

Digital HD Video Camera Recorder

Operating Guide

Please also refer to :

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

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AVCHD

HDMI™
HIGH DEFINITION MULTIMEDIA INTERFACE

HANDYCAM®

InfoLITHIUM™
V SERIES

MEMORY STICK™

SD
XC
CLASS 6

Read this first

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

WARNING

To reduce fire or shock hazard, do not expose the unit to rain or moisture.

Do not expose the batteries to excessive heat such as sunshine, fire or the like.

CAUTION

Battery pack

If the battery pack is mishandled, the battery pack can burst, cause a fire or even chemical burns. Observe the following cautions.

- Do not disassemble.
- Do not crush and do not expose the battery pack to any shock or force such as hammering, dropping or stepping on it.
- Do not short circuit and do not allow metal objects to come into contact with the battery terminals.
- Do not expose to high temperature above 60°C (140°F) such as in direct sunlight or in a car parked in the sun.
- Do not incinerate or dispose of in fire.
- Do not handle damaged or leaking lithium ion batteries.
- Be sure to charge the battery pack using a genuine Sony battery charger or a device that can charge the battery pack.
- Keep the battery pack out of the reach of small children.
- Keep the battery pack dry.
- Replace only with the same or equivalent type recommended by Sony.
- Dispose of used battery packs promptly as described in the instructions.

Replace the battery with the specified type only. Otherwise, fire or injury may result.

AC Adaptor

Do not use the AC Adaptor placed in a narrow space, such as between a wall and furniture.

Use the 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.

Even if your camcorder is turned off, AC power source (mains) is still supplied to it while connected to the wall outlet (wall socket) via the AC Adaptor.

Note on the power cord (mains lead)

The power cord (mains lead) is designed specifically for use with this camcorder only, and should not be used with other electrical equipment.

Notice for customers in the United Kingdom

A moulded plug complying with BS 1363 is fitted to this equipment for your safety and convenience.

Should the fuse in the plug supplied need to be replaced, a fuse of the same rating as the supplied one and approved by ASTA or BSI to BS 1362, (i.e., marked with an  or  mark) must be used. If the plug supplied with this equipment has a detachable fuse cover, be sure to attach the fuse cover after you change the fuse. Never use the plug without the fuse cover. If you should lose the fuse cover, please contact your nearest Sony service station.

FOR CUSTOMERS IN EUROPE

Notice for the customers in the countries applying EU Directives

The manufacturer of this product is Sony Corporation, 1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan. The Authorized Representative for EMC and product safety is Sony Deutschland GmbH, Hedelfinger Strasse 61, 70327 Stuttgart, Germany. For any service or guarantee matters please refer to the addresses given in separate service or guarantee documents.

ATTENTION

The electromagnetic fields at the specific frequencies may influence the picture and sound of this unit.

This product has been tested and found compliant with the limits set out in the EMC Directive for using connection cables shorter than 3 meters (9.8 feet).

Notice

If static electricity or electromagnetism causes data transfer to discontinue midway (fail), restart the application or disconnect and connect the communication cable (USB, etc.) again.



Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment.

By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local Civic Office, your household waste disposal service or the shop where you purchased the product.



Disposal of waste batteries (applicable in the European Union and other European countries with separate collection systems)

This symbol on the battery or on the packaging indicates that the battery provided with this product shall not be treated as household waste.

On certain batteries this symbol might be used in combination with a chemical symbol. The chemical symbols for mercury (Hg) or lead (Pb) are added if the battery contains more than 0.0005% mercury or 0.004% lead.

By ensuring these batteries are disposed of correctly, you will help prevent potentially negative consequences for the environment and human health which could otherwise be caused by inappropriate waste handling of the battery. The recycling of the materials will help to conserve natural resources. In case of products that for safety, performance or data integrity reasons require a permanent connection with an incorporated battery, this battery should be replaced by qualified service staff only. To ensure that the battery will be treated properly, hand over the product at end-of-life to the applicable collection point for the recycling of electrical and electronic equipment.

For all other batteries, please view the section on how to remove the battery from the product safely. Hand the battery over to the applicable collection point for the recycling of waste batteries.

For more detailed information about recycling of this product or battery, please contact your local Civic Office, your household waste disposal service or the shop where you purchased the product.

For customers in the U.S.A.

If you have any questions about this product, you may call:

Sony Customer Information Center 1-800-222-SONY (7669).

The number below is for the FCC related matters only.

Regulatory Information

Declaration of Conformity

Trade Name: SONY

Model No.: HDR-CX190E

Responsible Party: Sony Electronics Inc.

Address: 16530 Via Esprillo, San Diego, CA 92127 U.S.A.

Telephone No.: 858-942-2230

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Declaration of Conformity

Trade Name: SONY

Model No.: HDR-CX200E

Responsible Party: Sony Electronics Inc.

Address: 16530 Via Esprillo, San Diego, CA 92127 U.S.A.

Telephone No.: 858-942-2230

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Declaration of Conformity

Trade Name: SONY

Model No.: HDR-CX210E

Responsible Party: Sony Electronics Inc.

Address: 16530 Via Esprillo, San Diego, CA 92127 U.S.A.

Telephone No.: 858-942-2230

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Declaration of Conformity

Trade Name: SONY

Model No.: HDR-PJ200E

Responsible Party: Sony Electronics Inc.

Address: 16530 Via Esprillo, San Diego, CA 92127 U.S.A.

Telephone No.: 858-942-2230

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The supplied interface cable must be used with the equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

Battery pack

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

About language setting

- The on-screen displays in each local language are used for illustrating the operating procedures. Change the screen language before using the camcorder if necessary (p. 20).

On recording

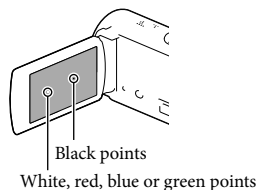
- Before starting to record, test the recording function to make sure the image and sound are recorded without any problems.
- Compensation for the contents of recordings cannot be provided, even if recording or playback is not possible due to a malfunction of the camcorder, recording media, etc.
- TV color systems differ depending on the country/region. To view your recordings on a TV, you need a PAL system-based TV.
- Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the copyright laws.

Notes on use

- Do not do any of the following. Otherwise, the recording media may be damaged, recorded images may be impossible to play back or may be lost, or other malfunctions could occur.
 - ejecting the memory card when the access lamp (p. 21) is lit or flashing
 - removing the battery pack or AC Adaptor from the camcorder, or applying mechanical shock or vibration to the camcorder when the  (Movie)/  (Photo) lamps (p. 23) or the access lamp (p. 21) are lit or flashing
- When the camcorder is connected to other devices through a USB connection and the power of the camcorder is turned on, do not close the LCD panel. The image data that has been recorded may be lost.
- Use the camcorder in accordance with local regulations.

LCD Panel

- The LCD screen is manufactured using extremely high-precision technology, so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue, or green in color) that appear constantly on the LCD screen. These points are normal results of the manufacturing process and do not affect the recording in any way.



About this manual, illustrations and on-screen displays

- The example images used in this manual for illustration purposes are captured using a digital still camera, and therefore may appear different from images and screen indicators that actually appear on your camcorder. And, the illustrations of your camcorder and its screen indication are exaggerated or simplified for understandability.
- Design and specifications of your camcorder and accessories are subject to change without notice.
- In this manual, the internal memory (HDR-CX210E) and the memory card are called “recording media.”
- In this manual, the DVD disc recorded with high definition image quality (HD) is called AVCHD recording disc.
- The model name is shown in this manual when there is a difference in specification between models. Confirm the model name on the bottom of your camcorder.

- Illustrations used in this manual are based on HDR-CX210E unless otherwise specified.

	Recording media	Capacity of internal recording media	Projector
HDR-CX190E	Memory card only	—	—
HDR-CX200E		—	—
HDR-PJ200E		—	✓
HDR-CX210E	Internal memory + memory card	8 GB	—

Learning more about the camcorder ("Handycam" User Guide)

"Handycam" User Guide is an on-line manual. Refer to it for in-depth instructions on the many functions of the camcorder.



1 Access the Sony support page.

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

2 Select your country or region.

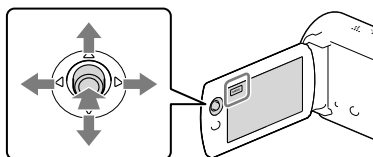
3 Search for the model name of your camcorder within the support page.

- Check the model name on the bottom of your camcorder

Selecting items on the LCD screen

HDR-CX190E

Move the multi-selector towards ▼/▲/◀/▶ to select the desired item, and then press the center of the selector to complete the selection.



HDR-CX200E/CX210E/PJ200E

Touch the desired part of the LCD screen.

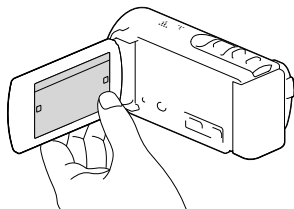


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Customizing your camcorder

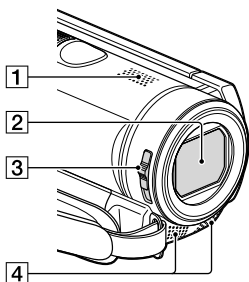
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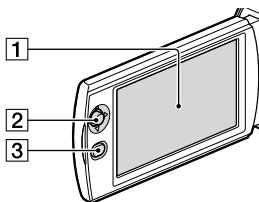
Parts and controls

Figures in () are reference pages.

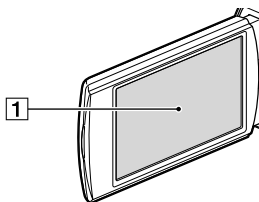


- 1 Speaker
- 2 Lens (Carl Zeiss lens)
- 3 LENS COVER switch
- 4 Built-in microphone

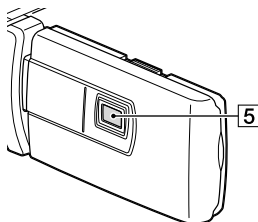
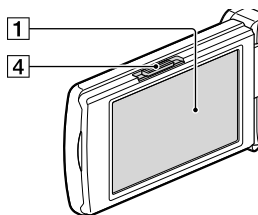
HDR-CX190E



HDR-CX200E/CX210E



HDR-PJ200E

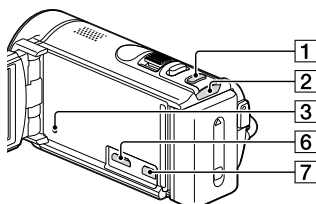


- 1 LCD screen/Touch panel (HDR-CX200E/CX210E/PJ200E) (19, 20)

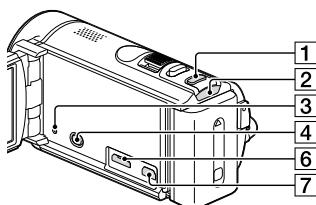
If you rotate the LCD panel 180 degrees, you can close the LCD panel with the LCD screen facing out. This is convenient during playback operations.

- 2 Multi selector (7) (HDR-CX190E)
- 3  (View Images) button (HDR-CX190E)
- 4 PROJECTOR FOCUS lever (40) (HDR-PJ200E)
- 5 Projector lens (40) (HDR-PJ200E)

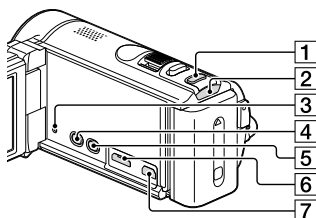
HDR-CX190E



HDR-CX200E/CX210E

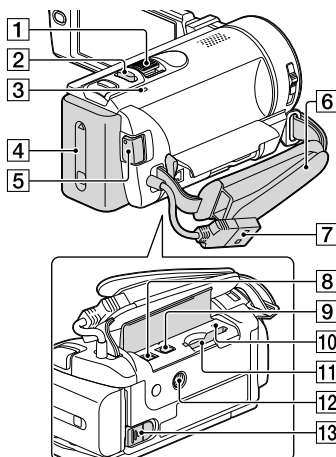


HDR-PJ200E

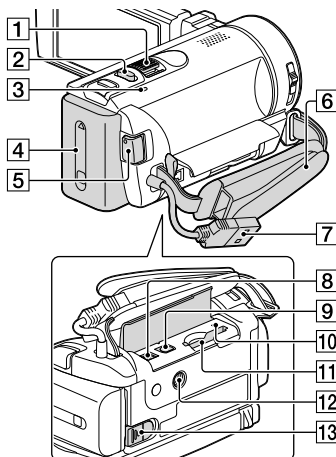


- 1 MODE button
- 2 (Movie)/ (Photo) lamp (23, 24)
- 3 RESET button
Press RESET using a pointed object.
Press RESET to initialize all the settings including the clock setting.
- 4 (View Images) button (HDR-CX200E/CX210E/PJ200E)
- 5 PROJECTOR button (40) (HDR-PJ200E)
- 6 HDMI OUT jack (38)
- 7 (USB) jack (51, 54)

HDR-CX190E



HDR-CX200E/CX210E/PJ200E



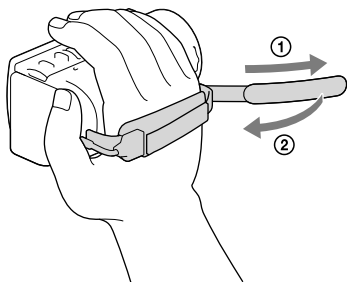
- 1 Power zoom lever (27)
- 2 PHOTO button (24)
- 3 CHG (charge) lamp (15)

- 4 Battery pack (15)
- 5 START/STOP button (24)
- 6 Grip belt
- 7 Built-in USB Cable (16)
- 8 DC IN jack (15)
- 9 A/V Remote Connector (38)
- 10 Memory card access lamp (21)
- 11 Memory card slot (21)
- 12 Tripod receptacle

Attach a tripod (sold separately: the length of the screw must be less than 5.5 mm (7/32 in.)).

