”: Progress of the file that is currently being uploaded.
- “Remain Time”: Estimated remaining time for uploading.
- “Transfer data rate”: Transfer rate indication.

To cancel or start uploading, or delete a file from the file list

1 Select the file on the list.

2 Touch at the upper right of the screen.

Select the item.

- “Abort selected”: Cancels uploading the selected file.
- “Delete from list”: Deletes the selected file from the list.
- “Start selected”: Starts uploading the selected file.
- “Select All”: Selects all files on the list.
- “Clear completed”: Deletes the list of all the uploaded files.

Thumbnail Screens

When you press the THUMBNAIL button (*page 11*), 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/viewfinder screen and external monitors.

Press the THUMBNAIL button to exit the thumbnail screen and return to the recording screen.

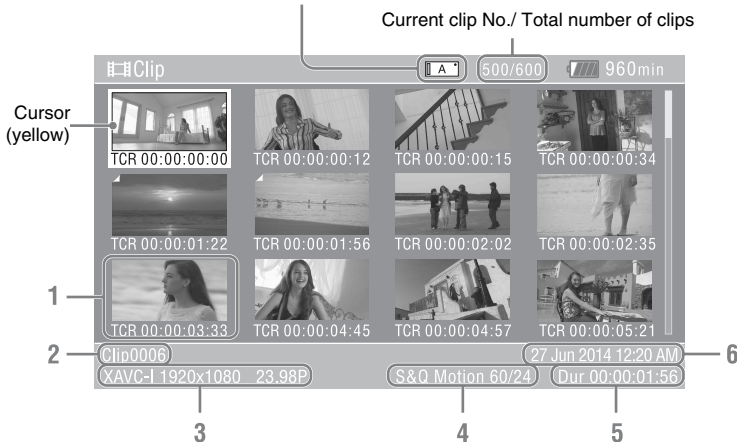
Note

Only clips that are recorded with the same format as the currently selected format appear on the thumbnail screen. If the clip that you recorded does not appear, check the recording format. When formatting a media, check the recording format and displayed clips on the thumbnail screen.

Configuration of the Screen

Information for the clip selected with the cursor is 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 right.)



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 57*) of the Thumbnail menu.

2. Clip name

The clip name of the selected clip is displayed.

3. Recording video format

The file format of the selected clip is displayed.

4. 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.

5. Duration of the clip

6. Creation date and time

Playing Clips

Playing a recorded clip

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

- 1 Insert the SxS memory card.**
- 2 Press the PLAY/PAUSE button of the playback control buttons.**
- 3 Search for the desired clip by pressing the PREV or NEXT button.**
- 4 Press the PLAY/PAUSE button.**

The playback image appears on the viewfinder.

Playback operation is performed as follows.

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.

Playing the selected and subsequent clips in sequence

- 1 Turn the SEL/SET dial (page 10) to move the cursor to the thumbnail image of the clip with which you wish to start playback.**
- 2 Press the SEL/SET dial.**

Playback starts from the beginning of the selected clip.

Notes

- 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 of the playback control buttons 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 11) on the thumbnail screen.

Operations of the thumbnail menu

Turn the SEL/SET dial (page 10) to select a menu item, then press the SEL/SET dial.

Pressing the CANCEL/BACK button (page 10) 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.

Clip operation menu

Display Clip Properties

Displays the detailed information of a clip screen (page 58).

Set Index Picture

Change Thumbnail View

Set Shot Mark

Set Clip Flag

Lock/Unlock Clip

Delete Clip

Select Clip: Deletes the selected clip (page 60).
All Clips: Deletes all displayed clips (page 60).

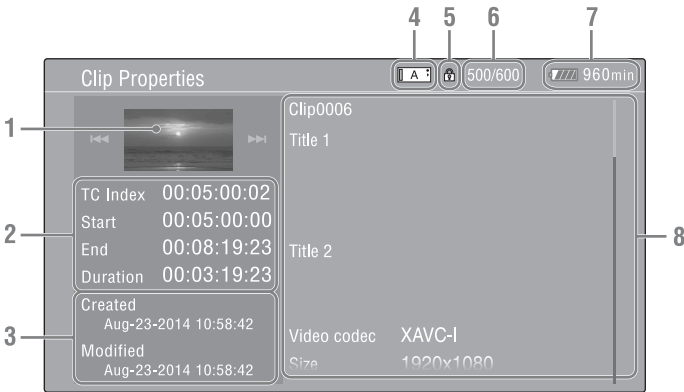
Filter Clips

Customize View

Thumbnail Caption: Changes the items that are displayed under the thumbnail image. (page 59)

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. Currently selected memory card

5. Media protect icon

6. Clip number/Total number of clips

7. Battery icon

8. Clip information

- Clip name
- Title name
- Recording format
- Special recording information
- Recording device name

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 11*) 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 the 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

Thumbnail Menu

Thumbnail		
Menu items	Sub items and setting values	Contents
Display Clip Properties Display of the detailed information screen of a clip		Opens the detailed information screen of the clip.
Set Index Picture Setting for the index picture for a clip	Set Index Picture Execute / Cancel	Sets the index picture for a clip.
Change Thumbnail View Settings for the display method of the thumbnail screen	Essence Mark Thumbnail All / Rec Start / Shot Mark1 / Shot Mark2 / Shot Mark3 / Shot Mark4 / Shot Mark5 / Shot Mark6 / Shot Mark7 / Shot Mark8 / Shot Mark9 / Shot Mark0	Displays the frame with the essence mark in the thumbnail screen.
	Clip Thumbnail	Displays the Thumbnail of recorded clip.
Set Shot Mark Settings for the shot mark	Add Shot Mark1 Delete Shot Mark1 Add Shot Mark2 Delete Shot Mark2	Adds Shot Mark1. Deletes Shot Mark1. Adds Shot Mark2. Deletes Shot Mark2.
Set Clip Flag Editing for the clip flag	Add OK Add NG Add KEEP Delete Clip Flag	Adds an OK flag. Adds a NG flag. Adds a Keep flag. Deletes all the flags.
Lock/Unlock Clip Protect settings for a clip	Select Clip Lock All Clips Unlock All Clips	Protects/cancels protection of selected clip. Protects all clips. Cancels protection of all clips.
Delete Clip Deleting a clip	Select Clip All Clips	Deletes a selected clip. Deletes all clips that are displayed.
Filter Clips Settings for the displayed clips	OK NG KP None	Displays only the clips with an OK flag. Displays only the clips with a NG flag. Displays only the clips with a Keep flag. Displays only the clips with no flag.
Customize View Display of the still image thumbnail screen	Thumbnail Caption Date Time / Time Code / Duration / Sequential Number	Changes the items that are displayed directly under thumbnails.

Overview of the Setup menus

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

Camera menu: For setting items related to shooting.

Paint menu: For setting items related to picture quality.

Audio menu: For setting audio-related items.

Video menu: For setting video output-related items.

LCD/VF menu: For setting items related to the LCD/viewfinder screen.

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

Recording menu: For setting items related to recording.

Media menu: For setting items related to media.

File menu: For setting items related to files.

System menu: For setting items related to the system.

Setup menu layers

MENU

- Camera
 - Gain
 - ND Filter
 - Auto Exposure
 - Focus
 - Shutter
 - Color Bars
 - Flicker Reduce
 - SteadyShot
 - Handle Zoom
 - Speed Zoom
 - Auto Black Balance
 - Video Light Set
- Paint
 - White
 - Offset White
 - Black
 - Gamma
 - Black Gamma
 - Knee

- White Clip
- Detail(HD mode)
- Detail(SD Mode)
- Skin Detail
- Aperture
- Matrix
- Multi Matrix
- Maintenance
- Audio
 - Audio Input
 - Audio Output
- Video
 - Output On/Off
 - Output Format
 - Output Display
 - Down Converter
- LCD/VF
 - LCD Setting
 - VF Setting
 - Peaking
 - Marker
 - Zebra
 - Display On/Off
- TC/UB
 - Timecode
 - Users Bit
 - HDMI TC Out
- Recording
 - S&Q Motion
 - Simul Rec
 - Clip Continuous Rec
 - Proxy Recording Mode (PXW-X180 only)
 - SDI/HDMI Rec Control
- Media
 - Update Media
 - Format Media
 - Clip
- File
 - All File
 - Scene File
 - Planning Metadata
- System
 - Codec
 - Rec Format
 - File Transfer (PXW-X180 only)
 - Assignable Button

—	Rec Lamp
—	Language
—	Clock Set
—	Country
—	Hours Meter
—	Basic Authentication (PXW-X180 only)
—	Wi-Fi (PXW-X180 only)
—	GPS* (PXW-X180 only)
—	IR Remote
—	Battery Alarm
—	All Reset
—	Network Reset (PXW-X180 only)
—	Version

* May not be available depending on the country or area.

Setup Menu Operations

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

Menu controls

MENU button (page 11)

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

SEL/SET dial (page 10)

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

Press the SEL/SET dial to select the highlighted item.

CANCEL/BACK button (page 10)

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

▲/▼/◀/▶ SET button

When you press the ▲/▼/◀/▶ buttons, 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 Focus Magnifier mode (page 30), the setup menu cannot be used.

Setting the Setup menus

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

- The menu item selection area can show up to 9 lines. 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 SEL/SET dial, then press the SEL/SET 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 a space on the position of the cursor.
 ◀/▶: Moves the cursor.
 BS: Deletes the 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 (example: **18dB**).

Camera menu

Camera		
Menu items	Sub items and setting values	Contents
Gain Settings for the gain	Gain<H> -3dB / 0dB / 3dB / 6dB / 9dB / 12dB / 15dB / 18dB	Sets the preset value <H> of the gain.
	Gain<M> -3dB / 0dB / 3dB / 6dB / 9dB / 12dB / 15dB / 18dB	Sets the preset value <M> of the gain.
	Gain<L> -3dB / 0dB / 3dB / 6dB / 9dB / 12dB / 15dB / 18dB	Sets the preset value <L> of the gain.
	Shockless Gain On / Off	Turns the shockless gain function on/off.
ND Filter Settings for the ND filter	Preset1 1/4 / 1/8 / 1/16 / 1/32 / 1/64 / 1/128	Sets the preset value 1 of the ND filter.
	Preset2 1/4 / 1/8 / 1/16 / 1/32 / 1/64 / 1/128	Sets the preset value 2 of the ND filter.
	Preset3 1/4 / 1/8 / 1/16 / 1/32 / 1/64 / 1/128	Sets the preset value 3 of the ND filter.

