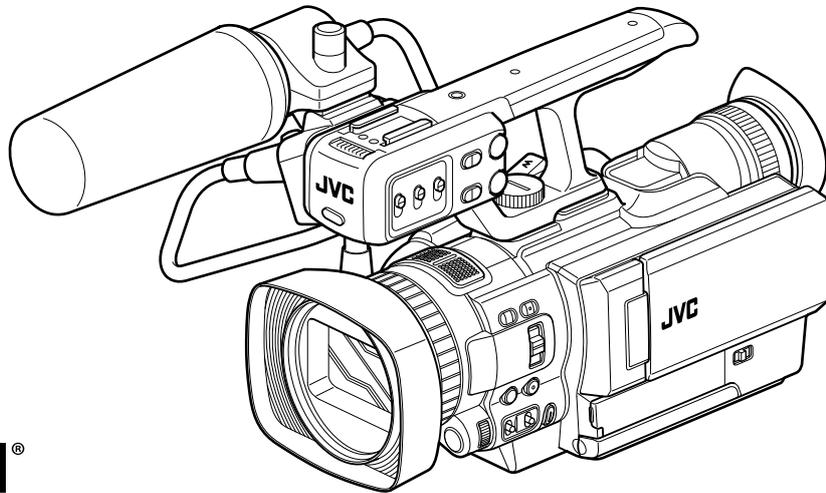


JVC

4K MEMORY CARD CAMERA RECORDER

GY-HMQ10U/ GY-HMQ10E

INSTRUCTIONS



*The illustration shows the GY-HMQ10U/GY-HMQ10E with the supplied audio unit attached. (Microphone is optional.)

For Future Reference:

Enter the Model No. (located on the bottom of the camera) and Serial No. (located on the battery pack mount of the camera) below.

Model No. **GY-HMQ10**

Serial No. _____

Please read the following before getting started:

Thank you for purchasing this JVC product.

Before operating this unit, please read the instructions carefully to ensure the best possible performance.

In this manual, each model number is described without the last letter (U/E) which means the shipping destination. (U: for USA and Canada, E: for Europe) Only "U" models (GY-HMQ10U) have been evaluated by UL.

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Main Features

This camera recorder enables recording of 4K2K/HD format images to an SDHC/SDXC card, and also playback of these images.

Recording in 4K2K Mode

You can record videos in the super fine 4K2K quality (3840 x 2160), which is equivalent to about four times the resolution of the full high definition quality.

Recording in HD Mode

You can also record videos in the full high definition quality (1920 x 1080) of the AVCHD format.

Recording on SDHC/SDXC Cards (Class 6/10)

The absence of mechanisms with the use of SDHC/SDXC cards (Class 6/10) as recording media brings about increased operation reliability.

Supports 60Hz/50Hz HD Signals in Both 4K2K and HD Modes

Focus Assist Function

Enables easy and accurate focusing during shooting.

Wide Variety of User Buttons Added

Enables you to switch camera settings instantly to suit the shooting conditions.

Built-in Viewfinder and Color LCD Monitor

Displays the status screens, menu screens for settings, and alarm indications, in addition to the camera image and playback image.

Built-in Monitor Speaker for Audio Checking

Zebra Pattern Video Level Indication

Full Auto Shooting Mode

Eliminates the need for troublesome switch operations by automatically providing a wide range of compatibility with shooting conditions that change as you move between indoors and outdoors or between bright and dark locations.

Image Stabilizer Feature

Reduces blurring of images due to camera shake.

White Balance Adjustment Feature

Enables white balance to be adjusted automatically or manually.

Slow Shutter

Makes it possible to brightly shoot video of dark subjects with little motion by accumulating the images.

Two Audio Input Terminals

This camera recorder comes with two XLR terminals, which can be used as audio input terminals for the built-in or external microphone.

Supports Wired Remote Control

Connection to PCs via USB Port

Files stored on an SDHC/SDXC card can be retrieved to a PC.

About This Manual

■ Symbols

- Caution** : Describes precautions to be taken during operation.
- Memo** : Describes information for user's reference, such as functions and usage restrictions.
-  : Indicates the page or item to refer to.

■ Contents of This Manual

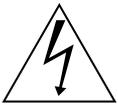
- The copyright of this manual belongs to JVC. Unauthorized reprint, duplication, etc. of this manual, wholly or partially, is strictly prohibited.
- The designs, specifications, and other contents of this manual are subject to change for further improvement without prior notice.
- AVCHD Progressive/AVCHD and the AVCHD Progressive/AVCHD logo are trademarks of Panasonic Corporation and Sony Corporation.
- HDMI®(High-Definition Multimedia Interface) and  are trademarks or registered trademarks of HDMI Licensing, LLC.
- This product is manufactured under license from Dolby Laboratories.
- Dolby and the double-D symbol are trademarks of Dolby Laboratories.
- Microsoft, Windows and Windows Vista are the registered trademark of USA Microsoft Corporation, in USA and other countries.
- Other company and product names in this manual are trademarks or registered trademarks of the respective companies. Marks such as ™ and ® have been omitted in this manual.

Safety Precautions

■ For GY-HMQ10U

• FOR USA AND CANADA

	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.		



The lightning flash with arrowhead symbol, with in an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" with in the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point with in an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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

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 bottom of the unit.
- The rating information and safety caution of the AC adapter are on it upper and lower sides.

REMARQUES :

- La plaque d'identification et l'avertissement de sécurité se trouvent sous l'appareil et/ou au dos.
- La plaque du numéro de série est située sur la partie inférieure de l'appareil.
- Les informations d'identification et l'avertissement de sécurité de l'adaptateur secteur sont situés sur ses côtés supérieur et inférieur.

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 (212°F) or incinerate. Replace battery with Panasonic, Sanyo, Sony or Maxell CR2025. Danger of explosion or Risk of fire if the battery is in correctly 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 (3-15/16") 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.)

CAUTION:

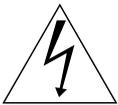
- The mains plug shall remain readily operable.
- Remove the mains plug immediately if the camera functions abnormally.

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 sunlight, fire or the like.

• POUR CANADA

	ATTENTION RISQUE D'ÉLECTROCUTION NE PAS OUVRIR	
ATTENTION: POUR ÉVITER TOUT RISQUE D'ÉLECTROCUTION, NE PAS OUVRIR LE BOÎTIER. AUCUNE PIÈCE INTÉRIEURE N'EST À RÉGLER PAR L'UTILISATEUR. SE RÉFÉRER À UN AGENT QUALIFIÉ EN CAS DE PROBLÈME.		



Le symbole de l'éclair à l'intérieur d'un triangle équilatéral est destiné à alerter l'utilisateur sur la présence d'une "tension dangereuse" non isolée dans le boîtier du produit. Cette tension est suffisante pour provoquer l'électrocution de personnes.



Le point d'exclamation à l'intérieur d'un triangle équilatéral est destiné à alerter l'utilisateur sur la présence d'opérations d'entretien importantes au sujet desquelles des renseignements se trouvent dans le manuel d'instructions.

AVERTISSEMENT : POUR ÉVITER LES RISQUES D'INCENDIE OU D'ÉLECTROCUTION, NE PAS EXPOSER L'APPAREIL À LA PLUIE NI À L'HUMIDITÉ.

For USA-California Only

This product contains a CR Coin Cell Lithium Battery which contains Perchlorate Material – special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
10. Only use attachments/accessories specified by the manufacturer.
11. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus.
When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



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 this unit and to the user.

Carrying or holding this unit by the LCD monitor can result in dropping the unit, or in a malfunction.

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

CAUTION!

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



If this symbol is shown, it is only valid in the European Union.

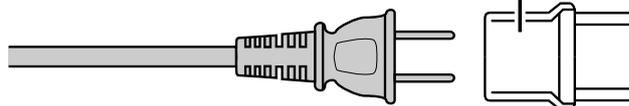
When using the AC adapter in areas other than the USA

The provided AC adapter features automatic voltage selection in the AC range from 110 V to 240 V.

USING HOUSEHOLD AC PLUG ADAPTER

In case of connecting the unit's power cord to an AC wall outlet other than American National Standard C73 series type use an AC plug adapter, called a "Siemens Plug", as shown.

For this AC plug adapter, consult your nearest JVC dealer.

Plug Adapter

- Remove the AC adapter from the AC wall outlet when not in use.
- Do not leave dust or metal objects adhered to the AC wall outlet or AC adapter (power/DC plug).

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

Changes or modifications not approved by JVC could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**INFORMATION (FOR CANADA)
RENSEIGNEMENT (POUR CANADA)**

This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

■ For GY-HMQ10E

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.

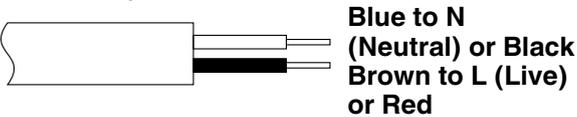
BE SURE to replace the fuse only with an identical approved type, as originally fitted, and to replace the fuse cover.

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 — consulta 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 bottom of the unit.
- 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 sunlight, fire or the like.

CAUTION:

The mains plug shall remain readily operable.

- Remove the mains plug immediately if the camera functions abnormally.

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 unit and to the user.

Carrying or holding the unit by the LCD monitor can result in dropping the unit, or in a malfunction.

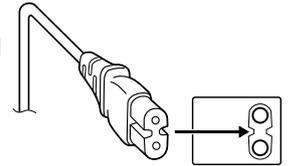
Do not use a tripod on unsteady or unlevel surfaces. It could tip over, causing serious damage to the unit.

CAUTION!

Connecting cables(Audio/Video, etc.) to the unit and leaving it on top of the TV is not recommended, as tripping on the cables will cause the unit 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 in to an AC outlet.



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, 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.

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 <http://www.jvc.eu> 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.

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 JVC KENWOOD Corporation is:
JVC Technical Services Europe GmbH

Postfach 10 05 04
61145 Friedberg
Germany

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 chance with electrical equipment of any kind — it is better to be safe than sorry!

Introduction

This equipment is in conformity with the provisions and protection requirements of the corresponding European Directives. This equipment is designed for professional video appliances and can be used in the following environments:

- Controlled EMC environment (for example, purpose-built broad-casting or recording studio), and rural outdoors environments.

In order to keep the best performance and furthermore for electromagnetic compatibility we recommend to use cables not exceeding the following lengths:

Port	Cable	Length
[DC INPUT]	Exclusive Cable	1.8 m
[AUDIO INPUT 1/2]	Shielded Cable	3 m
[HDMI OUT 1-4]	Shielded Cable	3 m
[PHONES]	Exclusive Cable	3 m
[REMOTE]	Exclusive Cable	5 m
[USB]	Shielded Cable	3 m

Caution:

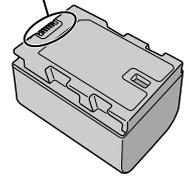
Where there are strong electromagnetic waves or magnetism, for example near a radio or TV transmitter, transformer, motor, etc., the picture and the sound may be disturbed. In such case, please keep the apparatus away from the sources of the disturbance.