- 13 BATT (battery) release lever (17)

To fasten the grip belt

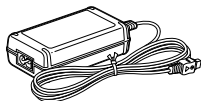


Supplied Items

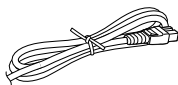
The numbers in () are the supplied quantity.

Camcorder (1)

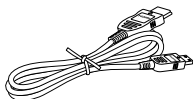
AC Adaptor (1)



Power cord (Mains lead) (1)



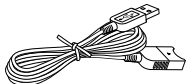
HDMI cable (1) (only for HDR-CX200E/CX210E/PJ200E)



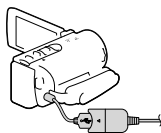
A/V connecting cable (1)



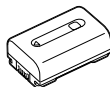
USB connection support cable (1)



- The USB connection support cable is designed for use with this camcorder only. Use this cable when the Built-in USB Cable of the camcorder (p. 16) is too short for connection.



Rechargeable battery pack NP-FV30 (1)



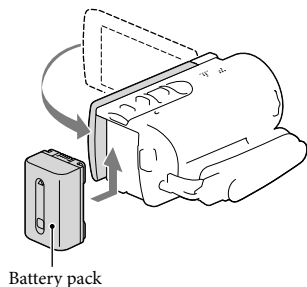
"Operating Guide" (This manual) (1)

Notes

- The "PlayMemories Home" (Lite Version) software and "PlayMemories Home" Help Guide are pre-installed in this camcorder (p 45, p 48).

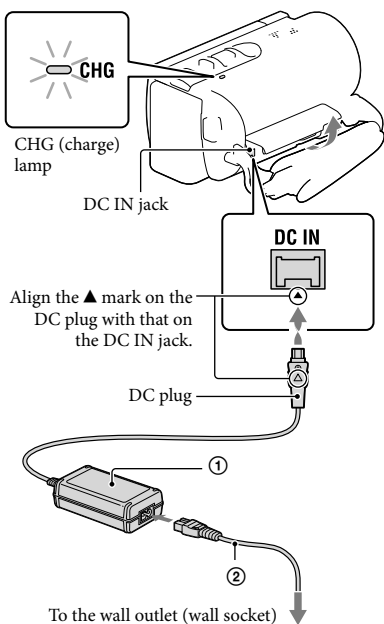
Charging the battery pack

- 1 Close the LCD screen and attach the battery pack.



- 2 Connect the AC Adaptor (①) and the power cord (mains lead) (②) to your camcorder and the wall outlet (wall socket).

- The CHG (charge) lamp turns on.
- The CHG (charge) lamp turns off when the battery pack is fully charged. Disconnect the AC Adaptor from the DC IN jack of your camcorder.

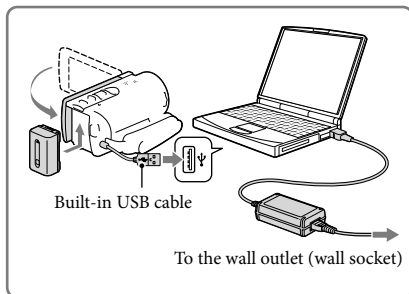


Notes

- You cannot attach any "InfoLITHIUM" battery pack other than the V series to your camcorder.

Charging the battery using your computer

Turn off your camcorder and connect the camcorder to a running computer using the Built-in USB Cable.



To charge the battery from a wall outlet (wall socket) using the Built-in USB Cable

You can charge the battery by connecting the Built-in USB Cable to a wall outlet (wall socket) using an AC-UD10 USB charger/AC Adaptor (sold separately). You cannot use a Sony CP-AH2R, CP-AL, or AC-UP100 portable power supply device (sold separately) to charge the camcorder.

Charging time

Approximate time (min.) required when you fully charge a fully discharged battery pack.

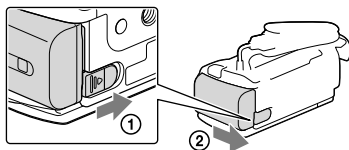
Battery pack	Charging time	
	AC Adaptor	Built-in USB Cable* (when using your computer)
NP-FV30 (supplied)	115	150
NP-FV50	155	280
NP-FV70	195	545
NP-FV100	390	1,000

- The charging times shown in the table above are measured when charging the camcorder at a temperature of 25 °C (77 °F). It is recommended that you charge the battery in a temperature range of 10 °C to 30 °C (50 °F to 86 °F).

* The charging times are measured without using the USB connection support cable.

To remove the battery pack

Close the LCD screen. Slide the BATT (battery) release lever (①) and remove the battery pack (②).



To use a wall outlet (wall socket) as a power source

Make the same connections as those for charging the battery pack.

Even if the battery pack is attached, the battery pack is not discharged.

Notes on the battery pack

- When you remove the battery pack or disconnect the AC Adaptor, turn the camcorder off and make sure that the (Movie)/ (Photo) lamps (p. 23, 24) and the access lamp (p. 21) are turned off.
- The CHG (charge) lamp flashes during charging under the following conditions:
 - The battery pack is not attached correctly.
 - The battery pack is damaged.
 - The temperature of the battery pack is low.
Remove the battery pack from your camcorder and put it in a warm place.
 - The temperature of the battery pack is high.
Remove the battery pack from your camcorder and put it in a cool place.
- In the default setting, the power turns off automatically if you leave your camcorder without any operation for about 2 minutes, to save battery power ([Eco Mode] p. 60).

Notes on the AC Adaptor

- Use the 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 DC plug of the AC Adaptor or battery terminal with any metallic objects. This may cause a malfunction.
- Disconnect the AC Adaptor from the camcorder, holding both the camcorder and the DC plug.



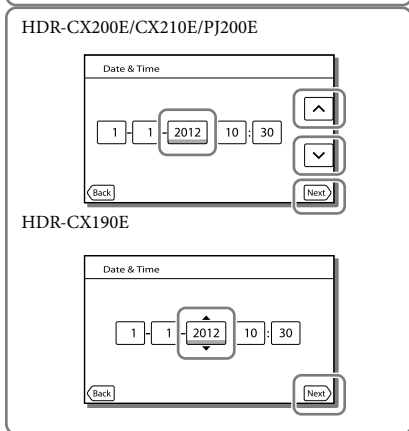
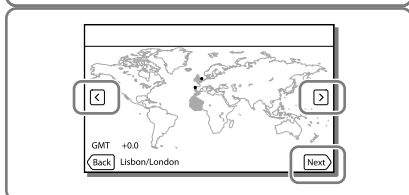
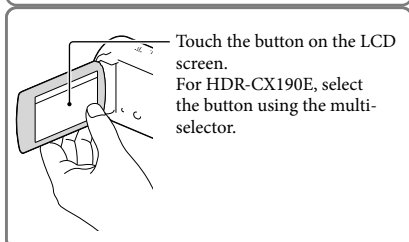
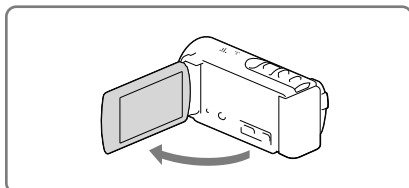
- Recording time, Playing time (64)
- Remaining battery indicator (25)
- Charging the battery pack abroad (18)

Charging the battery pack abroad

You can charge the battery pack in any countries/regions using the AC Adaptor supplied with your camcorder within the AC 100 V - 240 V, 50 Hz/60 Hz range. Do not use an electronic voltage transformer.

Turning the power on, and setting the date and time

- 1 Open the LCD screen of your camcorder and turn the power on.
- 2 Select the desired language, then select [Next].
- 3 Select the desired geographical area with [◀]/[▶], then select [Next].
- 4 Set [Summer Time], select the date format and the date and time.
 - If you set [Summer Time] to [On], the clock advances 1 hour.
 - When you select the date and time, select one of the items and adjust the value with [▲]/[▼].
 - When you select [OK], the date and time setting operation is complete.



Changing the language setting

You can change the on-screen displays to show messages in a specified language.

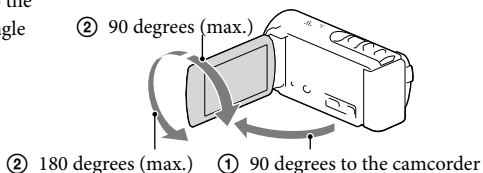
Select [MENU] → [Setup] → [General Settings] → [Language Setting] → a desired language.

To turn off the power

Close the LCD screen.

To adjust the angle of the LCD panel

First open the LCD panel 90 degrees to the camcorder (①), and then adjust the angle (②).



To turn off the beep sound

Select [MENU] → [Setup] → [General Settings] → [Beep] → [Off].

Notes

- The recording date, time and condition are recorded automatically on the recording media. They are not displayed during recording. However, you can check them as [Data Code] during playback. To display them, select [MENU] → [Setup] → [Playback Settings] → [Data Code] → [Date/Time].



- To set the date and time again: [Date & Time Setting] (p. 60)
- To calibrate the touch panel: [Calibration] (HDR-CX200E/CX210E/PJ200E) (p. 69)

Preparing the recording media

The recording media that can be used are displayed on the screen of your camcorder as following icons.

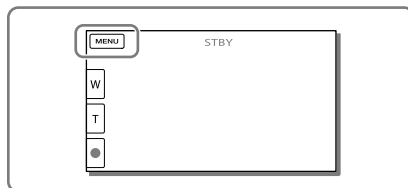
	Default recording medium	Alternative recording medium
HDR-CX190E/CX200E/ PJ200E	 Memory card	—
HDR-CX210E	 Internal memory	 Memory card

Notes

- You cannot select a different recording medium for movies and for photos.

Selecting a recording medium (HDR-CX210E)

Select **[MENU]** → **[Setup]** → **[Media Settings]** → **[Media Select]** → the desired medium.

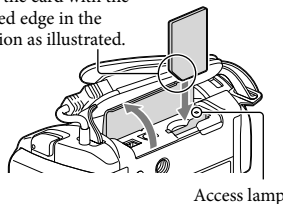


Inserting a memory card

Open the cover, and insert the memory card until it clicks.

- The [Preparing image database file. Please wait.] screen appears if you insert a new memory card. Wait until the screen disappears.

Insert the card with the notched edge in the direction as illustrated.



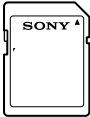
To eject the memory card

Open the cover and lightly push the memory card in once.

Notes

- To ensure stable operation of the memory card, it is recommended to format the memory card with your camcorder before the first use (p. 59). Formatting the memory card will erase all the data stored on it and the data will be irrecoverable. Save your important data on your PC, etc.
- If [Failed to create a new Image Database File. It may be possible that there is not enough free space.] is displayed, format the memory card (p. 59).
- Confirm the direction of the memory card. If you forcibly insert the memory card in the wrong direction, the memory card, memory card slot, or image data may be damaged.
- When inserting or ejecting the memory card, be careful so that the memory card does not pop out and drop.

Types of memory card you can use with your camcorder

		SD Speed Class	Capacity (operation verified)	Described in this manual
"Memory Stick PRO Duo" media (Mark2)		—	32 GB	"Memory Stick PRO Duo" media
"Memory Stick PRO-HG Duo" media				
SD memory card		Class 4 or faster	64 GB	SD card
SDHC memory card				
SDXC memory card				

- Operation with all memory cards is not assured.

Notes

- A MultiMediaCard cannot be used with this camcorder.
- Movies recorded on SDXC memory cards cannot be imported to or played back on computers or AV devices not supporting the exFAT* file system by connecting the camcorder to these devices with the USB cable. Confirm in advance that the connecting equipment is supporting the exFAT system. If you connect an equipment not supporting the exFAT system and the format screen appears, do not perform the format. All the data recorded will be lost.

* The exFAT is a file system that is used for SDXC memory cards.



- Recording/playback/editing media: Screen indicators during recording (74)
- Recording time of movies/number of recordable photos (64)

Recording

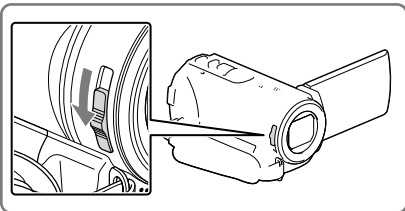
In the default setting, movies and photos are recorded on the following media. Movies are recorded with high definition image quality (HD).

HDR-CX190E/CX200E/PJ200E: Memory card

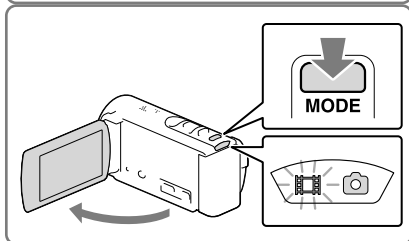
HDR-CX210E: Internal recording media

Recording movies

- 1 Open the lens cover.

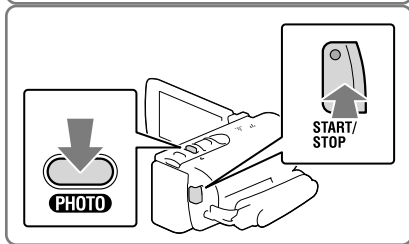


- 2 Open the LCD screen and press **MODE** to turn on the  (Movie) lamp.



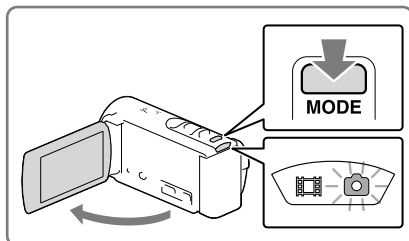
- 3 Press **START/STOP** to start recording.

