

JVC



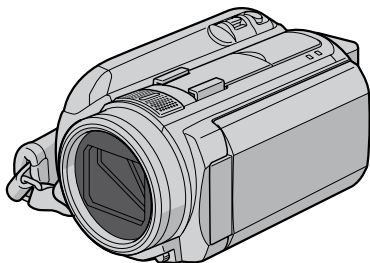
LYT1951-009A

GUIDEBOOK

EN

HD HARD DISK CAMCORDER

GZ-HD10 **E/EK**



Dear Customers

Thank you for purchasing this hard disk camera. Before use, please read the safety information and precautions contained on pages 6 and 7 to ensure safe use of this product.

HDD

**micro
S2
HD**

DOLBY
DIGITAL
STEREO
CREATOR

HDMI
HIGH-DEFINITION MULTIMEDIA INTERFACE

AVCHD

ENGLISH

Easy Start Guide

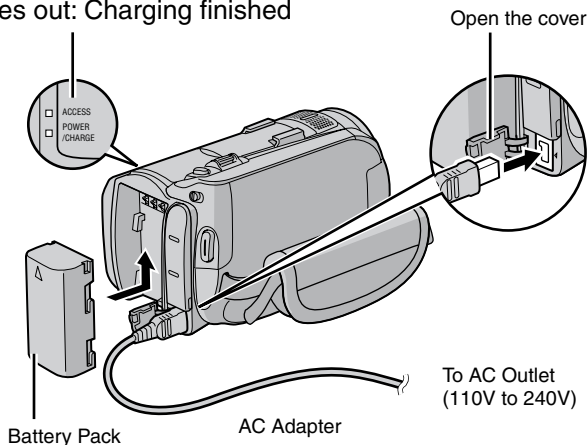
Charge the battery before recording

Turn off the camera and attach the battery pack.

Power/charge lamp

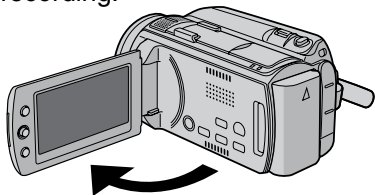
blinks: Charging

goes out: Charging finished



The power turns on if you open the LCD monitor

Close the LCD monitor after you finish recording.

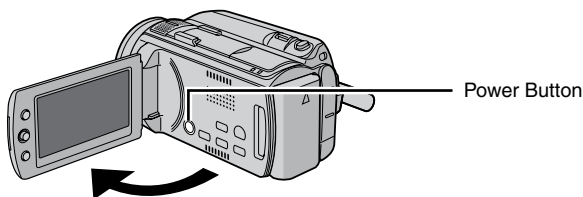


CAUTION

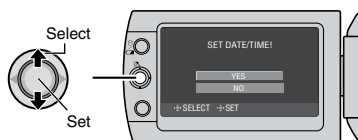
- Charge the battery pack before use. (p. 16)
- Be sure to use JVC battery packs. If you use any other battery packs besides JVC battery packs, safety and performance can not be guaranteed.

Preparation

- 1 Open the LCD monitor to turn on the camera

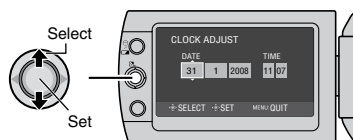


- 2 Select [YES] within 10 seconds



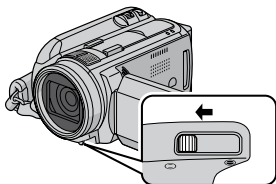
When the message disappears, press the power button for at least 2 seconds to turn off the power, and then press it again for at least 2 seconds.

- 3 Set the date and time

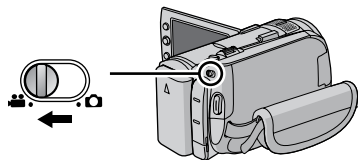


To change the date and time (p. 17)

- 4 Open the lens cover



- 5 Select video mode



Video recording

Before recording an important scene, it is recommended to conduct a trial recording.

CAUTION

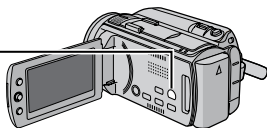
- This camera records video in accordance with the AVCHD format.
- Try recording with easy [AUTO] mode first.

1 Select recording mode

SELECT
PLAY/REC



The mode changes when you press the button



When recording

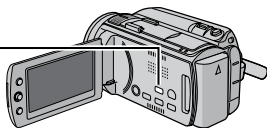


2 Select auto mode

AUTO / INFO



The mode changes when you press the button (recording mode only)



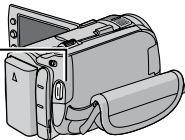
The auto recording indicator appears.



3 Start recording



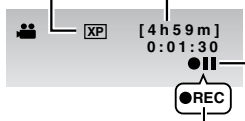
Press the **START/STOP** button to start recording, and press it again to stop



Remaining space on the hard disk

Picture Quality

Record-standby



Recording

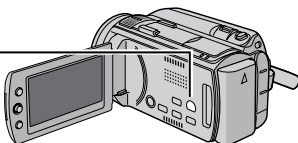
Playing back

1 Select playback mode

SELECT
PLAY/REC



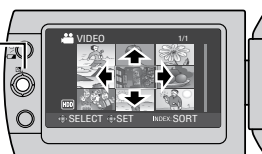
The mode changes when you press the button



2 Select the desired file



Index screen

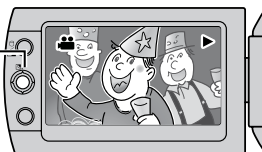


3 Press down the set lever



Press down the set lever to start playback, and press it again to stop

Playback screen



■ To perform operations such as fast forwarding or fast rewinding (➡ p. 28)

■ To view video/still image on TV (➡ p. 33)

CAUTION

Don't forget to make copies after recording!

- To copy files onto DVD discs (➡ p. 43)
- To dub files using a VCR/DVD recorder (➡ p. 47)
- To play back a created DVD disc (➡ p. 44, 46)
- To edit files on your computer (➡ p. 9)

Safety Precautions

IMPORTANT (for owners in the U.K.) Connection to the mains supply in the United Kingdom.

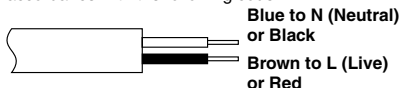
DO NOT cut off the mains plug from this equipment.

If the plug fitted is not suitable for the power points in your home or the cable is too short to reach a power point, then obtain an appropriate safety approved extension lead or consult your dealer. **BE SURE** to replace the fuse only with an identical approved type, as originally fitted, and to replace the fuse cover.

If nonetheless the mains plug is cut off be sure to remove the fuse and dispose of the plug immediately, to avoid possible shock hazard by inadvertent connection to the mains supply.

If this product is not supplied fitted with a mains plug then follow the instructions given below: **DO NOT** make any connection to the Larger Terminal coded E or Green.

The wires in the mains lead are coloured in accordance with the following code:



If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt — consult a competent electrician.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTIONS:

- To prevent shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified personnel.
- When you are not using the AC adapter for a long period of time, it is recommended that you disconnect the power cord from AC outlet.

NOTES:

- The rating plate and safety caution are on the bottom and/or the back of the main unit.
- The serial number plate is on the battery pack mount.
- The rating information and safety caution of the AC adapter are on its upper and lower sides.

WARNING:

The battery pack, the camera with battery installed, and the remote control with battery installed should not be exposed to excessive heat such as direct sunshine, fire or the like.

CAUTION:

The mains plug shall remain readily operable.

Caution on Replaceable lithium battery

The battery used in this device may present a fire or chemical burn hazard if mistreated.

Do not recharge, disassemble, heat above 100°C or incinerate.

Replace battery with Panasonic (Matsushita Electric), Sanyo, Sony or Maxell CR2025.

Danger of explosion or Risk of fire if the battery is incorrectly replaced.

- Dispose of used battery promptly.
- Keep away from children.
- Do not disassemble and do not dispose of in fire.

When the equipment is installed in a cabinet or on a shelf, make sure that it has sufficient space on all sides to allow for ventilation (10 cm or more on both sides, on top and at the rear).

Do not block the ventilation holes.

(If the ventilation holes are blocked by a newspaper, or cloth etc. the heat may not be able to get out.) No naked flame sources, such as lighted candles, should be placed on the apparatus.

When discarding batteries, environmental problems must be considered and the local rules or laws governing the disposal of these batteries must be followed strictly.

The apparatus shall not be exposed to dripping or splashing.

Do not use this equipment in a bathroom or places with water.

Also do not place any containers filled with water or liquids (such as cosmetics or medicines, flower vases, potted plants, cups etc.) on top of this unit. (If water or liquid is allowed to enter this equipment, fire or electric shock may be caused.)

Do not point the lens directly into the sun. This can cause eye injuries, as well as lead to the malfunctioning of internal circuitry. There is also a risk of fire or electric shock.

CAUTION!

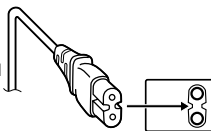
The following notes concern possible physical damage to the camera and to the user.
Carrying or holding the camera by the LCD monitor can result in dropping the unit, or in a malfunction. Do not use a tripod on unsteady or uneven surfaces. It could tip over, causing serious damage to the camera.

CAUTION!

Connecting cables (Audio/Video, S-Video, etc.) to the camera and leaving it on top of the TV is not recommended, as tripping on the cables will cause the camera to fall, resulting in damage.

CAUTION:

To avoid electric shock or damage to the unit, first firmly insert the small end of the power cord into the AC Adapter until it is no longer wobbly, and then plug the larger end of the power cord into an AC outlet.



Information for Users on Disposal of Old Equipment and Batteries



Products



Battery

Notice:

The sign Pb below the symbol for batteries indicates that this battery contains lead.

[European Union]

These symbols indicate that the electrical and electronic equipment and the battery with this symbol should not be disposed of as general household waste at its end-of-life. Instead, the products should be handed over to the applicable collection points for the recycling of electrical and electronic equipment as well as batteries for proper treatment, recovery and recycling in accordance with your national legislation and the Directive 2002/96/EC and 2006/66/EC. By disposing of these products correctly, you will help to conserve natural resources and will help to prevent potential negative effects on the environment and human health which could otherwise be caused by inappropriate waste handling of these products. For more information about collection points and recycling of these products, please contact your local municipal office, your household waste disposal service or the shop where you purchased the product. Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

[Business users]

If you wish to dispose of this product, please visit our web page www.jvc-europe.com to obtain information about the take-back of the product.

[Other Countries outside the European Union]

These symbols are only valid in the European Union. If you wish to dispose of these items, please do so in accordance with applicable national legislation or other rules in your country for the treatment of old electrical and electronic equipment and batteries.

SOME DO'S AND DON'TS ON THE SAFE USE OF EQUIPMENT

This equipment has been designed and manufactured to meet international safety standards but, like any electrical equipment, care must be taken if you are to obtain the best results and safety is to be assured. **DO** read the operating instructions before you attempt to use the equipment. **DO** ensure that all electrical connections (including the mains plug, extension leads and interconnections between pieces of equipment) are properly made and in accordance with the manufacturer's instructions. Switch off and withdraw the mains plug when making or changing connections. **DO** consult your dealer if you are ever in doubt about the installation, operation or safety of your equipment. **DO** be careful with glass panels or doors on equipment.

DON'T continue to operate the equipment if you are in any doubt about it working normally, or if it is damaged in any way — switch off, withdraw the mains plug and consult your dealer.

DON'T remove any fixed cover as this may expose dangerous voltages.

DON'T leave equipment switched on when it is unattended unless it is specifically stated that it is designed for unattended operation or has a standby mode. Switch off using the switch on the equipment and make sure that your family knows how to do this. Special arrangements may need to be made for infirm or handicapped people.

DON'T use equipment such as personal stereos or radios so that you are distracted from the requirements of road safety. It is illegal to watch television whilst driving.

DON'T listen to headphones at high volume, as such use can permanently damage your hearing.

DON'T obstruct the ventilation of the equipment, for example with curtains or soft furnishings. Overheating will cause damage and shorten the life of the equipment.

DON'T use makeshift stands and **NEVER** fix legs with wood screws — to ensure complete safety always fit the manufacturer's approved stand or legs with the fixings provided according to the instructions.

DON'T allow electrical equipment to be exposed to rain or moisture.

ABOVE ALL

- **NEVER** let anyone especially children push anything into holes, slots or any other opening in the case — this could result in a fatal electrical shock;
- **NEVER** guess or take chances with electrical equipment of any kind — it is better to be safe than sorry!

Remember that this camera is intended for private consumer use only.

Any commercial use without proper permission is prohibited. (Even if you record an event such as a show, performance or exhibition for personal enjoyment, it is strongly recommended that you obtain permission beforehand.)

Trademarks

- AVCHD and AVCHD logotype are trademarks of Matsushita Electric Industrial Co., Ltd. and Sony Corporation.
- Manufactured under license from Dolby Laboratories. Dolby and the double-D symbol are trademarks of Dolby Laboratories.
- x.v.Colour™ is a trademark of Sony Corporation.
- HDMI is a trademark of HDMI Licensing, LLC.
- Windows® is either registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.
- Macintosh is a registered trademark of Apple Inc.
- Other product and company names included in this instruction manual are trademarks and/or registered trademarks of their respective holders.



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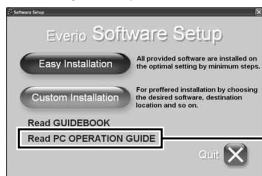


PC OPERATION

■ For Windows

Refer to the PC OPERATION GUIDE in the supplied CD-ROM.

- ① Load the provided CD-ROM into the PC.
After a moment, the [Software Setup] screen appears. If the [Software Setup] screen does not appear, double-click the CD-ROM icon in [My Computer].



② Click

NOTE

Refer to the PC OPERATION GUIDE for the system requirements of the provided software. For details, refer to the User's guide or Help of the software.

■ For Macintosh

- ① Load the provided CD-ROM into the Computer.
- ② Double-click the CD-ROM icon.
- ③ Double-click "Start.pdf" in the "PC guide" folder.
- ④ Click the desired language.

NOTE

- Adobe® Acrobat® Reader™ or Adobe® Reader® must be installed to read PDF files. Adobe® Reader® can be located from Adobe's web site: <http://www.adobe.com/>

Read This First!

Make a backup of important recorded data

It is recommended to copy your important recorded data to a DVD or other recording media for storage. (➡ p. 43) JVC will not be responsible for any lost data.

Make a trial recording

Before the actual recording of important data, make a trial recording and play back the recorded data to check that the video and sound have been recorded correctly.

Reset the camera if it does not operate correctly

This camera uses a microcomputer. Factors such as background noise and interference can prevent it from operating correctly. If the camera does not operate correctly, reset the camera. (➡ p. 58)

Precautions on handling batteries

- Be sure to use the JVC BN-VF808U/VF815U/VF823U battery packs.
- If the camera is subjected to electrostatic discharge, turn off the power before using it again.