Camera		
Menu items	Sub items and setting values	Contents
Auto Exposure Settings for the total level control system	Level	Sets the TLCS level.
		-2.0 / -1.75 / -1.5 / -1.25 / -1.0 / -0.75 / -0.5 / -0.25 / 0 / +0.25 / +0.5 / +0.75 / +1.0 / +1.25 / +1.5 / +1.75 / +2.0
	Mode	Set the control mode of TLCS.
	Backlight / Standard / Spotlight	Backlight: Backlight mode (reduce darkening of the center subject against lights) Standard: Standard mode Spotlight: Spotlight mode (reduces blown-out highlights on the center subject in the spotlight)
	Speed	Sets the control speed of the TLCS.
		-99 to +99 (± 0)
	AGC	Turns the AGC (Auto Gain Control) function on/off.
		On / Off
	AGC Limit	Sets the maximum gain of the AGC function.
		Off / 0dB / 3dB / 6dB / 9dB / 12dB / 15dB
	Auto Shutter	Turns the Auto Shutter control function on/off.
		On / Off
	A.SHT Limit	Sets the fastest shutter speed for the auto shutter function.
	Off / 1/100 / 1/150 / 1/200 / 1/250	
Clip High light	Turns the function dulls the response to high luminance on/off by ignoring detection of high luminance.	
	On / Off	
Detect Window	Selects the photometric range that adjusts exposure automatically according to brightness of subject. (This function is not available when exposure is adjusted manually.)	
	1 / 2 / 3 / 4 / 5 / 6	
Detect Window Indication	Turns the detect window on/off.	
	On / Off	
Focus Settings for the focus	AF Assist	By setting this item to on, you can perform manual focus temporarily by turning the focus ring while in the auto focus mode.
		On / Off
	Focus Macro	Sets whether to include the macro area in the moving range of the focus position.
	On / Off	

Camera		
Menu items	Sub items and setting values	Contents
Shutter Settings for the operating conditions of the electronic shutter	Mode	Select modes of the electronic shutter.
	Speed / Angle / ECS / SLS	Speed/Angle (standard modes): These modes may be especially effective when you wish to record a quick-moving subject with minimal blurring. You can select Speed mode to specify the shutter speed in seconds, or Angle mode to specify the shutter speed by the shutter angle. ECS (Extended Clear Scan) mode: This mode may be used to shoot the LCD/viewfinder screen, eliminating horizontal bands. SLS (Slow shutter mode): This mode sets the shutter speed according to the number of accumulated frames.
	Shutter Speed	Set the shutter speed when Speed mode is selected. The available setting values vary depending on the frame frequency of the video format selected.
	1/32, 1/33, 1/40, 1/48, 1/50, 1/60, 1/96, 1/100 , 1/120, 1/125, 1/250, 1/500, 1/1000, 1/2000	
	Shutter Angle	Set the shutter angle when Angle mode is selected.
	11.25° / 22.5° / 45° / 90° / 180°	
ECS Frequency	Set the ECS frequency when ECS mode is selected. The available setting values vary depending on the frame frequency of the video format selected.	
25.02 to 8000 (NTSC Area: 60.00 , PAL Area: 50.00)		
SLS Frame	Selects the number of accumulated frames in SLS mode.	
2 / 3 / 4 / 5 / 6 / 7 / 8 / 16		
Color Bars Settings for the color bars	Setting	Turns the color bars on/off.
	Off / On	
	Type	Selects the type of color bar.
	ARIB / SMPTE / 75% / 100%	
Flicker Reduce Settings for the flicker correction	Mode	Sets the flicker correction mode.
	Auto / On / Off	
	Frequency	Sets the power frequency of lights that cause flicker.
	50Hz / 60Hz (NTSC Area: 60Hz , PAL Area: 50Hz)	
SteadyShot Settings for the SteadyShot function	Setting	Turns the SteadyShot function on/off.
	SteadyShot / Active SteadyShot / Off	
	SteadyShot Type	Selects the SteadyShot type.
Hard / Standard / Soft		
Handle Zoom Setting for the handle zoom speed	Setting	Sets the handle zoom speed. (This setting is available only when the handle zoom switch is set to FIX.)
	1 to 8 (3)	
Speed Zoom Setting for the fast zoom function	Setting	Turns the fast zoom function on/off.
	On / Off	

Camera		
Menu items	Sub items and setting values	Contents
Auto Black Balance Setting for the automatic black balance	Auto Black Balance	Executes the automatic black balance function.
	Execute / Cancel	
Notes		
<ul style="list-style-type: none"> This cannot be set while recording or while the color bars are displayed. This cannot be set while using Interval Recording mode, Frame Recording mode, Slow and Quick Motion mode, or Slow Shutter mode. 		
Video Light Set	Video Light Set	Sets the lighting method of the video light that is attached to the Multi Interface Shoe. Power Link: The video light is turned on/off by interlocking with the power on/off operation of the camcorder. Rec Link: The video light is turned on/off by interlocking with the recording start/stop operation of the camcorder. “Rec Link + Stby”: The video light is turned on/off (standby status) by interlocking with the recording start/stop operation of the camcorder.
	Power Link / Rec Link / “Rec Link + Stby”	

Paint menu

Paint		
Menu items	Sub items and setting values	Contents
White Settings for white balance	Preset White	Performs the preset color temperature adjustment when preset is selected in the white balance mode.
	2100K to 10000K (3200K)	
	Notes	
	<ul style="list-style-type: none"> You cannot check the change on the screen even if the “Preset White” setting is changed when a setting other than preset is selected in the white balance mode. 	
	Shockless White	Sets the speed of change in white balance when the white balance mode is switched. Off: Changes instantly. 1 to 3: Select a larger number to change the white balance more slowly through interpolation.
Off / 1 / 2 / 3		
White Switch	Select the white balance adjustment mode selected at the B position of the WHT BAL switch.	
Memory / ATW		
ATW Speed	Sets the reaction speed when in ATW mode. 1: Fastest reaction speed	
1 / 2 / 3 / 4 / 5		
Offset White Settings for the offset white balance	Setting	Turns “Offset White” for the auto white balance (one push) and ATW function on/off.
	On / Off	
	Offset<A>	Adjusts the volume of the offset white for the white memory (A).
	-99 to +99 (±0)	
	Offset	Adjusts the volume of the offset white for the white memory (B).
-99 to +99 (±0)		
Offset<ATW>	Adjusts the volume of the offset white for the ATW.	
-99 to +99 (±0)		

Paint		
Menu items	Sub items and setting values	Contents
Black Settings for the black	Setting On / Off	Turns the black correction on/off.
	Master Black -99 to +99 (±0)	Sets the master black level.
	R Black -99 to +99 (±0)	Sets the R black level.
	B Black -99 to +99 (±0)	Sets the B black level.
Gamma Settings for the gamma compensation	Setting On / Off	Turns the gamma compensation function on/off.
	Step Gamma 0.35 to 0.90 (0.45)	Sets the gamma compensation value in 0.05 steps.
	Master Gamma -99 to +99 (0)	Sets the master gamma level.
	Gamma Category STD / HG	Select from among "STD" (standard gamma), "HG."
	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 / STD5 R709 / STD6 ×5.0 When "Gamma Category" is set to "HG" HG1 3250G36 / HG2 4600G30 / HG3 3259G40 / HG4 4609G33	
Black Gamma Settings for the black gamma level	Setting On / Off	Turns the black gamma compensation function on/off.
		Notes • The black gamma compensation function and the Knee Saturation function of Knee cannot be used at same time.
	Range Low / Mid / High	Selects the effective range for the black gamma compensation.
	Master Black Gamma -99 to +99 (±0)	Sets the master black gamma level.

Paint		
Menu items	Sub items and setting values	Contents
Knee Settings for the knee compensation	Setting On / Off	Turns the knee compensation function on/off. (This setting is available only when “Gamma Category” in “Gamma” is set to “STD.”)
	Auto Knee On / Off	Turns the auto knee function on/off.
	Point 75% to 109% (90%)	Sets the knee point.
	Slope -99 to +99 (±0)	Sets the knee slope.
	Knee Saturation On / Off	Set to “On” to enable the knee saturation adjustment (level for the area over the knee point).
	Knee Saturation Level -99 to +99 (±0)	Adjust the knee saturation level for the area over the knee point.
	White Clip Settings for the white clipping adjustment	Setting On / Off
	Level When setting other than “PAL Area” is selected for “Country” 90.0% to 109.0% (108.0%) When “PAL Area” is selected for “Country” 90.0% to 109.0% (105.0%)	Specifies the white clip level.

Notes

- The black gamma compensation function and the Knee Saturation function of Knee cannot be used at same time.

Paint		
Menu items	Sub items and setting values	Contents
Detail(HD mode) Settings for the detail adjusting	Manual Setting On / Off	Turns the detail adjusting function on/off.
	Master Level -99 to +99 (± 0)	Adjusts the detail level.
	H/V Ratio -99 to +99 (± 0)	Adjusts the ratio between the H detail level and V detail level.
	Crispensing -99 to +99 (± 0)	Adjusts the crispensing level.
	Level Depend On / Off	Turns the level depend adjusting function on/off.
	Level Depend Level -99 to +99 (± 0)	Adjusts the level depend level.
	Frequency -99 to +99 (± 0)	Specifies the central frequency for details (thickness of details). Larger values give thinner details, smaller values give thicker details.
	Knee Aperture On / Off	Turns the knee aperture function on or off.
	Knee Aperture Level -99 to +99 (± 0)	Specifies the knee aperture level.
	Master Limit -99 to +99 (± 0)	Specifies the detail limiter values for both the white-side and black-side directions.
	White Limit -99 to +99 (± 0)	Adjusts the white detail limiter.
	Black Limit -99 to +99 (± 0)	Adjusts the black detail limiter.
	V Black Limit -99 to +99 (± 0)	Adjusts the V black detail limiter.
	V Detail Creation NAM / Y / G / G+R	Selects the source signal used to generate the V detail signal from among NAM (G or R, whichever is the signal with the highest level), Y, G, and G+R.

Paint		
Menu items	Sub items and setting values	Contents
Detail(SD Mode) Settings for the detail adjusting	Manual Setting On / Off	Turns the detail adjusting function on/off.
	Master Level -99 to +99 (± 0)	Adjusts the detail level.
	H/V Ratio -99 to +99 (± 0)	Adjusts the ratio between the H detail level and V detail level.
	Crispening -99 to +99 (± 0)	Adjusts the crispening level.
	Level Depend On / Off	Turns the level depend adjusting function on/off.
	Level Depend Level -99 to +99 (± 0)	Adjusts the level depend level.
	Frequency -99 to +99 (± 0)	Specifies the central frequency for details (thickness of details). Larger values give thinner details, smaller values give thicker details.
	Knee Aperture On / Off	Turns the knee aperture function on or off.
	Knee Aperture Level -99 to +99 (± 0)	Specifies the knee aperture level.
	Master Limit -99 to +99 (± 0)	Specifies the detail limiter values for both the white-side and black-side directions.
	White Limit -99 to +99 (± 0)	Adjusts the white detail limiter.
	Black Limit -99 to +99 (± 0)	Adjusts the black detail limiter.
	V Black Limit -99 to +99 (± 0)	Adjusts the V black detail limiter.
	V Detail Creation NAM / Y / G / G+R	Selects the source signal used to generate the V detail signal from among NAM (G or R, whichever is the signal with the highest level), Y, G, and G+R.
	Skin Detail Settings for the skin detail compensation	Setting On / Off
Area Detection Execute / Cancel		Detects the color for the skin detail compensation. Execute: Executes this function.
Area Indication On / Off		Turns the function that displays the zebra pattern in the target area for the skin detail compensation on/off.
Level -99 to +99 (± 0)		Adjusts the skin detail level.
Saturation -99 to +99 (± 0)		Adjusts the color saturation level for the skin detail compensation.
Hue 0 to 359		Adjusts the color hue for the skin detail compensation.
Width 0 to 90 (40)		Adjusts the width of the color hue for the skin detail compensation.