- To stop recording, press **START/STOP** again.
- You can record photos during movie recording by pressing **PHOTO** (Dual Capture).



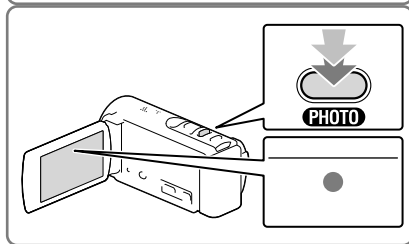
Shooting photos

- 1 Open the LCD screen and press **MODE** to turn on the  (Photo) lamp.



- 2 Press **PHOTO** lightly to adjust the focus, then press it fully.

- When the focus is adjusted properly, AE/AF lock indicator appears on the LCD screen.



To display items on the LCD screen

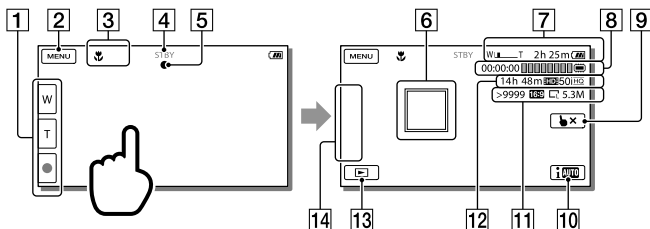
Items on the LCD screen disappear if you do not operate the camcorder for a few seconds after you turn the camcorder on or switch between the movie recording and photo shooting modes. To display the items again, do as follows.

HDR-CX190E: Move the multi-selector.

HDR-CX200E/CX210E/PJ200E: Touch anywhere except the buttons on the LCD screen.

Screen indicators during recording

Described here are icons for both movie recording and photo recording modes. Refer to the page in () for details.



- 1 Zoom button (W: Wide/T: Telephoto), START/STOP button (in movie recording mode), PHOTO button (in photo recording mode)*
- 2 MENU button (56)
- 3 Status detected by Intelligent Auto (33)
- 4 Recording status ([STBY]/[REC])
- 5 AE/AF (automatic exposure/automatic focus) lock (24)
- 6 Tracking focus* (32)
- 7 Zoom, Remaining battery
- 8 Counter (hour: minute: second), Capturing a photo, Recording/playback/editing media** (74)
- 9 Tracking focus cancel button* (32)
- 10 Intelligent Auto button (33)
- 11 Approximate number of recordable photos, Aspect ratio (16:9 or 4:3), Photo size (L/S)
- 12 Estimated recording remaining time, Recording image quality (HD/STD), and recording mode (FX/FH/HQ/LP) (34)
- 13 View Images button (28)
- 14 My Button (you can assign your favorite functions to icons displayed in this area) (58)

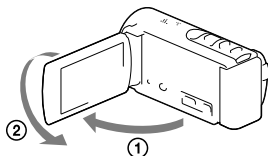
* HDR-CX200E/CX210E/PJ200E

** HDR-CX210E

To record in mirror mode

Open the LCD panel 90 degrees to the camcorder (①), then rotate it 180 degrees to the lens side (②).

A mirror-image of the subject appears on the LCD screen, but the image will be normal when recorded.



Notes

- If you close the LCD screen while recording movies, the camcorder stops recording.
- The maximum continuous recordable time of movies is about 13 hours.
- When a movie file exceeds 2 GB, the next movie file is created automatically.
- The following states will be indicated if data is still being written onto the recording media after recording has finished. During this time, do not apply shock or vibration to the camcorder, or remove the battery or AC Adaptor.
 - Access lamp (p. 21) is lit or flashing
 - The media icon in the upper right of the LCD screen is flashing
- The LCD screen of your camcorder can display recording images across the entire screen (full pixel display). However, this may cause slight trimming of the top, bottom, right, and left edges of images when played back on a TV which is not compatible with full pixel display. It is recommended you record images with [Guide Frame] set to [On] and using the outer frame of [Guide Frame] (p. 58) as a guide.



- Recording time, recordable number of photos (p. 64)
- [Media Select] (p. 21)
- To display items on the LCD screen all the time: [Display Setting] (p. 58)
- To change the image size: [Image Size] (p. 35)
- Recordable time, remaining capacity [Media Info] (p. 59)

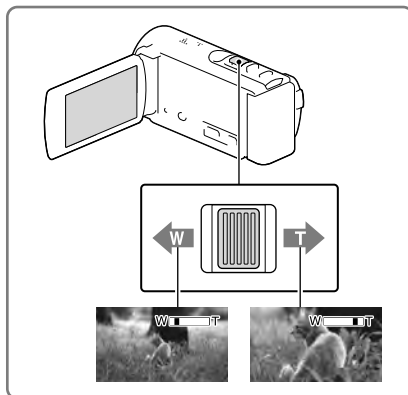
Zooming

Move the power zoom lever to magnify or reduce the size of the image.

W (Wide angle): Wider range of view

T (Telephoto): Close view

- You can magnify images using optical zooming up to 25 times the original size with the default setting.
- Move the power zoom lever slightly for a slower zoom. Move it further for a faster zoom.



To magnify images further (Extended Zoom)

Set [SteadyShot] to [Standard] or [Off] (p. 58).

- You can magnify images up to 30 times the original size by extending the wide angle.

Notes

- Be sure to keep your finger on the power zoom lever. If you move your finger off the power zoom lever, the operation sound of the power zoom lever may also be recorded.
- You cannot change the zoom speed with the button on the LCD screen (HDR-CX200E/CX210E/PJ200E).
- The minimum possible distance between camcorder and subject while maintaining sharp focus is about 1 cm (about 13/32 in.) for wide angle and about 80 cm (about 31 1/2 in.) for telephoto.



- Further zooming: [Digital Zoom] (p. 58)

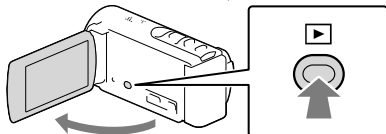
Playback

You can search for recorded images by date and time of recording (Event view).

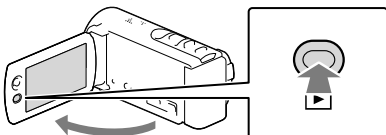
- 1 Open the LCD screen and press the  button on the camcorder to enter the playback mode.

- You can enter the playback mode by selecting  on the LCD screen (p. 25).

HDR-CX200E/CX210E/PJ200E

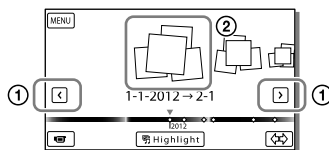


HDR-CX190E



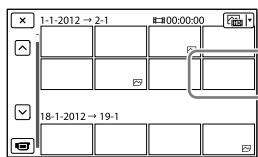
- 2 Select / to move the desired event to the center (①) and then select it (②).

- The camcorder displays recorded images as an event automatically, based on the date and time.

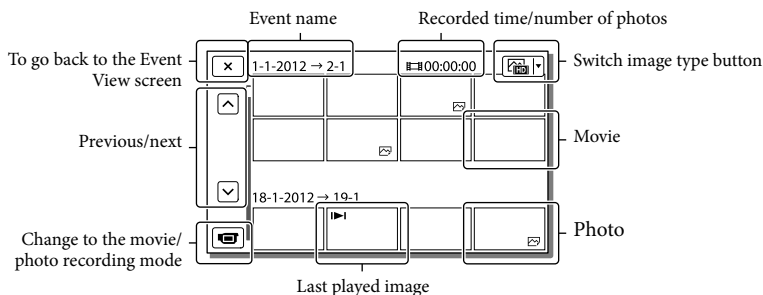
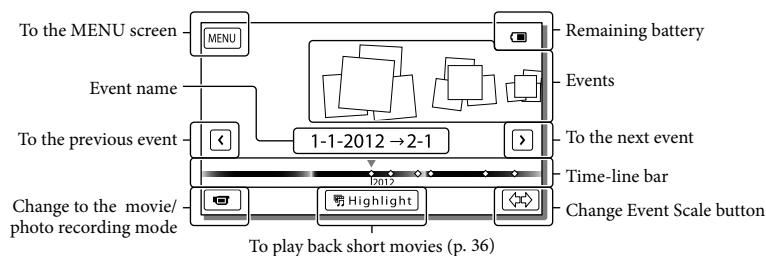


- 3 Select the image.

- The camcorder plays from the selected image to the last image in the event.



Screen display on the Event View screen



- Reduced-size images which enable you to view many images at the same time on an index screen are called “thumbnails.”

Notes

- To prevent your image data from being lost, save all your recorded images on external media periodically. (p. 49)
- In the default setting, a protected demonstration movie is pre-recorded (HDR-CX210E).

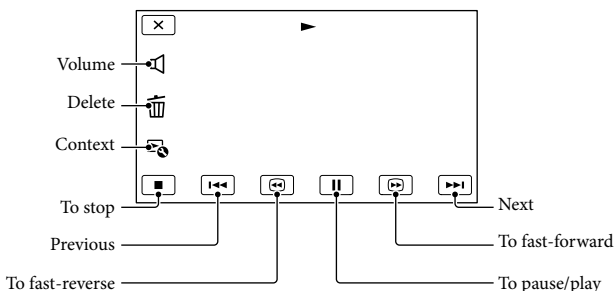
Operating buttons while playing

Items on the LCD screen disappear if you do not attempt to operate the camcorder for a few seconds. To display the items again, do as follows.

HDR-CX190E: Move the multi-selector.

HDR-CX200E/CX210E/PJ200E: Touch the LCD screen.

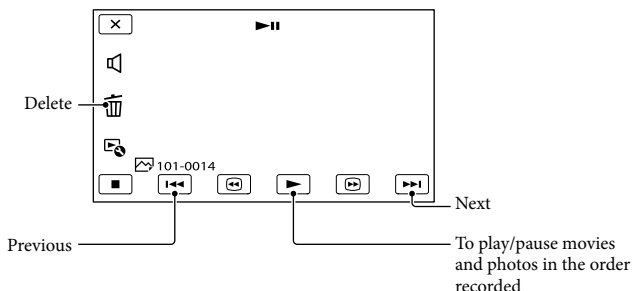
While playing a movie

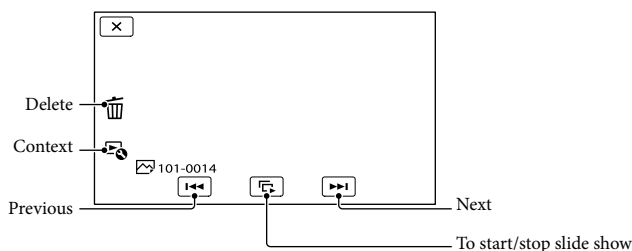
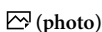


While viewing photos

Operating buttons while viewing photos will be changed depends on the setting of Switch Image Type button (p. 29).

(Movie/photo) (default setting)





- As you repeat selecting / during playback, movies are played as fast as about 5 times → about 10 times → about 30 times → about 60 times.
- Select / during pause to play movies slowly.
- To repeat Slideshow, select → [Slideshow Set].

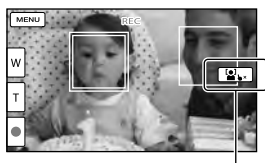
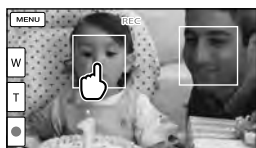
To play back images with other devices

- You may not be able to play back normally images recorded on your camcorder with other devices. Also, you may not be able to play back images recorded on other devices with your camcorder.
- Standard definition image quality (STD) movies recorded on SD memory cards cannot be played on AV equipment of other manufacturers.

Recording people clearly

Recording the selected subject clearly (Face Priority) (HDR-CX200E/CX210E/PJ200E)

Your camcorder can track a face you select and adjust the focus, exposure, and skin tone of the face automatically. Touch one of the faces targeted.



The double-lined frame is displayed. Release selection

Notes

- The subject you touched may not be detected, depending on the surrounding brightness or hairstyle of the subject.
- Make sure to set the [Face Detection] setting to other than [Off] ([Auto] is the default setting).

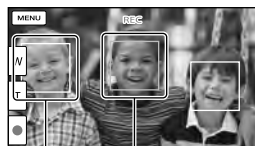
To record subjects other than people (Tracking focus)

Touch the subject you want to record. Your camcorder adjusts the focus automatically.



Capturing smiles automatically (Smile Shutter)

A photo is recorded automatically when the camcorder detects the smile of a person during movie recording (p. 58). ([Dual Capture] is the default setting.)



The camcorder is detecting a face.

The camcorder is detecting a smile (orange).

Recording movies in various situations

Notes

- When the [ REC Mode] is set to [Highest Quality **FX**], you cannot use the Smile Shutter function while recording movies.
- Smiles may not be detected depending on recording conditions, subject conditions, and the setting of your camcorder.



- [Smile Sensitivity] (p. 58)

Selecting the suitable setting automatically for the recording situation (Intelligent Auto)

Your camcorder records movies after selecting the most suitable setting for the subjects or the situation automatically. ([On] is the default setting.) When the camcorder detects a subject, the icons that correspond to the detected conditions are displayed.

Select  → [On] →  at the right bottom of the recording screen of movies or photos.



Face detection:

The camcorder detects faces, and adjusts the focus, color and exposure.

 (Portrait),  (Baby)

Scene detection:

The camcorder selects the most effective setting automatically, depending on the scene.

 (Backlight),  (Landscape),  (Night Scene),  (Spotlight),  (Low light),  (Macro)

Camera-shake detection:

The camcorder detects whether camera-shake occurs or not, and makes the optimum compensation.

 (Tripod)

- To cancel the Intelligent Auto function, select  → [Off].

To record images brighter than those recorded using the Intelligent Auto function

Select [MENU] → [Camera/Mic] → [Manual Settings] → [Low Lux].