If a malfunction occurs, stop using the camera immediately and consult your local JVC dealer

- If a problem occurs when using the microSD card, take the card together with the camera for repair. If one of them is not included, the cause of the malfunction cannot be diagnosed, and the camera cannot be repaired.
- Recorded data may be erased while the camera is being repaired or inspected. Back up all data before requesting repairs or inspections.

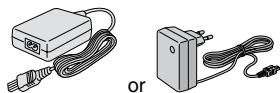
Because cameras may be used for demonstration in a shop, the demonstration mode is set to on by default

To deactivate the demonstration mode, set [DEMO MODE] to [OFF]. (➡ p. 51)

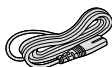
Do not cover the fan (➡ p. 12 ⑥, ⑬)

If the camera becomes too hot inside it may cause a malfunction.

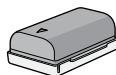
Accessories



AC Adapter
AP-V14E/AP-V17E



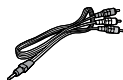
Power Cord
(for AP-V14E only)




Battery Pack
BN-VF808U



Component Cable
( p. 33)




Audio/Video Cable
( p. 34, 47)



USB Cable




Shoulder Strap
( p. 18)



CD-ROM
( p. 9)



Remote Control
RM-V750U ( p. 11)



Lithium Battery
CR2025
Pre-installed in the
remote control unit.



Core Filter
( p. 11)

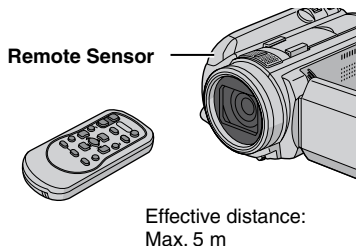
NOTE

Make sure to use the provided cables for connections. Do not use any other cables.

Preparing the Remote Control

A battery is included inside the remote control at the time of purchase.
Remove the insulation sheet before use.

Beam Effective Area



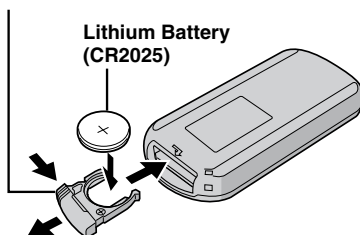
NOTE

The transmitted beam may not be effective or may cause incorrect operation when the remote sensor is directly exposed to sunlight or powerful lighting.

To Reinsert the Battery

Pull out the battery holder by pressing the lock tab.

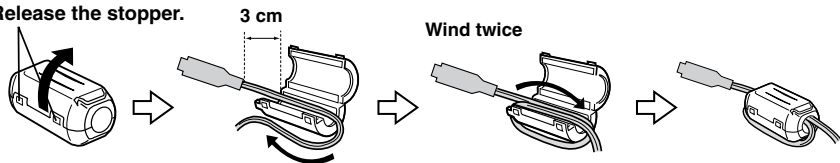
Lock Tab



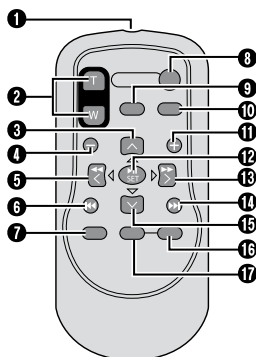
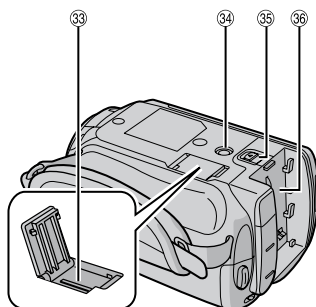
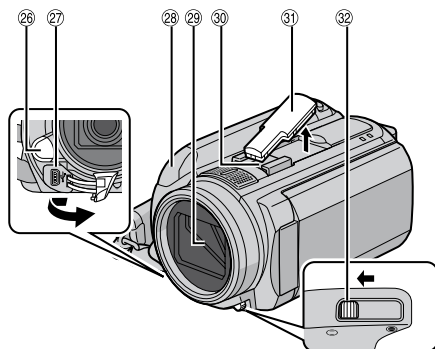
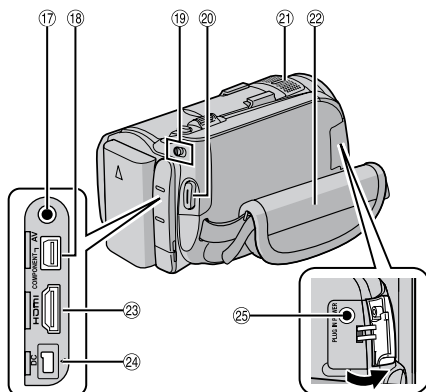
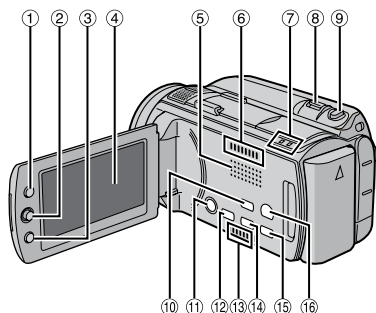
Attaching the Core Filter to the DC cord

The core filter reduces interference. Connect the end of the cable with the core filter to the camera.

Release the stopper.

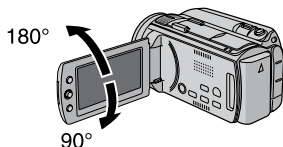


Index



NOTES









- The LCD monitor can rotate 270°.





Power-linked operation

- You can also turn on/off the camera by opening/closing the LCD monitor.
- Be careful not to cover sensors 21, 26 and 29 during shooting.

Camera

- ① Index Button [INDEX] (☞ p. 31)/
Remaining Space Button/
Data Battery Button [ / ] (☞ p. 22)
- ② Set Lever
Move to ^ :
Reverse Skip (☞ p. 28)/Up/Backlight
Compensation Button [] (☞ p. 25)
Move to v :
Forward Skip (☞ p. 28)/Down/Manual
Focus Button [FOCUS] (☞ p. 24)
Move to < :
Reverse Search (☞ p. 28)/Left/Light
Button [LIGHT] (☞ p. 22)
Move to > :
Forward Search (☞ p. 28)/Right/Program
AE Button [PROGRAM AE] (☞ p. 24)
Press down:
Play/Pause (☞ p. 28)
- ③ Menu Button [MENU]
- ④ LCD Monitor
- ⑤ Speaker
- ⑥ Fan outlet
- ⑦ Access Lamp [ACCESS] (Blinks when you
access files. Do not turn off the power or
remove the battery pack/AC adapter while
accessing files.)
Power/Charge Lamp [POWER/CHARGE]
(Blinks when you charge the battery.)
- ⑧ Zoom Lever [W , T ] (☞ p. 22)
- ⑨ Speaker Volume Control [-VOL+] (☞ p. 28)
- ⑩ Still Image Shooting Button [SNAPSHOT]
(☞ p. 21)
- ⑪ Auto/Manual Mode Button [AUTO] (☞ p. 24)/
Information Button [INFO] (☞ p. 37)
- ⑫ Power Button (You can turn off the camera
by pressing and holding this button.)
- ⑬ Direct Disc Button [DIRECT DISC]/
Focus Assist Button [FOCUS ASSIST]
(☞ p. 25)
- ⑭ Fan inlet
- ⑮ Direct Backup Button [DIRECT BACK UP]/
Quick Review Button [QUICK REVIEW]
(☞ p. 20, 21)
- ⑯ Delete Button []
- ⑰ Playback/Recording Mode Switching Button
[PLAY/REC] (☞ p. 20, 21)
- ⑱ Audio/Video Connector [AV] (☞ p. 34, 47)
- ⑲ Component Connector [COMPONENT]
(☞ p. 33)
- ⑳ Mode Switch [, ]
- ㉑ Video Recording Start/Stop Button [START/
STOP] (☞ p. 20)

- ㉒ Stereo Microphone
- ㉓ Grip Strap (☞ p. 18)
- ㉔ HDMI Connector [HDMI] (☞ p. 33)
- ㉕ DC Connector [DC] (☞ p. 16)
- ㉖ Microphone Input Connector [MIC]
- ㉗ LED Light
- ㉘ USB Connector []
- ㉙ Remote Sensor (☞ p. 11)
- ㉚ Lens Cover/Lens
- ㉛ Shoe (for external microphone, etc)
- ㉜ Shoe Cover
- ㉝ Lens Cover Switch [, ] (☞ p. 18)
- ㉞ microSD Card Slot (☞ p. 19)
- ㉟ Tripod Mounting Socket (☞ p. 18)
- ㊱ Battery Release Button [BATT.] (☞ p. 16)
- ㊲ Battery Pack Mount

Remote Control

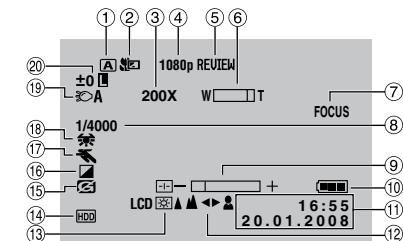
- ① Infrared Beam Transmitting Window
- ② ZOOM (T/W) Buttons
(Zoom in/out during playback.)
- ③ Up Button
Rotate Button (counterclockwise)
- ④ Skip Backward Button
- ⑤ Left Button
- ⑥ Back Button
- ⑦ PLAYLIST Button
- ⑧ START/STOP Button
- ⑨ SNAPSHOT Button
- ⑩ INFO Button
- ⑪ Skip Forward Button
- ⑫ PLAY/PAUSE Button
- ⑬ Right Button
- ⑭ Next Button
- ⑮ Down Button
Rotate Button (clockwise)
- ⑯ INDEX Button
- ⑰ DATE Button

NOTE

You can move the zooming area with the up/
down/left/right button during zoom in playback
mode.

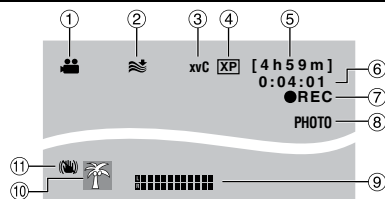
Indications on LCD Monitor

During both Video and Still Image Recording



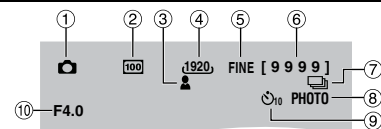
- ① Selected Recording Mode Indicator (↗ p. 24)
- ② Tele Macro Mode Indicator (↗ p. 27)
- ③ Approximate Zoom Ratio (↗ p. 48)
- ④ Output with 1080p (↗ p. 52)
- ⑤ Quick Review Indicator (↗ p. 20, 21)
- ⑥ Zoom Indicator (↗ p. 22)
- ⑦ Focus Assist Indicator (↗ p. 25)
- ⑧ Shutter Speed (↗ p. 26)
- ⑨ Brightness/Sharpness Control Indicator (↗ p. 51, 27)
- ⑩ Battery Indicator
- ⑪ Date/Time (↗ p. 17)
- ⑫ Manual Focus Adjustment Indicator (↗ p. 24)
- ⑬ Monitor Backlight (↗ p. 51)
- ⑭ Selected Recording Medium Indicator (↗ p. 53)
- ⑮ Drop Detection Indicator (Appears when [DROP DETECTION] is set to [OFF].) (↗ p. 51)
- ⑯ Effect Mode Indicator (↗ p. 27)
- ⑰ Program AE Mode Indicator (↗ p. 24)
- ⑱ White Balance Indicator (↗ p. 27)
- ⑲ LED Light Indicator (↗ p. 22)
- ⑳ ±0 : Exposure Adjustment Indicator (↗ p. 26)
- ㉑ : Backlight Compensation Indicator (↗ p. 25)
- ㉒ : Spot Exposure Control Indicator (↗ p. 25)
- ㉓ : Iris Lock Indicator (↗ p. 25, 26)

During Video Recording Only



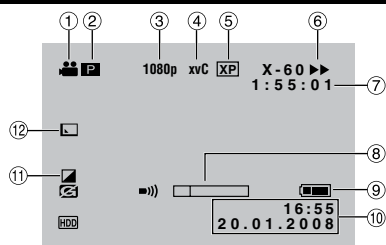
- ① Mode Indicator (↗ p. 20)
- ② Wind Cut Indicator (↗ p. 49)
- ③ x.v.Colour™ (↗ p. 49)
- ④ Picture Quality (↗ p. 48)
- ⑤ Remaining Time (↗ p. 20, 63)
- ⑥ Counter
- ⑦ ● REC : (Appears during recording.) (↗ p. 20)
- ⑧ ● II : (Appears during record-standby mode.)
- ⑨ Shooting Indicator (↗ p. 20)
- ⑩ Microphone Input Level Indicator (↗ p. 49)
- ⑪ Event Indicator (↗ p. 23)
- ⑫ Digital Image Stabiliser (DIS) Indicator (Appears when [DIS] is set to [OFF].) (↗ p. 48)

During Still Image Recording Only



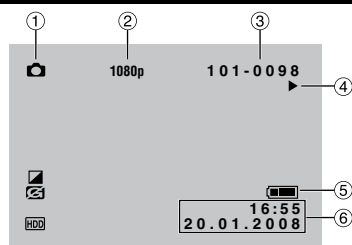
- ① Mode Indicator (↗ p. 21)
- ② ISO Sensitivity (GAIN): When set to [AUTO], there is no indication. (↗ p. 50)
- ③ Focus Indicator (↗ p. 21)
- ④ Image Size (↗ p. 50)
- ⑤ Picture Quality (↗ p. 50)
- ⑥ Remaining Number of Shots (↗ p. 63)
- ⑦ : Continuous Shooting Mode Indicator (↗ p. 50)
- ⑧ : Bracket Shooting Mode Indicator (↗ p. 50)
- ⑨ Shooting Indicator (↗ p. 21)
- ⑩ Self-Timer Indicator (↗ p. 50)
- ⑪ Aperture Value (F-number) (↗ p. 27)

During Video Playback



- ① Mode Indicator (↗ p. 28)
- ② **P** : Playlist Playback Indicator (Appears when playing back a playlist.) (↗ p. 41)
- ③ Output with 1080p (↗ p. 52)
- ④ x.v.Colour™ (↗ p. 49)
- ⑤ Picture Quality (↗ p. 48)
- ⑥ Playback Mode (↗ p. 28)
 - ▶ : Playback
 - ⏸ : Pause
 - ⏭ : Forward Search
 - ⏮ : Reverse Search
 - ⏩ : Forward Slow-Motion
 - ⏪ : Reverse Slow-Motion
 (The number on the left shows speed.)
- ⑦ Counter
- ⑧ Volume Level Indicator
- ⑨ Battery Indicator
- ⑩ Date/Time
- ⑪ Effect Mode Indicator (↗ p. 30)
- ⑫ Wipe/Fader Effect Indicator (↗ p. 30)

During Still Image Playback



- ① Mode Indicator (↗ p. 29)
- ② Output with 1080p (↗ p. 52)
- ③ Folder/File Number
- ④ Slide Show Playback Indicator (↗ p. 29)
- ⑤ Battery Indicator
- ⑥ Date/Time

Operation guide display

The operation guide is displayed at the bottom of the screen during menu display etc.