Common

Battery Pack

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, carry the battery in a plastic bag.
- ... **do not** modify or disassemble.
- ... **do not** expose the battery to temperatures exceeding 60°C (140°F), 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 (50°F to 95°F). Cooler temperatures require longer charging time, or in some cases stop charging at all. Warmer temperatures prevent complete charging, or in some cases stop charging at all.
- ... store in a cool, dry place. Extended exposure to high temperatures will increase natural discharge and shorten service life.
- ... keep a 30% battery level () if the battery pack is not to be used for a long period of time. In addition, fully charge and then fully discharge the battery pack every 6 months, then continue to store it at a 30% battery level ().
- ... remove from charger or powered unit when not in use, as some machines use current even when switched off.
- ... do not drop or subject to strong impact.

ATTENTION:



The product you have purchased is powered by a rechargeable battery that is recyclable. Please call 1-800-8-BATTERY for information on how to recycle this battery. (USA and Canada only)

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 recording medium. 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.

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.

While the LCD monitor screen has more than 99.99% effective pixels, 0.01% of the pixels may be bright spots (red, blue, green) or dark spots. This is not a malfunction. The spots will not be recorded.

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 104°F) or extremely low (under 0°C or 32°F) temperatures.
- **DO NOT leave the unit**
 - ... in places of over 50°C (122°F).
 - ... 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.
 - ... store the camera in a dusty or sandy area.
- **To prevent the unit from dropping,**
 - 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.

Make a backup of important recorded data

Make a backup of important recorded data JVC will not be responsible for any lost data. It is recommended to copy your important recorded data to a disc or other recording media for storage once every 3 months.

Precautions for Proper Use

Storage and Usage Locations

■ Allowable ambient temperature and humidity

Be sure to use this unit within the allowable temperature range of 0°C to 40°C (32°F to 104°F) and a relative humidity of 35 % to 80 %. Using this unit beyond the allowable temperature range may cause it to malfunction.

■ Strong electromagnetic waves or magnetism

Noise may appear in the picture or audio and/or the colors may be incorrect if this unit is used near a radio or television transmitting antenna, in places where strong magnetic fields are generated by transformers, motors, etc., or near devices emitting radio waves, such as transceivers or cellular phones.

■ Use of wireless microphone near this unit

When a wireless microphone or wireless microphone tuner is used near this unit during recording, the tuner could pick up noise.

■ Avoid using or placing this unit in the following places.

- Places subject to extreme heat or cold
- Places with excessive dirt or dust
- Places with high humidity or moisture
- Places subject to smoke or vapor such as near a cooking stove
- Places subject to strong vibrations or unstable surfaces
- In a parked car under direct sunlight or near a heater for long hours.

■ Do not place this unit at places that are subject to radiation or X-rays, or where corrosive gases occur.

■ Protect this unit from being splashed with water. (Especially when shooting in the rain)

■ Protect this unit from getting wet when shooting on a beach. In addition, salt and sand may adhere to the body. Be sure to clean the unit after use.

■ Protect this unit against penetration of dust when using it in a place subject to sandy dust.

■ Do not expose this device and the remote control to excessive heat, such as direct sunlight or fire. The built-in battery may explode if it gets heated up.

■ Do not leave the card slot cover open for a long period of time. Dirt entering the interior of the slot may cause it to malfunction.

Transportation

- Do not drop or hit this unit against a hard object when transporting.

Power Saving

- When this unit is not in use, be sure to turn off the power in order to reduce power consumption.

Maintenance

- Turn off the power before performing any maintenance.
- Wipe the external cabinet of the unit with a soft cloth. Do not wipe the body with benzene or thinner. Doing so may cause the surface to melt or turn cloudy. When it is extremely dirty, soak the cloth in a solution of neutral detergent, wipe the body with it, and then use a clean cloth to remove the detergent.

Rechargeable Batteries

- Be sure to use the only batteries specified by us. We do not guarantee the safety and performance of this device if an unspecified battery is used.
- The battery is not charged when purchased.
- When using the battery in a low temperature environment (10°C (50°F) or below), the operating time may be shortened, or it may not function properly. When using this unit outdoors in the winter weather, warm the battery, such as by placing it in the pocket, before attaching it.
- Do not expose the battery to excessive heat, such as direct sunlight or fire.
- If the battery is not to be used for a long time,
 - 1 To prevent deterioration of this unit, store it at a 30% battery level.
 - 2 Fully charge and then fully discharge the battery pack every six months, then continue to store it at a 30 % battery level.
- After removing the battery, store it in a dry place between 15°C to 25°C (59°F to 77°F).

SDHC/SDXC Cards

- This camera recorder saves the recorded images and audio sound on the SDHC/SDXC card (sold separately) in the card slot.
- Use an SDHC/SDXC card (4 GB to 64 GB) with Class 6 or higher performance and formatted using this camera recorder.
 - Using cards other than those from Panasonic, TOSHIBA or SanDisk may result in recording failure or data loss.
 - When this unit is used in 4K2K mode, it is recommended that the 4 of the SD cards for recording be the same.
- If the SDHC/SDXC card contains files recorded by devices other than this camera recorder or files that are saved from a PC, the recordable time may be shorter or data may not be properly recorded. In addition, the remaining space on the card may not increase even when files are deleted using a PC.

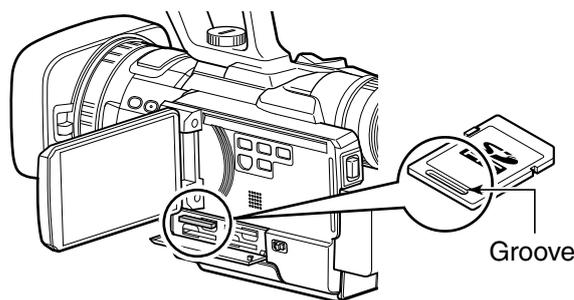
UHS-I SDHC/SDXC cards can be used in the same manner as standard SDHC/SDXC cards.

- UHS Speed Class is not supported.

Handling of SDHC/SDXC Cards

- The access lamp and status indicator blink in green when data on the SDHC/SDXC card is being accessed. Do not remove the SDHC/SDXC card during data access (such as recording, playback, or formatting). Do not turn off the power or remove the battery and AC adapter during access either.
- Do not use or store the SDHC/SDXC card in a place that is subject to static electricity or electrical noise.
- Do not place the SDHC/SDXC card near locations that are exposed to strong magnetic fields or radio waves.
- Inserting the SDHC/SDXC card incorrectly may result in damage of this unit or the SDHC/SDXC card.
- We are not liable for any accidental loss of data stored on the SDHC/SDXC card. Please back up any important data.
- Make use of the SDHC/SDXC card within the prescribed conditions of use. Do not use it at the following locations. Places that are subject to direct sunlight, high humidity or corrosion, places near thermal equipment, sandy or dusty places, or in a car under the sun with the doors and windows closed.
- Do not bend or drop the SDHC/SDXC card, or subject it to strong impact or vibration.
- Do not splash the SDHC/SDXC card with water.
- Do not dismantle or modify the SDHC/SDXC card.
- Do not touch the terminals with your hands or with a metal object.
- Do not allow dust, dirt, water, or foreign objects to adhere to the terminals.
- Do not remove the labels or stick other labels or stickers on the SDHC/SDXC cards.
- Do not use pencils or ballpoint pens to write on the SDHC/SDXC cards. Always use oil-based pens.

- If you format (initialize) the SDHC/SDXC card, all data recorded on the card, including video data and setup files, will be deleted.
- If you want to wipe out all information by completely erasing the data, we recommend either using commercially available software that is specially designed for that purpose, or by physically destroying the SDHC/SDXC card with a hammer, etc. When formatting or erasing data using the camera recorder, only the file administration information is changed. The data is not completely erased from the SDHC/SDXC card.
- Some commercially available SDHC/SDXC cards may be harder to be removed from this unit. Remove them by hooking onto the groove on the cards.
 - It will be easier to remove the cards after several times.
 - Do not stick any stickers on the cards.



- The SDHC/SDXC card may pop out when it is being removed. Be careful not to lose the card.

Further Information

- Do not insert objects other than the memory card into the card slot.
- Do not turn off the power, or remove the battery or AC adapter during recording or playback.
- The camera recorder may not show stable pictures for a few seconds immediately after the power is turned on, but this is not a malfunction.
- Do not drop this unit or subject it to strong impact or vibration as it is a precision equipment.
- Optical performance of lens
Due to the optical performance of the lens, color divergence phenomena (magnification chromatic aberration) may occur at the periphery of the image. This is not a camera malfunction.
- Noise may appear on the screen when you switch from one mode to another.
- If placed on its side, heat release efficiency will deteriorate.
- Use the supplied AC adapter as the power supply. Do not use the supplied AC adapter on other devices.
- When the connectors that come with connector covers are not in use, put on the covers to prevent damage to the connectors.

LCD Monitor/Viewfinder

- The LCD monitor and viewfinder screens are manufactured using high-precision technology. Black spots may appear on the LCD monitor and viewfinder screens, or red, blue, and/or white spots may not disappear. However, this is not a malfunction and these spots are not recorded on the SDHC/SDXC card.
- If you use this unit continuously for a long period of time, the characters displayed in the viewfinder may temporarily remain on the screen. This is not recorded on the SDHC/SDXC card. They will not appear after you turn the power off and then on again.
- If you use this unit in a cold place, the images may appear to lag on the screen, but this is not a malfunction. Retained images are not recorded on the SDHC/SDXC card.
- Do not press against the surface with force or subject it to strong impact. Doing so may damage or break the screens.
- Due to the characteristic of the viewfinder display device, colors may appear on the images when you blink your eyes. This is not a malfunction. It does not affect the recorded images or HDMI output.

Characteristic Lens Phenomena

- When shooting an extremely bright light source, ghosting may occur. This is a characteristic of the lens and not a malfunction.

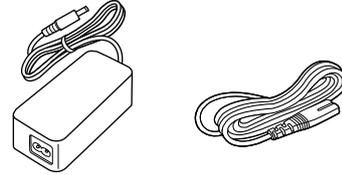
Copyright

- Any recordings made on this camera recorder that are played back for profit or public preview may infringe on the rights of the owner of the recordings.
- Do not use the recordings for purpose other than personal enjoyment without prior consent from the owner.

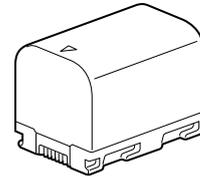
Accessories

This camera recorder comes bundled with the following accessories.