Notes

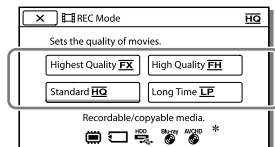
- The camcorder may not detect the expected scene or subject, depending on the recording conditions.

Recording images with the selected image quality

Selecting the image quality of movies (Recording mode)

You can switch the recording mode to select the movie quality when recording high definition image quality (HD) movies. The recording time (p. 64) or the type of media device to which the images can be copied may change, depending on the recording mode selected. ([Standard HQ] is the default setting.)

- 1 Select [MENU] → [Image Quality/Size] → [REC Mode].
- 2 Select the desired recording mode.



- A circle with a diagonal slash appears on a medium icon if a movie recorded with the selected recording mode cannot be copied on that medium.

Recording mode and the media devices to which the images can be copied

Types of media	Recording mode	
	FX	FH/HQ/LP
On this camcorder		
Internal recording media*	✓	✓
Memory card	✓	✓
On external devices		
External media (USB storage devices)	✓	✓
Blu-ray discs	✓	✓
AVCHD recording discs	—	✓

* HDR-CX210E

On image quality

The image quality and the bit-rate for each recording mode can be set as follows. (“M,” such as in “24M,” means “Mbps.”)
For the high definition image quality (HD) movies

- [Highest Quality **FX**]: 1920 × 1080/50i quality, AVC HD 24M (FX)
- [High Quality **FH**]: 1920 × 1080/50i quality, AVC HD 17M (FH)
- [Standard **HQ**]: 1440 × 1080/50i quality, AVC HD 9M (HQ)*¹
- [Long Time **LP**]: 1440 × 1080/50i quality, AVC HD 5M (LP)

For the standard definition image quality (STD) movies

- [Standard **HQ**]: Standard quality, STD 9M (HQ)*²

*¹ The default setting

*² Standard image quality (STD) is fixed to this value.

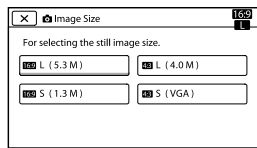


- Recording standard definition image quality (STD) movie: [**HQ**]/[**STD**] Setting] (p. 59)
- Guide for creating discs (p. 49)

Changing the image quality of photos

The number of photos you can shoot differs, depending on the image size selected.

- 1 Select **[MENU]** → [Image Quality/Size] → [Image Size].
- 2 Select the desired image size.



Notes

- The image size selected with this setting takes effect for photos taken by the Dual Capture function (p. 23).

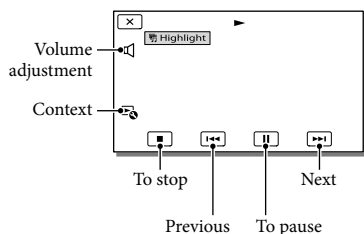
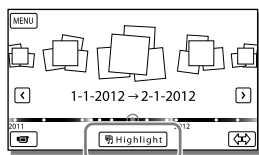


- Number of recordable photos (p. 65)

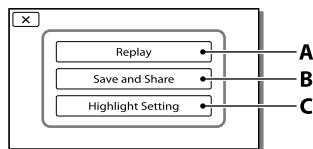
Enjoying a digest of your movies (Highlight Playback)

You can enjoy a digest of high definition image quality (HD) movies and photos, similar to a short movie.

- 1 Press  (View Images) (p. 28).
- 2 Display the desired event at the center of the Event View, and select [ Highlight].



- 3 Select the desired operation when the highlight playback finishes.



A: The camcorder plays the Highlight Playback scenes again.

B: You can save the Highlight Playback scenes in standard definition image quality (STD) and share it (upload it to the web, etc.).

C: You can change the settings for Highlight Playback.

To change the settings for Highlight Playback

You can change the Highlight Playback settings by selecting [Highlight Setting] on the screen after Highlight Playback has finished.

You can also change the setting by selecting  → [Highlight Setting] while the camcorder is playing highlight scenes.

- [Playback Range]
You can set the playback range (starting and ending date) of the Highlight Playback.
- [Theme]
You can select a theme for Highlight Playback.
- [Music]
You can select music.
- [Audio mix]
The original sound is played back with the music.
- [Length]
You can set the length of the Highlight Playback segment.
- [Highlight Point]
You can set the points in a movie or photo that will be used in a Highlight Playback. Play the desired movie, and select  → . Or play the desired photo and select  → .  appears on the movie or photo that is used in a Highlight Playback.
To erase the points, select  → [Clear All Points].

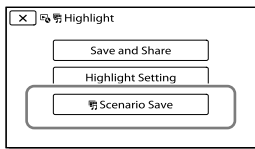
Notes

- Highlight Playback scenes will change each time you select a Highlight Playback.
- The [Playback Range] setting is cleared when the Highlight Playback stops.
- When you connect the camcorder to an external device, such as a TV, and watch Highlight Playback or Highlight Scenario, these images do not appear on the LCD screen of the camcorder.

Saving Highlight Playback in HD image quality (Scenario Save)

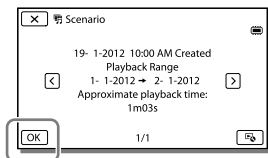
You can save your favorite Highlight Playback as a “Scenario” with high definition image quality (HD). Up to 8 scenarios can be saved and these scenarios can be played on the camcorder only.

- 1 Select [Replay] on the screen after a Highlight Playback has finished.
- 2 When the Highlight Playback starts again, select  → [Scenario Save].



To play back a saved scenario

Select [MENU] → [Playback Function] → [Scenario], select the desired scenario, and then select [OK].



- To erase a saved scenario, select  → [Erase]/[Erase All] while playing the scenario.

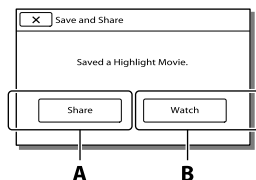
Converting the data format to STD image quality (Highlight Movie)

You can convert the data format of Highlight Playback or Highlight Scenarios to standard definition image quality (STD) and save them as a “Highlight Movie.” Highlight movies can be used to create DVDs or be uploaded to the Web.

- 1 Select [Save and Share] on the screen after a Highlight Playback or Highlight Scenario playback has finished.

Playing images on a TV

- 2 Select the desired operation when the item has been saved.



A: Selecting [Share] allows you to upload the Highlight movie to the Web using the built-in “PlayMemories Home” software (p. 48), or create DVDs using the “DVDirect Express” DVD writer (p. 51)

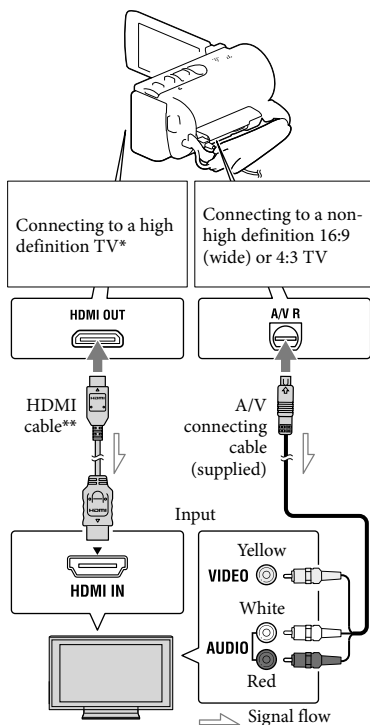
B: Your camcorder plays the Highlight Movie saved.

To play back a Highlight Movie

Select [MENU] → [Playback Function] → [Highlight Movie] and select the desired Highlight Movie.

- To erase a Highlight Movie, select  while the Highlight Movie is playing.

Connection methods and the image quality viewed on the TV screen differ depending on what type of TV is connected, and the connectors used.



* If the TV does not have the HDMI input jack, use the A/V connecting cable for connection.

** Supplied with HDR-CX200E/CX210E/PJ200E

- 1 Switch the input on the TV to the connected jack.
- 2 Connect the camcorder to a TV.
- 3 Play a movie or a photo on the camcorder (p. 28).

Notes

- Refer to the instruction manuals of the TV as well.
- Use the supplied AC Adaptor as the power source (p. 17).
- When movies are recorded with standard definition image quality (STD), they are played back in standard definition image quality (STD) even on a high definition TV.
- When you play back standard definition image quality (STD) movies on a 4:3 TV that is not compatible with the 16:9 signal, set [ Wide Mode] to [4:3] to record movies with 4:3 aspect ratio.
- If you connect your camcorder to the TV using more than one type of cable to output images, HDMI output takes priority.
- The camcorder does not support the S-Video output.

On an HDMI cable

- Use an HDMI cable with the HDMI logo.
- Use an HDMI mini connector on one end (for the camcorder), and a plug suitable for connecting your TV on the other end.
- Copyright-protected images are not output from the HDMI OUT jack of your camcorder.
- Some TVs may not function correctly (e.g., no sound or image) with this connection.
- Do not connect the camcorder HDMI OUT jack to an external device HDMI OUT jack, as malfunction may result.
- HDMI (High Definition Multimedia Interface) is an interface to send both video/audio signals. The HDMI OUT jack outputs high quality images and digital audio.

When your TV is monaural (When your TV has only one audio input jack)

Connect the yellow plug of the A/V connecting cable to the video input jack and connect the white (left channel) or red (right channel) plug to the audio input jack of your TV or VCR.

When connecting to your TV via a VCR

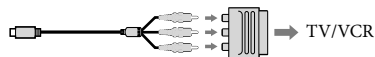
Connect your camcorder to the LINE IN input on the VCR using the A/V connecting cable. Set the input selector on the VCR to LINE (VIDEO 1, VIDEO 2, etc.).



- Setting the aspect ratio supported by the TV: [TV Type] (p. 60)

If your TV/VCR has a 21-pin adaptor (EUROCONNECTOR)

Use a 21-pin adaptor (sold separately) to view playback pictures.



Using "BRAVIA" Sync

You can operate your camcorder with the remote commander of your TV by connecting your camcorder to a "BRAVIA" Sync compatible TV launched in 2008 or later with the HDMI cable.

You can operate the menu of your camcorder by pressing the SYNC MENU button of the remote commander of your TV. You can display the camcorder screens such as Event View, play selected movies or display selected photos by pressing up/down/left/right/enter buttons of the remote commander of your TV.

- There may be some operations you cannot do with the remote commander.
- Set [CTRL FOR HDMI] to [On].
- Also set your TV accordingly. Refer to the instruction manual of the TV for details.
- The operation of "BRAVIA" Sync differs according to each model of BRAVIA. Refer to the instruction manual of your TV for details.
- If you turn off the TV, your camcorder is turned off simultaneously.

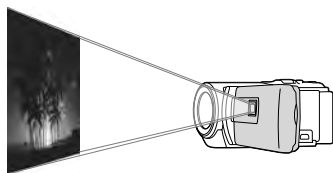
On "Photo TV HD"

This camcorder is compatible with the "Photo TV HD" standard. "Photo TV HD" allows for highly-detailed, photo-like depiction of subtle textures and colors. By connecting Sony's Photo TV HD-compatible devices using an HDMI cable*, a whole new world of photos can be enjoyed in breathtaking HD quality.

* The TV will automatically switch to the appropriate mode when displaying photos.

Using the built-in projector (HDR-PJ200E)

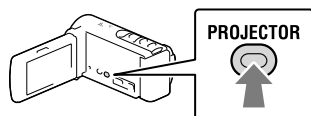
You can use a flat surface such as a wall as a screen to view recorded images using the built-in projector.



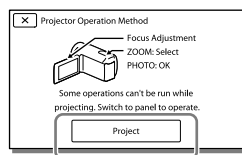
Notes

- The LCD screen turns off while an image is being projected. Use the power zoom lever/PHOTO button to operate the camcorder.

- 1 Face the projector lens towards a surface, such as a wall, and then press PROJECTOR.



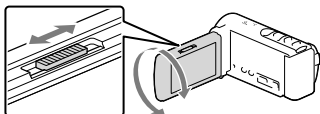
- 2 When the operating guide screen appears, select [Project].



- This screen appears the first time you use the built-in projector.

3 Adjust the focus of the projected image using the PROJECTOR FOCUS lever.

PROJECTOR FOCUS lever



- The projected image is larger when the distance between your camcorder and the reflecting surface increase.
- It is recommended that you place the camcorder about 0.5 m (1.6 feet) or further away from the surface that the images are to be projected onto.

4 Move the power zoom lever to select the image you want to play, then press PHOTO to begin playback.

Power zoom lever

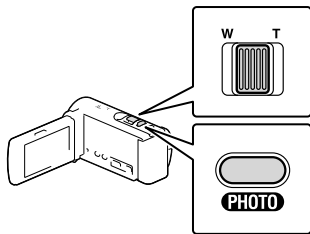


PHOTO button

- Use the power zoom lever to move the selection frame that appears on the LCD screen and press the PHOTO button to start playing the framed item.
- For details on playback, see page 28.
- To turn off the projector, press PROJECTOR.

Notes

- Be careful of the following operations or situations while using the projector.
 - Make sure not to project images towards the eyes.
 - Make sure not to touch the projector lens.
 - The LCD screen and the projector lens become hot while in use.
 - Using the projector shortens battery life.
- The following operations are unavailable while you are using the projector.
 - Output of Highlight Playback to a device such as a TV
 - Operation of the camcorder with the LCD screen closed
 - Several other functions

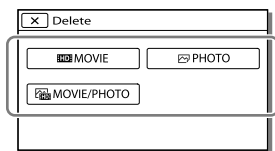
Editing on your camcorder

Notes

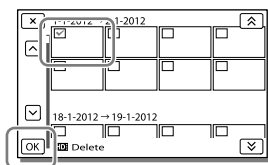
- Some basic editing operations can be done on the camcorder. If you want to perform advanced editing operations, install the “Expanded Feature” for the built-in “PlayMemories Home” software.
- You cannot restore images once they are deleted. Save important movies and photos in advance.
- Do not remove the battery pack or the AC Adaptor from your camcorder while deleting or dividing the images. It may damage the recording media.
- Do not eject the memory card while deleting or dividing images from the memory card.
- If you delete or divide movies/photos that are included in saved scenarios (p. 37), the scenarios will also be deleted.