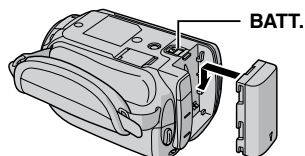


Necessary Settings before Use

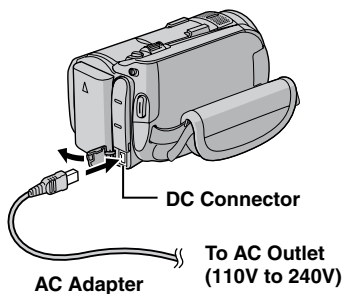
Charging the Battery Pack

1 Close the LCD monitor to turn off the camera.

2 Attach the battery pack.



3 Connect the AC adapter.



- The power/charge lamp blinks to indicate charging has started.
- When the lamp goes out, charging is finished.

Required charging/recording time (approx.)

*When the LED light is off and the monitor backlight is set to [STANDARD] mode.

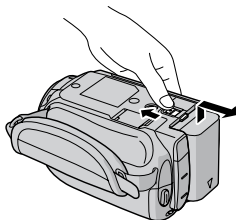
Battery pack	Charging time	Recording time
BN-VF808U (Provided)	1 hr. 30 min.	1 hr. 00 min.*
BN-VF815U	2 hr. 40 min.	2 hr. 00 min.*
BN-VF823U	3 hr. 50 min.	3 hr. 05 min.*

NOTE

The actual recording time may shorten depending on the recording environment, such as when recording scenes with fast moving.

To detach the battery pack

Slide and hold **BATT.** (step 2), then remove the battery pack.



To check the remaining battery power

See page 22.

NOTES

- You can also use the camera with just the AC adapter.
- Please do not pull or bend the AC adapter plug and cable. This may damage the AC adapter.

Date/Time Setting

1 Open the LCD monitor to turn on the camera.

2 Press MENU.



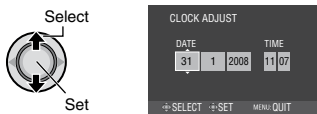
3 Select [BASIC SETTINGS].



4 Select [CLOCK ADJUST].



5 Set the date and time.



Repeat this step to input the day, month, year, hour and minute.

■ **To return to the previous screen**
Move the set lever to ◀.

■ **To quit the screen**
Press MENU.

NOTE

If you do not set the date and time, the [SET DATE/TIME!] screen appears every time you turn on the camera.

Language Setting

The language on the display can be changed.

1 Open the LCD monitor to turn on the camera.

2 Press MENU.



3 Select [BASIC SETTINGS].



4 Select [LANGUAGE].



5 Select the desired language.



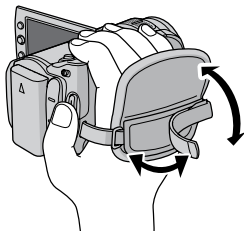
■ **To return to the previous screen**
Move the set lever to ◀.

■ **To quit the screen**
Press MENU.

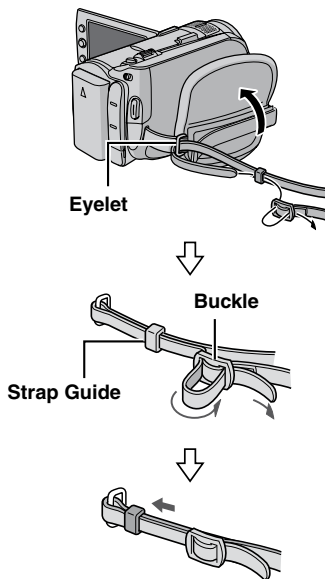
Other Settings

Grip Adjustment

Open the pad and make grip adjustments.

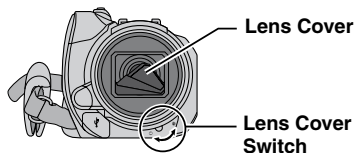


Attaching the Shoulder Strap



Lens Cover

When not using the camera, close the lens cover to protect the lens.

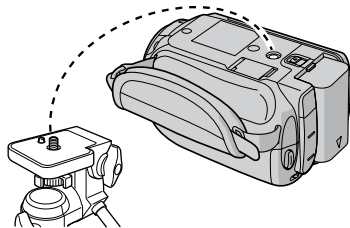


NOTE

Do not push the lens cover strongly. Doing so may cause damage to the lens.

Tripod Mounting

Align the camera stud hole with the tripod stud, and the mounting socket with the screw, and then rotate the camera clockwise to mount it to the tripod.



NOTE

Do not use a tripod on unsteady or unlevel surfaces. It could tip over, causing serious damage to the camera.

When Using a microSD Card

If you want to record to a microSD card, the following 3 operations need to be performed.

- Operations are confirmed on the following microSD cards.

- Panasonic
- TOSHIBA
- SanDisk
- ATP

Video recording:

Class 4 or 6 compatible microSDHC card (4 GB, 8 GB)

Still image recording:

microSD card (256 MB to 2 GB) or microSDHC card (4 GB, 8 GB)

- If other media are used, they may fail to record data correctly, or they may lose data that had already been recorded.
- MultiMediaCards are not supported.

2 Change the recording medium

The camera is programmed to record on the built-in hard disk when it is shipped from the factory. You can change the recording medium to microSD card.

Set **[REC MEDIA FOR VIDEO]** and **[REC MEDIA FOR IMAGE]** to **[SD]**. (p. 53)

3 Format a microSD card when using it for the first time

This will also ensure stable speeds and operation when accessing the microSD card.

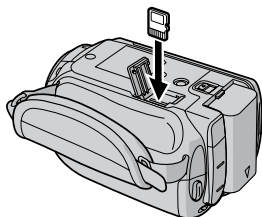
Select **[FORMAT SD CARD]** to format the card. (p. 53)

1 Insert a microSD card

Preparation:

Close the LCD monitor to turn off the camera.

- 1 Open the microSD card cover.
- 2 Firmly insert the card with its clipped edge first.



- 3 Close the microSD card cover.

■ To remove a microSD card

Push the microSD card once.

After the card comes out a little, pull it out.


NOTES


- Insert and remove the microSD card only while the power is turned off. Otherwise, data on the card may be corrupted.
- Do not touch the terminal on the reverse side of the label.

Recording Files

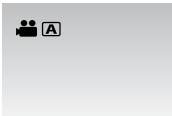

Video Recording

Preparation: Open the LCD monitor to turn on the camera.

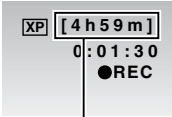

1 Slide the mode switch to select  (video) mode.



2 Press **PLAY/REC** to select the recording mode.



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



Approximate remaining time for recording

■ To stop recording

Press **START/STOP** again.

■ To view the last recorded scene

Press **QUICK REVIEW** while recording is paused. Pressing **DELETE** during playback deletes that scene.

■ To change the picture quality

Change the settings in [VIDEO QUALITY].

( p. 48)

■ To record a still image during video recording


Press **SNAPSHOT** (Up to 3 times in a row).


NOTES

- If the camera is not operated for 5 minutes while the power is on, it turns itself off automatically to conserve power. To turn on the camera again when using the battery pack, close the LCD monitor and open it again. When using the AC adapter, perform any operation such as zooming.
- A new file will be created for every 4 GB.
- Do not move or shake the camera suddenly during recording. If you do so, the driving sound (hum) of the hard disk may be recorded.


Still Image Recording

Preparation: Open the LCD monitor to turn on the camera.


1 Slide the mode switch to select  (still image) mode.





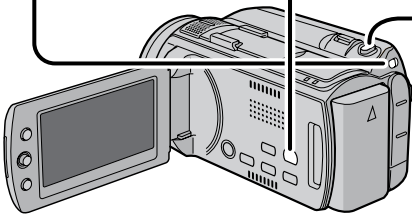
2 Press **PLAY/REC** to select the recording mode.







3 Press and hold **SNAPSHOT** halfway.










The  indicator becomes green when the captured image is focused.

- **To view the last recorded scene**
Press **QUICK REVIEW** while recording is paused. Pressing **DELETE** during playback deletes that scene.
- **To change the picture quality**
Change the settings in [IMAGE QUALITY].
( p. 50)
- **To change the image size**
Change the settings in [IMAGE SIZE].
( p. 50)
- **To record still images continuously**
Set [SHUTTER MODE] to [CONTINUOUS SHOOTING]. ( p. 50)

4



Press SNAPSHOT fully to take the picture.





NOTES

- DIS (Digital Image Stabiliser) does not function during still image recording.
- If the camera is not operated for 5 minutes while the power is on, it turns itself off automatically to conserve power. To turn on the camera again when using the battery pack, close the LCD monitor and open it again. When using the AC adapter, perform any operation such as zooming.
- The sides of still images recorded in 16:9 size may be cut off when printed. Check whether 16:9 size prints can be printed at your local print store.
- When you turn off the camera after the recording is paused and turn it on again, the **QUICK REVIEW** and **DELETE** button cannot work.

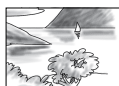
Recording Files (Continued)

Zooming

Preparation:

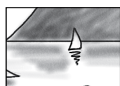
- Select  or  mode.
- Select the recording mode.

Zoom out





W: Wide angle

Zoom in



T: Telephoto

Maximum zoom ratio (factory-preset).

 mode	 mode
10x	8x

■ To change the maximum zoom ratio (movie mode only)



Change the settings in [ZOOM]. (p. 48)

NOTE

Macro shooting is possible as close as approx. 5 cm to the subject when the zoom lever is set all the way to W.

LED Light

Preparation:

- Select  or  mode.
- Select the recording mode.



Each time you press the setting changes.



The LED light remains on regardless of the surrounding conditions.



The LED light turns on automatically when shooting in insufficient light conditions.

No display


Deactivates this function.

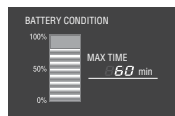
Checking the Remaining Battery Power

Preparation:

- Close the LCD monitor to turn off the camera.
- Attach the battery pack.

 mode: press **INDEX** twice.

 mode: press **INDEX**.



Battery information is displayed for approx. 3 seconds if the button is pressed and released quickly, and for approx. 15 seconds if the button is pressed and held for several seconds.

■ To return to the normal screen

Press **INDEX**.


NOTE

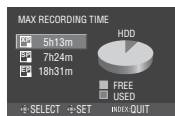
The recordable time display should only be used as a guide. It is displayed in 10 minute units.

Checking the Remaining Space on the Recording Media



Preparation:

- Select  mode.
- Select the recording mode.



The maximum recording time is displayed for each picture quality mode.

- XP : High quality
 SP : Standard quality
 EP : For recording for a long time

■ To change the picture quality

- 1) Select the picture quality.
- 2) Press the set lever.

■ To return to the normal screen


Press **INDEX** twice.

Registering Files to Events



If you select an event to register the file to before starting recording, the file will be registered to the selected event, thus making the file easy to find at playback.

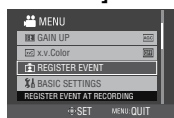
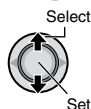
Preparation:

- Select  mode.
- Select the recording mode.

1 Press MENU.



2 Select [REGISTER EVENT].



3 Select the event that you want to register the file to.

To cancel the event registration, select [DON'T REGISTER].



The selected event is displayed on the screen.

■ To quit the screen

Press **MENU**.

■ To search by event for a file to play back

See page 32.

NOTE

Once you select a certain event to register a file, the setting will remain even if you turn off the camera.

Manual Recording

Manual recording mode enables you to set the focus and screen brightness, etc. manually.

To Change to Manual Recording Mode

Preparation:

- Select or mode.
- Select the recording mode.



To return to the auto recording mode

Press **AUTO/INFO** so that the **A** indicator appears.

Program AE

You can record videos or still images with optimum brightness by adjusting the exposure and shutter speed to suit your surroundings or the subject.

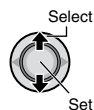
In the manual recording mode;

1



2 Select the desired setting.

For details on each setting, see the right column.



Items for program AE setting

- **PORTRAIT***:
The subject in the foreground is accentuated by blurring the background.
 - **SPORTS**:
Records fast moving subjects clearly.
 - **SNOW**:
Compensates for subjects that may appear too dark when shooting in extremely bright surroundings, such as in snow.
 - **SPOTLIGHT**:
Select this when a spotlight makes a subject appear too bright.
 - **TWILIGHT**:
Makes evening scenes look more natural.
- * mode only

Manual Focus

In the manual recording mode;

1



2 Adjust the focus.



To cancel the manual focus setting

Move the set lever to (FOCUS) so that the / indicator disappears.

To cancel the program AE

Select [OFF] in step 2.

Focus Assist

The image becomes black and white. The outline of focused object is displayed in blue. Use this for adjusting the focus more precisely.

1



2 Adjust the focus, then press down the set lever to fix the focus.



- **To cancel the focus assist mode**
Press **FOCUS ASSIST** again.

- **To change the colour of the outline**
See page 49.

NOTE

If you use focus assist in dark places, the rough area of the image appears in colour, and the outline colour becomes difficult to see.



Backlight Compensation

Backlight compensation brightens the subject by increasing the exposure.

In the manual recording mode;



- **To cancel backlight compensation**

Move the set lever to ^ () twice so that the  indicator disappears.

Spot Exposure Control

Use this function when backlight compensation does not work well, or to adjust the brightness in the desired spot.

In the manual recording mode;

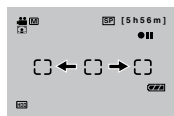
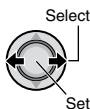
1

Move twice.




2



Select the desired spot metering area frame.



- **To lock the exposure**

After you finish configuring the setting, press and hold the set lever for more than 2 seconds. The  indicator appears.

- **To cancel spot exposure control**

Move the set lever to ^ () once so that the  indicator disappears.

Manual Recording (Continued)

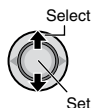
Manual Setting in Menu

In the manual recording mode;

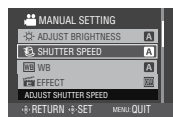
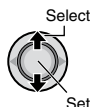
1 Press MENU.



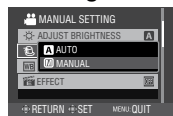
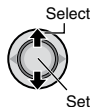
2 Select [MANUAL SETTING].



3 Select the desired menu.











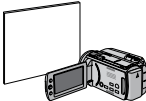














4 Select the desired setting.



■ **To return to the previous screen**
Move the set lever to \angle .