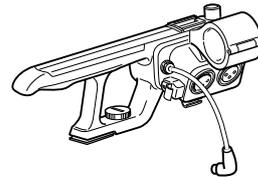
- AC Adapter
UIA336-12 / UIA336-1230 (For GY-HMQ10U)
UIA336-1230 (For GY-HMQ10E)



- Battery Pack
SSL-JVC50



- Audio Unit

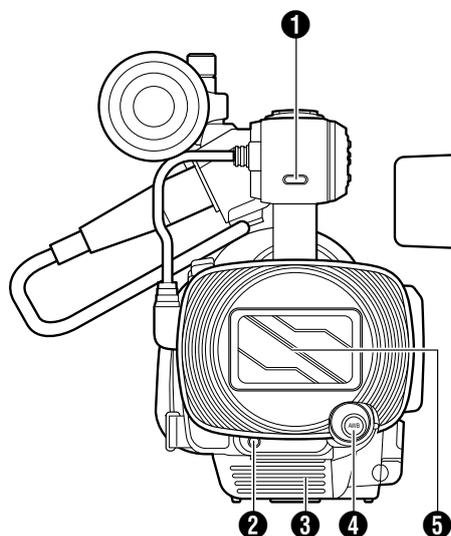


Memo :

- To purchase a spare battery or battery charger, please visit a nearby JVC dealer.

Names of Parts

■ Front



* Microphone is optional.

① Tally lamp

"Tally Settings" (☞ p. 27)

② Tally lamp

"Tally Settings" (☞ p. 27)

③ Vent

Do not cover the vent.

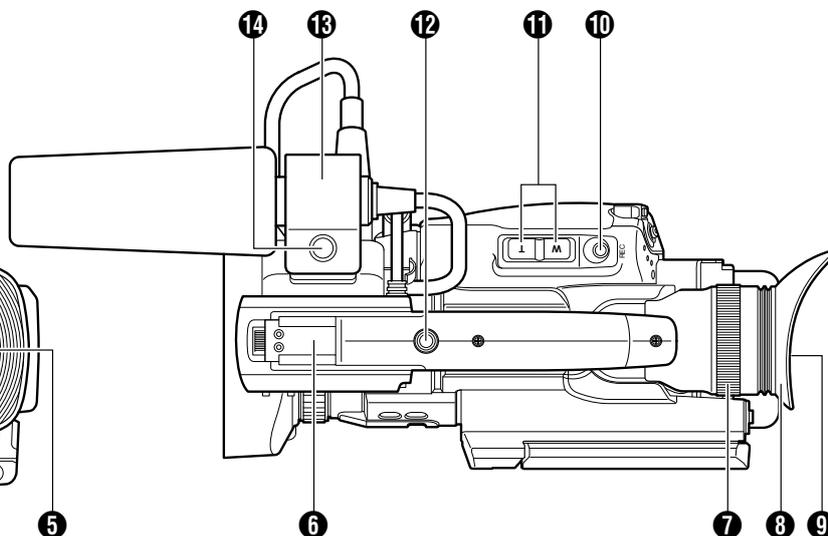
④ [AWB]Auto White Balance button

"Adjusting Automatic White Balance" (☞ p. 41)

⑤ Lens/Lens cover

"Opening the Lens Cover" (☞ p. 23)

■ Top



⑥ Shoe

For mounting separately sold lights and accessories.

⑦ Eyepiece focus lever

Lever for adjusting the visibility. It is found on the under side.

⑧ Eyepiece

⑨ Viewfinder

"Viewing the Viewfinder/LCD Monitor" (☞ p. 31)

⑩ REC (Record) button

For starting or stopping recording.

"Shooting" (☞ p. 33)

⑪ Zoom lever

For zooming to the Tele (T) or Wide (W) end.

"Zoom Operation" (☞ p. 35)

⑫ Screw hole for installing accessories

⑬ Microphone holder

For mounting an external microphone.

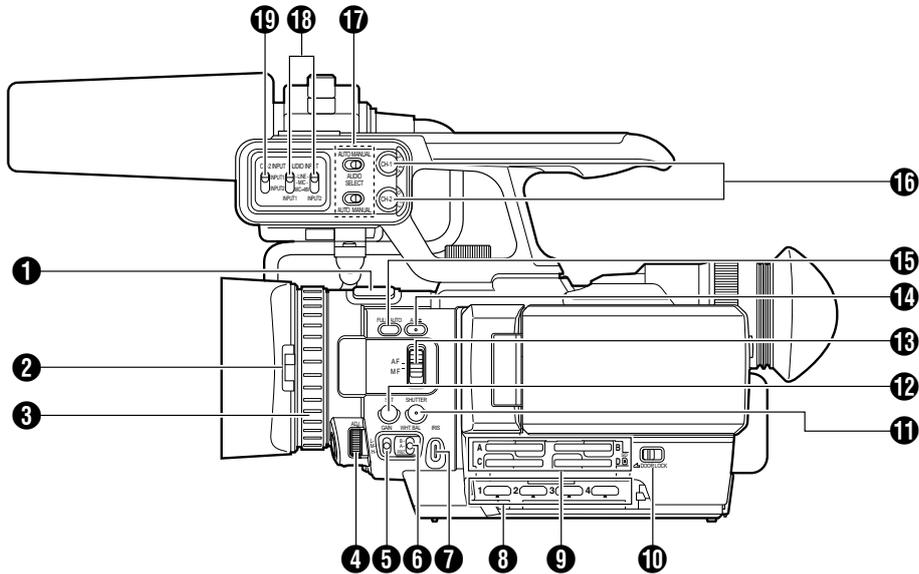
"Attaching an External Microphone" (☞ p. 22)

⑭ Knob

Knob for locking the microphone in place.

Names of Parts (Continued)

■ Side (LCD Monitor)



* Microphone is optional.

1 Built-in microphone

“Using the Built-in Microphone” (☞ p. 45)

2 Lens cover switch

3 Manual ring

“Adjusting the Focus Manually” (☞ p. 35)

4 [ADJ.] Knob

For adjusting the shutter speed (☞ p. 39), aperture (☞ p. 40), exposure (☞ p. 38), and volume level of the headphone or built-in speaker (☞ p. 46).

5 [GAIN] Gain switch

For selecting one of the three sensitivity levels.
“Adjusting Manual Gain” (☞ p. 38)

6 [WHT.BAL] White balance selection switch

For selecting one of the three types of white balance.
“Adjusting the White Balance” (☞ p. 41)

7 [IRIS] Iris button

Press this button to adjust the aperture manually.
“Adjusting the Aperture” (☞ p. 40)

8 [HDMI] terminals 1 to 4

You can play back the recorded video by connecting this unit to the monitor with HDMI terminal.
“Viewing Images on a Monitor” (☞ p. 51)

9 Card slots A to D

Slot for SDHC/SDXC cards. Open the door to insert the SDHC/SDXC card.
“Inserting an SDHC/SDXC Card” (☞ p. 29)

10 [DOOR LOCK] lever

Locks/unlocks the door cover.

11 [SHUTTER] Shutter speed button

Press this button to set the shutter speed manually.
“Adjusting the Shutter Speed” (☞ p. 39)

12 [SET] Button

For confirming the adjustments made for exposure, shutter speed, etc.

13 [AF/MF] Focus switch

For setting the focusing mode to the Auto or Manual mode.
“Selecting a Focusing Mode” (☞ p. 32)

14 [AE±] Exposure button

Press this button to set the exposure manually.
“Adjusting the Exposure Manually” (☞ p. 38)

15 [FULL AUTO] Full Auto mode selection button

For setting the shooting mode to the Full Auto or Manual mode.
“Selecting the Full Auto / Manual Shooting Mode” (☞ p. 32)

16 [CH-1/CH-2] CH-1/CH-2 recording level adjustment knob

For adjusting the audio input level for CH-1 or CH-2.

“Adjusting the audio recording level” (🔍 p. 46)

17 [CH1/CH2 AUDIO SELECT] CH-1/CH-2 audio selection switch

For setting the method of adjusting the audio recording level for CH-1 or CH-2 to the Auto or Manual mode.

“Adjusting the audio recording level” (🔍 p. 46)

18 [AUDIO INPUT 1/2] INPUT1/INPUT2 audio input signal selection switch

For selecting the input signal for the [INPUT1] or [INPUT2] terminal.

“Using an External Microphone Connected to the [INPUT1/INPUT2] Terminal” (🔍 p. 45)

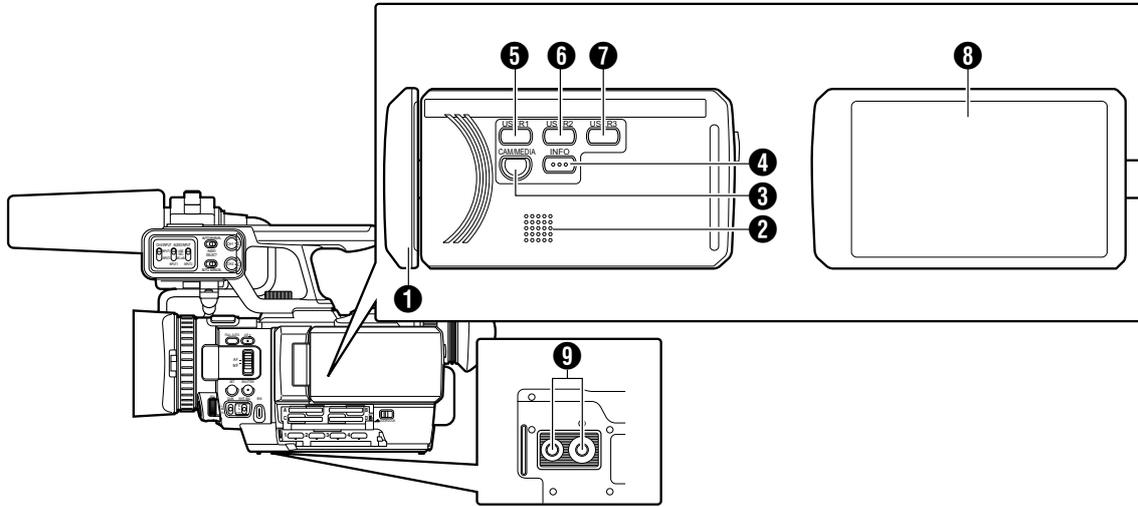
19 [CH-2 INPUT] CH-2 audio input terminal selection switch

For selecting whether to input audio signals to CH-2 audio from the [INPUT1] or [INPUT2] terminal.

“Selecting [CH-2] audio” (🔍 p. 45)

Names of Parts (Continued)

■ LCD Monitor Unit



* Microphone is optional.

① Monitor cover

② Built-in speaker

You can adjust the volume level using the [ADJ.] knob on the same side as the LCD monitor.