Deleting movies and photos

- 1 Select **[MENU]** → **[Edit/Copy]** → **[Delete]**.
- 2 Select **[Multiple Images]**, and then select the type of image you want to delete.

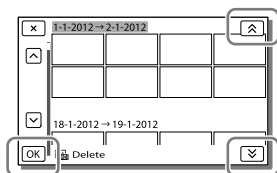


- 3 Add check marks ✓ to the movies or photos to be deleted and select **[OK]**.



To delete all movies/photos in the selected date at one time

- 1 In step 3, select **[All In Event]**.
- 2 Select the date you want to delete using **[↑]/[↓]**, and then select **[OK]**.



To delete a part of a movie

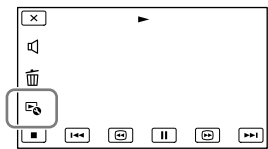
You can divide a movie and delete it.



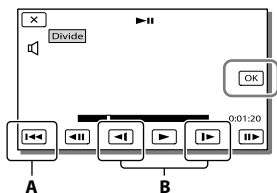
- Release protection: **[Protect]** (p. 59)
- **[Format]** (p. 59)

Dividing a movie

- 1 Select **[Divide]** → **[Divide]** on the movie playback screen.



- 2 Select the point where you want to divide the movie into scenes using  , and then select .



- A:** Returns to the beginning of the selected movie
B: Adjusts the dividing point with more precision

Notes

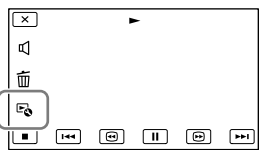
- A slight difference may occur from the point where you select and the actual dividing point, as your camcorder selects the dividing point based on about half-second increments.
- Some basic editing operations can be done on the camcorder. If you want to do advanced editing operations, use the built-in "PlayMemories Home" software.

Capturing a photo from a movie

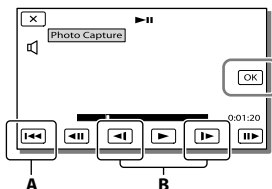
(HDR-CX210E)

You can capture images from movies recorded in the internal recording medium.

- 1 Select  → [Photo Capture] that appears on the playback screen of a movie.



- 2 Select the point where you want to capture a photo using  , and then select .



- A:** Returns to the beginning of the selected movie
B: Adjusts the capturing point with more precision

If the movie was recorded with one of the following image quality levels, the image size will be set as shown below.

- High definition image quality (HD): 2.1 M (16:9)
- Wide aspect ratio (16:9) with standard definition image quality (STD): 0.2 M (16:9)
- 4:3 aspect ratio with standard definition image quality (STD): 0.3 M (4:3)

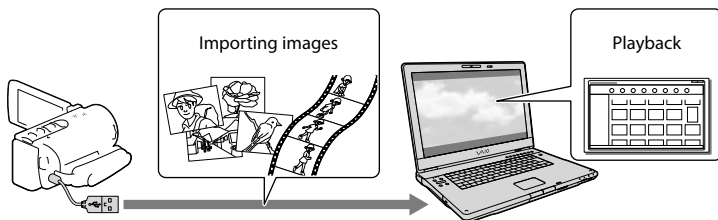
On recording date and time of captured photos

- The recording date and time of captured photos are the same as the recording date and time of the movies.
- If the movie you are capturing from has no data code, the recording date and time of the photo will be the date and time you captured from the movie.

Useful functions available when connecting the camcorder to your computer

For Windows

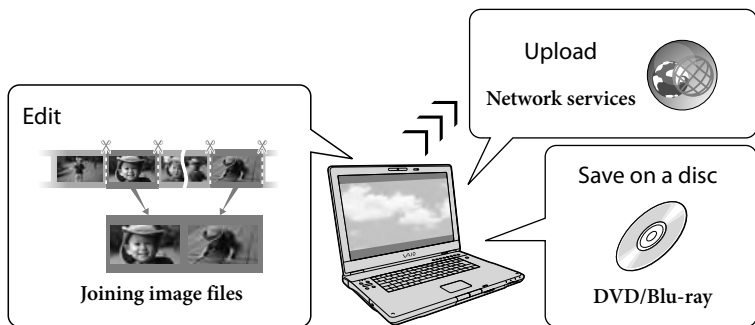
The built-in “PlayMemories Home” (Lite Version) software allows you to import images in the camcorder to your computer and play them on the computer easily.



- Use the USB connection support cable when the Built-in USB Cable of the camcorder is too short for connection with your computer.

To use the “Expanded Feature” upgrade for the “PlayMemories Home” software

On the computer that is connected to the Internet, you can download the “Expanded Feature” upgrade which allows you to use various expanded functions.



For Mac

The built-in “PlayMemories Home” software is not supported with Mac computers. To import images from the camcorder to your Mac and play them, use the appropriate software on your Mac. For details, visit the following URL.

<http://www.sony.co.jp/imsoft/Mac/>

Preparing a computer (Windows)

Step 1 Checking the computer system

OS* ¹
Microsoft Windows XP SP3* ² /Windows Vista SP2* ³ /Windows 7 SP1
CPU* ⁴
Intel Core Duo 1.66 GHz or faster, or Intel Core 2 Duo 1.66 GHz or faster (Intel Core 2 Duo 2.26 GHz or faster is required when processing FX or FH movies.) However, Intel Pentium III 1 GHz or faster is sufficient for the following operations: – Importing the movies and photos to the computer – Creating a Blu-ray disc/AVCHD recording disc/DVD-video (Intel Core Duo 1.66 GHz or faster is required when creating a DVD video by converting high definition image quality (HD) to standard definition image quality (STD).) – Processing only the movies with standard definition image quality (STD)
Memory
Windows XP: 512 MB or more (1 GB or more is recommended) Windows Vista/ Windows 7: 1 GB or more
Hard disk
Disk volume required for installation: Approximately 500 MB (10 GB or more may be necessary when creating AVCHD recording discs. 50 GB maximum may be necessary when creating Blu-ray discs.)
Display
Minimum 1,024 × 768 dots
Others
USB port (this must be provided as standard, Hi-Speed USB (USB 2.0 compatible)), Blu-ray disc/DVD burner Either NTFS or exFAT file system is recommended as the hard disk file system.

*¹ Standard installation is required. Operation is not assured if the OS has been upgraded or in a multi-boot environment.

*² 64-bit editions and Starter (Edition) are not supported. Windows Image Mastering API (IMAPI) Ver.2.0 or newer is required to use disc creation function, etc.

*³ Starter (Edition) is not supported.

*⁴ Faster processor is recommended.

Notes

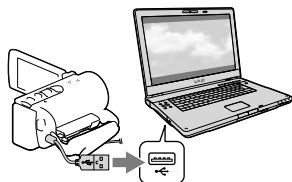
- Operation with all computer environments is not assured.

Step 2 Installing the built-in “PlayMemories Home” software

1 Turn on the computer.

- Log on as an Administrator for installation.
- Close all applications running on the computer before installing the software.

2 Connect the camcorder to the computer using the Built-in USB Cable, then select [USB Connect] on the LCD screen of the camcorder.



- When using Windows 7: The Device Stage window opens.
- When using Windows XP/Windows Vista: The AutoPlay wizard is displayed.

3 On Windows 7, select [PlayMemories Home] on the Device Stage window.
On Windows XP/Windows Vista, select [Computer] (on Windows XP, [My Computer]) → [PMHOME] → [PMHOME.EXE].

4 Follow the instructions that appear on the computer screen to continue the installation.

When the installation completes, “PlayMemories Home” starts up.

- If the “PlayMemories Home” software is already installed on your computer, register your camcorder with the “PlayMemories Home” software. Functions that can be used with this camcorder will then be available.
- The “PMB (Picture Motion Browser)” software is installed on your computer, it will be overwritten by the “PlayMemories Home” software. In this case, you cannot use some functions that were available with “PMB” with this “PlayMemories Home” software.
- Instructions for installing the “Expanded Feature” upgrade appear on the computer display. Follow the instructions and install the expansion files.
- The computer has to be connected to the Internet to install the “Expanded Feature” upgrade. If you did not install the file the first time you started the “PlayMemories Home” software, the instructions appear again when you select a function of the software that can be used only when the “Expanded Feature” upgrade has been installed.
- For details on “PlayMemories Home,” select  (“PlayMemories Home” Help Guide) on the software or visit the PlayMemories Home support page (<http://www.sony.co.jp/pmh-se/>).

Notes

- Make sure to set [USB LUN Setting] to [Multi] when you install the “PlayMemories Home” software.
- If the “Device Stage” does not start up when you are using Windows 7, click [Start], then double click the camera icon for this camcorder → the medium icon on which the desired images are stored → [PMHOME.EXE].
- Operation is not guaranteed if you read or write video data from or to the camcorder using software other than the built-in “PlayMemories Home” software. For the information on the compatibility of the software you are using, consult the manufacturer of the software.

To disconnect your camcorder from the computer

- 1 Click the  icon at the bottom right of the desktop of the computer → [Safely remove USB Mass Storage Device].



- 2 Select  → [Yes] on the camcorder screen.
 - 3 Disconnect the USB cable.
- If you are using Windows 7, the  icon may not appear on the desktop of the computer. In this case, you can disconnect the camcorder from your computer without following the procedures described above.

Notes

- Do not format the internal recording media of the camcorder using a computer. If you do this, the camcorder will not operate correctly.
- Do not insert AVCHD recording discs that have been created using the built-in “PlayMemories Home” software to DVD players or recorders, as these devices do not support the AVCHD standard. If you do, you may not be able to remove the disc from these devices.
- This camcorder captures high definition footage in the AVCHD format. Using the enclosed PC software, high definition footage can be copied onto DVD media. However, DVD media containing AVCHD footage should not be used with DVD based players or recorders, as the DVD player/recorder may fail to eject the media and may erase its contents without warning.
- When you access the camcorder from the computer, use the built-in “PlayMemories Home” software. Do not modify the files or folders on the camcorder from the computer. The image files may be damaged or may not be played back.
- Operation is not guaranteed, if you operate the data on the camcorder from the computer.
- The camcorder automatically divides an image file that exceeds 2 GB and saves the parts as separate files. All image files may be shown as separate files on a computer, however, the files will be handled properly by the import function and the playback function of the camcorder or the “PlayMemories Home” software.
- Use the built-in “PlayMemories Home” software when you import long movies or edited images from the camcorder to a computer. If you use other software, the images may not be imported correctly.
- When you delete image files, follow the steps on page 42.

To create a Blu-ray disc

You can create a Blu-ray disc with a high definition image quality (HD) movie previously imported to a computer. To create a Blu-ray disc, the “BD Add-on Software” must be installed.

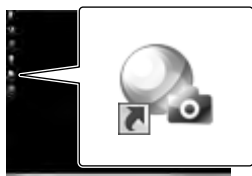
Visit the following URL to install the software.

<http://support.d-imaging.sony.co.jp/BDUW/>

- Your computer must support the creation of Blu-ray discs.
- BD-R (unrewritable) and BD-RE (rewritable) media are available for creating Blu-ray discs. You cannot add contents to either type of disc after creating the disc.

Starting the “PlayMemories Home” software

- 1 Double-click the “PlayMemories Home” icon on the computer screen.



The “PlayMemories Home” software starts up.

- 2 Double-click the “PlayMemories Home” Help Guide” short-cut icon on the computer screen to see how to use “PlayMemories Home.”



- If the icon is not displayed on the computer screen, click [Start] → [All Programs] → [PlayMemories Home] → the desired item.

Downloading the dedicated software for the camcorder

Installing software for Mac

For details on the software for Mac computers, refer to the following URL.
<http://www.sony.co.jp/imsoft/Mac/>

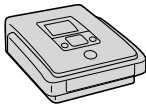
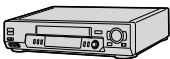
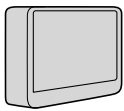
- You can access the URL noted above by clicking [FOR_MAC.URL] in [PMHOME] while your camcorder is connected to the computer. When you connect the camcorder to the computer, set [USB LUN Setting] to [Multi].

Notes

- The software that can be used with your camcorder will differ, depending on the countries/regions.

Disc creation guide

You can save high definition image quality (HD) movies using an external device. Select the method to be used according to the device.

External devices		Connecting cable	Page
	DVDirect Express DVD writer Saving images on a DVD disc with high definition image quality (HD).	Built-in USB cable of the DVDirect Express	51
	DVD writer other than DVDirect Express Saving images on a DVD disc with high definition image quality (HD) or with standard definition image quality (STD).	Built-in USB Cable	52
	Hard disk recorder, etc. Saving images on a DVD disc with standard definition image quality (STD).	A/V connecting cable (supplied)	52
	External media device Saving images on an external media device with high definition image quality (HD).	USB Adapter Cable VMC-UAM1 (sold separately)	54

Movies that are recorded with standard definition image quality (STD)

Use the A/V connecting cable to connect the camcorder to an external device in which images are saved.

Notes

- Delete the demonstration movie when copying or creating discs. If it is not deleted, the camcorder may not operate correctly. However, you cannot recover the demonstration movie once you delete it (HDR-CX210E).
- There may be some types of discs or media devices on which movies cannot be saved, depending on the [REC Mode] setting selected when you record the movie.