■ **To quit the screen**
Press **MENU**.



Menus	Settings: [] = Factory-preset
ADJUST BRIGHTNESS Adjusts the brightness.	<p>mode A [AUTO]: The brightness is adjusted automatically. -6 to +6: Corrects the brightness within this range in increments of 1. Move the set lever to \wedge / \vee to set the value.</p> <p>mode A [AUTO]: The brightness is adjusted automatically. -2.0 to +2.0 (EV): Corrects the brightness within this range in increments of 1/3EV. Move the set lever to \wedge / \vee to set the value.</p> <p>■ To lock the exposure After you finish configuring the setting, press and hold the set lever for more than 2 seconds. The indicator appears.</p>
SHUTTER SPEED A fast shutter speed can freeze the motion of a fast-moving subject, and a slow shutter speed can blur the subject to give the impression of motion.	<p>A [AUTO]: The shutter speed is adjusted automatically. mode: 1/15 to 1/4000 mode: 1/15 to 1/500 The smaller the value, the faster the shutter speed. Move the set lever to \wedge / \vee to set the value.</p> <p>NOTE It is recommended to use a tripod (p. 18) when recording with a slow shutter speed.</p>

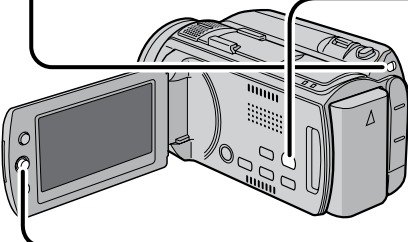
Menus	Settings: [] = Factory-preset
<p> APERTURE PRIORITY* You can add a blurring effect to the background by setting the aperture value (F-number). *  mode only</p>	<p>A [AUTO]: The aperture value is adjusted automatically. F1.9 to F4.0: The lower the F-number (larger aperture value), the more blurred the background will become. The higher the F-number (smaller aperture value), the clearer the focus will be for both near and far objects. Move the set lever to \wedge / \vee to set the value.</p> <p>NOTE If the image is too bright, set to a larger F-number. If the image is too dark, set to a smaller F-number.</p>
<p> WB Adjusts the white balance to achieve the optimum colours for the amount of light in your surroundings during recording.</p>	<p>A [AUTO]: White balance is adjusted automatically.  MWB: Adjusts the white balance manually depending on the light source.</p> <ol style="list-style-type: none"> 1) Hold a sheet of plain white paper in front of the subject so that the white paper fills the screen. 2) Press and hold the set lever until the  indicator starts blinking then stops blinking. <p> FINE: When shooting outdoors on a sunny day.  CLOUD: When shooting outdoors on a cloudy day.  HALOGEN: When a video light or similar type of lighting is used.</p> 
<p> EFFECT Enables you to record videos or still images with special effects.</p>	<p> [OFF]: No effect is used.  SEPIA: The image has a brownish tint like old photos. B/W MONOTONE: The image becomes black and white like old movies.  CLASSIC FILM*: This effect skips frames to give images of an old movie atmosphere.  STROBE*: The image looks like a series of consecutive snapshots. *  mode only</p>
<p> TELE MACRO Enables you to shoot a subject as large as possible at a distance of approx. 70 cm.</p>	<p> [OFF]: Deactivates the function.  ON: Activates the function.</p>
<p> ZEBRA* The sections of the photographic subject that are reflected as white due to light are displayed in a striped pattern. Use this as a guide for adjusting the brightness. *  mode only</p>	<p> [OFF]: Deactivate this function. 70%: Sections that are close to being reflected as white (bright) are displayed in a striped pattern. 100%: Sections that are completely reflected as white (too bright) are displayed in a striped pattern.</p>
<p> SHARPNESS* Adjusts the enhancement level of the outline of the recorded image. *  mode only</p>	<p>Adjust the sharpness moving the set lever to $<$ / $>$, then press down. NOTE Enhancing the sharpness causes the recorded image to appear grainy.</p>

Playing Back Files

Video Playback

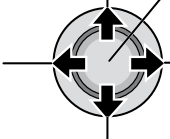
- 1** Slide the mode switch to select  (video) mode.
 
- 2** Select the playback mode.
 


The index screen appears.
- 3** Select the desired file.
 




- To return to the index screen**
 Press **INDEX**.
- To check the file information**
 Press **AUTO/INFO** when playback is stopped. (➡ p. 37)
- To delete a video**
 Press **DELETE** when playback is stopped.

Operations during Playback



Return to the first scene of the file

Play/Pause

Reverse search/
Frame-by-frame
playback (during
pause)

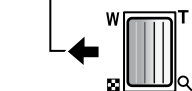
Forward search/
Frame-by-frame
playback (during
pause)

Go to the first scene
of the next file

During forward/reverse search, moving the set lever to < / > alters the search speed (maximum 60x).

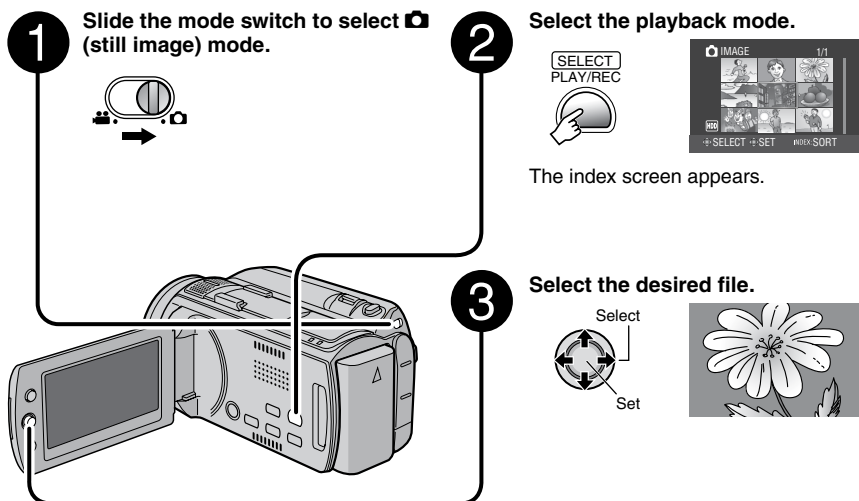
Speaker volume

— : Turn down the volume



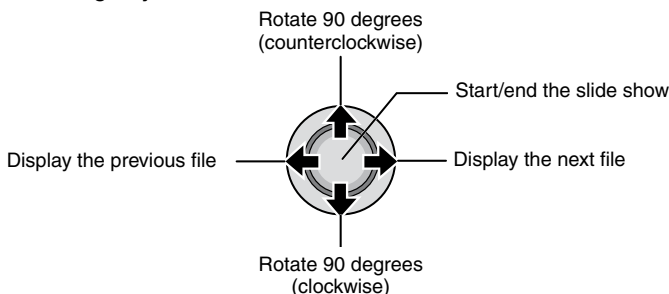
+ : Turn up the volume

Still Image Playback



- **To return to the index screen**
Press **INDEX**.
- **To check the file information**
Press **AUTO/INFO**. (p. 37)
- **To delete a still image**
Press **DELETE**.

Operations during Playback



During the slide show, moving the set lever to \wedge / \vee changes the playback order.

Playing Back Files (Continued)

Playback with Special Effects

Wipe or fader effects

Add effects at the beginning and end of videos. These effects cannot be set for still images.

Playback effects

Add effects that, for example, alter the colour tones of images.

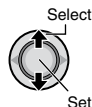
Preparation:

- Select or mode.
- Select the playback mode.

1 Press MENU.

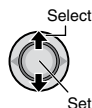


2 Select [WIPE/FADER] (mode only) or [EFFECT].



3 Select a desired effect.

For details on each effect, see the right column.



4 Select the file you want to play back.

■ To quit the screen

Press **MENU**.

■ To turn off the effect

Select [OFF] in step 3.

■ Items for WIPE/FADER setting

- **FADER-WHITE:**
Fades in or out with a white screen.
- **FADER-BLACK:**
Fades in or out with a black screen.
- **FADER-B.W:**
Fades in to a colour screen from a black and white screen, or fades out in the opposite way.
- **WIPE-CORNER:**
Wipes in on a black screen from the upper right to the lower left corner, or wipes out in the opposite way.
- **WIPE-WINDOW:**
Starts in the centre of a black screen and wipes in toward the corners, or wipes out in the opposite way.
- **WIPE-SLIDE:**
Wipes in from right to left, or wipes out in the opposite way.
- **WIPE-DOOR:**
Wipes in as the two halves of a black screen which open to the left and right revealing the scene, or wipes out in the opposite way.
- **WIPE-SCROLL:**
Wipes in from the bottom to the top of a black screen, or wipes out in the opposite way.
- **WIPE-SHUTTER:**
Wipes in from the centre of a black screen toward the top and bottom, or wipes out in the opposite way.

NOTE

No effect will be applied on files with a play time shorter than 7 seconds.



■ Items for EFFECT setting

- **SEPIA:**
The image is given a brownish tint like an old photo.
- **MONOTONE:**
The image becomes black and white like an old movie.
- **CLASSIC FILM*:**
The image is given an old movie atmosphere by the effect of skipping frames.
- **STROBE*:**
The image looks like a series of consecutive snapshots.

* mode only.

File Search Function

Preparation:

- Select  or  mode.
- Select the playback mode.

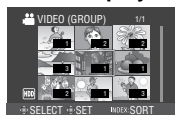
Group Index Screen

You can search the desired file by the group. The group is created automatically based on recording date and time. And the contents of the group are changed when adding/deleting or editing scenes.

1 Press INDEX.



2 Select the file you want to play back.



The number of files in the group is displayed in the thumbnails.

■ To return to the index screen

Press **INDEX** twice.

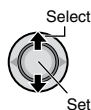
Date Index Screen

You can search the desired file by the recording date.

1 Press INDEX twice.



2 Select the recording date.



3 Select the file you want to play back.



■ To return to the index screen

Press **INDEX**.

NOTES

- The contents of the group may be changed depending on the interval of the recording time. To change the contents, register the event. (p. 23)
- The created groups may not be listed by recording date such as when copying the files to a microSD card.

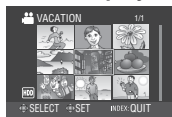
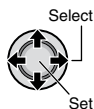
Playing Back Files (Continued)

Event Screen



You can search the desired file by the event that you registered the file to when recording. (p. 23) After searching by the event, you can search by the recording date to narrow down the search.

5 Select the file you want to play back.



■ To return to the index screen

Press **INDEX**.

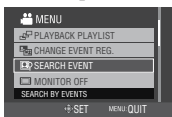
■ To change the event registration of a file

See page 37.

1 Press MENU.



2 Select [SEARCH EVENT].



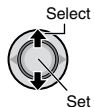
3 Select the event.

To move to the next page, select [NEXT PAGE].



4 Select the recording date.

To display all the files, select [ALL SCENES].



Watching Images on TV

This camera is designed to be used with high-definition or PAL-type colour television signals. It cannot be used with a television of a different standard.

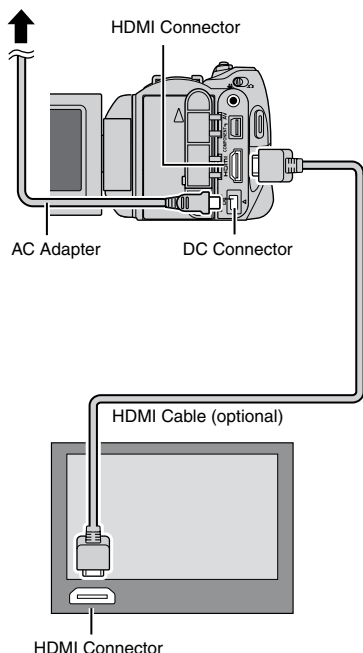
Connection with TV

You can output videos from the HDMI connector, COMPONENT connector, or AV connector. Select the connector that best suits your television.

Preparation: Turn off all units.

■ To connect using the HDMI connector

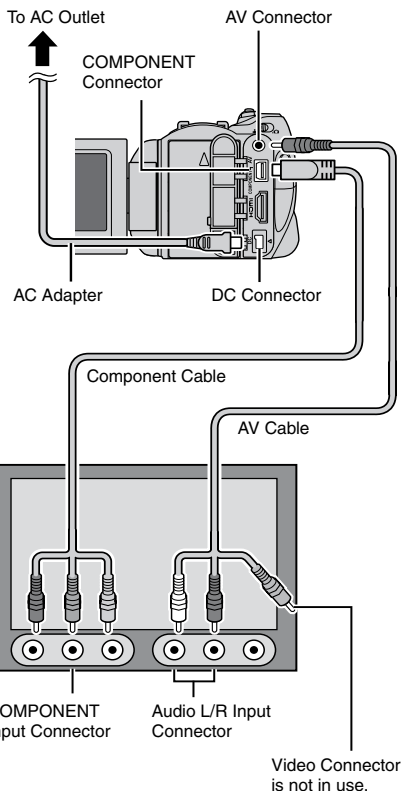
To AC Outlet



NOTE

When connecting to a 1080p compatible TV, set [HDMI OUTPUT] to [AUTO1]. When this is set, 1080p appears at the top of the display. (p. 52)

■ To connect using the COMPONENT connector

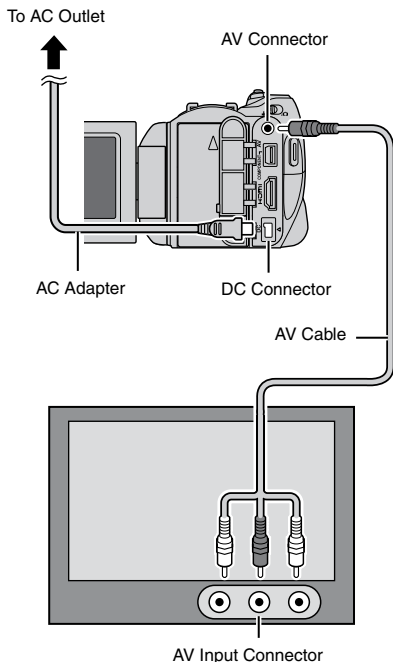


NOTE

Change the settings in [COMPONENT OUTPUT] according to the connection. (p. 52)

Watching Images on TV (Continued)

■ To connect using the AV connector



Playback Operation

After the connection with TV is completed

- 1 Turn on the camera and the TV.
- 2 Set the TV to its VIDEO mode.
- 3 (Only when connecting the camera to the VCR/DVD recorder)
Turn on the VCR/DVD recorder, and set the VCR/DVD recorder to its AUX input mode.
- 4 Start playback on the camera.
([p. 28, 29](#))

-
- To display camera's on-screen display on TV
Set [DISPLAY ON TV] to [ON]. ([p. 51](#))

NOTE

When the video was recorded with x.v.Colour™ set to [ON], change the x.v.Colour™ setting on TV. For details, refer to the TV's instruction manual. ([p. 49](#))

NOTE

Change the settings in [VIDEO OUTPUT] to suit the screen size of your television.
([p. 52](#))

Managing Files

CAUTION

Do not remove the recording medium or perform any other operation (such as turning off the power) while accessing files. Also, be sure to use the provided AC adapter, as the data on the recording medium may be corrupted if the battery becomes exhausted during operation. If the data on the recording medium becomes corrupted, format the recording medium to use the medium again. (p. 52, 53)

To Capture a Still Image from a Video



You can capture the desired scene from a recorded video, and store it as a still image.