Audio from the built-in speaker can be monitored using a headphone.

“Monitoring Audio Sound Using a Headphone” (☞ p. 46)

Memo :

- The built-in speaker is usable only in the Media mode. Audio is not output from the built-in speaker during Camera mode.
- Audio level in the Camera mode and Media mode can be adjusted separately.
- When in the Media mode, the volume of the headphone and speaker are adjusted at the same time.
- When the headphone connector is not connected to this unit, the audio is always output from the built-in speaker.

③ [CAM]/[MEDIA] button

Pressing the button each time switches between the Camera mode and Media mode.

④ [INFO] button

You can check the remaining recording time on the SDHC/SDXC card as well as the remaining battery power.

“Checking the Remaining Recording Time” (☞ p. 44)

⑤ [USER1] button

A specific feature in the menu setting can be assigned to this button according to the user’s preference.

“Assigning Functions to the USER Buttons” (☞ p. 27)

⑥ [USER2] button

A specific feature in the menu setting can be assigned to this button according to the user’s preference.

“Assigning Functions to the USER Buttons” (☞ p. 27)

⑦ [USER3] button

A specific feature in the menu setting can be assigned to this button according to the user’s preference.

“Assigning Functions to the USER Buttons” (☞ p. 27)

⑧ LCD monitor

“Viewing the Viewfinder/LCD Monitor” (☞ p. 31)

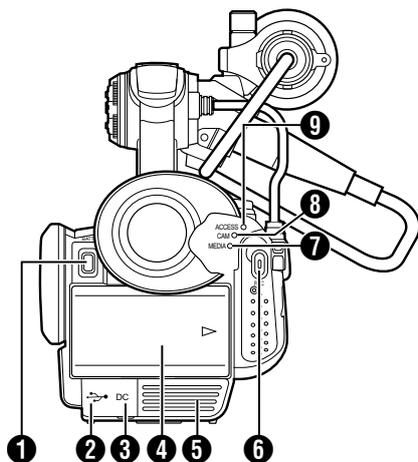
⑨ Tripod mounting holes

“Attaching the Tripod” (☞ p. 23)

Memo :

- To prevent the camera recorder from falling, attach securely using the rotation prevention hole.
- Use screws with a screw length 5 mm or below.

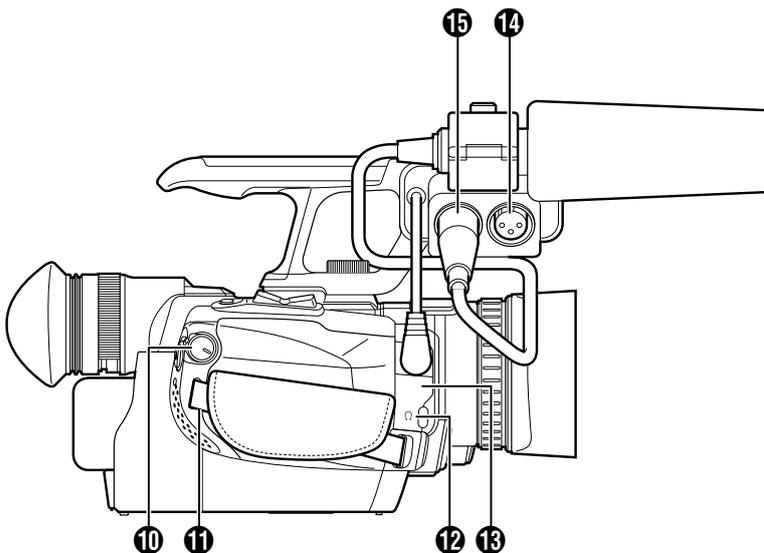
■ Rear



* Microphone is optional.

- ❶ Battery lock release button**
“Removing the Battery” (☞ p. 24)
- ❷ USB Connector**
“Copying to Computer” (☞ p. 57)
- ❸ [DC] input terminal**
“Charging the Battery Pack” (☞ p. 24)
- ❹ Battery Mount**
“Attach the supplied battery.” (☞ p. 24)
- ❺ Vent**
Do not cover the vent.
- ❻ [REC] Record button**
“Shooting” (☞ p. 33)
For starting or stopping recording.
- ❼ [MEDIA] Media mode indicating lamp**
Lights up in red during the Media mode.
- ❽ [CAM] Camera mode indicating lamp**
Lights up in red during the Camera mode.
- ❾ [ACCESS] Access indicating lamp**
Lights up or blinks during recording or playback.
Also blinks during battery charging.

■ Side (Grip Belt)

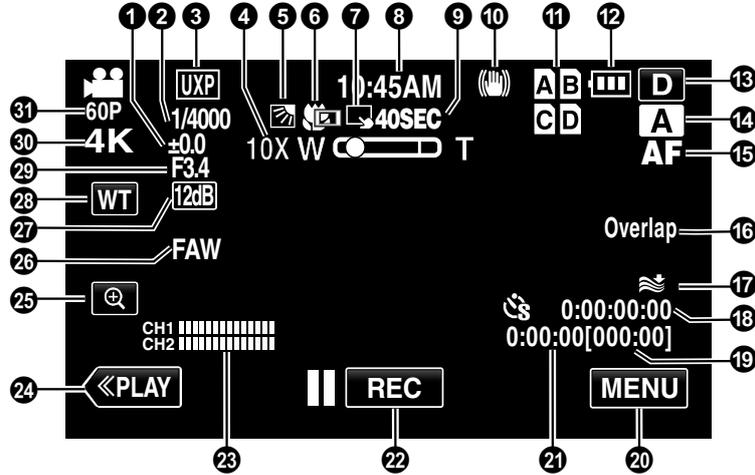


- ❿ [STANDBY/ON OFF]/[CAM/MEDIA] Power/Operation mode selection switch**
STANDBY/: Turns the power On/Off.
ON OFF
CAM/ : Sets this camera recorder to the Camera or
MEDIA Media mode.
- ⓫ Grip belt**
- ⓬ Headphone jack**
“Monitoring Audio Sound Using a Headphone” (☞ p. 46)
- ⓭ [REMOTE] Remote terminal**
For connecting a separately sold wired remote control.
“Setting up the Remote Control” (☞ p. 23)
- ⓮ [INPUT1] Audio input 1 terminal**
For connecting an XLR microphone.
“Attaching an External Microphone” (☞ p. 22)
- ⓯ [INPUT2] Audio input 2 terminal**
For connecting an XLR microphone.
“Attaching an External Microphone” (☞ p. 22)

LCD Screen Display

LCD Screen Display Information (During Recording)

All the items are displayed in the illustration for explanatory purposes.



1 Exposure compensation

“Adjusting the Exposure Manually” (☞ p. 38)

2 Shutter speed

“Adjusting the Shutter Speed” (☞ p. 39)

3 Record mode

“Selecting a Video Recording Mode (HD Recording Only)” (☞ p. 33)

4 Zoom

“Zoom Operation” (☞ p. 35)

5 Backlight compensation

“Setting Backlight Compensation” (☞ p. 43)

6 TELE MACRO

“Using the Tele Macro Feature” (☞ p. 37)

7 Touch Priority AE/AF

“Setting Touch Priority AE/AF” (☞ p. 43)

8 Time

“Clock Setting” (☞ p. 26)

9 Time-lapse recording

“Setting Time-lapse Recording” (☞ p. 44)

10 Image Stabilizer

“Using the Image Stabilizer Feature” (☞ p. 43)

11 Slot display

4K2K mode: lights up when SDHC/SDXC cards are inserted into all the slots.

1920 mode: **A** lights up when an SDHC/SDXC card is inserted into slot A.

12 Battery indicator

“Checking the Remaining Recording Time” (☞ p. 44)

13 Display button

Some displays disappear after approximately 3 seconds. Press this button to show the displays again.

The displays appear for approximately 3 seconds with every press. Press and hold this button to fix the displays. Press this button again to release the displays.

14 Recording mode button

“Selecting the Full Auto / Manual Shooting Mode” (☞ p. 32)

15 Focus mode

“Selecting a Focusing Mode” (☞ p. 32)

16 Overlap

Appears when “EDGE BLENDING” in the recording menu is set to “16 PIXEL”.

“EDGE BLENDING” (☞ p. 62)

17 Wind cut

“Reducing Wind Noise” (☞ p. 46)

18 Time-lapse recording counter

“Setting Time-lapse Recording” (☞ p. 44)

19 Remaining recording time

“Checking the Remaining Recording Time” (☞ p. 44)

20 Menu button

“Operating the Menu” (☞ p. 59)

21 Scene counter

22 Recording start/stop button

“Shooting” (☞ p. 33)

23 Volume level

24 Mode button

Switches between the Recording/Playback mode.

25 Magnify button

“Using the Magnifying Function” (☞ p. 36)

26 FAW

“Using the Full Auto White (FAW) Function” (☞ p. 42)

27 Gain level

“Adjusting Manual Gain” (☞ p. 38)

28 Zoom button

“Zoom Operation” (☞ p. 35)

29 Aperture value

“Adjusting the Aperture” (☞ p. 40)

30 4K2K mode

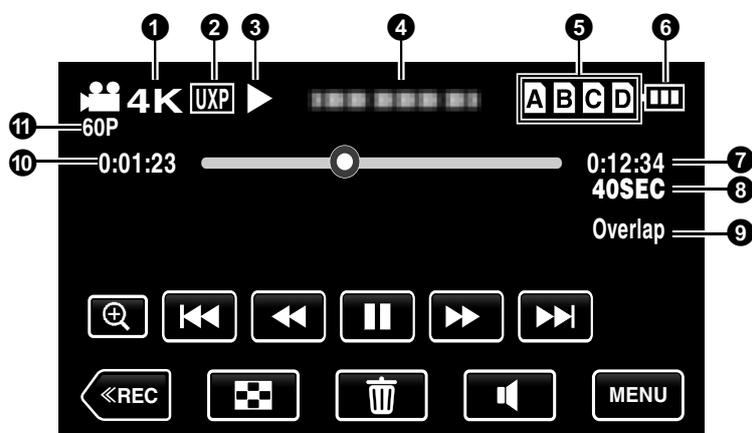
“Selecting a Video Recording Format or Recording Mode”
(☞ p. 33)

31 Frame rate

“SYSTEM SELECT” (☞ p. 61)

LCD Screen Display (Continued)

■ LCD Screen Display Information (During Playback)



① 4K2K mode

“Selecting a Video Recording Format or Recording Mode”
(☞ p. 33)

② Record mode

“Selecting a Video Recording Mode (HD Recording Only)”
(☞ p. 33)

③ Operation indicator

“Screen Display During Playback” (☞ p. 50)

④ Date/time

“Clock Setting” (☞ p. 26)

⑤ Slot display

4K2K mode: lights up when SDHC/SDXC cards are inserted into all the slots.