- Dubbing on a computer: the built-in “PlayMemories Home” software (p. 48)

The devices on which the created disc can be played back

DVD disc with high definition image quality (HD)

AVCHD format playback devices, such as a Sony Blu-ray disc player or a PlayStation®3

DVD disc with standard definition image quality (STD)

Ordinary DVD playback devices, such as a DVD player.

Notes

- The AVCHD recording disc can be played back only on AVCHD format compatible devices.
- Discs with high definition image quality (HD) images recorded should not be used in DVD players/recorders. Because DVD players/recorders are not compatible with the AVCHD format, DVD players/recorders may fail to eject the disc.
- Always maintain your PlayStation®3 to use the latest version of the PlayStation®3 system software. The PlayStation®3 may not be available in some countries/regions.

Creating a disc with the DVD writer or recorder

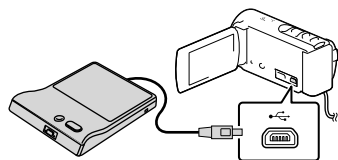
Notes

- Connect your camcorder to the wall outlet (wall socket) using the supplied AC Adaptor for this operation (p. 17)
- Refer to the instruction manual supplied with the device connected.
- Sony DVD writer may not be available in some countries/regions.

Creating a disc with DVDirect Express

Connect your camcorder and the “DVDirect Express” DVD writer (sold separately) using the USB cable supplied with the DVDirect Express.

- 1 Connect the DVDirect Express to the Ψ (USB) jack of your camcorder with the USB cable of the DVDirect Express.



- 2 Insert an unused disc into the DVDirect Express, and close the disc tray.
- 3 Press $\odot$ (DISC BURN) on the DVDirect Express.

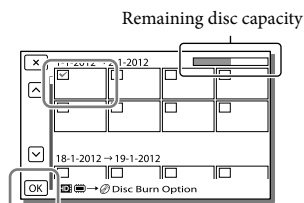
Movies that have not yet been saved on any disc can be saved on the disc at this time.

- After the operation is completed, select .

To perform [DISC BURN OPTION]

You can also create a standard definition image quality (STD) disc.

- 1 Select [DISC BURN OPTION] in step 3 above.
- 2 Select the recording medium containing the movie(s) you want to save (HDR-CX210E).
- 3 Select the image quality of the disc you will create.
- 4 Add check marks $\checkmark$ to the images you want to copy, and then select .



- After the operation is completed, select .

To play back a disc in the DVDirect Express

- 1 To play back movies from the disc in the DVDirect Express on the TV screen, connect the DVDirect Express to the Ψ (USB) jack of your camcorder, and connect your camcorder to the TV (p. 38).
- 2 Insert a created disc into the DVDirect Express.
- 3 Press the play button on the DVDirect Express.
 - After the operation is completed, select .

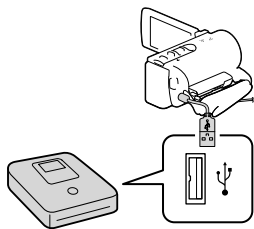
Notes

- High definition (HD) and standard definition (STD) image quality movies will be saved on individual discs.
- If the total memory size of movies to be burnt by the DISC BURN operation exceeds that of the disc, disc creation stops when the limit is reached. The last movie on the disc may be cut off.
- Do not do any of the following when creating a disc.
 - Turn off the camcorder
 - Disconnect the USB cable or the AC Adaptor
 - Subject the camcorder or the DVDDirect Express to mechanical shock or vibration
 - Eject the memory card from the camcorder
- Disc creation time to copy movies to the limit of the disc is about 20 to 60 minutes. It may take more time depending on the recording mode or the number of scenes.

Creating a high definition image quality (HD) disc with a DVD writer

Use the built-in USB cable to connect your camcorder to a Sony DVD writer other than DVDDirect Express (sold separately), etc., which is compatible with high definition image quality (HD) movies.

- 1 Connect a DVD writer to your camcorder with the Built-in USB Cable.



- 2 Select [USB Connect] on the camcorder screen.

- If the [USB Select] screen does not appear, select **[MENU]** → **[Setup]** → **[↔ Connection]** → **[USB Connect]**.

- 3 Record movies on the connected device.

- After the operation is completed, select **[X]**.

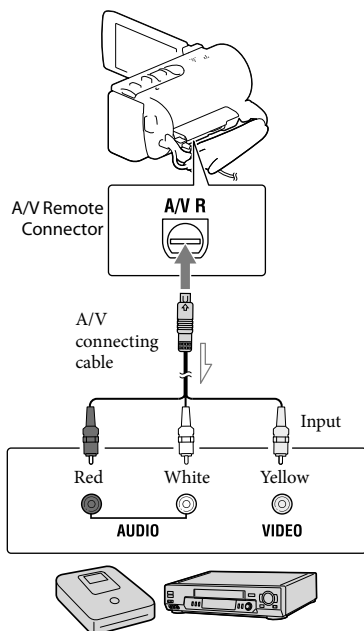
Creating a standard definition image quality (STD) disc with a recorder, etc.

Connect your camcorder to a disc recorder, a Sony DVD writer, etc., other than DVDDirect Express, with the A/V connecting cable. You can copy images played back on your camcorder on a disc or video cassette.

- 1 Insert the recording medium in the recording device (a disc recorder, etc.).

- If your recording device has an input selector, set it to the input mode.

- 2 Connect your camcorder to the recording device with the A/V connecting cable.



➞ Signal flow

- Connect your camcorder to the input jacks of the recording device.

- 3 Start playback on your camcorder, and record it on the recording device.
- 4 When dubbing is finished, stop the recording device, and then your camcorder.

Notes

- You cannot copy images to recorders connected with an HDMI cable.
- Since copying is performed via analog data transfer, the image quality may deteriorate.
- High definition image quality (HD) movies will be copied with standard definition image quality (STD).
- When you connect a monaural device, connect the yellow plug of the A/V connecting cable to the video input jack, and the white (left channel) or the red (right channel) plug to the audio input jack on the device.



- Copying date and time information: [Data Code] (p. 59)
- Using 4:3 screen size display device: [TV Type] (p. 60)

Saving images on an external media device

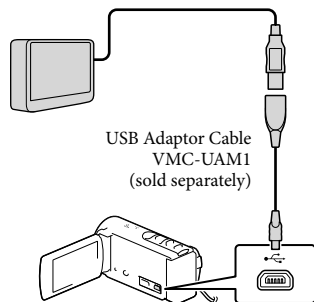
You can save movies and photos on an external media device (USB storage devices), such as an external hard disk drive. The following functions will be available after you have saved your images on an external media device.

- You can connect your camcorder and the external media device, and then play back images stored on the external media device (p. 54).
- You can connect your computer and the external media device and import images to your computer using the built-in "PlayMemories Home" software (p. 48).

Notes

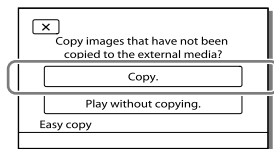
- For this operation, you need the USB Adaptor Cable VMC-UAM1 (sold separately).
- Connect the AC Adaptor and the power cord (mains lead) to the DC IN jack of your camcorder and the wall outlet (wall socket).
- Refer to the instruction manual supplied with the external media device.

- 1 Connect your camcorder and the external media device using the USB Adaptor Cable (sold separately).



- Make sure not to disconnect the USB cable while [Preparing image database file. Please wait.] is displayed on the LCD screen.
- If [Repair Img. DB F.] is displayed on the camcorder screen, select .

- 2 Select [Copy.] on the camcorder screen.



HDR-CX190E/CX200E/PJ200E

Movies and photos that are stored in the memory card (inserted in the camcorder), and that have not yet been saved on to external media device can be saved on the connected media device at this time.

HDR-CX210E

Movies and photos that are stored on one of the camcorder's recording media selected in [Media Select], and that have not yet been saved on external media device can be saved on the connected media device at this time.

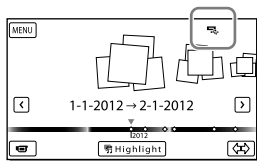
- This operation is available only when there are newly recorded images in your camcorder.
- To disconnect the external media device, select while the camcorder is in the playback standby mode (either Event View or Event Index is displayed).

To play back images in the external media device on the camcorder

Select [Play without copying.] in step 2 and select the image you want to view.

- You can also view images on a TV connected to your camcorder (p. 38).

- When an external media device is connected,  will appear on the Event View screen.



To delete images in the external media device

- Select [Play without copying.] in step 2.
- Select **[MENU]** → [Edit/Copy] → [Delete], and then follow the instructions that appear on the LCD screen to delete images.

To save the desired images in the camcorder to the external media device

- Select [Play without copying.] in step 2.
 - Select **[MENU]** → [Edit/Copy] → [Copy], and then follow the instructions that appear on the LCD screen to save images.
- If you want to copy images that have not yet been copied, select **[MENU]** → [Edit/Copy] → [Direct Copy] while your camcorder is connected to the external media device.

To play back high definition image quality (HD) movies on your computer

On the “PlayMemories Home” software (p. 48), select the drive that represents the external media device connected, and then play movies.

Notes

- You cannot use the following devices as an external media device.
 - media devices with a capacity exceeding 2 TB
 - ordinary disc drive such as CD or DVD drive
 - media devices connected via a USB hub
 - media devices with built-in USB hub
 - card reader
- You may not be able to use external media devices with a code function.
- The FAT file system is available for your camcorder. If the storage medium of the external device was formatted for the NTFS file system, etc., format the external media device using the camcorder before use. The format screen appears when an external media device is connected to your camcorder. Make sure that important data has not previously been saved on the external media device before you format it using the camcorder.
- Operation is not assured with every device satisfying requirements for operating.
- For details on available external media devices, go to the Sony support website in your country/region.
- The number of scenes you can save on the external media device are as follows. However, even if the external media device has free space, you cannot save scenes exceeding the following number.
 - High definition image quality (HD) movies: Max. 3,999
 - Standard definition image quality (STD) movies: Max. 9,999
 - Photos: Max. 40,000
- If your camcorder does not recognize the external media device, try the following operations.
 - Reconnect the USB Adaptor Cable to your camcorder.
 - If the external media device has the AC power cord (mains lead), connect it to the wall outlet (wall socket).
- The number of scenes may be smaller depending on the type of images recorded.
- You cannot copy images from an external media device to the internal recording medium on the camcorder.

Using menus

The camcorder has various menu items under each of 6 menu categories.

 **Shooting Mode** (Items for selecting a shooting mode) → p. 58

 **Camera/Mic** (Items for customized shooting) → p. 58

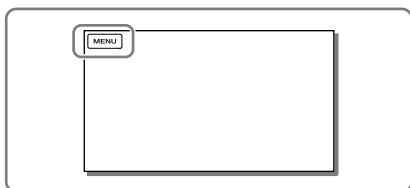
 **Image Quality/Size** (Items for setting up image quality or size) → p. 59

 **Playback Function** (Items for playback) → p. 59

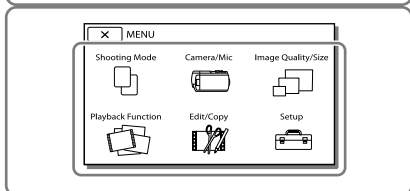
 **Edit/Copy** (Items for editing images such as copy or protect) → p. 59

 **Setup** (Other setup items) → p. 59

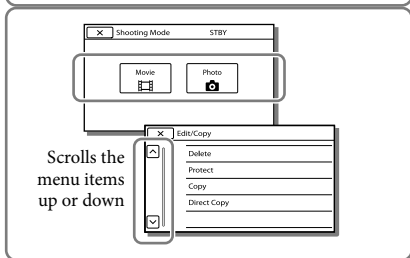
1 Select **MENU**.



2 Select a category.



3 Select your desired menu item.

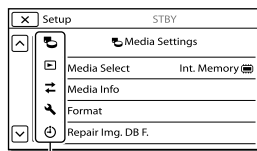


Notes

- Select **X** to finish setting the menu or to return to the previous menu screen.

To find a menu item quickly

The [Camera/Mic] and [Setup] menus have sub-categories. Select the sub-category icon so that the LCD screen displays the list of menus in the sub-category selected.

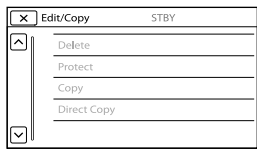


Sub-category icons

When you cannot select a menu item

Grayed out menu items or settings are not available.

When you select the grayed out menu item, your camcorder displays the reason why you cannot select the menu item or the instruction of under which condition you can set the menu item.



Menu lists

Shooting Mode

- Movie Records movies.
Photo..... Shoots photos.

Camera/Mic

Manual Settings

- White Balance..... Adjusts the color balance to the brightness of the recording environment.
Spot Meter/Fcs*1 Adjusts the brightness and focus for the selected subject simultaneously.
Spot Meter*1 Adjusts the brightness of images to a subject you touch on the screen.
Spot Focus*1 Adjusts the focus on a subject you touch on the screen.
Exposure..... Adjusts the brightness of movies and photos. If you select [Manual], adjust the brightness (exposure) using  / .
Focus..... Adjusts the focus manually. If you select [Manual], select  to adjust the focus for a nearby subject and  to adjust the focus for a distant subject.
Low Lux..... Records bright color images in the dim.

Camera Settings

- Scene Selection Selects an appropriate recording setting according to the type of scene, such as night view or beach.
 Fader Fades scenes in or out.
 Self-Timer Sets the self-timer when your camcorder is in photo recording mode.
Tele Macro..... Focuses on the subject with its background blurred.
 SteadyShot Sets the SteadyShot function when recording movies. If you change this setting, the setting for the Extended Zoom function will also change accordingly.
Digital Zoom Sets the maximum zoom level of the digital zoom.
Auto Back Light..... Adjusts the exposure for backlit subjects automatically.