Paint		
Menu items	Sub items and setting values	Contents
Aperture Settings for the aperture correction	Setting On / Off	Set to "On" to enable aperture correction (processing to improve resolution by adding high-frequency aperture signals to the video signal, which corrects degeneration due to high-frequency characteristics).
	Level -99 to +99 (± 0)	Select the level for the aperture correction.
Matrix Settings for the Matrix correction	Setting On / Off	Turns the matrix correction function on/off.
	Adaptive Matrix On / Off	Turns the adaptive matrix function on/off.
	Preset Matrix On / Off	Turns the preset matrix function on/off.
	Preset Select 1:SMPTE 240M / 2:ITU-709 / 3:SMPTE Wide / 4:NTSC / 5:EBU / 6:PAL	Selects the preset matrix.
	User Matrix On / Off	Turns the user matrix correction function on/off.
	Level -99 to +99 (± 0)	Adjusts the color saturation for the entire picture area.
	Phase -99 to +99 (± 0)	Adjusts the color phase for the entire picture area.
	User Matrix R-G -99 to +99 (± 0)	Specifies a freely defined R-G user matrix.
	User Matrix R-B -99 to +99 (± 0)	Specifies a freely defined R-B user matrix.
	User Matrix G-R -99 to +99 (± 0)	Specifies a freely defined G-R user matrix.
	User Matrix G-B -99 to +99 (± 0)	Specifies a freely defined G-B user matrix.
	User Matrix B-R -99 to +99 (± 0)	Specifies a freely defined B-R user matrix.
	User Matrix B-G -99 to +99 (± 0)	Specifies a freely defined B-G user matrix.
	Multi Matrix Settings for the multi-matrix correction	Setting On / Off
Area Indication On / Off		Turns the area indication function on/off .
Color Detection Execute / Cancel		Detects the target color on the screen for multi-matrix correction.
Axis B / B+ / MG- / MG / MG+ / R / R+ / YL- / YL / YL+ / G- / G / G+ / CY / CY+ / B-		Selects the axis.
Hue -99 to +99 (± 0)		Sets the color hue of the color targeted by multi-matrix correction.
Saturation -99 to +99 (± 0)		Sets the color saturation targeted by multi-matrix correction.

Paint

Menu items	Sub items and setting values	Contents
Maintenance Setting for maintenance	Test Saw On / Off	Turns the test signal on/off.

Audio menu

Audio

Menu items	Sub items and setting values	Contents	
Audio Input Settings for audio inputs	INPUT1 Reference -60dB / -50dB / -40dB	Selects the reference input level for when the INPUT1 switch is set to MIC.	
	INPUT2 Reference -60dB / -50dB / -40dB	Selects the reference input level for when the INPUT2 switch is set to MIC.	
	INT MIC Sensitivity Normal / High	Selects the sensitivity of the internal microphone.	
	INPUT1 Wind Filter On / Off	Turns the wind filter for CH1 on/off.	
	INPUT2 Wind Filter On / Off	Turns the wind filter for CH2 on/off.	
	INT MIC Wind Filter On / Off	Turns the wind filter for the internal stereo microphone on/off.	
	SHOE MIC Wind Filter On / Off	Turns the wind filter for the shoe microphone on/off.	
	Limiter Mode On / Off	Turns the limiter on/off when a loud signal is input while setting audio input level manually.	
	AGC Mode Mono / Stereo	Selects the cross-channel linkage of the AGC.	
	INPUT CH Select INPUT1/INPUT1 / INPUT1/ INPUT2	INPUT1/INPUT1: Records the INPUT1 signal to both CH-1 and CH-2. INPUT1/INPUT2: Records the INPUT1 signal to CH-1, and the INPUT2 signal to CH-2.	
	1kHz Tone on Color Bars On / Off	Turns the 1-kHz reference tone signal on/off.	
	Audio Output Settings for audio outputs	Headphone Out Mono / Stereo	Selects the headphones output, "Mono" or "Stereo."
		Alarm Volume 0 to 7 (4)	Sets the alarm volume.

Video menu

Video

Menu items	Sub items and setting values	Contents
Output On/Off Settings for the video output	SDI On / Off	Turns the SDI output on/off.
	HDMI On / Off	Turns the HDMI output on/off.
Output Format Settings for the output format • For details about the setting items, see “ <i>Video Formats and Output Signals</i> ” (page 97)	SDI/HDMI	Sets the resolution of the SDI/HDMI output. SET: Execute this function.
	VIDEO	Displays the resolution and scan method. (Display only)
Output Display Settings for the output signal	SDI/HDMI On / Off	Selects whether to add the menu or status on the SDI/HDMI output signal.
	VIDEO On / Off	Selects whether to add the menu or status on the video output signal.
Down Converter Selection for the operation mode of the down converter	Squeeze / Letter Box / Edge Crop	Set the output mode (aspect) for SD signals Squeeze: To horizontally reduce a 16:9 picture to output a 4:3 picture Letter Box: To mask the upper and lower areas of a 4:3 picture to display a 16:9 picture in the center of the screen Edge Crop: To cut both sides of a 16:9 picture to output a 4:3 picture

LCD/VF menu

LCD/VF		
Menu items	Sub items and setting values	Contents
LCD Setting Settings for the LCD screen	Color -99 to +99 (± 0)	Adjusts the color saturation of the LCD screen.
	Brightness -99 to +99 (± 0)	Adjusts the brightness of the LCD screen.
VF Setting Settings for the viewfinder	Brightness -99 to +99 (± 30)	Adjusts the brightness of the viewfinder.
	Color Mode Color / B&W	Selects the display mode of the viewfinder during E-E display/recording.
Peaking Settings for the peaking function	Setting On / Off	Turns the peaking function on/off.
	Peaking Type Normal / Color	Selects the peaking type. Normal: Normal peaking Color: Color peaking
	Frequency Normal / High	Selects "Normal" or "High" as the peaking frequency.
	Normal Peaking Level 0 to 99 (50)	Sets the normal peaking level.
	Color B&W / Red / Yellow / Blue	Selects the signal color of the color peaking.
	Color Peaking Level 0 to 99 (50)	Sets the color peaking level.
	Marker Settings for the marker indications	Setting On / Off
	Center Marker 1 / 2 / 3 / 4 / Off	Turns on/off the center marker.
	Safety Zone On / Off	Turns the safety zone marker on/off.
	Safety Area 80% / 90% / 92.5% / 95%	Selects the size (ratio to the entire screen) of the safety zone marker.
	Aspect Marker Line / Mask / Off	Selects the aspect marker. Line: Show as white lines. Mask: Display by lowering the video signal level of areas outside the marker range. Off: The aspect marker is not displayed.
	Aspect Mask 0 to 15 (12)	When "Aspect Marker" is set to "Mask," specifies the brightness of areas outside the aspect marker.
	Aspect Select 4:3 / 13:9 / 14:9 / 15:9 / 16:9 / 17:9 / 1.66:1 / 1.85:1 / 2.35 :1 / 2.4:1	Select the ratio of the aspect marker.
	Guide Frame On / Off	Turns the guide frame display on/off.

LCD/VF		
Menu items	Sub items and setting values	Contents
Zebra Settings for the zebra pattern	Setting On / Off	Turns the zebra function on/off.
	Zebra Select 1 / 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% (70%)	Sets the display level of zebra 1.
	Zebra1 Aperture Level 1% to 20% (10%)	Sets the aperture level of zebra 1.
	Zebra2 Level 52% to 109% (100%)	Sets the display level of zebra 2.
Display On/Off Settings for the items to be displayed	Shutter Setting On / Off	Selects the items to be displayed on the LCD/viewfinder screen.
	ND Filter Position On / Off	
	Gain Setting On / Off	
	Rec/Play Status On / Off	
	Color Temp. On / Off	
	Frame Rate On / Off	
	Battery Remain On / Off	
	Timecode On / Off	
	Audio Manual On / Off	
	Audio Level Meter On / Off	
	Media Status On / Off	
	Focus Position Meter / Feet / Off	
	Iris Position On / Off	
	Zoom Position Number / Bar / Off	
	Focus Macro On / Off	
	SteadyShot On / Off	
	Focus Mode On / Off	
	Auto Shutter On / Off	
	AGC On / Off	

Auto Iris	On / Off
AE Mode	On / Off
White Balance Mode	On / Off
SDI/HDMI Rec Control	On / Off
Rec Format	On / Off
Gamma	On / Off
Timecode Lock	On / Off
Audio Format	On / Off
Wi-Fi Condition (PXW-X180 only)	On / Off
Video Signal Monitor	Off / Waveform / Vector / Histogram
Clip Name	On / Off
Focus Assist Bar	On / Off
Focus Area Marker	On / Off
Video Level Warning	On / Off
Clip Number	On / Off
GPS (PXW-X180 only)	On / Off
Proxy Status (PXW-X180 only)	On / Off
Lens Info	Meter / Feet / Off

TC/UB menu

TC/UB		
Menu items	Sub items and setting values	Contents
Timecode Settings for the timecode	Mode Preset / Regen / Clock	Selects the timecode mode. Preset: Starts the timecode from the specified value. Regen (regeneration): Starts the timecode by continuing the timecode of the previous clip. Clock: Uses the internal clock as the timecode.
	Run Rec Run / 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 DF / NDF	Selects the timecode format. DF: Drop frame NDF: Non drop frame
	Users Bit Settings for the users bit	Mode Fix / Time
Setting		Sets the users bit to a desired value.
HDMI TC Out Setting On / Off		Sets whether to output the time code to another device for professional use via HDMI.

Recording menu



Recording

Menu items	Sub items and setting values	Contents
S&Q Motion Settings for the Slow & Quick motion mode	Setting On / Off	Turns the Slow & Quick motion mode on/off.
	Frame Rate 1P to 60P / 72P / 75P / 80P / 90P / 96P / 100P / 110P / 120P	Sets the frame rate during shooting with the Slow & Quick motion function when S&Q setting is "On."
Simul Rec Settings for the simultaneously recording function	Setting On / Off	Turns the simultaneously recording function on/off, and sets the destination media.
	Rec Button Set	Assigns the record button to perform the recording operation for each media.
	Rec Button: <input type="text" value="A"/> , <input type="text" value="B"/>	
	Handle Rec Button: <input type="text" value="A"/>	
	<input type="text" value="B"/> / Rec Button: <input type="text" value="A"/>	
Handle Rec Button: <input type="text" value="B"/> /		
Rec Button: <input type="text" value="B"/> Handle Rec		
Button: <input type="text" value="A"/>		
Clip Continuous Rec Settings for the Clip Continuous Recording function	Setting On / Off	Turns the Clip Continuous Recording function on/off.
Proxy Recording Mode (PXW-X180 only) Settings for the proxy recording mode	Setting On / Off	Turns the proxy recording mode on/off.
	Size 1280×720(9Mbps) / 640×360(3Mbps) / 480×270(1Mbps) / 480×270(0.5Mbps)	Sets the picture size for the proxy file.
	Frame Rate	Displays the frame rate.
	Bit Rate	Displays the bit rate.
SDI/HDMI Rec Control Settings for the SDI/HDMI recording control function	Setting On / Off	Turns the recording/stop recording controls of the external device via the SDI/HDMI output signal on/off.