1920 mode: **A** lights up when an SDHC/SDXC card is inserted into slot A.

⑥ Battery indicator

“Checking the Remaining Recording Time” (☞ p. 44)

⑦ Playback time

“Playing Back Videos” (☞ p. 47)

⑧ Time-lapse playback

“TIME-LAPSE RECORDING” (☞ p. 62)

⑨ Overlap playback

“EDGE BLENDING” (☞ p. 62)

⑩ Scene counter

⑪ Frame rate

“SYSTEM SELECT” (☞ p. 61)

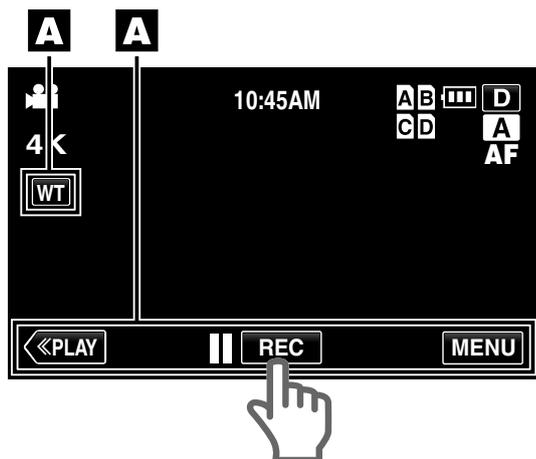
Using the Touch Screen

There are two ways to operate the touch screen, namely “tap” and “drag”. The following are some examples.

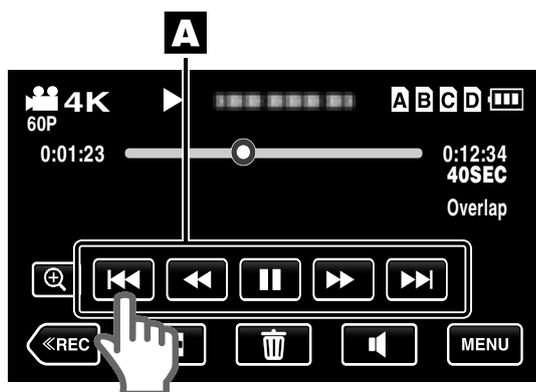
A Tap the displayed button (icon) or thumbnail (file) on the touch screen to make a selection.

B Drag the thumbnails on the touch screen to search for the desired file.

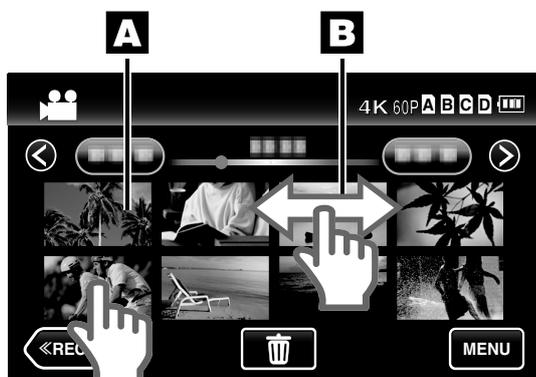
■ Recording Screen



■ Playback Screen



■ Index Screen



Memo :

- The touch screen of this unit is pressure-sensitive. When the touch screen does not respond smoothly, apply slightly more force to your fingertip.
- Do not press or rub with excessive force.
- Do not operate the touch screen using an object with a sharp tip.
- Pressing two or more places at a time may cause a malfunction.
- Tap the buttons (icons) on the touch screen accurately. The buttons may not respond if they are not tapped on the right area.
- Perform “TOUCH SCREEN ADJUST” (p. 27) if the reactive area of the screen is misaligned with the touched area. (Adjust by lightly tapping with objects such as the corner of an SD card. Do not press using an object with a sharp tip, and do not press hard.)

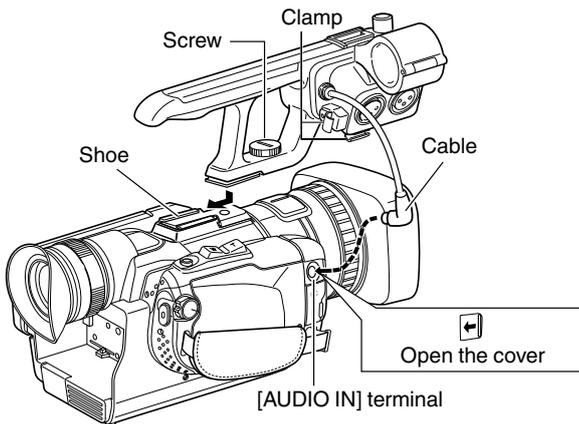
Preparation and Adjustment Before Use

Attaching the Audio Unit

The audio unit (with handle) is not attached to the camera recorder unit when purchased.

Attach the audio unit according to the following procedure.

- 1 Attach the audio unit by sliding it all the way into the shoe on the top of the camera recorder.
- 2 Turn the screw on the audio unit clockwise to fasten it fully and securely to the camera recorder.
 - If the audio unit is not fully and securely tightened, it will be loose and may drop off from the camera recorder during use.
- 3 Connect the audio unit cable to the [AUDIO IN] terminal of the camera recorder.



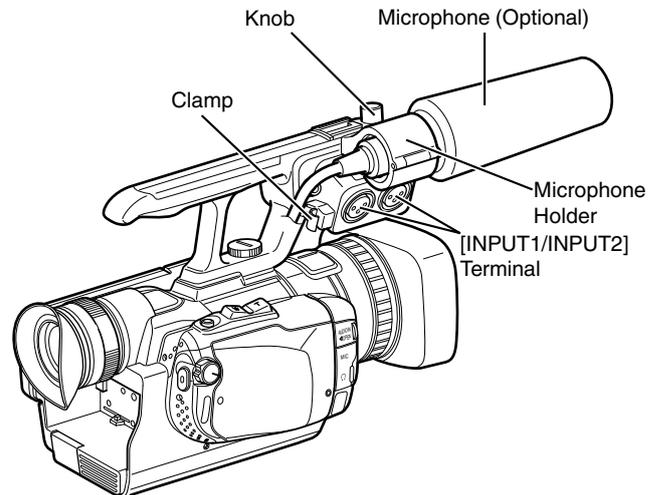
Memo :

- The cable of the audio unit cannot be fastened using a clamp. The clamp is intended for fastening the microphone cable.
- For details on mounting an external microphone and its settings, refer to “Attaching an External Microphone”.

Attaching an External Microphone

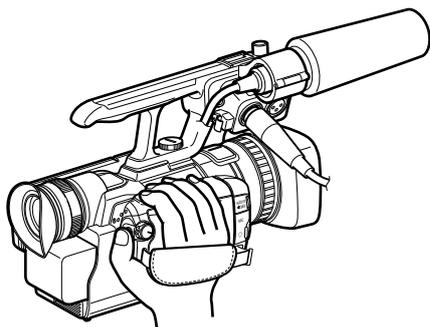
You can attach a microphone (optional) to the microphone holder.

- 1 Turn the knob on the microphone holder anticlockwise to loosen and open the microphone holder.
- 2 Place the microphone in the microphone holder.
- 3 Turn the knob on the microphone holder clockwise to secure the microphone.
- 4 Connect the microphone to the [INPUT1] or [INPUT2] (XLR) terminal according to the type of microphone cable terminal you are using.
- 5 Attach the microphone cable to the clamp.
- 6 Specify the audio input settings correctly.
 - For details on the method of audio input, refer to “Audio Recording” (p. 45).



Adjusting the Grip Belt

Open the pad and adjust the position of the grip belt accordingly.



Caution :

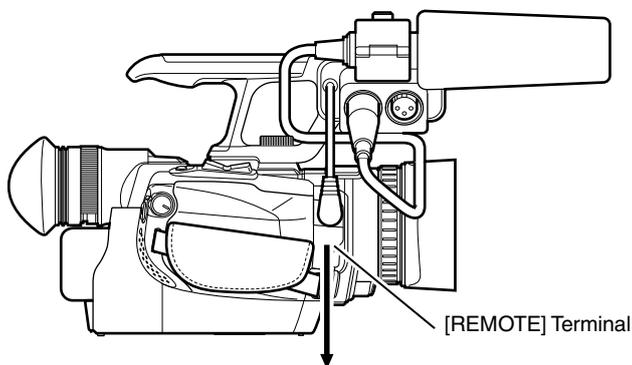
- If the grip belt is loose, this unit may drop and result in injuries or damages.
- Parents should take extra care when your child is using the camera recorder.

Setting up the Remote Control

The functions of the camera recorder can be configured using a wired remote control.

1 Connect a wired remote control to the camera recorder.

Connect the wired remote control (sold separately) to the [REMOTE] terminal of this camera recorder.



Connect the wired remote control

2 Turn on the power of the camera recorder.

Caution :

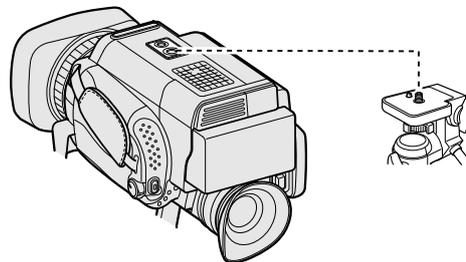
- Turn off the power of the camera recorder when connecting a wired remote control.

Attaching the Tripod

To prevent the camera recorder from falling off, which may result in injuries or damages, read the instruction manual of the tripod to be used and make sure that it is securely attached.

To attach a tripod to this unit, use the “tripod mounting holes (bottom)”.

“Tripod mounting holes” (☞ p. 16)



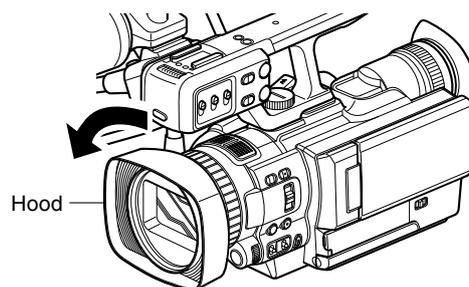
Caution :

- Use the tripod on a stable surface.

Removing the Hood

Remove the hood when attaching a filter (with external diameter 50 mm and below), teleconverter or wide converter to the front of the lens.

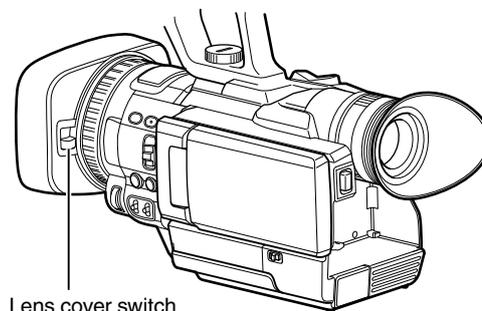
- Turn the hood in an anti-clockwise direction to remove it.