Preparation:

- Select mode.
- Select the playback mode.

Press SNAPSHOT when playback is paused.

SNAPSHOT



NOTES

- Captured still images are stored at a resolution of 1920 x 1080. The image can be elongated in the horizontal or vertical directions depending on the picture quality of the source video file.
- Images cannot be captured when the video is in search or slow-motion playback.
- The continuous shooting function cannot be used to capture images.

Deleting/Protecting Files

- Protected files cannot be deleted. To delete them, release the protection first.
- Once files are deleted, they cannot be restored. Check files before deleting.

Preparation:

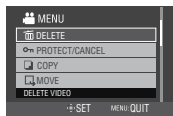
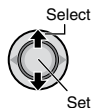
- Select or mode.
- Select the playback mode.

Deleting/Protecting the Currently Displayed File

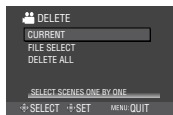
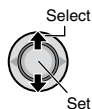
1 Press MENU.



2 Select [DELETE] or [PROTECT/CANCEL].

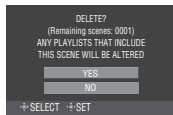
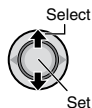


3 Select [CURRENT].



You can select the previous or next file by moving the set lever to < / >.

4 Select [YES].



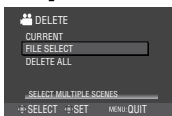
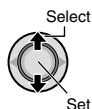
- **To quit the screen**
Press MENU.

Managing Files (Continued)

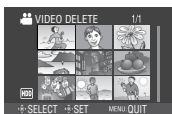
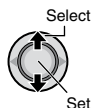
Deleting/Protecting Selected Files



After performing steps 1-2 (▶ p. 35)

3 Select [FILE SELECT].



4 Select the desired file.

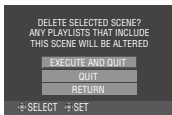
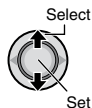


- The  (deletion) or  (protection) mark appears on the file. To select other files, repeat this step.
- If you slide the zoom lever towards **T**, the preview screen is displayed. Sliding the zoom lever towards **W** returns to the index screen.

5



6 Select [EXECUTE AND QUIT] (when performing [DELETE]), or [QUIT] (when performing [PROTECT/CANCEL]).

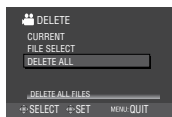
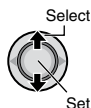


- **To quit the screen**
Press **MENU**.

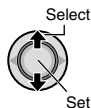
Deleting/Protecting All Files

After performing steps 1-2 (▶ p. 35)

3 Select [DELETE ALL] or [PROTECT ALL].



4 Select [YES].



- **To quit the screen**
Press **MENU**.

■ To release protection

Select the protected file in step 4 ("Deleting/Protecting Selected Files" left column).

■ To release protection of all files

- 1) In step 3, select [CANCEL ALL].
- 2) When [CANCEL ALL?] appears, select [YES].

Viewing File Information

Preparation:

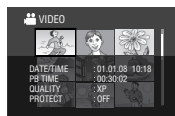
👤 mode:

Pause the playback. Otherwise, select the file on the index screen.

📷 mode:

Play back the still image. Otherwise, select the file on the index screen.

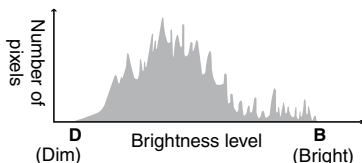
AUTO/INFO



- **FILE (📷 mode):** File name
- **FOLDER (📷 mode):** Folder name
- **DATE/TIME:** Date and time of the recording
- **PB TIME (👤 mode):** Playback time (length of the file)
- **SIZE (📷 mode):** Image size (➡ p. 50)
- **QUALITY:** Image quality (➡ p. 48, 50)
- **PROTECT:** File protection status (➡ p. 35)

■ To turn off the file information display

Press **AUTO/INFO** again.



- The shutter speed, F-number and ISO sensitivity (GAIN) when recorded are also displayed.

■ To turn off the file information display

Press **AUTO/INFO** a few times.

NOTE

The shutter speed displayed during shooting in auto mode is an approximation. It may not match the one displayed with the histogram.

Changing the Event Registration

Preparation:

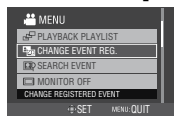
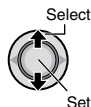
- Select 👤 mode.
- Select the playback mode.

Changing the Event of the Currently Displayed File

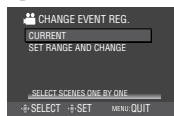
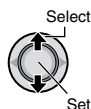
1 Press MENU.



2 Select [CHANGE EVENT REG.].



3 Select [CURRENT].



Histogram



A histogram is a graph indicating the image's brightness.

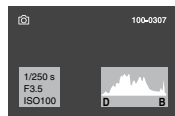
By checking the image and its histogram, you can see the exposure level pattern and the overall tone reproduction.

Preparation:

Play back the still image.

Press twice.

AUTO/INFO



- A larger number of pixels in the centre position indicates correct exposure and well-balanced brightness.

Managing Files (Continued)

4 Select the file you want to register.



You can select the previous or next file by moving the set lever to < / >.

Changing the Event of the Selected Files

After performing steps 1-2 (p. 37)

3 Select [SET RANGE AND CHANGE].

4 Select the file you want to register.



- When you select a file, the colour of the cursor changes. To select other files, move the cursor forward. You can only select the files in order.
- If you slide the zoom lever towards **T**, the preview screen is displayed. Sliding the zoom lever towards **W** returns to the index screen.

5 Select a new event you want to register the file to.

- To select a different destination, select [NEXT PAGE].
- To cancel the event registration, select [DON'T REGISTER].



■ To quit the screen
Press **MENU**.

Dividing Files



You can divide the selected video into two.

Preparation:

- Select **mode**.
- Select the playback mode.

1 Press MENU.



2 Select [DIVIDE].



3 Select the desired file.



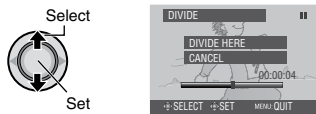
Playback starts.

4 Set the point at which you want to divide the file.



The actual division point may differ slightly from the point that is set.

5 Select [DIVIDE HERE].



To set the division point again, select [CANCEL].

■ To quit the screen
Press **MENU**.

NOTE

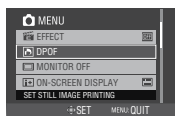
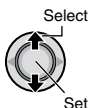
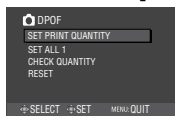
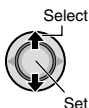
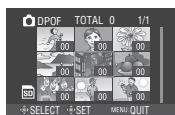
When playing back the divided file, the recording date of the division point is displayed.

DPOF Print Setting

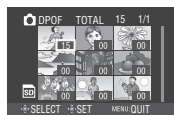
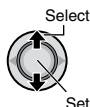
The number of prints to make of a still image recorded on a microSD card can be set. This feature is useful when taking the microSD card to a photo lab for printing.

Preparation:

- Select mode.
- Select the playback mode.
- Set [REC MEDIA FOR IMAGE] to [SD].
(p. 53)

Setting Files Individually**1 Press MENU.****2 Select [DPOF].****3 Select [SET PRINT QUANTITY].****4 Select the desired file.**

If you slide and hold the zoom lever towards **T**, the preview screen of the still image is displayed.

5 Select the number of prints (max. 15 prints).

To set print information for other images, repeat steps **4** and **5**. (You can set up to 999 files.)

To quit the screen

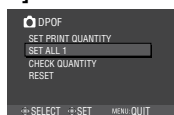
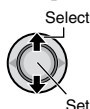
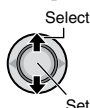
Press **MENU**.

To cancel the selection

Set the number of prints to "00" in step **5**.

Setting All Files Together (One Print for Each)

After performing steps 1-2 (left column)

3 Select [SET ALL 1].**4 Select [YES].****To quit the screen**

Press **MENU**.

To confirm DPOF settings

In step **3**, select [CHECK QUANTITY].

- If necessary, change the number of prints for the desired file by following steps **4** and **5**.

To reset DPOF settings

- 1) In step **3**, select [RESET].
- 2) When [RESET?] appears, select [YES].

Playlists



It is a list that enables you to organise recorded videos in order of preference.

Preparation:

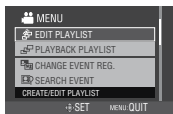
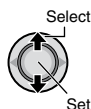
- Select mode.
- Select the playback mode.

Creating Playlists

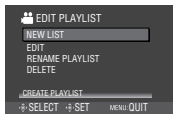
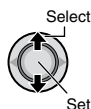
1 Press MENU.



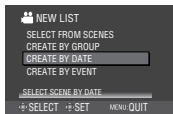
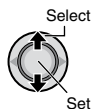
2 Select [EDIT PLAYLIST].



3 Select [NEW LIST].

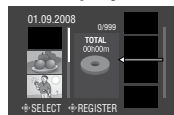
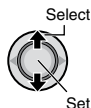


4 Select an item and display files.



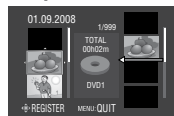
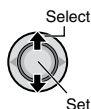
- **[SELECT FROM SCENES]:**
Display all files individually.
- **[CREATE BY GROUP]:**
Display all files listed by group.
- **[CREATE BY DATE]:**
Display all the files listed by recording date.
- **[CREATE BY EVENT]:**
Search for an event and display the corresponding files listed by recording date.

5 Select the file to add to playlist.



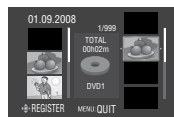
- To preview scenes, press **INDEX**. When the index screen of individual scenes appears, select the file.
To return to the previous screen, press **INDEX**.

6 Select the insertion point.

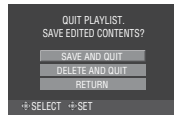
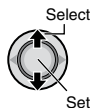


- To add other files, repeat steps 5 and 6.
- To delete a registered scene, select the registered file.

7



8 Select [SAVE AND QUIT].



- **To quit the screen**
Press **MENU**.

NOTES

- A maximum of 99 playlists can be created.
- If you delete the original files, the corresponding files are also deleted from the playlist.

Other Operations of Playlists

You can perform additional editing and delete files in a created playlist.

After performing steps 1-2 (p. 40)

Adding/Deleting Files in Playlist

3 Select [EDIT].

4 Select the playlist you want to edit.

To add or delete files, follow the steps 5 to 8 in "Creating Playlists". (p. 40)

Changing Playlist Names

The default name of a playlist is its creation date and time.

3 Select [RENAME PLAYLIST].

4 Select the desired playlist.

5 Select the desired letter.

- Repeat this process to complete the name.
- You can change the character types (capital letters, small letters or marks) by selecting [A/a/@].
- To correct a letter, select [←] or [→] and press down the set lever to move the cursor to the letter, then select [Clear] and press down the set lever.

6 Select [←].

Deleting Playlist

Original files are not deleted even if you delete the playlist.

3 Select [DELETE].

4 Select a playlist you want to delete.

To delete all playlists at once, select [DELETE ALL].

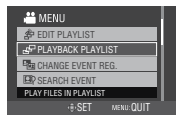
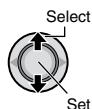
5 When [DELETE PLAYLIST?] appears, select [YES].

Playing Back Playlists

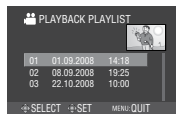
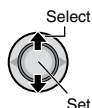
1 Press MENU.



2 Select [PLAYBACK PLAYLIST].



3 Select the playlist that you want to play back.



■ To quit the screen Press INDEX.

■ To stop playback Press the set lever.

■ To return to the normal file playback mode

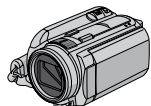
- 1) Press MENU.
- 2) Select [PLAYBACK NORMAL FILE].

■ To play back from the desired scene

- 1) In step 3, press INDEX. (The index screen for playlist appears.)
- 2) Select the desired scene.

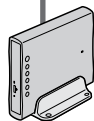
Copying Files

Types of Copying and Connectable Device



The Camera

You can copy files between the HDD and microSD card with this camera alone. (➡ right column)



DVD Burner (CU-VD50/CU-VD3)*

You can copy files recorded on this camera onto DVD discs. (➡ p. 43)

* AVCHD discs can be played back only on CU-VD50. CU-VD3 is not capable of playing back videos. In such case, use the camera to play back.



VCR/DVD Recorder

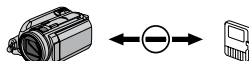
You can dub video recorded on this camera onto VCR/DVD recorder. (➡ p. 47)

It is recommended to use the JVC DVD burner (CU-VD50/CU-VD3). When using CU-VD20 or CU-VD40, the recording time may take approx. 2 times longer than the time that is described in the instruction manual of DVD burner.

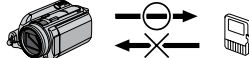
Copying/Moving Files

You can copy or move files between the HDD and microSD card.

mode



mode



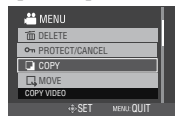
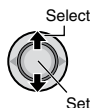
Preparation:

- Select or mode.
- Select the playback mode.
- Make sure that microSD card is inserted in the microSD slot.
- Make sure that enough free space is left in the copy/move destination medium.

1 Press MENU.

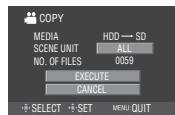


2 Select [COPY] or [MOVE].



- **[COPY]:**
Files are copied to the destination medium while leaving original files in the source medium.
- **[MOVE]:**
Files are moved to the destination medium while deleting original files (except read-only files) in the source medium.

3 Set the direction of copy/move.* (HDD → SD or SD → HDD)



* In case of mode, go to step 4.

4 Set the file unit to copy/move.



- **mode: [SCENE]**

- **mode: [FILE]**

Select this to transfer the selected files.

1) Select the desired file.

- The **✓** mark appears on the file. To select other files, repeat this step.

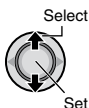
2) Press **MENU**.

- **[ALL]:**

Select this to transfer all files in the recording medium.