Media menu

This menu is not available when media is not loaded.

Media		
Menu items	Sub items and setting values	Contents
Update Media Updating media	Media(A) Execute / Cancel	Updates the managerial file on the SxS memory card in slot A.
	Media(B) Execute / Cancel	Updates the managerial file on the SxS memory card in slot B.
Format Media Formatting media	Media(A) Execute / Cancel	Formats the SxS memory card in slot A. Execute: Executes format.
	Media(B) Execute / Cancel	Formats the SxS memory card in slot B. Execute: Executes format.
	SD card Execute / Cancel	Formats the UTILITY SD card. Execute: Executes format.
	Proxy (PXW-X180 only) Execute / Cancel	Formats the PROXY SD card. Execute: Executes format.

Media		
Menu items	Sub items and setting values	Contents
Clip Settings for clip naming or deletion	Auto Naming Title / Plan	Selects the method to specify clip names. Title: Specifies by using the name specified in “Title Prefix.” Plan: Uses a name specified in planning metadata. If no name is specified in planning metadata, the name specified by “Title Prefix” is used.
	Title Prefix nnn_ (nnn=least three digits of the serial number) (Max. 7 characters displayed)	<p>Calls the Character Set screen to set the title part (4 to 46 characters) of the clip names.</p> <p>Configuration of the Character Set screen</p> <p>Character selection area (3 lines):</p> <p>Selects the characters to insert in the cursor position of the Title Prefix area.</p> <pre>!#\$%()+,-.=@[^_~0123456789 abcdefghijklmnopqrstuvwxyz ABCDEFGHIJKLMNOPQRSTUVWXYZ</pre> <p>Cursor operation area (1 line):</p> <p>Space: Changes the character in the cursor position to a space</p> <p>INS: Inserts a space in the cursor position</p> <p>DEL: Deletes a character in the cursor position</p> <p>←: Moves the cursor to the left</p> <p>→: Moves the cursor to the right</p> <p>ESC: Cancels the changes and exits the Character Set screen</p> <p>END: Validates the changes and exits the Character Set screen</p> <p>Title Prefix area (1 line):</p> <p>For entering the title</p> <p>To set the title</p> <p>1 Using the /  buttons, select (highlight) a character in the character selection area to be entered in the cursor position of the Title Prefix area. Then press the SEL/SET dial.</p> <p>2 Repeat Step 1 for setting the title. (Use Space, INS, and DEL as required.)</p> <p>3 When the title setting is completed, select END to exit the Character Set screen.</p>
	Number Set 0001 to 9999	Sets the second 4-numeric part of the clip name. Sets a five-digit number for a planning metadata file.

File menu

File

Menu items	Sub items and setting values	Contents
All File Settings for the All file	Load SD Card Execute / Cancel	Loads the All file. Execute: Executes this function.
	Save SD card Execute / Cancel	Stores the All file. Execute: Executes this function.
	File ID	Names the file.
Scene File Settings for the Scene file	Recall Internal Memory Execute / Cancel	Loads the Scene file from the internal memory. Execute: Executes this function.
	Store Internal Memory Execute / Cancel	Stores the Scene file to the internal memory. Execute: Executes this function.
	Load SD Card Execute / Cancel	Recalls from an SD card by selecting "Execute."
	Save SD card Execute / Cancel	Stores to an SD card by selecting "Execute." The setup file is stored to the following directories. For PXW-X180: /Private/Sony/PRO/CAMERA/PXW-X180/ For PXW-X160: /Private/Sony/PRO/CAMERA/PXW-X160/
	File ID	Names the file.
	Scene White Data On / Off	Sets whether to apply the White Balance data when recalling the Scene File.
	Planning Metadata Settings for operation of planning metadata	Load Media(A) or Load Media(B) Execute / Cancel
		<div style="background-color: #333; color: white; padding: 2px; text-align: center;">Notes</div> <ul style="list-style-type: none"> • The file list displays up to 64 files. Even if the total number of planning metadata files is 64 or less, all of the planning metadata files may not appear if the directory where they are located in the SxS memory card (XDROOT/General/Sony/Planning) contains 512 or more files. • After you start loading, do not remove the SxS memory card until the completion message is displayed.
	Properties Execute / Cancel	Select "Execute" to display the detailed information of the planning metadata loaded in the camcorder. File Name: File name Assign ID: Assignment ID Created: Time and date of creation Modified: Time and date of most recent modification Modified by: Name of person who modified the file Title1: Title1 specified in file (clip name in ASCII-format) Title2: Title2 specified in file (clip name in UTF-8-format) Material Group: Number of material groups (groups of clips recorded using the same planning metadata) Shot Mark0 to 9: Name defined for Shot Mark 0 to 9
	Clear Memory Execute / Cancel	Select "Execute" to clear the planning metadata loaded in the camcorder.
	Clip Name Disp Title1(ASCII) / Title2(UTF-8)	Selects the display mode of the clip name specified in planning metadata.

System menu

System

Menu items	Sub items and setting values	Contents
Codec	Select	Sets the recording/playback mode.
	XAVC-I / XAVC-L / MPEG HD422 / MPEG HD420 / DVCAM / AVCHD	
Rec Format	Video Format	Sets the recording format.
Settings for the recording format	<ul style="list-style-type: none"> • NTSC Area: When “Select” in “Codec” is set to “XAVC-I” <ul style="list-style-type: none"> 1920×1080 59.94i 1920×1080 29.97P 1920×1080 23.98P 1280×720 59.94P When “Select” in “Codec” is set to “XAVC-L” <ul style="list-style-type: none"> 1920×1080 59.94P 50 1920×1080 59.94P 35 1920×1080 59.94i 50 1920×1080 59.94i 35 1920×1080 59.94i 25 1920×1080 29.97P 50 1920×1080 29.97P 35 1920×1080 23.98P 50 1920×1080 23.98P 35 1280×720 59.94P 50 When “Select” in “Codec” is set to “MPEG HD422” <ul style="list-style-type: none"> 1920×1080 59.94i 50 1920×1080 29.97P 50 1920×1080 23.98P 50 1280×720 59.94P 50 1280×720 29.97P 50 1280×720 23.98P 50 When “Select” in “Codec” is set to “MPEG HD420” <ul style="list-style-type: none"> 1920×1080 59.94i HQ 1920×1080 29.97P HQ 1920×1080 23.98P HQ 1440×1080 59.94i HQ 1280×720 59.94P HQ When “Select” in “Codec” is set to “DVCAM” <ul style="list-style-type: none"> 720×480 59.94i When “Select” in “Codec” is set to “AVCHD” <ul style="list-style-type: none"> 1920×1080 59.94P 1920×1080 59.94i 1920×1080 29.97P 1920×1080 23.98P 1280×720 59.94P 	<ul style="list-style-type: none"> • PAL Area When “Select” in “Codec” is set to “XAVC-I” <ul style="list-style-type: none"> 1920×1080 50i 1920×1080 25P 1280×720 50P When “Select” in “Codec” is set to “XAVC-L” <ul style="list-style-type: none"> 1920×1080 50P 50 1920×1080 50P 35 1920×1080 50i 50 1920×1080 50i 35 1920×1080 50i 25 1920×1080 25P 50 1920×1080 25P 35 1280×720 50P 50 When “Select” in “Codec” is set to “MPEG HD422” <ul style="list-style-type: none"> 1920×1080 50i 50 1920×1080 25P 50 1280×720 50P 50 1280×720 25P 50 When “Select” in “Codec” is set to “MPEG HD420” <ul style="list-style-type: none"> 1920×1080 50i HQ 1920×1080 25P HQ 1440×1080 50i HQ 1280×720 50P HQ When “Select” in “Codec” is set to “DVCAM” <ul style="list-style-type: none"> 720×576 50i When “Select” in “Codec” is set to “AVCHD” <ul style="list-style-type: none"> 1920×1080 50P 1920×1080 50i 1920×1080 25P 1280×720 50P

System		
Menu items	Sub items and setting values	Contents
	AVCHD Audio Format Linear PCM / Dolby Digital	Sets the recording format while in AVCHD mode.
	Aspect Ratio (SD) 16:9 / 4:3	Set the aspect ratio of DVCAM recording.
File Transfer (PXW-X180 only) Settings for file transfer	File Transfer Execute / Cancel	Switches to the mode for transferring original files to an SxS memory card via wireless LAN connection.
Assignable Button Settings to assign functions to the assignable buttons	<1> to <7> Off / Marker / Zebra / Peaking / Video Signal Monitor / Focus Magnifier / Focus Macro / VF Mode / Auto Exposure Level / Spotlight / Backlight / ATW / ATW Hold / SteadyShot / Color Bars / NFC / Rec Lamp / Rec Review / Thumbnail / Shot Mark1 / Shot Mark2 / Clip Flag OK / Clip Flag NG / Clip Flag Keep	Assign a function to the assignable buttons. Marker: Turns the marker on/off. Zebra: Turns the zebra function on/off. Peaking: Turns the peaking function on/off. Video Signal Monitor: Switches the video signal indication (such as Histogram). Focus Magnifier: Turns the focus magnifier function on/off. Focus Macro: Turns the focus macro function on/off. VF Mode: Switches between color and mono display on the viewfinder. Auto Exposure Level: Turns the auto exposure level function on/off. Spotlight: Switches to Spotlight of AE Mode. Backlight: Switches to Backlight of AE Mode. ATW: Turns the ATW function on/off. ATW Hold: Holds the ATW operation temporarily. SteadyShot: Turns the SteadyShot function on/off. Color Bars: Turns the color bars display on/off. NFC (PXW-X180 only): Performs the NFC function. Rec Lamp: Turns the recording/tally lamp on/off. Rec Review: Starts Rec Review. Thumbnail: Turns the thumbnail display on/off. Shot Mark1: Adds Shot Mark1. Shot Mark2: Adds Shot Mark2. Clip Flag OK: Adds/deletes an OK flag to/from the currently recording or playing clip. Clip Flag NG: Adds/deletes an NG flag to/from the currently recording or playing clip. Clip Flag Keep: Adds/deletes a Keep flag to/from the currently recording or playing clip.
Rec Lamp Setting for the recording/tally lamp	Rec Lamp On / Off	Turns the recording/tally lamp on/off.
Language Setting for the language	Select	Sets the language to be displayed. SET: Execute this function.