- To attach a hood, press it against the lens, and turn it in the clockwise direction.

Opening the Lens Cover

Use the lens cover switch to open or close the lens cover. Before shooting, open the lens cover.



Memo :

- When this camera recorder is not in use, close the lens cover to protect the lens.
- Do not press against the lens cover with force. Doing so may damage the lens or the cover.

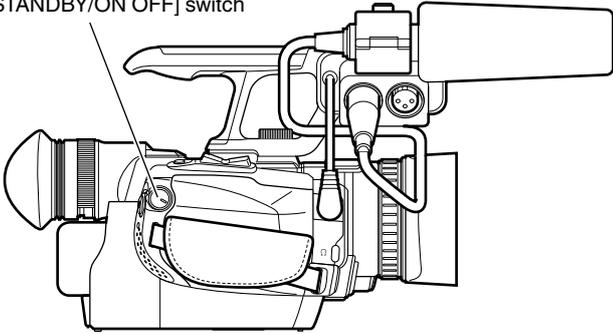
Charging the Battery Pack

Charge the battery pack immediately after purchase and when the remaining battery power is low.

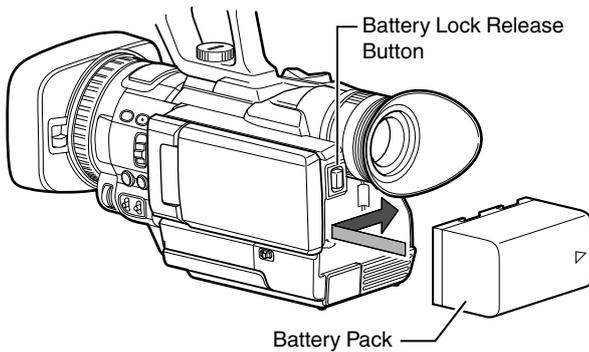
- The battery pack is not charged at the time of purchase.

1 Set the [STANDBY/ON OFF] switch to [OFF].

[STANDBY/ON OFF] switch

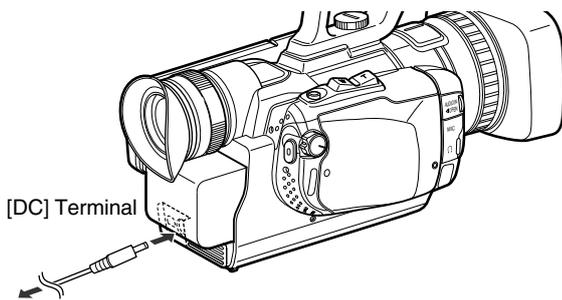


2 Attach the supplied battery.



- Align the top of the battery with the mark on this unit, and slide in until the battery clicks into place.

3 Connect the AC adapter to the [DC] terminal



AC Adapter
To AC Outlet
(110 V to 240 V)

4 Plug in the power.

- When charging is in progress, [ACCESS] access indicating lamp blinks. It goes out when charging is finished.
- After charging is complete, disconnect the AC adapter.

Removing the Battery

- 1 Set the [STANDBY/ON OFF] switch to [OFF].
- 2 Press the battery lock release button and slide the battery to the left.

Charging time and continuous recording time (approximate)

Battery Pack	Charging Time
SSL-JVC50 (Provided)	Approx. 4 hrs

Battery Pack	Continuous Recording Time	
	4K2K mode	1920 mode
SSL-JVC50 (Provided)	Approx. 1 hrs 45 mins	Approx. 2 hrs 45 mins

Caution :

- Recording time is the value when "MONITOR BRIGHTNESS" is set to "3" during the use of LCD monitor.
- Recording time may differ depending on the age of the battery, charging condition, and operating environment.
- Under the high-temperature environment, the power of this unit may be turned off to protect the battery. The use of an AC adapter is recommended when this unit is used in such places.
- Recording time is shortened in cold environments.
- Recording time is shortened when the zoom lens and LCD screen are frequently used.
- Recording time is shortened when the HDMI cable is connected.

Memo :

- To purchase a spare battery or battery charger, please visit a nearby JVC dealer.

Turning On/Off the Power

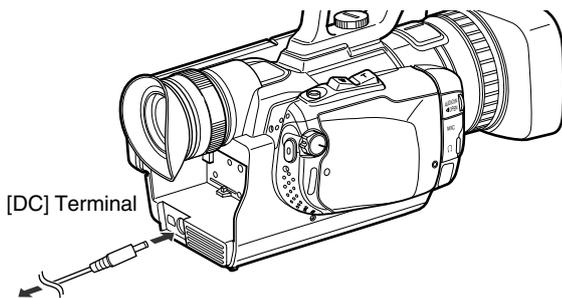
Turning On the Power

Preparation: Attach a charged battery or connect the AC adapter.

- To make use of a battery, refer to “Charging the Battery Pack” (p. 24).

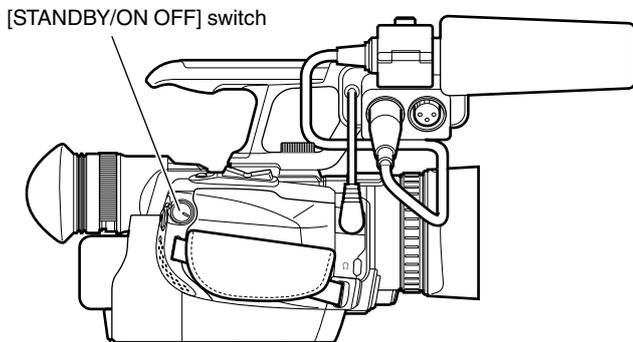
■ When the AC adapter is connected

1 Connect the AC adapter to the [DC] terminal



[DC] Terminal
AC Adapter
To AC Outlet
(110 V to 240 V)

2 Set the [STANDBY/ON OFF] switch to [ON].

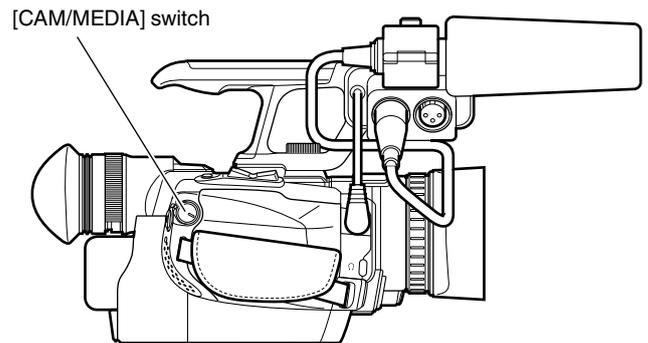


- The camera recorder starts up in Camera mode.
- The camera recorder always start up in Camera mode when the power is turned on.

■ [CAM/MEDIA] operation mode and indicating lamp status

Use the [CAM/MEDIA] operation mode selection switch to switch to a different mode. The [CAM] indicating lamp and [MEDIA] indicating lamp change as below.

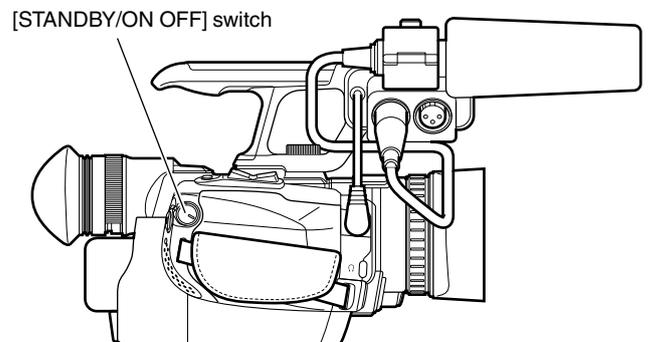
Mode	[CAM] Indicating Lamp	[MEDIA] Indicating Lamp
During Camera mode	Lights up in red	Light goes out
During Media mode	Light goes out	Lights up in red



- To switch to the Media mode, turn the [CAM/MEDIA] selection switch, or press the [CAM/MEDIA] button. In other words, you can make a [CAM]/[MEDIA] selection at one of the two locations.

Turning Off the Power

1 Set the [STANDBY/ON OFF] switch to [OFF].



■ Auto power off feature

If the unit is running using the battery only, and “AUTO POWER OFF” in the common menu is set to “ON”, the power will turn off automatically if the unit is not operated or does not operate for five minutes.

“AUTO POWER OFF” (p. 64)

Memo :

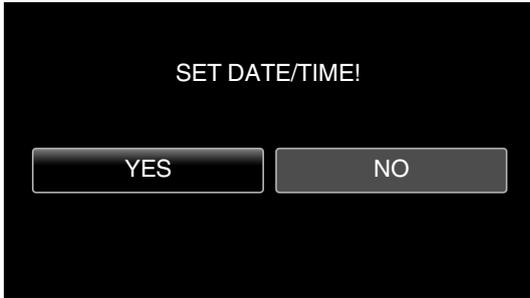
- When both the battery and AC adapter are connected, power from the AC adapter connection will be used. As such, the “AUTO POWER OFF” function will not have any effect.

Clock Setting

The "SET DATE/TIME!" screen appears when you turn on this unit for the first time after purchase, when it has not been used for a long time, or when the clock is not set yet.

Set the clock before recording.

- 1 Set the [STANDBY/ON OFF] switch to [ON].
- 2 Open the LCD monitor.
- 3 Tap "YES" when "SET DATE/TIME!" is displayed.



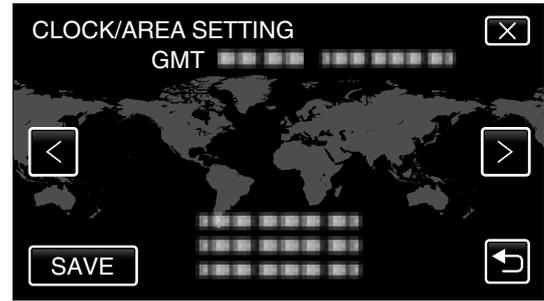
- 4 Set the date and time.



- When the year, month, day, hour, or minute item is tapped, \wedge or \vee will be displayed.
- Tap \wedge or \vee to adjust the year, month, day, hour, and minute.

- 5 After setting the date and time, tap "SET".

- 6 Select the region where you live and tap "SAVE".



- The city name and time difference are displayed.
- Tap <or> to select the city name.