When the size of all files in the HDD is larger than the free space of the microSD card, only the files that can be contained in the free space will be copied.

5 Select [EXECUTE].



File transfer starts. When [COPYING COMPLETED]/[MOVING COMPLETED] appears, press down the set lever.

■ To quit the screen

Press **MENU**, then select [YES] when [QUIT?] appears.

■ To stop the file transfer

- 1) Press down the set lever.
- 2) Select [YES] when [QUIT?] appears.

Using a DVD Burner to Copy Files from the Camera

The files in the camera can be backed up to a DVD disc using a DVD burner.

- This disc cannot be played in a normal DVD player.

Use one of the following methods to view the disc.

- Playback the disc using the camera.

("To play back the created disc using the camera" p. 44, 46)

- Playback the disc using a DVD burner.*

- Playback on a PC.*

* The disc must first be finalised on the camera.

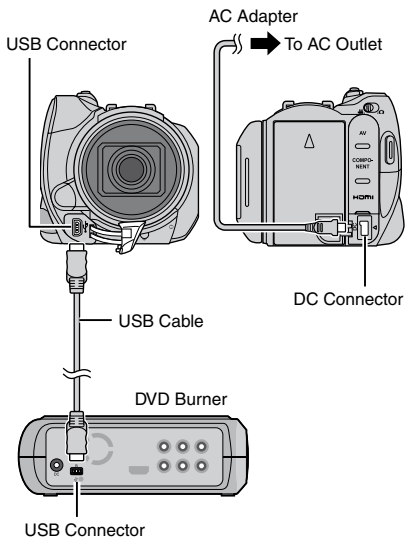
- Other than the created DVD using a DVD burner cannot be played.

- When connecting a DVD burner (CU-VD50) to a TV, you can play back the created disc without using the camera. When playing back disconnect the USB cable.

Connection with a DVD Burner

Preparation:

Turn on the camera first, then turn on the DVD burner.



NOTES

- Refer to also the optional DVD burner's instruction manual.
- Use the USB cable that came with the DVD burner.

Copying Files (Continued)

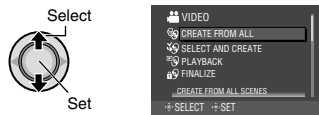
Backup All Files

Preparation:

- Connect the camera to the DVD burner.
- Select or mode.
- Select HDD or microSD card. (mode only)

The following illustrations of display screens are examples of when backing up video.

1 Select [CREATE FROM ALL].

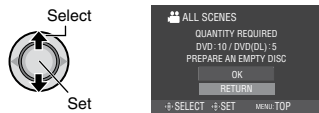


2 Select the desired menu.

- mode: [UNSAVED SCENES]
 mode: [UNSAVED IMAGES]
Files that have never been copied to a DVD disc are automatically selected and copied.
- mode: [ALL SCENES]
 mode: [ALL IMAGES]
All files in the recording medium are copied.



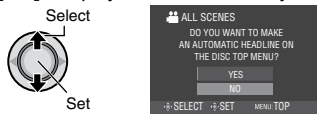
3 Select [OK].



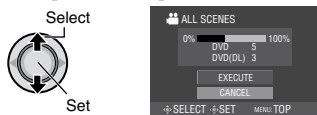
To cancel the backup, select [RETURN].

4 Select [YES] or [NO].

- [YES]: Displays the thumbnails by group.
- [NO]: Displays the thumbnails by date.



5 Select [EXECUTE].



- The files are copied on the disc. When [COMPLETED] appears, press down the set lever to complete the operation.
- When [INSERT NEXT DISC. PRESS [STOP] TO EXIT CREATE] appears, change the disc. Remaining files are copied on the second disc.
- To cancel the copying, select [STOP].

■ To return to the top screen

Press **MENU**, then select [YES].

■ To finalise the disc after copy is finished

- 1) Connect the camera to the DVD burner.
- 2) Turn on the camera.
- 3) Select [FINALIZE].
- 4) Select [EXECUTE].
- 5) When [COMPLETED] appears, select [OK].

■ To play back the created disc using the camera

- 1) Connect the camera to the DVD burner.
- 2) Turn on the camera first, then turn on the DVD burner.
- 3) Select [PLAYBACK].
- 4) Select the desired folder.
- 5) Select the desired file.
To return to the previous screen, press **INDEX**.

■ To view video/still image on TV

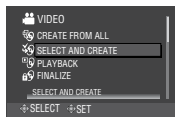
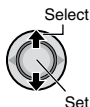
See page 33.

Select Files for Backup

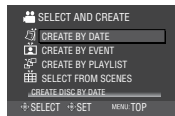
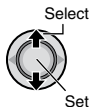
Preparation:

- Connect the camera to the DVD burner.
- Select or mode.

1 Select [SELECT AND CREATE] (mode) or [SELECT AND SAVE] (mode).



2 Select the desired menu.



mode:

• [CREATE BY DATE]:

Files are sorted according to the date on which they were recorded. Relevant files are displayed in a list. Select the recording date.

• [CREATE BY EVENT]:

Files are sorted according to event. Relevant files are displayed in a list. Select the event.

• [CREATE BY PLAYLIST]:

Select the desired playlist from the list of playlists. The selected playlists are displayed in a list.

- 1) Select the desired list. To select other lists, repeat this process.
- 2) Move the set lever to > twice.

• [SELECT FROM SCENES]:

Register backup files individually.

- 1) Select the desired file. To select other files, repeat this process.
- 2) Press **INDEX** then go to step 4.

mode:

• [SAVE BY DATE]:

Files are sorted according to the date on which they were recorded. Relevant files are displayed in a list. Select the recording date.

• [SELECT FROM IMAGES]:

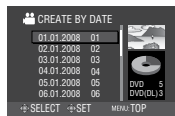
Register backup files individually.

- 1) Select the desired file. To select other files, repeat this process.
- 2) Press **INDEX** then go to step 4.

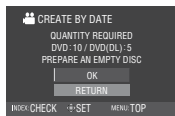
To preview scenes, press **INDEX**. When the index screen of individual scenes appears, select the file.

To return to the previous screen, press **INDEX**.

3 Select the desired file.



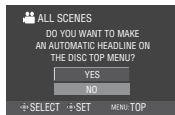
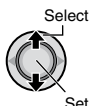
4 Select [OK].



To cancel the backup, select [RETURN].

5 Select [YES] or [NO].

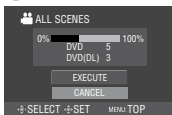
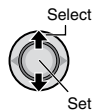
- [YES]: Displays the thumbnails by group.
- [NO]: Displays the thumbnails by date.



When selecting [CREATE BY PLAYLIST], select [OK] when [HEADLINE DISPLAYED ON THE DISC TOP MENU] IS EITHER THE PLAYLIST OR DATE appears.

Copying Files (Continued)

6 Select [EXECUTE].



- The files are copied on the disc. When [COMPLETED] appears, press down the set lever to complete the operation.
- When [INSERT NEXT DISC. PRESS [STOP] TO EXIT CREATE] appears, change the disc. Remaining files are copied on the second disc.
- To cancel the copying, select [STOP].

■ To return to the top screen

Press **MENU**, then select [YES].

■ To finalise the disc after copy is finished

- 1) Connect the camera to the DVD burner.
- 2) Turn on the camera.
- 3) Select [FINALIZE].
- 4) Select [EXECUTE].
- 5) When [COMPLETED] appears, select [OK].

■ To play back the created disc using the camera

- 1) Connect the camera to the DVD burner.
- 2) Turn on the camera first, then turn on the DVD burner.
- 3) Select [PLAYBACK].
- 4) Select the desired folder.
- 5) Select the desired file. To return to the previous screen, press **INDEX**.

■ To view video/still image on TV

See page 33.

Digest Playback

You can view the opening scene of each video (digest) in the created DVD.

Create a DVD using a DVD burner (CU-VD50/ CU-VD3).

When playing back the digest;

- Use a DVD burner (CU-VD50/CU-VD3).
- Use an AVCHD compatible DVD device.

1 Load the created DVD on the device.

2 Select [DIGEST PLAYBACK].



You can view the previous or next page by selecting < / >.

3 The digest is played back continuously.

■ To normal playback / To the index menu

- 1) Press the top menu button on the remote control of the DVD device during the digest playback.
- 2) Select the desired item.

NOTE

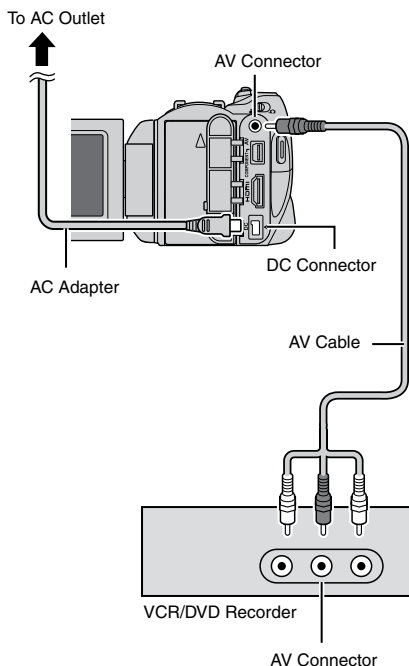
In case of [CREATE BY PLAYLIST], date/time on the file information display shows the date of copying the file, not of the actual recording.

Standard-definition Dubbing

You can dub videos in standard-definition to a DVD recorder.

Preparation: Turn off all units.

■ To connect using the AV connectors (analogue dubbing)



Preparation: Create a playlist.

1 Set the VCR/DVD recorder to its AUX input mode.

Check that the images from the camera are input correctly to the VCR/DVD recorder.

2 Play back playlists on the camera.

- 1) Press **MENU**.
- 2) Select [DUBBING PLAYBACK].
- 3) Select the desired playlist.
- 4) Select [YES]. (A black screen is displayed for 5 seconds at the first and the last scene.)

3 At the point you want to start dubbing, start recording on the VCR/ DVD recorder.

Refer to the VCR/DVD recorder's instruction manual.

■ To stop dubbing

Stop recording on the VCR/DVD recorder, then press **START/STOP** again.

■ To hide the date or icons on the screen

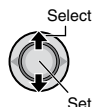
Change the settings in [DISPLAY ON TV] (p. 51) or [ON-SCREEN DISPLAY] (p. 49).

Changing the Menu Settings

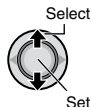
1 Press MENU.



2 Select the desired menu.



3 Select the desired setting.



■ To return to the previous screen

Move the set lever to \leftarrow .

■ To quit the screen










Press **MENU**.

Menus (VIDEO)	Settings: [] = Factory-preset
VIDEO QUALITY Sets the picture quality for videos.	<p>[XP]: High quality [SP]: Standard quality [EP]: For recording for a long time You can record in high-definition (1440 x 1080i) videos with any of the picture qualities.</p> <p>NOTE It is recommended to set XP mode when recording scenes with fast moving or with extreme changing in brightness to avoid noise.</p>
ZOOM Sets the maximum zoom ratio.	<p>[10x] / 40x / 200x</p> <p>NOTE Optical zoom is used up to [10x]. Digital zoom is used from more than [10x] up to the selected zoom ratio.</p>
DIS Compensates for hand shake.	<p>OFF: Deactivates the function. [ON]: Activates the function.</p> <p>NOTES</p> <ul style="list-style-type: none"> Complete stabilisation may not be possible if hand shake is excessive, or depending on the shooting conditions. Switch off this mode when recording with the camera on a tripod.








Menus (VIDEO)	Settings: [] = Factory-preset
📺 GAIN UP Makes the subject appear bright automatically when you record in dark places. However, the overall colour tones appear grayish.	OFF: Deactivates the function. [AGC]: Electrically brightens the scene in dark place. AUTO: Automatically brightens the scene when it is dark. (Becomes brighter than [AGC])
📺 x.v.Color Records video in the colour range suitable for viewing in an x.v.Color™ compliant TV.	[OFF]: Deactivates the function. ON: Activates the function.
📺 REGISTER EVENT	See page 23.
📺 BASIC SETTINGS	[BASIC SETTINGS] menus (📖 p. 51)
📺 FOCUS ASSIST When this function is used, the outline of the focused object is displayed in the selected colour.	RED / GREEN / [BLUE]
📺 WIND CUT Reduces noise caused by wind.	[OFF]: Deactivates the function. ON: Activates the function.
📺 MIC LEVEL Displays the input level.	OFF: Deactivates the function. [ON]: Activates the function.
📺 MIC LEVEL SETTING Increases or decreases the sensitivity of the microphone.	-2 to +2 NOTE When the external microphone is connected, you can adjust the sensitivity.
📺 MONITOR OFF* Enables you to turn off the backlight on the monitor temporarily. * playback mode only	YES: Turn off the backlight. (no display) [NO]: Turn on the backlight. NOTE To turn on the backlight again, perform any operation such as zooming.
📺 ON-SCREEN DISPLAY* Displays the icons and date on the screen. * playback mode only	OFF: Hides all the text and icons on the screen. [DISPLAY ALL]: Displays all the text and icons. DISPLAY DATE ONLY: Hides the text and icons and displays the date only. DISPLAY DATE 5 SEC: When the recording date changes or images are displayed, the date is displayed for approximately 5 seconds.











Changing the Menu Settings (Continued)

Menus (📷 IMAGE)	Settings: [] = Factory-preset
🔍 IMAGE QUALITY Sets the picture quality for still images.	[FINE] / STANDARD
📐 IMAGE SIZE Selects the picture size for still images.	[1920 x 1080] / 1440 x 1080 / 640 x 480
ISO GAIN Sets the ISO setting to increase the sensitivity in dark conditions.	[AUTO] / ISO100 / ISO200 / ISO400
⚙️ BASIC SETTINGS	[BASIC SETTINGS] menus (🔧 p. 51)
🎯 FOCUS ASSIST When this function is used, the outline of the focused object is displayed in the selected colour.	RED / GREEN / [BLUE]
⌚ SELF-TIMER Starts recording when the set time elapses after SNAPSHOT is pressed.	[OFF] / 2SEC / 10SEC NOTES <ul style="list-style-type: none"> • You can confirm the countdown on the camera screen. • You can also use this to prevent vibration by the hand.
📷 SHUTTER MODE Records still images continuously while SNAPSHOT is pressed.	[RECORD ONE SHOT]: Records one still image at a time. CONTINUOUS SHOOTING: Records still images continuously while SNAPSHOT is pressed. BRACKETING: Activates the bracket shooting function. In addition to an image with the exposure set by the camera, two other images are recorded with exposure values shifted to the +0.3 EV and -0.3 EV sides. You can select the image that has a suitable exposure after shooting. NOTES <ul style="list-style-type: none"> • The interval between recording still images is approx. 0.5 seconds. • Continuous shooting may not work well depending on the recording medium. • The continuous shooting speed will drop if this function is used repeatedly.
📺 MONITOR OFF	See page 49.
📺 ON-SCREEN DISPLAY	See page 49.