Face

- Face Detection Automatically detects faces.
Smile Shutter Automatically takes a shot whenever a smile is detected.
Smile Sensitivity Sets the smile detection sensitivity for the Smile Shutter function.

Microphone

- Blt-in Zoom Mic..... Records movies with vivid sound appropriate to the zoom position.
Wind Noise Reduct. Reduces the wind noise recorded from the built-in microphone.
Micref Level..... Sets the microphone level for recording.

Shooting Assist

- My Button Assigns functions to My Buttons.
Guide Frame..... Displays frames as a guide to make sure the subject is horizontal or vertical.
Display Setting..... Sets the duration that icons or indicators are displayed on the LCD screen.

Image Quality/Size

-  REC Mode Sets the mode to record movies.
-  **HD** / **STD** Setting..... Sets the image quality for recording (high definition image quality (HD) or standard definition image quality (STD)).
-  Wide Mode Sets the horizontal to vertical ratio when recording movies with standard definition image quality (STD).
-  x.v.Color..... Records a wider range of colors. Set this item when you watch images with a TV which is compliant with x.v.Color.
-   Image Size..... Sets the photo size.

Playback Function

- Event View Starts playing images from the Event View display.
- Highlight Movie Starts playing Highlight Playback scenes or Highlight Scenarios saved with standard definition image quality (STD).
-  Scenario Starts playing the scenarios that were saved by Highlight Playback.

Edit/Copy

- Delete..... Deletes movies or photos.
- Protect..... Protects movies or photos to avoid deleting.
- Copy Copies images.
- Direct Copy Copies images stored in the camcorder to some type of external media device.

Setup

Media Settings

- Media Select*2 Selects the type of recording media (p. 21).
- Media Info..... Displays information on the recording media.
- Format..... Deletes and formats all data on the recording media.
- Repair Img. DB F..... Repairs the image database file on the recording media (p. 63).
- File Number..... Sets how to assign the file number to photos.

Playback Settings

- Data Code Displays information that was recorded automatically at the time of recording.
- Volume..... Adjusts the volume of playback sound (p. 30).

➡ Connection

- TV Type Converts the signal depending on the TV connected (p. 38).
- HDMI Resolution Selects the output image resolution when connecting your camcorder to a TV with an HDMI cable.
- CTRL FOR HDMI Sets whether or not the TV's Remote Commander is to be used when the camcorder is connected to a "BRAVIA" Sync compatible TV with the HDMI cable.
- USB Connect Select this item when no instructions appear on the LCD screen when you connect your camcorder to an external device via USB.
- USB Connect Setting ... Sets the connection mode when the camcorder is connected to a computer or a USB device.
- USB LUN Setting Sets the camcorder to improve the compatibility of a USB connection by restricting some USB functions.
- Disc Burn Saves images that have not yet been saved onto a disc.

🔧 General Settings

- Beep Sets whether the camcorder sounds operation beeps or not.
- LCD Brightness Adjusts the brightness of the LCD screen.
- Language Setting Sets the display language (p. 19).
- Calibration*¹ Calibrates the touch panel.
- Battery Info Displays the approximate remaining battery time.
- Eco Mode Sets the LCD screen and the power so that they turn off automatically.
- Demo Mode Sets playback of the demonstration movie about the functions of the camcorder.

🕒 Clock Settings

- Date & Time Setting Sets the date and time.
- Area Setting Adjusts for a time difference without stopping the clock (p. 19).

*¹ HDR-CX200E/CX210E/PJ200E

*² HDR-CX210E

Troubleshooting

If you run into any problems using your camcorder, follow the steps below.

- ① Check the list (p. 61 to 63), and inspect your camcorder.

- ② Disconnect the power source, attach the power source again after about 1 minute, and turn the camcorder on.

- ③ Press RESET (p. 12) using a pointed object, and turn the camcorder on. If you press RESET, all settings, including the clock setting, are reset.

- ④ Contact your Sony dealer or local authorized Sony service facility.

- Your camcorder may be required to initialize or change the internal memory (HDR-CX210E) of your camcorder, depending on the problem. In the event of this, the data stored on the internal memory will be deleted. Be sure to save the data on the internal memory on other media (backup) before sending your camcorder for repair. We will not compensate you for any loss of internal memory data.
- During repair, we may check a minimum amount of data stored on the internal memory in order to investigate the problem. However, your Sony dealer will neither copy nor retain your data.
- See the "Handycam" User Guide (p. 7) for details on the symptoms of your camcorder, and "PlayMemories Home" Help Guide (p. 48) on connecting your camcorder to a computer.

The power does not turn on.

- Attach a charged battery pack to the camcorder (p. 15).
- The plug of the AC Adaptor has been disconnected from the wall outlet (wall socket). Connect it to the wall outlet (wall socket) (p. 17).

The camcorder does not operate even when the power is set to on.

- It takes a few seconds for your camcorder to be ready to shoot after the power is turned on. This is not a malfunction.
- Disconnect the AC Adaptor from the wall outlet (wall socket) or remove the battery pack, then reconnect it after about 1 minute. If the functions still do not work, press RESET using a pointed object. (If you press RESET (p. 12), all settings, including the clock setting, are reset.)
- The temperature of your camcorder is extremely high. Turn off your camcorder and leave it for a while in a cool place.
- The temperature of your camcorder is extremely low. Leave your camcorder with the power of your camcorder on. Turn off your camcorder and take it to a warm place. Leave the camcorder there for a while, then turn on your camcorder.

Your camcorder gets warm.

- Your camcorder may become warm during operation. This is not a malfunction.

The power abruptly turns off.

- Use the AC Adaptor (p. 17).
- In the default setting, when about 2 minutes have elapsed while you do not operate your camcorder, the camcorder automatically turns off. Change the setting of [Eco Mode] (p. 60), or turn on the power again.
- Charge the battery pack (p. 15).

Pressing START/STOP or PHOTO does not record images.

- The playback screen is displayed. Press MODE to turn on the  (Movie) or  (Photo) lamp (p. 23).
- Your camcorder is recording the image you have just shot on the recording media. You cannot make new recording during this period.
- The recording media is full. Delete unnecessary images (p. 42).
- Total number of movie scenes or photos exceeds the recordable capacity of your camcorder (p. 64, 65). Delete unnecessary images (p. 42).

The camcorder stops operating.

- The temperature of your camcorder is extremely high. Turn off your camcorder and leave it for a while in a cool place.
- The temperature of your camcorder is extremely low. Turn off your camcorder and take it to a warm place. Leave the camcorder there for a while, then turn on the camcorder.

“PlayMemories Home” cannot be installed.

- Check the computer environment or installation procedure required to install “PlayMemories Home.”

“PlayMemories Home” does not work correctly.

- Quit “PlayMemories Home” and restart your computer.

The camcorder is not recognized by the computer.

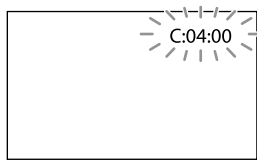
- Disconnect devices from the USB jack of the computer other than the keyboard, mouse, and your camcorder.

- Disconnect the Built-in USB Cable from the computer and your camcorder, and restart the computer, then connect the computer and your camcorder again in the correct order.
- When both the Built-in USB Cable and the USB jack of the camcorder are connected to the external devices at the same time, disconnect one that is not connected to a computer.

Self-diagnosis display/Warning indicators

If indicators appear on the LCD screen, check the following.

If the problem persists even after you have tried to fix a couple of times, contact your Sony dealer or local authorized Sony service facility. In this case, when you contact them, give them all the numbers of the error code beginning with C or E. You may hear a melody when some warning indicators appear on the screen.



C:04:□□

- The battery pack is not an “InfoLITHIUM” battery pack (V series). Use an “InfoLITHIUM” battery pack (V series) (p. 15).
- Connect the DC plug of the AC Adaptor to the DC IN jack of your camcorder securely (p. 15).

C:06:□□

- The battery pack temperature is high. Change the battery pack or place it in a cool place.

C:13:□□ / C:32:□□

- Remove the power source. Reconnect it and operate your camcorder again.

E:□□:□□

- Follow the steps from ② on page 61.



- The battery pack is nearly used up.



- The battery pack temperature is high. Change the battery pack or place it in a cool place.



- No memory card is inserted (p. 21).
- When the indicator flashes, there are not enough free spaces for recording images. Delete unnecessary images (p. 42), or format the memory card after storing the images on other media (p. 59).
- The image data base file may be damaged. Check the data base file by selecting [MENU] → [Setup] → [Media Settings] → [Repair Img. DB F.] → the recording medium (HDR-CX210E).



- The memory card is damaged.
- Format the memory card with your camcorder (p. 59).



- Incompatible memory card is inserted (p. 22).



- The memory card is write-protected.
- Access to the memory card was restricted on another device.



- The camcorder is unsteady, so camera-shake easily occurs. Hold the camcorder steady with both hands and record the image. However, note that the camera-shake warning indicator does not disappear.



- The recording medium is full.
- Photos cannot be recorded during processing. Wait for a while, then record.

Recording time of movies/number of recordable photos

“HD” stands for high definition image quality, and “STD” stands for standard definition image quality.

Expected time of recording and playback with each battery pack

Recording time

Approximate time available when you use a fully charged battery pack.

(unit: minute)

Battery pack	Continuous recording time		Typical recording time	
	HD	STD	HD	STD
NP-FV30 (supplied)	95	105	45	50
NP-FV50	180	200	90	100
NP-FV70	375	415	185	205
NP-FV100	745	830	370	415

- Each recording time is measured when the camcorder is recording high definition image quality (HD) movies with [ REC Mode] set to [Standard HQ].
- Typical recording time shows the time when you repeat recording start/stop, switching the MODE lamp, and zooming.
- Times measured when using the camcorder at 25 °C (77 °F). 10 °C to 30 °C (50 °F to 86 °F) is recommended.
- The recording and playback time will be shorter when you use your camcorder in low temperatures.
- The recording and playback time will be shorter depending on the conditions under which you use your camcorder.

Playing time

Approximate time available when you use a fully charged battery pack.

(unit: minute)

Battery pack		
Image quality	HD	STD
NP-FV30 (supplied)	135	145
NP-FV50	255	280
NP-FV70	525	565
NP-FV100	1045	1120

Expected recording time of movies

Internal recording media (HDR-CX210E)

High definition image quality (HD) in h (hour) and min (minute)

Recording mode	Recording time
[Highest Quality <u>FX</u>]	45 min (45 min)
[High Quality <u>FH</u>]	1 h (1 h)
[Standard <u>HQ</u>]	1 h 50 min (1 h 20 min)
[Long Time <u>LP</u>]	3 h 15 min (2 h 35 min)

Standard definition image quality (STD) in h (hour) and min (minute)

Recording mode	Recording time
[Standard <u>HQ</u>]	1 h 55 min (1 h 45 min)

- You can record movies of a maximum of 3,999 scenes with high definition image quality (HD), and 9,999 scenes with standard definition image quality (STD).
- The maximum continuous recording time of movies is approximately 13 hours.

- If you want to record up to the maximum recording time indicated in the table, you need to delete the demonstration movie on your camcorder. (HDR-CX210E)
- Your camcorder uses the VBR (Variable Bit Rate) format to automatically adjust image quality to suit the recording scene. This technology causes fluctuations in the recording time of the media. Movies containing quickly moving and complex images are recorded at a higher bit-rate, and this reduces the overall recording time.

Notes

- The number in () is the minimum recordable time.

Memory card

High definition image quality (HD)

	(unit: minute)				
	2 GB	4 GB	8 GB	16 GB	32 GB
FX	10 (10)	20 (20)	40 (40)	90 (90)	180 (180)
FH	10 (10)	25 (25)	60 (60)	120 (120)	245 (245)
HQ	25 (15)	50 (40)	105 (80)	215 (165)	440 (330)
LP	45 (35)	90 (75)	185 (155)	380 (310)	770 (630)

Standard definition image quality (STD)

	(unit: minute)				
	2 GB	4 GB	8 GB	16 GB	32 GB
HQ	25 (25)	55 (50)	110 (100)	225 (210)	460 (420)

- When using a Sony memory card.

Notes

- The number in () is the minimum recordable time.

Expected number of recordable photos

Internal recording media (HDR-CX210E)

You can record the maximum 34,000 photos.

Memory card

	16:9 5.3M
2 GB	690
4 GB	1350
8 GB	2800
16 GB	5600
32 GB	11000

- When using a Sony memory card.
- The number of recordable photos of memory card shown is for the maximum image size of your camcorder. The actual number of recordable photos is displayed on the LCD screen during recording (p. 74).
- The number of recordable photos of memory card may vary depending on the recording conditions.

Notes

- The unique image processing system of Sony's BIONZ allows still image resolution equivalent to the sizes described.

About handling of your camcorder

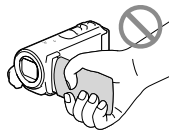
On bit-rate and recording pixels

- The bit-rate, pixels and aspect ratio of each recording mode for movies (movie + audio, etc.)
 - High definition image quality (HD):
 - FX: Max. 24 Mbps $1,920 \times 1,080$ pixels/16:9
 - FH: Approx. 17 Mbps (average) $1,920 \times 1,080$ pixels/16:9
 - HQ: Approx. 9 Mbps (average) $1,440 \times 1,080$ pixels/16:9
 - LP: Approx. 5 Mbps (average) $1,440 \times 1,080$ pixels/16:9
 - Standard definition image quality (STD):
 - HQ: Approx. 9 Mbps (average) 720×576 pixels/16:9, 4:3
- The photo recording pixels and the aspect ratio.
 - Photo recording mode, Dual capture:
 - $3,072 \times 1,728$ dots/16:9
 - $2,304 \times 1,728$ dots/4:3
 - $1,536 \times 864$ dots/16:9
 - 640×480 dots/4:3
 - Capturing a photo from a movie:
 - $1,920 \times 1,080$ dots/16:9
 - 640×360 dots/16:9
 - 640×480 dots/4:3

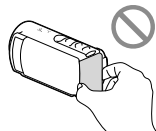
On use and care

- The camcorder is not dustproofed, dripproofed or waterproofed.
- Do not hold the camcorder by the following parts, and also do not hold the camcorder by the jack covers.