Memo :

- The configured date/time data can be displayed on the LCD monitor and viewfinder and be recorded to the SDHC/SDXC card.
 - The value of the year can be set between the range from "2001" to "2099".
 - The clock can be reset again later.
- "CLOCK ADJUST" (p. 63)
- "SET DATE/TIME!" is displayed when you turn on this unit after it has not been used for a prolonged period.
Connect the AC adapter for more than 24 hours to charge the internal clock battery of this unit before setting the clock.
"Charging the Battery Pack" (p. 24)

■ Changing the date/time display style

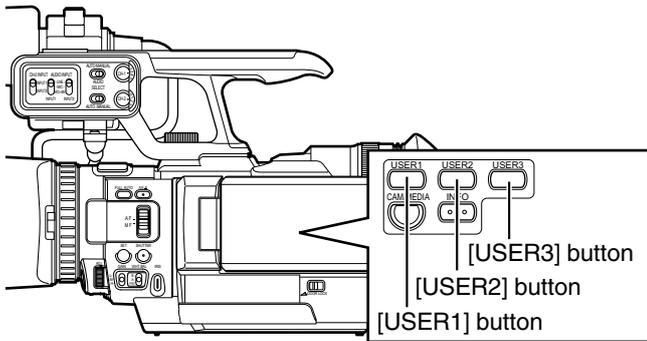
You can change the display style of the date/time on the menu.
"DATE DISPLAY STYLE" (p. 63)

■ Date/Time Display in Different Operation Modes

During Camera mode	Date/time of the built-in clock is displayed.
During Media mode	Shooting date/time of the file (image) being played back is displayed.

Assigning Functions to the USER Buttons

This unit comes with three user buttons, [USER1], [USER2], and [USER3].
A specific function can be assigned to each button according to your preference.

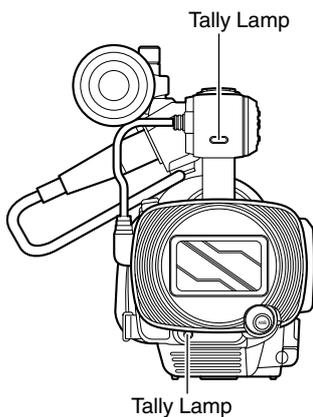


Memo :

- You can assign "FOCUS ASSIST", "TELE MACRO", and "ZEBRA" respectively to the three user buttons, "USER1", "USER2", and "USER3" in the recording menu. You can also leave them unassigned. (p. 63)

Tally Settings

You can select whether to enable the illumination of the tally lamp. Set using "TALLY" in the common menu. (p. 64)
When this is set to "ON", the tally lamp lights up in the recording mode.

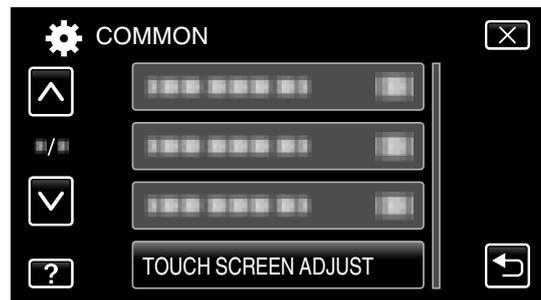


Adjusting the Touch Panel Button Position

If the reactive area of the screen is misaligned with the touched area, adjust the alignment between the button display position and the reactive area.

- Select "TOUCH SCREEN ADJUST" in the common menu.

- 1 Tap "MENU".
- 2 Tap "⚙️" (Common).
- 3 Tap "TOUCH SCREEN ADJUST".



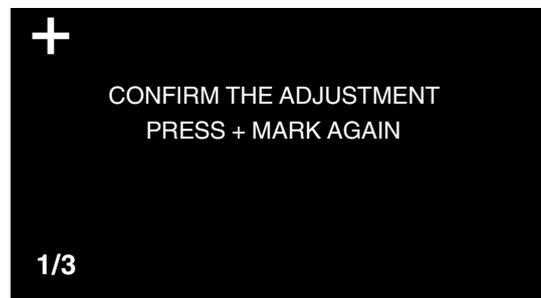
- The touch screen adjustment screen appears.

- 4 Tap "+". (3 times in total)



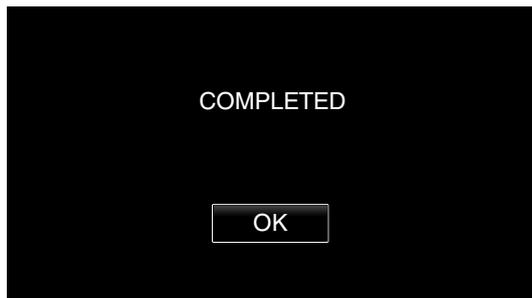
- Keep tapping "+" as its position changes with every tap.

- 5 Tap "+" again to confirm the adjusted positions. (3 times in total)



- Keep tapping "+" as its position changes with every tap.
- If areas on the adjustment screen other than the "+" mark are tapped, errors will occur. In this case, try again from step 4.

6 Tap "OK".



- Setting ends and returns to the menu screen.

Caution :

- Do not tap areas other than the "+" mark during touch screen adjustment (steps 4 - 5). Doing so may cause the touch screen to malfunction.

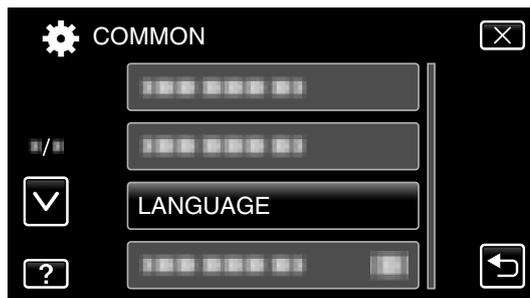
Memo :

- Adjust by lightly tapping with a corner of an SD card, etc.
- Do not press using an object with a sharp tip, and do not press hard.

Changing the Display Language

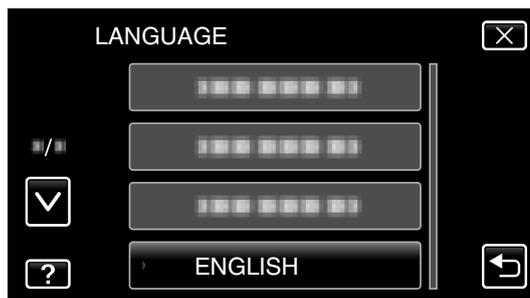
The language on the display can be changed.

- 1 Tap "MENU".
- 2 Tap "⚙️" (Common).
- 3 Tap "LANGUAGE".



- Tap \wedge or \vee to move upward or downward for more selection.

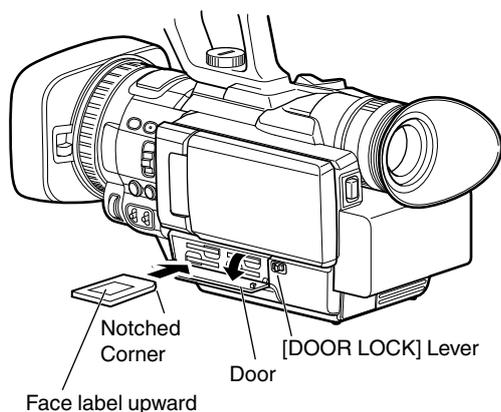
- 4 Tap to the desired language.



Inserting an SDHC/SDXC Card

This camera recorder comes with four SDHC/SDXC card slots. (Slots A, B, C, and D)

- 1** Set the [STANDBY/ON OFF] switch to [OFF].
- 2** Open the door.
 - Slide the [DOOR LOCK] lever to the right, and pull the door toward you.
- 3** Insert an SDHC/SDXC card with the notched corner first.
 - To record in the 4K2K mode, insert four SD cards into slots A to D. The four media icons light up when SD cards are inserted into all the slots.
 - When recording in HD quality (1920 mode), insert an SD card into slot A. After an SD card is inserted, the media icon for slot A will light up.
- 4** Close the door.
 - After closing the door, slide the [DOOR LOCK] lever to the left, and make sure that the door does not open up by itself.



Caution :

- The memory card needs to be formatted in advance if it has not been used for recording in the 4K2K mode before. See "Formatting (Initializing) SDHC/SDXC Cards" (p. 30).
- When you insert the formatted cards, ensure that the combination and sequence of the four cards are matching correctly. If the combination or sequence is incorrect, cards cannot be used. In order not to forget, take notes on the combination and sequence of the cards when formatted.

SDHC/SDXC cards to use

See "SDHC/SDXC Cards" (p. 11).

Slot Display

The icon of the slot will appear blinking in the following cases.

- When the card is write-protected
- When the card in use does not support Class 6 or higher
- When the card is faulty
- When there is no card in the slot

When in the 4K2K mode, the four slot display icons will appear blinking in the following cases.

- When there is a slot with no card inserted
- When the combination of the four cards is incorrect
- When there is an unformatted card

Removing the SDHC/SDXC Card

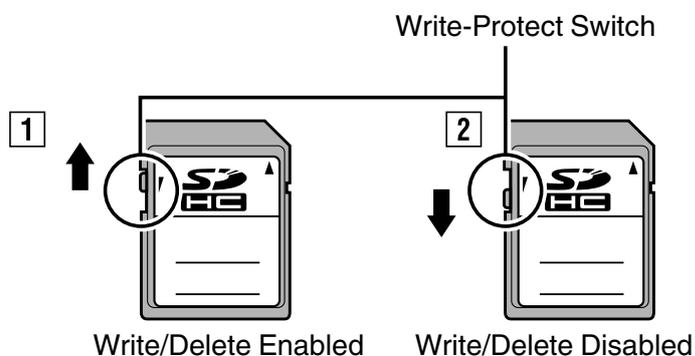
- 1** Set the [STANDBY/ON OFF] switch to [OFF].
- 2** Open the door.
 - Slide the [DOOR LOCK] lever to the right, and pull the door toward you.
- 3** Push the SDHC/SDXC card and remove it from the slot.
- 4** Close the door.
 - After closing the door, slide the [DOOR LOCK] lever to the left, and make sure that the door does not open up by itself.

Memo :

- Do not touch the metal part of the SDHC/SDXC card when inserting or removing the SDHC/SDXC card.

Write-Protect Switch on the SDHC/SDXC Card

- 1** Slide the write-protect switch upward to enable writing or deleting.
- 2** Slide the write-protect switch downward to prevent writing or deleting. (Recorded data in the card are protected.)



Preparations

Estimated Recordable Time of SDHC/SDXC Cards

The estimated recordable time is only a guide. Differences may occur depending on the SDHC/SDXC card in use and the battery condition.

Recording Format	Quality	4 GB	8 GB	16 GB	32 GB	48 GB	64 GB
4K2K mode		15 m	30 m	1 h	2 h	3 h	4 h
1920 mode	60p/50p	15 m	35 m	1 h 10 m	2 h 30 m	3 h 50 m	5 h
	UXP	20 m	40 m	1 h 20 m	2 h 50 m	4 h 10 m	5 h 40 m
	XP	30 m	1 h	2 h	4 h	6 h	8 h 10 m
	SP	40 m	1 h 20 m	2 h 50 m	5 h 50 m	8 h 30 m	11 h 30 m
	EP	1 h 40 m	3 h 30 m	7 h 10 m	14 h 40 m	21 h 30 m	28 h 50 m

Memo :

- If the SDHC/SDXC card contains files recorded by devices other than this camera recorder or files that are saved from a PC, the recordable time may be shorter or data may not be properly recorded.