System		
Menu items	Sub items and setting values	Contents
Clock Set Settings for 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 YYMMDD / MMDDYY / DDDMMYY	Selects the display mode of the date. YYMMDD: In year, month, day MMDDYY: In month, day, year DDMMYY: In day, month, year
	12H/24H 12H / 24H	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.
	Country Setting for the region	NTSC/PAL Area
Hours Meter Display for 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.
Basic Authentication (PXW-X180 only) Settings for basic authentication of the network	User Name (admin)	Sets a desired user name (1 to 16 alphanumeric characters). SET: Sets the user name.
	Password (pxw-x180)	Sets the password (1 to 16 alphanumeric characters). SET: Execute this function.
Wi-Fi (PXW-X180 only) Settings for wireless LAN connection and respective display items	NFC Execute / Cancel	Selects whether to enable the NFC function or not. When "Execute" is selected, the NFC function turns on and "Setting" is set to "Access Point" temporarily, and the camcorder goes into standby mode for NFC. When "Cancel" is selected, settings return to the previous settings.
	Setting Access Point / Station / Off	Sets the operation mode of the wireless LAN connection.
	Channel Auto / CH1 / CH2 / CH3 / CH4 / CH5 / CH6 / CH7 / CH8 / CH9 / CH10 / CH11 / CH12 / CH13	Sets the wireless LAN channel.
	SSID & Password	Displays the SSID and password.
	WPS Execute / Cancel	Starts Wi-Fi Protected Setup (WPS).
	IP Address	Displays the IP address of the camcorder.
	Subnet Mask	Displays the subnet mask of the camcorder.
	MAC Address	Displays the MAC address of the wireless LAN module of the camcorder.
	Regenerate Password Execute / Cancel	Regenerates the password. Execute: Executes this function.

System		
Menu items	Sub items and setting values	Contents
GPS (PXW-X180 only) Setting for GPS	GPS On / Off	Turns the GPS function on/off.
IR Remote Activating/ deactivating the Remote Commander	Setting On / Off	Set to "On" to activate remote control operations from the supplied Wireless Remote Commander.
Battery Alarm Settings for the low power alarm	Low BATT 5% / 10% / 15% / ... / 45% / 50%	Sets the battery level at which the low voltage warning is generated (in steps of 5%).
	BATT Empty 3% to 7% (3%)	Sets the battery level at which the battery empty warning is generated.
	DC Low Volt1 16.0 V to 19.0 V (16.0 V)	Set the DC IN voltage at which the low voltage warning is generated.
	DC Low Volt2 15.5 V to 18.5 V (15.5 V)	Set the DC IN voltage at which the warning for the shortage of the voltage is generated.
All Reset Resetting to the factory status	Reset Execute / Cancel	Resets the camcorder to the factory status. Execute: Executes resetting.
Network Reset (PXW-X180 only) Resetting of the network settings	Reset Execute / Cancel	Resets the network settings.
Version Display of 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. * Upgrade is the function for updating the software of the camcorder.
	Net-Func Version Number (PXW-X180 only) Vx.xx	Displays the version for the wireless LAN connecting function of the camcorder.
	Net-Func Ver.Up (PXW-X180 only) Execute / Cancel	Upgrades the version for the wireless LAN connecting function of the camcorder.

Connecting External Monitors and Recording Devices

To display recording or 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 74) in the Video menu to “On.”

SDI OUT connector (BNC type)

Set the on/off setting of the output, and the output format in the Video menu (page 74).

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

Notes

- 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/HDMI Rec Control” (page 79) of the Recording menu to “On.”

Notes

- 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 the output format in the Video menu (page 74).

Use a commercially available high speed HDMI cable for connection.

GENLOCK/VIDEO connector (BNC type)

The GENLOCK/VIDEO connector can output the HD-Y signal, HD-Sync Signal, or the down-converted SD analog composite signal for the monitor by changing the setting in “Output Format” of the Video menu.

Use the commercially available BNC cable for connection.

For details, see “Video Formats and Output Signals” (page 97).

AUDIO OUT connector (3.5 mm stereo pin connector)

The AUDIO OUT connector can output 2 channel audio signals.

Use the supplied audio connecting cable for connection.

External Synchronization

When multiple units of the camcorder are used in the same shooting location, recording can be synchronized 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/VIDEO connector (page 9) of the camcorder.

Valid reference signals depend on the frame rate of the selected recording format.

For “NTSC Area”

Frame rate of the recording format	Valid reference signal
59.94P	1920×1080 59.94i 720×486 59.94i 1280×720 59.94P
29.97P	1920×1080 59.94i 720×486 59.94i
23.98P	1920×1080 47.95i (23.98PsF)
59.94i	1920×1080 59.94i 720×486 59.94i

For “PAL Area”

Frame rate of the recording format	Valid reference signal
50P	1920×1080 50i 720×576 50i 1280×720 50P
25P	1920×1080 50i 720×576 50i
50i	1920×1080 50i 720×576 50i

Notes

- Both video signal and timecode signal need to be input when the selected recording format is 1280×720 60P.
- 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 or Clock mode).

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

Mode: Preset
Run: Free Run

2 Press the DURATION/TC/U-BIT button (page 11) so that the timecode is displayed on the screen.

3 Confirm that the GENLOCK/TC switch (page 9) is set to IN, then supply an HD or SD reference video signal to the GENLOCK/VIDEO connector and the reference timecode to the TC connector.

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 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 or set the camcorder to OFF.

External synchronization is also released when you start recording in a special recording mode (Slow & Quick Motion).

Synchronizing the timecode of another unit with that of your camcorder

- 1 Specify the timecode of your camcorder with “Timecode” of the TC/UB menu (page 78).
- 2 Confirm that the GENLOCK/TC switch (page 9) is set to OUT, then connect the TC connector and GENLOCK/VIDEO connector (page 9) with the timecode input and reference signal input of the other unit, respectively.

Operating Clips with a Computer

Connecting with a USB Cable

To use an SxS card reader (sold separately)

When you connect the SBAC-US20 SxS card reader (sold separately) using a USB cable, the memory card in the slot is acknowledged as an extended drive by the computer.

To use mass storage mode of 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/viewfinder screen.

Notes

- This message will not be displayed while another confirmation message or an in-progress message (e.g., for formatting or restoring 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 SEL/SET 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 (main lead)
 - 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, an editing software that corresponds to the recording formats used with this camcorder (sold separately) is required.

Store the clips to be edited on the HDD of your computer in advance, using the dedicated application software.

Important Notes on Operation

About Recording Media

Recording media and compatible formats

■ Normal recording

	SxS Pro	SxS Pro+	SxS-1	XQD	SDXC	SDHC	Memory Stick
XAVC-I	○	○	○	○	–	–	–
XAVC-L	○	○	○	○	○*1	–	–
MPEG HD422	○	○	○	○	○*1	–	–
MPEG HD420	○	○	○	○	○*1	–	–
DVCAM	○	○	○	○	○*1	–	–
AVCHD	–	–	–	–	○*1	○*1	○*1

○: Compatible

–: Incompatible

■ S&Q mode

	SxS Pro	SxS Pro+	SxS-1	XQD	SDXC	SDHC	Memory Stick
XAVC-I	○	○	–	○	–	–	–
XAVC-L	○	○	○	○	–	–	–
MPEG HD422	○	○	○	○	–	–	–

○: Compatible

–: Incompatible

■ Simultaneous recording

	SxS Pro	SxS Pro+	SxS-1	XQD	SDXC	SDHC	Memory Stick
XAVC-I	○	○	○	○	–	–	–
XAVC-L	○	○	○	○	○*1*2	–	–
MPEG HD422	○	○	○	○	–	–	–
MPEG HD420	○	○	○	○	–	–	–
DVCAM	–	–	–	–	–	–	–
AVCHD	–	–	–	–	○*1	○*1	○*1

○: Compatible

–: Incompatible

Record simultaneously in a memory card of the same type.

*1 Not all memory cards are guaranteed for operation.

*2 Simultaneous recording available only in 25 Mbps.

If you are using memory cards other than Sony SxS, operation may not be guaranteed.

If you are using memory cards other than XQD memory cards (S series, N series, H series), operation may not be guaranteed.

Special Recording and Compatible Formats

	XAVC-I	XAVC-L	MPEG HD422	MPEG HD420	AVCHD	DVCAM
Normal recording	○	○	○	○	○	○
S&Q Motion	○	○	○	-	-	-
Clip Continuous Rec	○	○	○	-	-	-

○: Compatible

-: Incompatible

Maximum Recording Time for a Clip

(Unit: Hour)

Recording format	Maximum recording time (approx.)
XAVC-I	6
XAVC-L	6
MPEG HD422	6
MPEG HD420	6
AVCHD	13
DVCAM	6

Using your Camcorder Abroad

Power supply

You can use your camcorder in any country/region using the AC Adaptor ACDP-060S01 (supplied) or optional Charger BC-U1/U2 within the AC 100 V to 240 V, 50 Hz/60 Hz range.

Viewing on TV

Before recording a movie with your camcorder for viewing on a TV, set “NTSC/PAL Area” in “Country” of System menu to the appropriate TV system for the country/region in which you intended to view the movie. The following shows which countries and regions require “NTSC Area” or “PAL Area” setting.

NTSC Area:

Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Guyana, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL Area:

Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, China, Czech Republic, Denmark, Finland, France, Germany, Guiana, Holland, Hong Kong, Hungary, Iran, Iraq, Italy, Kuwait, Malaysia, Monaco, New Zealand, Norway, Paraguay, Poland, Portugal, Russia, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, Ukraine, United Kingdom, Uruguay, etc.

Simple setting of the clock by time difference

When you are abroad, set “Time Zone” of “Clock Set” in the System menu (*page 85*).

Use and Storage

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.

Shipping

- 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.

Care of the unit

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.

About the battery pack

To charge the battery pack

- Be sure to charge the battery pack before you start using your camcorder.

To use the battery pack effectively

- Battery pack performance decreases when the ambient temperature is 10 °C (50 °F) or below, and the length of time you can use the battery pack becomes shorter. In that case, do one of the following to use the battery pack for a longer time.
 - Put the battery pack in a pocket to warm it up, and install it in your camcorder right before you start taking shots.
 - Use a high capacity battery pack.
- Be sure to set the power switch to off when not recording or playing back on your camcorder. The battery pack is also consumed when your camcorder is in recording standby or playback pause.
- Have spare battery packs ready for 2 or 3 times the expected recording time, and make trial recordings before making the actual recording.
- Do not expose the battery pack to water. The battery pack is not water resistant.

About storage of the battery pack

- If the battery pack is not used for a long time, fully charge the battery pack and use it up on your camcorder once a year to maintain proper function. To store the battery pack, remove it from your camcorder and put it in a dry, cool place.
- To discharge the battery pack on your camcorder completely, leave your camcorder in recording standby until the power goes off (page 15).

About battery life

- Battery capacity decreases over time and through repeated use. If decreased usage time between charges becomes significant, it is probably time to replace it with a new one.
- Each battery's life is governed by storage, operating and environmental conditions.