LCD Screen



Battery pack



Built-in USB Cable



- Do not aim at the sun. Doing so might cause your camcorder to malfunction. Take images of the sun only in low light conditions, such as at dusk.
- Use the camcorder in accordance with local regulations.
- Do not use or store the camcorder and accessories in the following locations:
 - Anywhere extremely hot, cold or humid. 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 tuner devices such as TVs or radio. 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, or the lens may be exposed to direct sunlight. This damages the LCD screen.
- Operate your camcorder on DC 6.8 V/7.2 V (battery pack) or DC 8.4 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.
- Keep the LCD screen closed 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 cord.
- Do not damage the power cord (mains lead) such as by placing anything heavy on it.
- Do not use a deformed or damaged battery pack.
- Keep metal contacts clean.
- 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

- To keep your camcorder in optimum state for a long time, turn it on and let it run by recording and playing back images about once a month.
- Use up the battery pack completely before storing it.

Note on the camcorder/battery pack temperature

- When the temperature of the camcorder or battery pack becomes extremely high or extremely low, you may not be able to record or play back on the camcorder, due to the protection features of the camcorder being activated in such situations. In this case, an indicator appears on the LCD screen.

Notes on charging through the USB cable

- Operation with all computers is not assured.
- If you connect the camcorder to a laptop computer that is not connected to a power source, the battery of the laptop computer will continue to use up its charge. Do not leave the camcorder connected to a computer in this manner.
- Charging with a personally assembled computer, with a converted computer, or through a USB hub are not guaranteed. The camcorder may not function correctly depending on the USB device which is used with the computer.

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder. This may cause a malfunction to 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 follows:
 - You bring your camcorder from a ski slope into a place warmed up by a heating device.
 - You bring your camcorder from an air conditioned car or room into a hot place outside.
 - You use your camcorder after a squall or a rain.
 - You use your camcorder in a hot and humid place.
- How to prevent 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 surrounding temperature (after about 1 hour).

When the camcorder is connected to a computer or accessories

- Do not try to format the recording media of the camcorder using a computer. If you do so, your camcorder may not operate correctly.
- When connecting the camcorder to another device with communication cables, be sure to insert the connector plug in the correct way. Pushing the plug forcibly into the terminal will damage the terminal and may result in a malfunction of the camcorder

- When the camcorder is connected to other devices through a USB connection and the power of the camcorder is turned on, do not close the LCD panel. The image data that has been recorded may be lost.

Notes on optional accessories

- We recommend using genuine Sony accessories.
- Genuine Sony accessories may not be available in some countries/regions.

LCD screen

- Do not apply excessive pressure on the LCD screen, as it may cause uneven color and other 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

- If fingerprints or dust make the LCD screen dirty, it is recommended that you use a soft cloth to clean it.

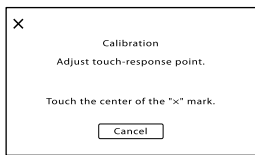
To clean the projector lens (HDR-PJ200E)

- Wipe the lens gently with a soft cloth such as a cleaning cloth or glass cleaning cloth.
- Stubborn stains may be removed with a soft cloth such as a cleaning cloth or glass cleaning cloth lightly dampened with water.
- Never use a solvent such as alcohol, benzene or thinner; acid, alkaline or abrasive detergent; or a chemical cleaning cloth, as they will damage the lens surface.

On adjustment of the touch panel ([Calibration]) (HDR-CX200E/CX210E/PJ200E)

The buttons on the touch panel may not work correctly. If this happens, follow the procedure below. It is recommended that you connect your camcorder to the wall outlet (wall socket) using the supplied AC Adaptor during the operation.

- ① [MENU] → [Setup] → [General Settings] → [Calibration].



- ② Touch "X" displayed on the screen with the corner of memory card or the like 3 times. Touch [Cancel] to cancel calibration.

Notes

- If you did not press the right spot, try the calibration again.
- Do not use a sharp-pointed object for calibration. Doing so may damage the LCD screen.
- You cannot calibrate the LCD screen if it is rotated, or closed with the screen facing out.

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 the camcorder 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 LCD screen is closed. 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. 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.

Specifications

How to charge the pre-installed rechargeable battery

Connect your camcorder to a wall outlet (wall socket) using the supplied AC Adaptor, and leave it with the LCD screen closed for more than 24 hours.

Note on disposal/transfer of the camcorder (HDR-CX210E)

Even if you delete all movies and still images, or perform [Format] (p. 59), data on the internal recording media may not be completely erased. When you transfer the camcorder, it is recommended that you select **[MENU]** → [Setup] → [Media Settings] → [Format] → [Empty] to prevent the recovery of your data. Also, when you dispose of the camcorder, it is recommended that you destroy the actual body of the camcorder.

Note on disposal/transfer of the memory card

Even if you delete data in the memory card or format the memory card on your camcorder or a computer, you may not delete data from the memory card completely. When you give the memory card to somebody, it is recommended that you delete data completely using data deletion software on a computer. Also, when you dispose of the memory card, it is recommended that you destroy the actual body of the memory card.

System

Signal format: PAL color, CCIR standards
HDTV 1080/50i specification

Movie recording format:

HD: MPEG-4 AVC/H.264 AVCHD format
Ver.2.0 compatible
STD: MPEG2-PS

Audio recording system:

Dolby Digital 2ch
Dolby Digital Stereo Creator

Photo file format:

DCF Ver.2.0 Compatible
Exif Ver.2.3 Compatible
MPF Baseline Compatible

Recording media (Movie/Photo):

Internal memory
HDR-CX210E: 8 GB
“Memory Stick PRO Duo” media
SD card (Class 4 or faster)
The capacity that a user can use: Approx.
7.88 GB (HDR-CX210E)
1 GB equals 1 billion bytes, a portion of which is used for system management and/or application files. Only pre-installed demonstration movie may be deleted.

Image device:

3.1 mm (1/5.8 type) CMOS sensor
Recording pixels (photo, 16:9):
Max. 5.3 mega (3 072 × 1 728) pixels*1
Gross: Approx. 1 500 000 pixels
Effective (movie, 16:9)*3:
Approx. 1 310 000 pixels
Effective (photo, 16:9):
Approx. 1 330 000 pixels
Effective (photo, 4:3):
Approx. 1 000 000 pixels

Lens: Carl Zeiss Vario-Tessar Lens

25 × (Optical)*2, 30 × (Extended)*3, 300 × (Digital)
F1.8 ~ 3.2
Focal length:
f=2.5 mm ~ 62.5 mm (1/8 in. ~ 2 1/2 in.)
When converted to a 35 mm still camera
For movies*3: 36 mm ~ 1 080 mm (1 7/16 in. ~ 42 5/8 in.) (16:9)
For photos: 36 mm ~ 900 mm (1 7/16 in. ~ 35 1/2 in.) (16:9)

Color temperature: [Auto], [One Push], [Indoor] (3 200 K), [Outdoor] (5 800 K)

Minimum illumination:

11 lx (lux) (in default setting, shutter speed 1/50 second)

3 lx (lux) ([Low Lux] is set to [On], shutter speed 1/25 second)

*1 The unique image processing system of Sony's BIONZ allows still image resolution equivalent to the sizes described.

*2 [SteadyShot] is set to [Active].

*3 [SteadyShot] is set to [Standard] or [Off].

Input/Output connectors

A/V Remote Connector: Video and audio output jack

HDMI OUT jack: HDMI mini connector

USB jack: mini-AB/Type A (Built-in USB) (output only)

LCD screen

Picture: 6.7 cm (2.7 type, aspect ratio 16:9)

Total number of pixels: 230 400 (960 × 240)

Projector (HDR-PJ200E)

Projection type: DLP

Light source: LED (R/G/B)

Focus: Manual

Throw Distance: 0.5 m (1.6 feet) or over

Contrast ratio: 1500:1

Resolution (output): nHD (640 × 360)

Continuous projection time (when using the supplied battery pack): Approx. 70 min

General

Power requirements: DC 6.8 V/7.2 V (battery pack) DC 8.4 V (AC Adaptor)

USB Charging: DC 5 V 500 mA/1.5 A

Average power consumption:

During camera recording using LCD screen at normal brightness:

HD: 2.1 W STD: 1.9 W

Operating temperature: 0 °C to 40 °C (32 °F to 104 °F)

Storage temperature: -20 °C to +60 °C (-4 °F to +140 °F)

Dimensions (approx.):

HDR-CX190E:

51 mm × 56 mm × 107.5 mm (2 1/8 in. × 2 1/4 in. × 4 1/4 in.) (w/h/d) including the projecting parts

51 mm × 56 mm × 114 mm (2 1/8 in. × 2 1/4 in. × 4 1/2 in.) (w/h/d) including the projecting parts, and the supplied rechargeable battery pack attached

HDR-CX200E/HDR-CX210E:

51 mm × 56 mm × 106.5 mm (2 1/8 in. × 2 1/4 in. × 4 1/4 in.) (w/h/d) including the projecting parts

51 mm × 56 mm × 114 mm (2 1/8 in. × 2 1/4 in. × 4 1/2 in.) (w/h/d) including the projecting parts, and the supplied rechargeable battery pack attached

HDR-PJ200E:

58 mm × 56 mm × 106.5 mm (2 3/8 in. × 2 1/4 in. × 4 1/4 in.) (w/h/d) including the projecting parts

58 mm × 56 mm × 114 mm (2 3/8 in. × 2 1/4 in. × 4 1/2 in.) (w/h/d) including the projecting parts, and the supplied rechargeable battery pack attached

Mass (approx.)

HDR-CX190E:

168 g (5.9 oz) main unit only

212 g (7.5 oz) including the supplied rechargeable battery pack

HDR-CX200E/HDR-CX210E:

175 g (6.2 oz) main unit only

217 g (7.7 oz) including the supplied rechargeable battery pack

HDR-PJ200E:

210 g (7.4 oz) main unit only

252 g (8.9 oz) including the supplied rechargeable battery pack

AC Adaptor AC-L200C/AC-L200D

Power requirements: AC 100 V - 240 V, 50 Hz/60 Hz

Current consumption: 0.35 A - 0.18 A

Power consumption: 18 W

Output voltage: DC 8.4 V*

Operating temperature: 0 °C to 40 °C (32 °F to 104 °F)

Storage temperature: -20 °C to +60 °C (-4 °F to +140 °F)

Dimensions (approx.): 48 mm × 29 mm × 81 mm (1 15/16 in. × 1 3/16 in. × 3 1/4 in.) (w/h/d) excluding the projecting parts

Mass (approx.): 170 g (6.0 oz) excluding the power cord (mains lead)

* See the label on the AC Adaptor for other specifications.

Rechargeable battery pack NP-FV30

Maximum output voltage: DC 8.4 V

Output voltage: DC 7.2 V

Maximum charge voltage: DC 8.4 V

Maximum charge current: 2.12 A

Capacity

Typical: 3.6 Wh (500 mAh)

Minimum: 3.6 Wh (500 mAh)

Type: Li-ion

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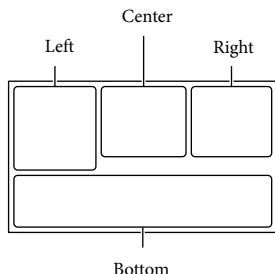
Add further enjoyment with your PlayStation 3 by downloading the application for PlayStation 3 from PlayStation Store (where available.)

The application for PlayStation 3 requires PlayStation Network account and application download.

Accessible in areas where the PlayStation Store is available.

Screen indicators

The following indicators appear when you change the settings. See page 25 and 30 also for the indicators that appear during recording or playing.



Left

Indicator	Meaning
	MENU button (56)
	Self-timer recording (58)
	Wide Mode (59)
	Fader (58)
	[Face Detection] set to [Off] (58)
	[Smile Shutter] set to [Off] (58)
	Manual focus (58)
	Scene Selection (58)
	White Balance (58)
	SteadyShot off (58)
	Tele Macro (58)
	x.v.Color (59)
	Destination (60)
	Intelligent Auto (face detection/scene detection/camera-shake detection) (33)

Center

Indicator	Meaning
	Slideshow Set
	Warning (63)
	Playback mode (30)

Right

Indicator	Meaning
	Recording image quality (HD/STD), frame rate (50i) and recording mode (FX/FH/HQ/LP) (34)
	Remaining battery
	Recording/playback/editing media (21)
	Counter (hour:minute:second)
	Estimated recording remaining time
	Photo size (35)
	Approximate number of recordable photos and photo size
	Playback folder
	Current playing movie or photo/Number of total recorded movies or photos
	Connection to the external media device (54)

Bottom

Indicator	Meaning
	Micref Level low (58)
	Wind Noise Reduct. (58)
	Blt-in Zoom Mic (58)
	Low Lux (58)
	Spot Meter/Fcs (58)/Spot Meter (58)/Exposure (58)
	Intelligent Auto (33)
	Data file name
	Protect (59)

- Indicators and their positions are approximate and may differ from what you actually see.
- Some indicators may not appear, depending on your camcorder model.

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Additional information on this product and answers to frequently asked questions can be found at our Customer Support Website.

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

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