 BASIC SETTINGS menus	Settings: [] = Factory-preset
 LANGUAGE Sets the display language. (p. 17)	[ENGLISH] You have a choice of 23 languages.
 CLOCK ADJUST Sets the time. (p. 17)	DATE / TIME
 DATE DISPLAY STYLE Sets the date and time display format.	DATE STYLE: month.day.year / year.month.day / [day.month.year] TIME: [24h] / 12h
 MONITOR BRIGHT Sets the brightness of the LCD monitor.	Adjust the brightness of the display by moving the set lever to < / >, then press down.
 MONITOR BACKLIGHT Enables you to adjust the brightness of backlight on the monitor.	BRIGHTER: Brightens the backlight on the monitor regardless of the surrounding conditions. STANDARD: Select this when saving the battery life. [AUTO] : The brightness will automatically be set to [BRIGHTER] when using outdoors and to [STANDARD] when using indoors. (when using the battery pack)
 DROP DETECTION Prevents damage to the HDD by turning off the power automatically when it is detected that the camera dropped.	OFF: Deactivates the function. [ON]: Activates the function. To turn on the camera when the drop detection worked, close the LCD monitor and open it again. CAUTION <ul style="list-style-type: none">• The built-in hard disk of the camera may not be protected even if the setting is [ON].• When recording/playback stops even if the camera is not dropped, set the setting to [OFF] or set [REC MEDIA FOR VIDEO] in the [BASIC SETTINGS] to [SD]. (p. 53)
 DEMO MODE Introduces special features of the camera when there is no operation for about 3 minutes during recording mode.	OFF: Deactivates the function. [ON]: Activates the function. NOTES <ul style="list-style-type: none">• The demonstration only works when the AC adapter is connected, not with the battery.• If a microSD card is in the camera, demonstration will not take place even if this mode is set to [ON].
 DISPLAY ON TV Displays camera's on-screen display on a TV screen.	[OFF]: Does not display on TV. ON: Displays on TV. NOTE When connected to a TV using the i.LINK connector, the camera's on-screen display is not displayed on the TV, even if this setting is [ON].

Changing the Menu Settings (Continued)

 BASIC SETTINGS menus	Settings: [] = Factory-preset
<p> VIDEO OUTPUT Set the aspect (16:9/4:3) to the screen of the connected television when outputting videos from the AV connector.</p>	<p>4:3 / [16:9]</p>
<p> COMPONENT OUTPUT Sets the definition of the video output from the COMPONENT connector.</p>	<p>[576i]: Outputs at 576i. 1080i: Outputs at 1080i.</p>
<p> HDMI OUTPUT Sets the definition of the video output from the HDMI connector.</p>	<p>[AUTO1]: The definition that best suits the connected device is automatically selected: 576i, 576p, 1080i or 1080p. AUTO2: Select when the video is not projected in [AUTO1] correctly. 576p: Select when the video is not projected in [AUTO2] correctly.</p>
<p> AUTO FINALIZE Sets the disc to a readable state.</p>	<p>OFF: Makes created DVDs recordable (not playable on device other than the camera). [ON]: Finalises created DVDs so that they can be played back on DVD burner.</p> <p>NOTES</p> <ul style="list-style-type: none"> • When you play back a DVD created when [OFF] is set on DVD burner, select [FINALIZE] on the DVD creation screen. (p. 44) • When you create two or more DVDs at the same time, other than the last DVD is finalised automatically even if the setting is [OFF].
<p> CLEAN-UP HDD Writing speed to HDD tends to become slow after long periods of repeated use. Execute cleanup periodically to regain the writing speed.</p>	<p>Connect the AC adapter. YES: Performs this function. Select [OK] when completed. [NO]: Cancels this function.</p> <p>NOTE</p> <p>Depending on the condition of the HDD, it may take several minutes for the cleanup process to be completed.</p>
<p> FORMAT HDD Ensures stable speeds and operation when accessing the hard disk drive.</p>	<p>[FILE]: Initialises all files in the hard disk drive. FILE + MANAGEMENT NO: Initialises all files and management numbers in the hard disk drive. (p. 60)</p> <p>NOTE</p> <p>Be aware that all files and data including protected files will be erased by the formatting process.</p>

 BASIC SETTINGS menus	Settings: [] = Factory-preset
 FORMAT SD CARD You have to format newly purchased microSD cards with this camera before using them. This will also ensure stable speeds and operation when accessing the microSD card.	<p>[FILE]: Initialises all files in the microSD card. FILE + MANAGEMENT NO: Initialises all files and management numbers in the microSD card. (p. 60)</p> <p>NOTE Be aware that all files and data including protected files will be erased by the formatting process.</p>
 DELETE DATA ON HDD When you dispose of the camera, perform this to make it difficult to recover data on the HDD.	<p>Connect the AC adapter. YES: Performs this function. Select [OK] when completed. [NO]: Cancels this function.</p> <p>NOTE In addition to this operation, it is recommended that you use a commercially available data erasing software to eliminate the risk of data recovery.</p>
 IMAGE NO. RESET By resetting the file number (name), a new folder is made. The new files will be stored in the new folder. It is convenient to separate the new files from previously recorded files.	<p>YES: Performs this function. Select [OK] when completed. [NO]: Cancels this function.</p>
 REMOTE Turns on/off reception of the operation signal from the remote control.	<p>OFF: The camera does not receive the signal from the remote control. [ON]: Enables operation with the remote control.</p>
 OPERATION SOUND Turns on/off the operation sound.	<p>OFF: Turns off the operation sound. [ON]: The melody sounds when operations are performed.</p>
 FACTORY PRESET Returns all the camera settings to their default values.	<p>YES: Performs this function. [NO]: Returns to the menu screen without executing reset.</p>
 QUICK RESTART Enables the camera to start up quickly when you turn off the camera and then on again within five minutes by closing and opening the LCD monitor.	<p>OFF: A quick start is not performed. [ON]: If the LCD monitor is opened again within 5 minutes, the camera starts quickly. The power consumption used for the 5 minute period after the LCD monitor is closed is approximately 1/3 that used during recording. This enables you to save more power than leaving the power on.</p>
 REC MEDIA FOR IMAGE Sets the recording medium for still images.	<p>[HDD] / SD</p>
 REC MEDIA FOR VIDEO Sets the recording medium for videos.	<p>[HDD] / SD</p>

Troubleshooting

The camera is a microcomputer-controlled device. External noise and interference (from a TV, a radio, etc.) might prevent it from functioning properly.

- To solve the problem, first follow the instructions below.
- If the problem is not solved, reset the camera. (p. 58)
- If the problem persists, please consult your nearest JVC dealer.

The following phenomena are not malfunctions.

- The camera heats up when it is used for a long time.
- The battery heats up during charging.
- When playing back a video, the image stops momentarily or the sound is interrupted at junctions between scenes.

Trouble		Action
Card	Cannot insert the microSD card.	<ul style="list-style-type: none"> ● Check that the microSD card is facing the right direction.
	No power is supplied.	<ul style="list-style-type: none"> ● Connect the AC adapter correctly. ● Recharge the battery.
Power	After the low temperature message is displayed, the power turns off when the camera warms up.	<ul style="list-style-type: none"> ● When the camera has warmed up after being cold, the camera may switch itself off to check it is operating correctly.
	Recording cannot be performed.	<ul style="list-style-type: none"> ● Open the LCD monitor to turn on the camera. ● Press PLAY/REC to select the recording mode.
Recording	Recording stops by itself.	<ul style="list-style-type: none"> ● If the camera temperature increases, REC flashes in the LCD monitor. If the temperature continues to increase, operation stops automatically to protect the HDD. ● Move to a place where the camera is not affected by excessive sound or vibration. ● Insert a commercially available microSD card, and set each of the [REC MEDIA FOR VIDEO] and [REC MEDIA FOR IMAGE] to [SD]. ● Recording stops automatically after 12 hours of continuous recording.
	The focus is not adjusted automatically.	<ul style="list-style-type: none"> ● Clean any dirt or water droplets from the lens. ● Set focus to the automatic mode. ● If you are recording in a dark place or a subject that has no contrast between dark and light, adjust the focus manually.
	The recorded subject is too dark.	<ul style="list-style-type: none"> ● Use backlight compensation. ● Set the brightness to the [+] side. ● For videos, set [GAIN UP] to [AGC] or [AUTO]. ● For still images, set [GAIN] to [AUTO].

Trouble		Action
Recording	The recorded subject is too bright.	<ul style="list-style-type: none"> Set the backlight compensation to [OFF] if it is being used. Set the brightness to the [-] side.
	Cannot use spot exposure control.	<ul style="list-style-type: none"> Keep the zoom ratio below [10x].
	The colour of the recorded subject looks strange.	<ul style="list-style-type: none"> If there are numerous light sources etc. behind the subject, set the white balance to [MWB].
	Digital zoom does not work.	<ul style="list-style-type: none"> Change [ZOOM] to [40x] or [200x]. Deactivate effect and/or focus assist.
	White balance setting cannot be activated.	<ul style="list-style-type: none"> This cannot be used if [SEPIA] or [MONOTONE] are selected as effects. Do not use [TWILIGHT] from program AE.
	The continuous shooting speed is slow.	<ul style="list-style-type: none"> The continuous shooting speed will drop after continuous shots. Continuous shooting speed may drop depending on the recording media or under certain recording conditions.
	A function cannot be activated.	<ul style="list-style-type: none"> Check the indication that represents that function. If the indication is flashing or off, you have selected two functions that cannot be used together. Choose which of the functions to use.
	Video movement appears jerky/like it is frame dropping.	<ul style="list-style-type: none"> Make sure the icon that represents the function is displayed. Set [SHUTTER SPEED] to [AUTO] and [EFFECT] to [OFF].
Displays	Mosaic-type noise occurs when recording scenes with fast moving or with extreme changing in brightness.	<ul style="list-style-type: none"> Record videos with high quality mode, such as XP.
	The indication display flashes or goes out.	<ul style="list-style-type: none"> You have selected two functions that cannot be used together. Choose which of the functions to use.
	The LCD monitor appears blank.	<ul style="list-style-type: none"> Operate the camera. If the camera is not operated for a certain length of time when using the AC adapter, it will enter sleep mode, and the LCD monitor will turn off.
	The remaining battery display is not correct.	<ul style="list-style-type: none"> Fully charge the battery, run it down, and then recharge it again. If the camera is used for long periods of time in high or low temperatures, or if the battery is repeatedly charged, the amount of remaining battery may not be displayed correctly.

Troubleshooting (Continued)

Trouble		Action
Displays	The LCD monitor display is uneven.	<ul style="list-style-type: none"> ● If the LCD monitor or surrounding parts have been pressed, remove your hand and leave the camera for a short while. (Applying pressure causes image unevenness.)
	Images on the LCD monitor appear dark or whitish.	<ul style="list-style-type: none"> ● Adjust the brightness and angle of the LCD monitor. ● The LCD monitor appears dark when used in cold places. This is not a malfunction. ● The LCD monitor may be reaching the end of its service life. Consult your nearest JVC dealer or the JVC customer service.
	The LCD monitor is difficult to see.	<ul style="list-style-type: none"> ● The LCD monitor may be difficult to see if used in bright areas such as under direct sunlight.
Playback	The date/time does not appear.	<ul style="list-style-type: none"> ● Set [ON-SCREEN DISPLAY] to [DISPLAY ALL].
	The same scene appears stopped for a long time.	<ul style="list-style-type: none"> ● Replace the microSD card. (If there are scratches etc. on the microSD card, the camera will have difficulty reading the data, and this phenomenon may occur. The camera will try to play back as much as possible, but if this condition continues, the camera will not be able to play back the video and it will automatically stop.) ● Perform cleanup or formatting.
	Video movement appears jerky.	
	Sound or video are interrupted.	<ul style="list-style-type: none"> ● Sometimes playback is interrupted at the connecting section between two scenes.
	A part of the TV screen appears to be shaking.	<ul style="list-style-type: none"> ● Change [HDMI OUTPUT] in the [BASIC SETTINGS] to [AUTO1].
	Cannot find a recorded video.	<ul style="list-style-type: none"> ● Select [PLAYBACK OTHER FILE] then search the video on the index screen. (Video files that have damaged management information can be played back.)
	Some functions cannot be used when playing back a backup DVD through a DVD burner connected to the camera.	<ul style="list-style-type: none"> ● The following functions cannot be used for a backup DVD. <ul style="list-style-type: none"> When playing back video <ul style="list-style-type: none"> - Search index by date - Playback effects When playing back still image <ul style="list-style-type: none"> - Playback effects

Trouble		Action
Playback	The colour of images looks strange.	<ul style="list-style-type: none"> When recording the white balance was not correctly adjusted. When the video was recorded with x.v.Colour™ set to [ON], change the setting as desired on TV. Set [EFFECT] to [OFF].
	Noise can be heard.	<ul style="list-style-type: none"> Do not move the camera suddenly during recording. (If the camera is moved suddenly during recording, the driving sound (hum) of the hard disk may have been recorded.)
	Images look unnatural on the TV (long and thin etc.)	<ul style="list-style-type: none"> Change [VIDEO OUTPUT] in the [BASIC SETTINGS] to match your TV.
Dubbing	When dubbing, the connected video device does not start recording automatically.	<ul style="list-style-type: none"> Operate the video device manually to start and stop recording.
Other problems	The camera operates slowly when switching between video mode and still image mode, or when switching the power on or off.	<ul style="list-style-type: none"> Copy all files from the media onto your computer, and erase the files from the media. (If there are many still images (more than 1,000 files) on the media, it takes time for the camera to process the files.)
	The camera gets hot.	<ul style="list-style-type: none"> This is not a malfunction.
	The lamp does not flash during battery charging.	<ul style="list-style-type: none"> Check the remaining battery charge. (When the battery is fully charged, the lamp does not flash.) When recharging in either a hot or cold environment, ensure that battery is being charged within the permitted temperature range. (If the battery is being recharged outside the permitted temperature range, recharging may stop to protect the battery.)
	The remote control doesn't work.	<ul style="list-style-type: none"> Replace the battery. Set [REMOTE] in the [BASIC SETTINGS] to [ON]. The remote control may not operate outdoors or in places exposed to strong light.

Troubleshooting (Continued)

■ The following phenomena are not malfunctions.

- LCD monitor momentarily becomes red or black when sunlight is recorded.
- Black spots, or red, green, or blue spots appear on the LCD monitor.
(The LCD monitor contains 99.99% effective pixels, but 0.01% or fewer pixels may be ineffective.)

■ Maintaining HDD Performance

Periodically perform [CLEAN-UP HDD].