About charging the battery pack

- Use the Charger (supplied) to charge the designated batteries only. If you charge other types of batteries, those batteries may leak, heat up, burst, or give an electric shock, resulting in burns or injury.
- Remove the charged battery from the Charger.
- The charge lamp of the supplied Charger flashes in 2 patterns as follows:
Fast-flashing...Turns on and off rapidly at about 0.15-second intervals.
Slow-flashing...Turns on and off alternately for about 1.5 seconds, and turns off completely for about 1.5 seconds. The lamp repeats this sequence.
- If the charge lamp is fast-flashing, remove the battery that is being charged, and then reattach the same battery again firmly. If the charge lamp continues fast-flashing, the cause could be that the battery is damaged, or the battery is not a designated type. Check the battery to confirm whether it is a designated type or not. If it is a designated type, remove the battery first, and then attach a brand-new battery or another known-to-be-good battery to see if the Charger is working correctly. If the Charger is working correctly, the cause could be that the battery is damaged.
- If the charge lamp is slow-flashing, the Charger is in standby mode and charging is suspended. When the ambient temperature is out of the appropriate temperature range for charging, the Charger suspends charging automatically and enters standby mode. When the ambient

temperature returns to an appropriate temperature, the Charger restarts charging and the charge lamp lights up. We recommend charging the battery pack in an ambient temperature of from 10 °C to 30 °C (50 °F to 86 °F).

About handling of your camcorder

On use and care

- Do not use or store the camcorder and accessories in the following locations.
 - Anywhere extremely hot or cold. Never leave them exposed to temperatures above 60 °C (140 °F), such as under direct sunlight, near heaters or in a car parked in the sun. They may malfunction or become deformed.
 - Near strong magnetic fields or mechanical vibration. The camcorder may malfunction.
 - Near strong radio waves or radiation. The camcorder may not be able to record properly.
 - Near AM receivers and video equipment. Noise may occur.
 - On a sandy beach or anywhere dusty. If sand or dust gets in your camcorder, it may malfunction. Sometimes this malfunction cannot be repaired.
 - Near windows or outdoors, where the LCD screen, the viewfinder, or the lens may be exposed to direct sunlight. This damages the inside of the viewfinder or the LCD screen.
 - Anywhere very humid.
- Operate your camcorder on DC 14.4 V (battery pack) or DC 19.5 V (AC Adaptor).
- For DC or AC operation, use the accessories recommended in these operating instructions.
- Do not let your camcorder get wet, for example, from rain or sea water. If your camcorder gets wet, it may malfunction. Sometimes this malfunction cannot be repaired.
- If any solid object or liquid gets inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling, disassembling, modifying, physical shock, or impact such as hammering, dropping or stepping on the product. Be particularly careful of the lens.
- Do not use a deformed or damaged battery pack.
- Keep the power switch setting to OFF when you are not using your camcorder.

- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- When disconnecting the power cord (mains lead), pull it by the plug and not the lead.
- Do not damage the power cord (mains lead) such as by placing anything heavy on it.
- Keep metal contacts clean.
- Keep the Wireless Remote Commander and button-type battery out of children's reach. If the battery is accidentally swallowed, consult a doctor immediately.
- If the battery electrolytic liquid has leaked,
 - consult your local authorized Sony service facility.
 - wash off any liquid that may have contacted your skin.
 - if any liquid gets in your eyes, wash with plenty of water and consult a doctor.

When not using your camcorder for a long time

- Turn on the camcorder and record and play back images about once a month to keep it in an optimum state for a long time.
- Use up the battery pack completely before storing it.

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder and cause a malfunction of your camcorder.

If moisture condensation has occurred

Leave your camcorder for about 1 hour without turning it on.

Note on moisture condensation

Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a humid place as shown below.

- When you bring your camcorder from a ski slope into a place warmed up by a heating device.
- When you bring your camcorder from an air conditioned car or room into a hot place outside.
- When you use your camcorder after a squall or a shower.
- When you use your camcorder in a hot and humid place.

How to avoid moisture condensation

When you bring your camcorder from a cold place into a warm place, put your camcorder in a

plastic bag and seal it tightly. Remove the bag when the air temperature inside the plastic bag has reached the ambient temperature (after about 1 hour).

LCD screen

- Do not exert excessive pressure on the LCD screen, as it may cause damage.
- If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

To clean the LCD screen

The surface of the LCD screen is coated. If you scratch the surface, the coating may be come off. Mind the following points when cleaning and handling it.

- If hand grease or hand cream remains on the screen, the coating comes off more easily. Wipe it early.
- The coating may be scratched if you wipe the screen with a tissue, etc.
- Remove the dust or sand with a blower, etc. before wiping the dirt.
- Use a soft cloth (a cloth for glasses, etc.) gently to clean the dirt.

On handling the casing

- If the casing is soiled, clean the camcorder body with a soft cloth lightly moistened with water, and then wipe the casing with a dry soft cloth.
- Avoid the following to avoid damage to the finish.
 - Using chemicals such as thinner, benzene, alcohol, chemical cloths, repellent, insecticide and sunscreen.
 - Handling with above substances on your hands.
 - Leaving the casing in contact with rubber or vinyl objects for a long period of time.

About care and storage of the lens

- Wipe the surface of the lens clean with a soft cloth in the following instances:
 - When there are fingerprints on the lens surface.
 - In hot or humid locations
 - When the lens is exposed to salty air such as at the seaside.
- Store in a well-ventilated location subject to little dirt or dust.

- To prevent mold, periodically clean the lens as described above.

On charging the pre-installed rechargeable battery

Your camcorder has a pre-installed rechargeable battery to retain the date, time, and other settings even when the power switch is set to OFF. The pre-installed rechargeable battery is always charged while your camcorder is connected to the wall outlet (wall socket) via the AC Adaptor or while the battery pack is attached. The rechargeable battery will be fully discharged in about **3 months** if you do not use your camcorder at all without the AC Adaptor connected or the battery pack attached. Use your camcorder after charging the pre-installed rechargeable battery.

However, even if the pre-installed rechargeable battery is not charged, the camcorder operation will not be affected as long as you are not recording the date.

To prevent electromagnetic interference from portable telephones, wireless devices, etc.

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

It is recommended that such equipment near this unit is powered off.

About the LCD screen

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

About stuck pixels

The LCD screen/organic EL 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 or organic EL panel, such “stuck” pixels may appear spontaneously. These problems are not a malfunction, and will not be recorded on recording media.

About the display of the organic EL panel

Because of the physical characteristics of the organic EL panel, image persistence or low brightness may occur.

These problems are not a malfunction, and the organic EL panel can be used without problems.

Note on the display

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

Fragmentation

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 80*) in the Media menu.

Notes on Internet security

- Use the camcorder behind a firewall that is designed with safety. Do not connect the camcorder to a network that is able to be connected to unreliable device.
- When you can, use FTPS. Contents, user names, and passwords are not encrypted while using FTP.

Formats and Limitations of Outputs

Video Formats and Output Signals

Output formats for the SDI OUT connector

Region setting	Recording format setting	SDI output setting	Output signal/ Conversion method
“NTSC/PAL Area” in “Country” of System menu	“Video Format” in “Rec Format” of System menu	“SDI” in “Output Format” of Video menu	Output signal
NTSC Area	1920×1080 59.94P	1920×1080P (Level A)	1920×1080 59.94P Level-A
		1920×1080P (Level B)	1920×1080 59.94P Level-B
		1920×1080i	1920×1080 59.94i
		720×486i	720×486 59.94i
	1920×1080 59.94i	1920×1080i	1920×1080 59.94i
		720×486i	720×486 59.94i
	1920×1080 29.97P	1920×1080P	1920×1080 29.97PsF
		720×486i	720×486 59.94i (PsF)
	1920×1080 23.98P	1920×1080P	1920×1080 23.98PsF
		1920×1080i (2-3PD)	1920×1080 59.94i (2-3PD)
		720×486i (2-3PD)	720×486 59.94i (2-3PD)
	1440×1080 59.94i	1920×1080i	1920×1080 59.94i
		720×486i	720×486 59.94i
	1280×720 59.94P	1280×720P	1280×720 59.94P
		720×486i	720×486 59.94i
	1280×720 29.97P	1280×720P	1280×720 59.94P (2-2RP)
		720×486i	720×486 59.94i (PsF)
	1280×720 23.98P	1280×720P (2-3PD)	1280×720 59.94P (2-3PD)
720×486i (2-3PD)		720×486 59.94i (2-3PD)	
720×480 59.94i	720×486i	720×486 59.94i	
PAL Area	1920×1080 50P	1920×1080P (Level A)	1920×1080 50P Level-A
		1920×1080P (Level B)	1920×1080 50P Level-B
		1920×1080i	1920×1080 50i
		720×576i	720×576 50i
	1920×1080 50i	1920×1080i	1920×1080 50i
		720×576i	720×576 50i
	1920×1080 25P	1920×1080P	1920×1080 25PsF
		720×576i	720×576 50i (PsF)
	1440×1080 50i	1920×1080i	1920×1080 50i
		720×576i	720×576 50i
	1280×720 50P	1280×720P	1280×720 50P
		720×576i	720×576 50i
	1280×720 25P	1280×720P	1280×720 50P (2-2RP)
		720×576i	720×576 50i (PsF)
720×576 50i	720×576i	720×576 50i	

Output formats from the HDMI OUT connector

Region setting	Recording format setting	HDMI output setting	Output signal/ Conversion method
“NTSC/PAL Area” in “Country” of System menu	“Video Format” in “Rec Format” of System menu	“HDMI” in “Output Format” of Video menu	Output signal
NTSC Area	1920×1080 59.94P	1920×1080P	1920×1080 59.94P
		1920×1080i	1920×1080 59.94i
		720×480i	720×480 59.94i
	1920×1080 59.94i	1920×1080i	1920×1080 59.94i
		720×480i	720×480 59.94i
	1920×1080 29.97P	1920×1080i	1920×1080 59.94i (PsF)
		720×480i	720×480 59.94i (PsF)
	1920×1080 23.98P	1920×1080i (2-3PD)	1920×1080 59.94i (2-3PD)
		720×480i (2-3PD)	720×480 59.94i (2-3PD)
	1440×1080 59.94i	1920×1080i	1920×1080 59.94i
		720×480i	720×480 59.94i
	1280×720 59.94P	1280×720P	1280×720 59.94P
		720×480i	720×480 59.94i
	1280×720 29.97P	1280×720P	1280×720 59.94P (2-2RP)
		720×480i	720×480 59.94i (PsF)
	1280×720 23.98P	1280×720P (2-3PD)	1280×720 59.94P (2-3PD)
720×480i (2-3PD)		720×480 59.94i	
720×480 59.94i	720×480i	720×480 59.94i	
	720×480P	720×480 59.94P	
PAL Area	1920×1080 50P	1920×1080P	1920×1080 50P
		1920×1080i	1920×1080 50i
		720×576i	720×576 50i
	1920×1080 50i	1920×1080i	1920×1080 50i
		720×576i	720×576 50i
	1920×1080 25P	1920×1080i	1920×1080 50i (PsF)
		720×576i	720×576 50i (PsF)
	1440×1080 50i	1920×1080i	1920×1080 50i
		720×576i	720×576 50i
	1280×720 50P	1280×720P	1280×720 50P
		720×576i	720×576 50i
	1280×720 25P	1280×720P	1280×720 50P (2-2RP)
720×576i		720×576 50i (PsF)	
720×576 50i	720×576i	720×576 50i	
	720×576P	720×576 50P	

Output formats from the GENLOCK/VIDEO connector

Video output signal

Setting for the region where the camcorder is used “NTSC/PAL Area” in “Country” of System menu	VIDEO output
NTSC Area	720×486 59.94i
PAL Area	720×576 50i

Notes

- If the recording format of a playback clip is smaller than that set in “SDI” or “HDMI” in “Output Format” of the Video menu, video signals are not output from the SDI or HDMI connector respectively.

Error/Warning Indications

The camcorder informs you of situations where warning, caution, or an operation check is required, through messages on the viewfinder screen, the recording/tally lamp, and a buzzer. The buzzer is output to the built-in speaker or to the headphones connected via the headphone connector.

Error Indications

The camcorder stops operation after the following indications.

Error indication on LCD/viewfinder	Buzzer	Recording/tally lamp	Cause and measures
E + Error code	Continuous	Rapidly flashing	The camcorder may be defective. Recording stops even if ●Rec is displayed on the 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	Recording/tally 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.

Caution and Operation Confirmation Indications

The following caution and operation confirmation indications may be displayed on the center area of the screen. In this case, please see the following table.

Indication	Cause and measures
Battery Error	An error was detected with the battery pack.
Please Change Battery	Replace the battery pack with a normal one.
Backup Battery End	The remaining power of the backup battery is insufficient.
Please Change	Replace the battery pack.
Unknown Media(A) ¹⁾	A partitioned memory card or one that contains recorded clips exceeding the number permitted with this camcorder is loaded.
Please Change	This card cannot be used with this camcorder. Remove it and load a compatible card.
Cannot Use Media(A) ¹⁾	A card of a different file system or an unformatted card was inserted.
Unsupported File System	It cannot be used with this camcorder. Replace it or format it with this camcorder.
Media Error	An error occurred with the memory card. The card requires restoration.
Media(A) Needs to be Restored ¹⁾	Restore the card.
Media Error	Recording cannot be done, because the memory card is defective.
Cannot Record to Media(A) ¹⁾	Because playback may be possible, it is recommended to replace it with another card after copying the clips, as required.
Media Error	Neither recording nor playback can be done, because the memory card is defective.
Cannot Use Media(A) ¹⁾	It cannot be operated with this camcorder. Replace it with another card.
Media(A) Error ¹⁾	Recording or playback stops, because an error occurred with the memory card.
Recording Halted	If this frequently occurs, change the memory card.
Playback Halted	
Media Reached Rewriting Limit	The memory card has come to the end of its service life.
Change Media (A) ¹⁾	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>
Copy All MPEG2 Proxy	Copying of all the MPEG2 Proxy is not completed because of the displayed reason.
NG: Reached Clip Number Limit	• The maximum number of clips is reached.
NG: Same File Already Exists	• There is a file with the same name.
NG: Not Enough Capacity	• There is not enough capacity for copying. Replace the Media.
Fan Stopped	The fan in the camcorder has stopped. Avoid use under high temperature conditions. Turn the camcorder off and contact a Sony service representative.
Invalid setting value was reset: Media/Clip Naming/Camera Position	The setting value of "Clip Naming" is reset because an incorrect All file is loaded.
Please save All File again	Save the All file again after setting the desired setting value.

¹⁾"Media(B)" for the card in slot B.

Licenses

On Accessing Software to which the GPL/LGPL Applies

This product uses software to which the GPL/LGPL applies. This informs you that you have a right to have access to, modify, and redistribute source code for these software programs under the conditions of the GPL/LGPL.

The source code is provided on the internet. Use the following URL and follow the download instructions.

<http://www.sony.net/Products/Linux/common/search.html>

We would prefer that you do not contact us about the contents of the source code.

For the content of these licenses, see "License1.pdf" in the "License" folder of the supplied CD-ROM.

Adobe Reader must be installed on your computer to view PDF files.

If Adobe Reader is not installed on your computer, you can download it by accessing the following URL.

<http://get.adobe.com/reader/>

Open Software Licenses

On the basis of license contracts between Sony and the software copyright holders, this product uses open software.

To meet the requirements of the software copyright holders, Sony is obligated to inform you of the content of these licenses.

For the content of these licenses, see "License1.pdf" in the "License" folder of the supplied CD-ROM.

Specifications

General

Mass

Approx. 2.7 kg (5 lb 15.2 oz)
(Camcorder only)

Approx. 3.2 kg (7 lb 0.9 oz)
(With lens hood (1), eyecup (1),
battery pack BP-U30 (1), SxS memory
card (1))

Dimensions

Approx. W191.5 mm × H201.5 mm ×
D412 mm
(7⁵/₈ × 8 × 16¹/₄ inches)
(Outermost dimensions. Depth is the
length from the front panel of the lens
hood to the viewfinder eyecup.)

Approx. W191.5 mm × H195 mm ×
D337.5 mm
(7⁵/₈ × 7³/₄ × 13³/₈ inches)
(Not including extruding parts. Depth
is the length from the front panel of the
lens hood to the back of the unit. Not
including extruding parts of the
viewfinder.)

Power requirements

DC 14.4 V (When using the battery
pack)

DC 19.5 V (When using the AC adaptor)

Power consumption

Approx. 19.9 W
while recording with LCD screen off,
viewfinder on, not using the external
device

Approx. 20.8 W
while recording with LCD screen on,
viewfinder on, using HD SDI, HDMI,
and external device

Operating temperature

0°C to +40°C (32°F to 104°F)

Storage temperature

-20°C to +60°C (-4°F to +140°F)

Continuous operation time

(While recording with LCD screen off, viewfinder on, not using external device)

With battery pack BP-U90: approx. 4 hours

With battery pack BP-U60: approx. 2 hours 35 minutes

With battery pack BP-U30: approx. 1 hour 15 minutes

Recording Format (Video)**XAVC Intra**

XAVC-I mode: CBG, 112 Mbps max, MPEG-4 H.264/AVC

XAVC Long

XAVC-L 50 mode: VBR, 50 Mbps max, MPEG-4 H.264/AVC

XAVC-L 35 mode: VBR, 35 Mbps max, MPEG-4 H.264/AVC

XAVC-L 25 mode: VBR, 25 Mbps, MPEG-4 H.264/AVC

MPEG-2 Long GOP

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

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

AVCHD

VBR, 28 Mbps max, MPEG-4 H.264/AVC

DVCAM

CBR, 25 Mbps

Recording Format (Audio)**XAVC Intra**

XAVC-I mode: LPCM 24-bit, 48-kHz, 2 channels

XAVC Long

XAVC-L mode: LPCM 24-bit, 48-kHz, 2 channels

MPEG-2 Long GOP

MPEG HD422 mode: LPCM 24-bit, 48-kHz, 2 channels

MPEG HD420 HQ mode: LPCM 16-bit, 48-kHz, 2 channels

AVCHD

LPCM 16-bit, 48-kHz, 2 channels

Dolby Digital 16-bit, 48-kHz, 2 channels

Equipped with Dolby Digital Stereo

Creator

DVCAM

LPCM 16-bit, 48-kHz, 2 channels

Recording Frame Rate**XAVC Intra**

XAVC-I mode: 1920 × 1080/59.94i, 50i, 29.97P, 25P, 23.98P

1280 × 720/59.94P, 50P

XAVC Long

XAVC-L 50 mode: 1920 × 1080/59.94P, 50P, 59.94i, 50i, 29.97P, 25P, 23.98P

1280 × 720/59.94P, 50P

XAVC-L 35 mode: 1920 × 1080/59.94P, 50P, 59.94i, 50i, 29.97P, 25P, 23.98P

XAVC-L 25 mode: 1920 × 1080/59.94i, 50i

MPEG-2 Long GOP

MPEG HD422 mode: 1920 × 1080/59.94i, 50i, 29.97P, 25P, 23.98P

1280 × 720/59.94P, 50P, 29.97P, 25P, 23.98P

MPEG HD420 HQ mode: 1920 × 1080/59.94i, 50i, 29.97P, 25P, 23.98P

1440 × 1080/59.94i, 50i

1280 × 720/59.94P, 50P

AVCHD

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

1280 × 720/59.94P, 50P

DVCAM

720 × 480/59.94i

720 × 576/50i

Recording/Playback Time**XAVC Intra**

XAVC-I mode

When using SBP-128B (128 GB):
Approx. 120 minutes

When using SBP-64B / SBS-64G1A
(64 GB): Approx. 60 minutes

When using SBS-32G1A (32 GB):
Approx. 30 minutes

XAVC Long

XAVC-L 50 mode

When using SBP-128B (128 GB):
Approx. 240 minutes
When using SBP-64B / SBS-64G1A
(64 GB): Approx. 120 minutes
When using SBS-32G1A (32 GB):
Approx. 60 minutes

XAVC-L 35 mode

When using SBP-128B (128 GB):
Approx. 340 minutes
When using SBP-64B / SBS-64G1A
(64 GB): Approx. 170 minutes
When using SBS-32G1A (32 GB):
Approx. 85 minutes

XAVC-L 25 mode

When using SBP-128B (128 GB):
Approx. 440 minutes
When using SBP-64B / SBS-64G1A
(64 GB): Approx. 220 minutes
When using SBS-32G1A (32 GB):
Approx. 110 minutes

MPEG-2 Long GOP

MPEG HD422 mode

When using SBP-128B (128 GB):
Approx. 240 minutes
When using SBP-64B / SBS-64G1A
(64 GB): Approx. 120 minutes
When using SBS-32G1A (32 GB):
Approx. 60 minutes

MPEG HD420 HQ mode

When using SBP-128B (128 GB):
Approx. 360 minutes
When using SBP-64B / SBS-64G1A
(64 GB): Approx. 180 minutes
When using SBS-32G1A (32 GB):
Approx. 90 minutes

AVCHD

When using a 64GB memory card:
Approx. 290 minutes
When using a 32GB memory card:
Approx. 145 minutes
When using a 16GB memory card:
Approx. 70 minutes

DVCAM

When using SBP-128B (128 GB):
Approx. 440 minutes
When using SBP-64B / SBS-64G1A
(64 GB): Approx. 220 minutes
When using SBS-32G1A (32 GB):
Approx. 110 minutes

Notes

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

Lens

Lens

G lens

Lens mount

Fixed type

Zoom ratio

25x

Maximum relative aperture

1:1.6

Focal length

3.7 mm to 92.5 mm ($\sqrt{5}/32$ to $3 \frac{3}{4}$ in.)
(equivalent to 26 mm to 650 mm ($1 \frac{1}{16}$
to $25 \frac{5}{8}$ in.) on a 35 mm lens)

Focus area

Auto/manual switchable
800 mm ($31 \frac{1}{2}$ in.) to ∞ (macro OFF)
10 mm ($13/32$ in.) to ∞ (macro ON, wide
end)
800 mm ($31 \frac{1}{2}$ in.) to ∞ (macro ON, tele
end)

Iris

Auto/manual switchable
F1.6 to F11 and C (close)

Picture stabilizing function

On/Off possible, shift-lens system

Filter thread

M 82 mm ($3 \frac{1}{4}$ in.), pitch 0.75 mm

Macro

On/Off possible

Camera Block

Pickup device

1/3 type Exmor 3 CMOS image sensor

Effective picture elements

1920 (H) × 1080 (V)

Optical system

F1.6 prism system

Built-in filters

ND filters

CLEAR: Clear

1: 1/4ND

2: 1/16ND

3: 1/64ND

Linear variable ND (Approx. 1/4 ND to 1/128 ND)

Sensitivity (2 000 lx, 89.9% reflectance)

F9 (typical) (1920 × 1080/59.94i mode)

F10 (typical) (1920 × 1080/50i mode)

Minimum subject illumination

0.12 lx (typical) (1920 × 1080/59.94i mode, F1.6, +18 dB gain, with 16-frame accumulation, Gamma Off, 100% video level)

0.02 lx (typical) (1920 × 1080/59.94i mode, F1.6, +18 dB gain, with 16-frame accumulation, Gamma On, 50% video level)

S/N Ratio

60 dB (Y) (typical)

Horizontal resolution

1 000 TV lines or more (1920 × 1080i mode)

Shutter speed

1/32 to 1/2000 sec.