■ If a malfunction occurs in the HDD

- ① Perform [CLEAN-UP HDD].
- ② If this does not solve the malfunction, perform [FORMAT HDD]. (All data is deleted.)
- ③ If this does not solve the problem, perform the disc check function from a PC after formatting.
- ④ If this does not solve the problem, contact the JVC customer service for repairs.

■ To reset the camera

- ① Close the LCD monitor and remove the power supply (battery pack or AC adapter) from the camera, then reattach it.
- ② Execute [FACTORY PRESET] in the [BASIC SETTINGS]. (➡ p. 53)

Cleaning

Before cleaning, turn off the camera and remove the battery pack and AC adapter.

■ To clean the camera

Wipe the camera gently with a soft cloth. If the camera is particularly dirty, dip the cloth into diluted mild soap and wring it out well. After wiping with the wet cloth, wipe again with a dry cloth.

■ To clean the LCD monitor

Wipe the monitor gently with a soft cloth. Be careful not to damage the monitor.

■ To clean the lens

Wipe gently with lens cleaning paper.

NOTES



- Avoid using strong cleaning agents such as benzene or alcohol.
- Mould may form if the lens is left dirty.
- When using a cleaner or chemically treated cloth, refer to the cautions for each product.

Warning Indications

Indication	Action
CHECK LENS COVER	<ul style="list-style-type: none"> ● Slide the lens cover switch to open the lens cover.
SET DATE/TIME!	<ul style="list-style-type: none"> ● Set the date and time. (Connect the camera to an AC outlet using the AC adapter for over 24 hours to charge the clock's built-in lithium battery. Then set the date/time.)
COMMUNICATING ERROR	<ul style="list-style-type: none"> ● Detach the battery pack once and re-attach it firmly.
CANNOT USE IN VIDEO MODE	<ul style="list-style-type: none"> ● Set [REC MEDIA FOR VIDEO] in the [BASIC SETTINGS] to [HDD]. ● Replace the microSD card.
NOT FORMATTED	<ul style="list-style-type: none"> ● Select [OK] and select [YES] when [DO YOU WANT TO FORMAT? ALL DATA WILL BE ERASED] appears.
FORMAT ERROR!	<ul style="list-style-type: none"> ● Check the operating procedure, and perform once again. ● Turn off the camera, and turn it on again.
DATA DELETION ERROR	
FAILURE TO SAVE	
HDD ERROR! MEMORY CARD ERROR!	<ul style="list-style-type: none"> ● Perform cleanup or formatting. ● Remove and re-insert the microSD card. (MultiMediaCard cannot be used.) ● Remove any dirt from the microSD card terminals. ● Insert the microSD card before switching the power on. ● Turn off the camera, and turn it on again.
UP TO 3 STILL IMAGES CAN BE TAKEN DURING RECORDING	<ul style="list-style-type: none"> ● Stop video recording, and then record a still image. ● Set the mode switch to still images, and then record a still image.
CANNOT TAKE MORE STILL IMAGES AT THE MOMENT	<ul style="list-style-type: none"> ● Stop video recording, and then record a still image. (If an microSD card is removed or inserted during video recording, a still image cannot be recorded.)
DROP DETECTION WORKED AND THE POWER IS TURNED OFF	<ul style="list-style-type: none"> ● Set [REC MEDIA FOR VIDEO] in the [BASIC SETTINGS] to [SD], then record to a microSD card.
RECORDING CANCELLED	

Warning Indications (Continued)

Indication	Action
RECORDING FAILURE	microSD card: <ul style="list-style-type: none"> • Check whether the microSD card has been checked for operability. HDD: <ul style="list-style-type: none"> • Perform cleanup. • Do not allow the camera to be subject to impact/vibrations.
VIDEO MANAGEMENT FILE IS DAMAGED, RECOVERY IS REQUIRED TO RECORD/PLAYBACK, RECOVER?	<ul style="list-style-type: none"> • Select [OK] to restore.
UNSUPPORTED SCENE! UNSUPPORTED FILE!	<ul style="list-style-type: none"> • Use a supported file format.
THIS FILE IS PROTECTED	<ul style="list-style-type: none"> • Switch off the [PROTECT/CANCEL] function in the MENU.
INSUFFICIENT SPACE	<ul style="list-style-type: none"> • Delete files. Move files to a PC or other device. • Replace the microSD card with a new one.
NUMBER OF FOLDERS OVERFLOW	<ul style="list-style-type: none"> • Replace the backup destination with another disc.
UPPER LIMIT OF RECORDABLE NUMBER OF FOLDERS/ FILES HAS BEEN REACHED	<ul style="list-style-type: none"> • Move the files or folder to a PC or other device, and then format the HDD of the camera or the microSD card. • Select [FILE + MANAGEMENT NO] in the [FORMAT HDD]/[FORMAT SD CARD].
SCENE QUANTITY LIMIT EXCEEDED	
CANCELLED BECAUSE PLAYLIST NUMBER LIMIT EXCEEDED	
PROCESSING CANCELLED DUE TO LACK OF SPACE FOR OPERATION	<ul style="list-style-type: none"> • When creating a DVD, reduce the number of playlists to be saved. • Reduce the number of videos to add to the playlist to 999 files or less.
NO REGISTERED SCENES IN PLAYLIST SOME OF SCENES MAY NOT BE PLAYED BACK	<ul style="list-style-type: none"> • Delete the playlist, and then create a new one.

Indication	Action
POWER IS OFF, OR USB DEVICE IS UNSUPPORTED	<ul style="list-style-type: none"> ● Turn on the power of the connected USB device. ● Connect the AC adapter to the DVD burner.
DVD-RW DISC HAS BEEN ALREADY USED	<ul style="list-style-type: none"> ● Replace the disc of the DVD burner with another disc. (A DVD-RW disc can be initialised.)
FINALIZATION FAILED	<ul style="list-style-type: none"> ● Replace the disc of the DVD burner with another disc.
INCOMPATIBLE FORMAT	<ul style="list-style-type: none"> ● Perform the following operations in order. <ol style="list-style-type: none"> ① Disconnect the external HDD from the camera, and connect it to a PC to make sure it contains no important files. ② Connect the external HDD to the camera, and then select the [FORMAT] from the menu. (All files on the external HDD will be deleted.)
NO FILES	<p> mode:</p> <ul style="list-style-type: none"> ● In the case of a still image DVD, set the mode switch to still images. <p> mode:</p> <ul style="list-style-type: none"> ● No still images have been recorded, so set the mode switch to videos.
INSERT DISC	<ul style="list-style-type: none"> ● Open the tray of the DVD burner, check and reinsert the DVD, and close the tray.
CHANGE DISC	

Specifications

Camera

■ For general

Power supply

- DC 11 V (Using AC adapter)
- DC 7.2 V (Using battery pack)

Power consumption

- Approx. 4.8 W*
- * When the LED light is off and the monitor backlight is set to [STANDARD] mode.

Dimensions (W x H x D)

- 71 mm x 68 mm x 123 mm

Weight

- Approx. 430 g
- Approx. 475 g (incl. battery)

Operating temperature

- 0°C to 40°C

Operating humidity

- 35% to 80%

Storage temperature

- 20°C to 50°C

Pickup

- 1/4.5" (1,840,000 pixels) progressive CMOS

Lens

- Video: F1.8 to 2.5, f = 3.2 mm to 32.0 mm, 10:1 power zoom lens
- Still image: F1.9 to 2.5, f = 4.0 mm to 32.0 mm, 8:1 power zoom lens

Filter diameter

- ø43.0 mm

LCD monitor

- 2.7" diagonally measured,
- LCD panel/TFT active matrix system

Speaker

- Monaural

LED Light

- Within 1.5 m
- (recommended shooting distance)

■ For video/audio

Recording/Playback format

- Video: MPEG-4 AVC/H.264
- Audio: Dolby Digital (2ch)

Signal format

- 1080/50i

Recording mode (video)

- XP: VBR, average of 17 Mbps
- SP: VBR, average of 12 Mbps
- EP: VBR, average of 5 Mbps

Recording mode (audio)

- 48 kHz, 256 kbps

■ For still image

Format

- JPEG

Image size

- 3 modes: 1920 x 1080
- 1440 x 1080
- 640 x 480

Picture quality

- 2 modes: FINE / STANDARD

■ For connectors

HDMI

- HDMI™ (V.1.3 with x.v.Colour™)

Component output

- Y, Pb, Pr component output
- Y: 1.0 V (p-p), 75 Ω
- Pb/Pr: 0.7 V (p-p), 75 Ω

AV output

- Video output: 1.0 V (p-p), 75 Ω
- Audio output: 300 mV (rms), 1 kΩ

USB

- Mini USB type A and type B,
- USB 2.0 compliant

Microphone

- ø3.5 mm stereo mini jack

AC Adapter

Power requirement

- AC 110 V to 240 V~, 50 Hz/60 Hz

Output

- DC 11 V —, 1 A

Remote Control

Power supply

DC 3 V

Battery life

Approx. 1 year
(depending on the frequency of use)

Operating distance

Within 5 m

Operating temperature

0°C to 40°C

Dimensions (W x H x D)

42 mm x 14.5 mm x 91 mm

Weight

Approx. 30 g
(incl. battery)

Design and specifications subject to change without notice.

Approximate recording time (minutes) (for video)

Recording medium	HDD	microSD Card	
	40 GB	4 GB	8 GB
Quality			
XP	300	30	60
SP	420	44	88
EP	1020	100	200

Approximate number of storable images (for still image)

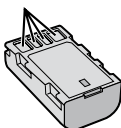
Recording medium		HDD	microSD Card				
Image size/Quality		40 GB	512 MB	1 GB	2 GB	4 GB	8 GB
16:9	1920 x 1080 / FINE	9999	510	1040	2100	4200	8420
	1920 x 1080 / STANDARD	9999	800	1630	3210	6410	9999
4:3	1440 x 1080 / FINE	9999	680	1370	2770	5540	9999
	1440 x 1080 / STANDARD	9999	1060	2160	4360	8700	9999
	640 x 480 / FINE	9999	3320	6720	9999	9999	9999
	640 x 480 / STANDARD	9999	5980	9999	9999	9999	9999

Cautions

Battery Packs

The supplied battery pack is a lithium-ion battery. Before using the supplied battery pack or an optional battery pack, be sure to read the following cautions:

Terminals



- **To avoid hazards**
 - ... **do not** burn.
 - ... **do not** short-circuit the terminals. Keep it away from metallic objects when not in use. When transporting, make sure the provided battery cap is attached to the battery. If the battery cap is misplaced, carry the battery in a plastic bag.
 - ... **do not** modify or disassemble.
 - ... **do not** expose the battery to temperatures exceeding 60°C, as this may cause the battery to overheat, explode or catch fire.
 - ... use only specified chargers.
- **To prevent damage and prolong service life**
 - ... do not subject to unnecessary shock.
 - ... charge within the temperature range of 10°C to 35°C. This is a chemical reaction type battery — cooler temperatures impede chemical reaction, while warmer temperatures can prevent complete charging.
 - ... store in a cool, dry place. Extended exposure to high temperatures will increase natural discharge and shorten service life.
 - ... fully charge and then fully discharge the battery every 6 months when storing the battery pack over a long period of time.
 - ... remove from charger or powered unit when not in use, as some machines use current even when switched off.

Recording Medium

- **Be sure to follow the guidelines below to prevent corruption or damage to your recorded data.**
 - Do not bend or drop the recording medium, or subject it to strong pressure, jolts or vibrations.
 - Do not splash the recording medium with water.
 - Do not use, replace, or store the recording medium in locations that are exposed to strong static electricity or electrical noise.
 - Do not turn off the camera power or remove the battery or AC adapter during shooting, playback, or when otherwise accessing the recording medium.
 - Do not bring the recording medium near objects that have a strong magnetic field or that emit strong electromagnetic waves.
 - Do not store the recording medium in locations with high temperature or high humidity.
 - Do not touch the metal parts.
- When formatting or erasing data using the camera, only the file administration information is changed. The data is not completely erased from the hard disk. If you want to completely erase all of the data, we recommend either using commercially available software that is specially designed for that purpose, or by physically destroying the camera with a hammer etc.

Hard disk

- Do not use the unit where it is subject to vibrations or loud sounds.
- If you move the unit suddenly, the drop detection function may operate and the power may be turned off.

LCD Monitor

- **To prevent damage to the LCD monitor, DO NOT**
 - ... push it strongly or apply any shocks.
 - ... place the camera with LCD monitor on the bottom.
- **To prolong service life**
 - ... avoid rubbing it with coarse cloth.

Main Unit

● For safety, DO NOT

- ... open the camera's chassis.
- ... disassemble or modify the unit.
- ... allow inflammables, water or metallic objects to enter the unit.
- ... remove the battery pack or disconnect the power supply while the power is on.
- ... leave the battery pack attached when the camera is not in use.
- ... place naked flame sources, such as lighted candles, on the apparatus.
- ... expose the apparatus to dripping or splashing.
- ... leave dust or metal objects adhered to the power plug or an AC wall outlet.
- ... insert any objects in the camera.

● Avoid using the unit

- ... in places subject to excessive humidity or dust.
- ... in places subject to soot or steam such as near a cooking stove.
- ... in places subject to excessive shock or vibration.
- ... near a television set.
- ... near appliances generating strong magnetic or electric fields (speakers, broadcasting antennas, etc.).
- ... in places subject to extremely high (over 40°C) or extremely low (under 0°C) temperatures.
- ... in places where air pressure is low (more than 3000 m above the sea level).

● DO NOT leave the unit

- ... in places of over 50°C.
- ... in places where humidity is extremely low (below 35%) or extremely high (above 80%).
- ... in direct sunlight.
- ... in a closed car in summer.
- ... near a heater.
- ... in high places such as on a TV. Leaving the unit in high places while a cable is connected may result in a malfunction if the cable is caught and the unit falls onto the floor.

● To protect the unit, DO NOT

- ... allow it to become wet.
- ... drop the unit or strike it against hard objects.
- ... subject it to shock or excessive vibration during transportation.
- ... keep the lens directed at extremely bright objects for long periods.
- ... expose the lens to direct sunlight.
- ... swing it excessively when using the hand strap.
- ... swing the soft camera case excessively when the camera is inside it.
- ... place the camera in dusty or sandy areas, such as on a beach.

● To prevent the unit from dropping,

- Attach the shoulder strap securely and fasten the grip belt securely.
 - When using the camera with a tripod, attach the camera to the tripod securely.
- If the camera drops, you may be injured and the camera may be damaged.
When a child uses the unit, there must be parental guidance.

Dear Customer,

[European Union]

This apparatus is in conformance with the valid European directives and standards regarding electromagnetic compatibility and electrical safety.

European representative of Victor Company of Japan, Limited is:
JVC Technical Services Europe GmbH
Postfach 10 05 04
61145 Friedberg
Germany

[illegible]

[illegible]

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