Slow Shutter (SLS)

2, 3, 4, 5, 6, 7, 8, 16 frames

Slow & Quick Motion**XAVC-I mode**

1920 × 1080: 1 to 60 frames (29.97P, 25P, 23.98P)

1280 × 720: 1 to 60 frames (59.94P, 50P)

XAVC-L mode

1920 × 1080: 1 to 60 frames (59.94P, 50P, 29.97P, 25P, 23.98P)

1280 × 720: 1 to 120 frames (59.94P, 50P)

HD422 mode

1920 × 1080: 1 to 30 frames (29.97P, 25P, 23.98P)

1280 × 720: 1 to 60 frames (59.94P, 50P, 29.97P, 25P, 23.98P)

White balance

Preset mode (3200K)

Memory A mode, Memory B, ATW mode

Gain

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

Gamma Curve

Selectable

Inputs/Outputs

Audio input

XLR type 3-pin (2), female, LINE/MIC/MIC+48V switchable

MIC: -50 dBu/3 k Ω

LINE: +4 dBu/10 k Ω

(Reference input level 0 dBu=0.775 Vrms)

Audio output

Stereo minijack (\varnothing 3.5 mm)

-10 dBu (Under 47 k Ω load, reference level)

Video output

BNC type (1), switchable with

GENLOCK IN connector, HD-Y/HD-SYNC/composite signal

1.0 Vp-p, 75 Ω

SDI output

BNC type (1), switchable with 3G SDI/
HD-SDI/SD-SDI
SMPTE292M/259M/424M/425M

Timecode input

BNC type (1), switchable with TC OUT
connector
SMPTE 12M-2-2008
0.5 V to 18 Vp-p, 3.3 k Ω

Timecode output

BNC type (1), switchable with TC IN
connector
SMPTE 12M-2-2008
2.0 Vp-p, 50 Ω

GENLOCK input

BNC type (1), switchable with VIDEO
OUT connector
1.0 Vp-p, 75 Ω

USB connector

Mass storage: mini-B (1)
Host: Type A

Headphone output

Stereo minijack (\varnothing 3.5 mm)
-19 dBu (Reference level output under
16 Ω load)

Speaker output

Monaural
Output: 50 mW

DC input

DC jack

HDMI output

HDMI connector (Type A)

REMOTE connector

Stereo mini-minijack (2.5 mm)

Displays

Viewfinder

Screen size: 1.3 cm (0.5 type)
Effective pixels: approx. 2.36M dots

LCD monitor

Screen size: 8.8 cm (3.5 type)
Effective pixels: approx. 1.56M dots

Internal Microphone

Internal microphone

Omnidirectional stereo electret
condenser microphone

Media Slot Block

Type

ExpressCard/34 (2)

AC adaptor ACDP-060S01

Rated input

100 V to 240 V AC, 50 Hz/60 Hz, 1.4 A

Rated output

19.5 V DC, 3.05 A

Charger BC-U1

Power requirements

100 V to 240 V AC, 50 Hz/60 Hz

Power consumption

38 W

Rated output

Charging: 16.4 V 1.9 A/1.5A

Rechargeable Battery Pack BP-U30

Maximum voltage
16.4 V DC

Nominal voltage
14.4 V DC

Capacity
28 Wh

Design and specifications of your camcorder and accessories are subject to change without notice.

- Manufactured under license from Dolby Laboratories.

Package Configuration

SD card adaptor MEAD-SD02 (1) (except for PXW-X180 NTSC model)
XQD card adaptor XDA-EX1 (1) (PXW-X180 NTSC model only)
Charger (1) (BC-U1)
Rechargeable battery pack BP-U30 (1)
AC Adaptor (1) (ACDP-060S01)
Power cord (mains lead) (2)
Audio connecting cable (1)
USB cable (1)
Lens hood (1)
Large eyecup (1)
Accessory shoe kit (accessory shoe (1), accessory shoe plate (1), screws (4))
Wireless Remote Commander (RMT-845) (1)
Shoulder strap (1)
USB wireless LAN module IFU-WLM3 (1) (PXW-X180 only)
CD-ROM “Manuals for Solid-State Memory Camcorder” (1)
Operating Guide (2)

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.

Notes

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

Design and specifications are subject to change without notice.

On trademarks

- “XDCAM” is a trademark of Sony Corporation.
- “XAVC” and **XAVC** are trademarks of Sony Corporation.
- XQD, and **XQD** are trademarks of Sony Corporation.
- Microsoft, Windows, Windows Vista, and Windows Media are trademarks or registered trademarks of U.S. Microsoft Corporation in the U.S. and other countries.
- Mac and Mac OS are registered trademarks of Apple Inc. in the U.S. and other countries.
- HDMI, HDMI logo, and High-Definition Multimedia Interface are registered trademarks of HDMI Licensing LLC in the United States and other countries.
- Intel, Intel Core, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

- Adobe, the Adobe logo, and Adobe Acrobat are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.
- Dolby and the double-D symbol are trademarks of Dolby Laboratories.

All other product names mentioned herein may be the trademarks or registered trademarks of their respective companies. Furthermore, ™ and “®” are not mentioned in each case in this manual.

Index

A

- AC Adaptor 18
- Accessory shoe 6
- Accessory shoe mount 6
- Accessory shoe plate 6
- AF/MF mode 29
- All File 82
- All Reset 86
- Aperture 72
- Assignable Button 36, 84
- ATW 33
- Audio 30
- Audio Input 73
- AUDIO INPUT1 connector 34
- AUDIO INPUT2 34
- Audio menu 73
- Audio Output 73
- Auto Black Balance 67
- Auto Exposure 65
- Auto Shutter 32
- Auto White Balance 33
- Auto-Tracing White balance 33

B

- Basic Authentication 85
- Battery Alarm 86
- Battery Pack 17
- Black 68
- Black Gamma 68

C

- Camera menu 64
- Caution and Operation Confirmation Indications 101
- Change Thumbnail View 60
- Charger 17
- Clip 30, 57, 89
- Clip Continuous Rec 79
- Clip name 30
- Clock 19
- Clock Set 85
- Color Bars 66
- Country 85
- Cueing up 30

Customize View 60

D

- Delete Clip 60
- Detail (HD mode) 70
- Detail (SD mode) 71
- Display Clip Properties 58, 60
- Display On/Off 76
- Down Converter 74

E

- Error Indications 100
- External Monitor 87
- External Synchronization 88

F

- File menu 82
- File Transfer 84
- Filter Clips 60
- Flicker Reduce 66
- Focus 29, 65
- Focus Magnifier 30
- Focus ring 29
- FOCUS switch 29
- Format 23, 24
- Format Media 80
- Full MF mode 29

G

- Gain 31, 64
- GAIN switch 31
- Gamma 68
- GENLOCK/VIDEO connector 87, 99
- GPS 86

H

- Handle Zoom 66
- Handle zoom 28
- Handle zoom lever 28
- Handle zoom switch 28
- HDMI OUT connector 87, 98
- HDMI TC Out 78
- Headphones connector 10
- Hook for shoulder strap 10
- Hours Meter 85

I

INPUT1 switch 34
 INPUT2 switch 34
 IR Remote 86
 Iris ring 31
 IRIS switch 31

K

Knee 69

L

Language 84
 LCD screen 15, 20
 LCD Setting 75
 LCD/VF Menu 75
 Lens 95
 Lens cover lever 19
 Lens hood with lens cover 19
 Lock/Unlock Clip 60

M

Maintenance 73
 Marker 75
 Matrix 72
 MEAD-MS01 24
 MEAD-SD02 24
 Media Adaptor 24
 Media Full 23
 Media menu 80
 Media Near Full 23
 Memory A mode 33
 Memory B mode 33
 Memory Stick 24
 MENU button 62
 MIC+48V 34
 Moisture condensation 95
 Multi Matrix 72

N

ND Filter 64
 ND filter 32
 Network Reset 86
 Nonlinear editing 90

O

Offset White 67
 OPTION button 57

Output Display 74
 Output Format 74
 Output On/Off 74
 Output signal 97

P

Paint menu 67
 Peaking 75
 Planning Metadata 82
 Planning metadata 38
 Power switch 9
 Power zoom lever 28
 Pre-installed rechargeable battery 96
 Preset mode 32
 Proxy Recording Mode 79
 PUSH (lens hood release) button 19
 PUSH AUTO button 29
 Push auto focus 29

R

Rec Format 83
 Rec Lamp 84
 Rec Review 37
 Record button 27
 Recording menu 79

S

S&Q Motion 79
 Scene File 82
 SD Cards 24
 SDI OUT connector 87, 97
 SDI/HDMI Rec Control 79
 SEL/SET dial 62
 Set Clip Flag 60
 Set Index Picture 60
 Set Shot Mark 60
 Setup menu 62, 64
 Setup Menus 61
 Shoulder strap 10
 Shutter 66
 Simul Rec 79
 Skin Detail 71
 SLOT SELECT button 22
 Slow & Quick Motion 36
 Speed Zoom 66
 SteadyShot 66
 SxS memory cards 22
 System menu 83

T

TC/UB menu 78
Telephoto 28
Thumbnail menu 57
Thumbnail screen 56
Time and date 19
Time Data 35
Time Zone 19
Timecode 35, 78

U

Update Media 80
USB cable 89
USB wireless LAN module 42
Users Bit 78
Using your camcorder abroad 93
UTC 19

V

Version 86
VF Setting 75
Video format 97
Video Light Set 67
Video menu 74
Viewfinder 15, 20
Viewfinder lens adjustment lever 20

W

Wall outlet (wall socket) 18
Warning Indications 100
WB SET button 33
White 67
White balance 32
White Clip 69
WHT BAL switch 32
Wide angle 28
Wi-Fi 85
Wi-Fi remote commander 49
Wireless Remote Commander 21

X

XQD Memory Cards 24

Z

Zebra 76
Zoom 28
Zoom ring 28

<http://www.sony.net/>

Printed in China