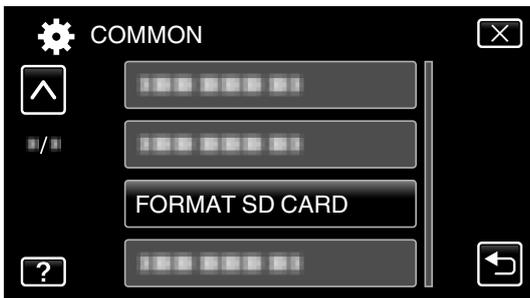
Formatting (Initializing) SDHC/SDXC Cards

The memory card needs to be formatted in advance if it has not been used for recording in the 4K2K mode before. Format the card using the camera recorder menu.

Caution :

- Be sure to format the SDHC/SDXC card on this camera recorder. SDHC/SDXC cards formatted on a PC and other peripheral equipment cannot be used on this camera recorder.
- The cards cannot be used if their combination of the four cards is incorrect, or when they are not inserted into the correct positions. Make sure that you remember the combination of the formatted cards and the positions they should be inserted into.

- 1 Tap "MENU".
- 2 Tap "⚙️" (Common).
- 3 Tap "FORMAT SD CARD".



- 4 Select "FILE" or "FILE + MANAGEMENT NO".

Setting	Details
FILE	Deletes all files on the SD card.
FILE + MANAGEMENT NO	Deletes all files on the SD card and resets the folder and file numbers to "1".

- 5 Check the confirmation message, and tap "YES".

- Formatting starts.
- After formatting is complete, tap "OK".

Caution :

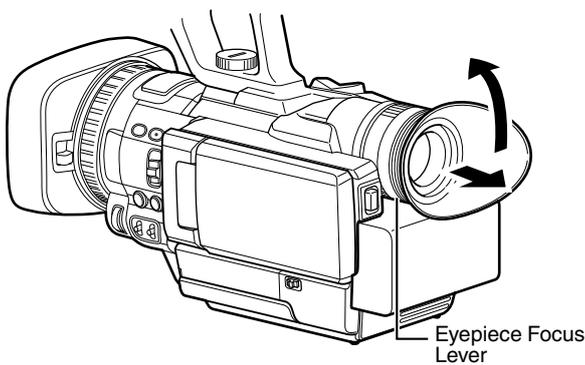
- Not available for selection when no SD card is inserted.
- All data on the card will be deleted when it is formatted. Copy all files on the card to a computer before formatting.
- Make sure that the battery pack is fully charged or connect the AC adapter as the formatting process may take some time.

Viewing the Viewfinder/LCD Monitor

You can monitor video images on this camera recorder using the viewfinder or LCD monitor.

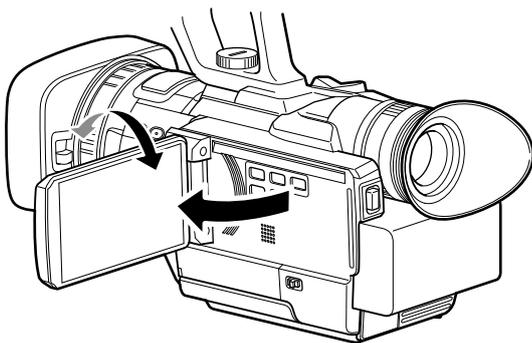
■ Viewing with the viewfinder

- 1 Pull out the viewfinder.
- 2 Incline the viewfinder vertically to a position that enables easy viewing.
- 3 Turn the eyepiece focus lever to adjust the focus.



■ Viewing on LCD monitor

- 1 Open the monitor cover
- 2 Incline the monitor cover to a position that enables easy viewing.



■ Relationship between the viewfinder and LCD monitor displays

When “PRIORITY SETTING” (p. 64) in the common menu is set to “VIEWFINDER”

VF Status	LCD Status	Video Output
OFF	OFF	VF
OFF	ON	LCD
ON	OFF	VF
ON	ON	VF

When “PRIORITY SETTING” in the common menu is set to “LCD MONITOR”

VF Status	LCD Status	Video Output
OFF	OFF	VF
OFF	ON	LCD
ON	OFF	VF
ON	ON	LCD

■ Adjusting the brightness of LCD monitor

Set using “MONITOR BRIGHTNESS” in the common menu.
 “MONITOR BRIGHTNESS” (p. 64)

Selecting a Shooting Mode

Selecting the Full Auto / Manual Shooting Mode

There are two adjustment modes for shooting, namely the Full Auto and Manual modes.

■ Setting to the Full Auto shooting mode

When [FULL AUTO] button is pressed once, the current adjustment mode is displayed. Pressing [FULL AUTO] button while the mode is displayed changes the setting.

- 1 Press the [FULL AUTO] button to display the Full Auto shooting mode icon (A) at the top of the screen.

- Exposure, aperture, shutter speed, and white balance are adjusted automatically.

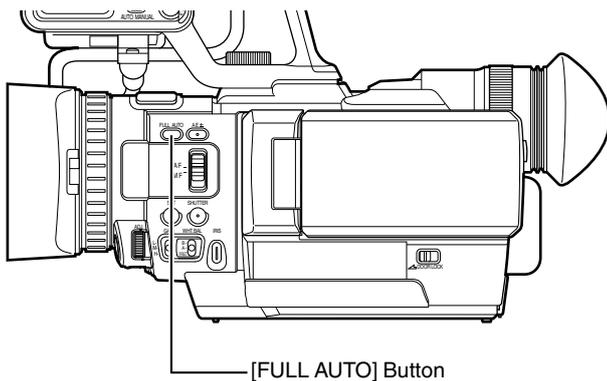
■ Setting to the Manual shooting mode

- 1 Press [FULL AUTO] button to display the Manual shooting mode icon (M) at the top of the screen.

- Even when the Manual shooting mode is set, the aperture and shutter speed are adjusted automatically if their icons are not displayed.
- To adjust the shutter speed manually, press the [SHUTTER] button, and change the value using the [ADJ.] knob.
“Adjusting the Shutter Speed” (p. 39)
- To adjust the aperture manually, press the [IRIS] button, and change the value using the [ADJ.] knob.
“Adjusting the Aperture” (p. 40)

A : Full Auto Shooting Mode

M : Manual Shooting Mode



Selecting a Focusing Mode

There are two focusing modes, namely Auto and Manual.

■ Setting to the Auto Focus mode

- 1 Set the focus switch to [AF] to display the Auto Focus icon (AF) on the screen.

- Focus is adjusted automatically.

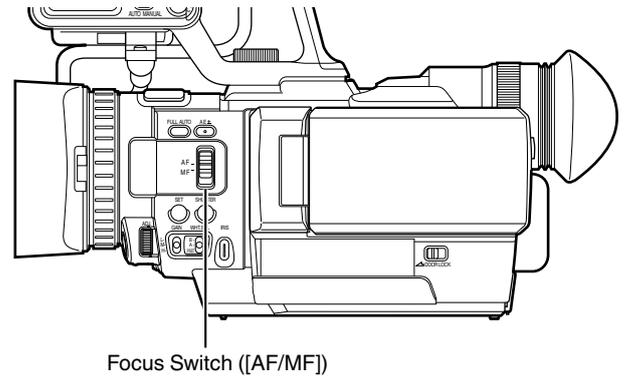
■ Setting to the Manual Focus mode

- 1 Set the focus switch to [MF] to display the Manual Focus icon (MF) on the screen.

- Adjust the focus manually. (p. 35)

“AF” : Auto Focus Mode

“MF” : Manual Focus Mode



Selecting a Video Recording Format or Recording Mode

This camera recorder supports both 4K2K recording (4K2K mode) and HD recording (1920 mode).

- 4K2K recording:
Super fine 4K2K video quality (3840 x 2160), which is equivalent to about four times the resolution of the full high definition quality
- HD recording:
Full high definition quality (1920 x 1080)

Selecting a Video Recording Format

You can select a video recording format.

- Select "SYSTEM SELECT" in the recording menu.

Item	Recording Mode
3840X2160/60p	4K2K mode (Select this mode to perform 4K2K recording.)
3840X2160/24p	
3840X2160/50p	
1920X1080/60i *	1920 mode (Select this mode to perform HD recording.)
1920X1080/60p	
1920X1080/50i *	
1920X1080/50p	

* Setting can be performed in "REC MODE" of the recording menu.

Memo :

- The 1920 mode does not allow you to have both the 60i/p and 50i/p frame rates on the same SDHC/SDXC card.

Selecting a Video Recording Mode (HD Recording Only)

You can select a recording quality for HD recording.

- Select "REC MODE" in the recording menu.

Item	Details
UXP	Enables recording in the best picture quality.
XP	Enables recording in high picture quality.
SP	Enables recording in standard quality.
EP	Enables long recordings.

Shooting

Preparation: "Selecting a Shooting Mode" (☞ p. 32)

Preparation: "Selecting a Video Recording Format or Recording Mode" (☞ p. 33)

There is a total of three recording buttons on this camera recorder, two [REC] buttons (back and top), and one "REC" button on the touch panel.

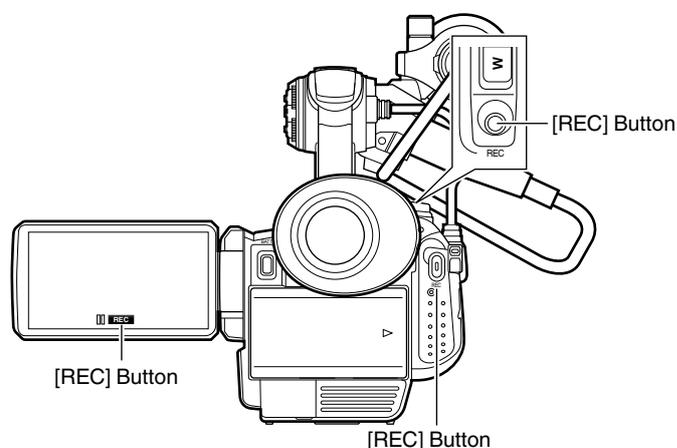
You can operate with any of the three buttons.

1 Press the [REC] button.

- Recording starts.

2 Press the [REC] button.

- Recording stops.



Memo :

- The fan is turned on to protect inside of this unit.
- Since the operating sounds may incur, the use of an external microphone is recommended.
- For long recordings, the file is split into two or more files if the size exceeds 4GB.
- Recording stops when there is no more space left on the SDHC/SDXC card.
- When the temperature rises during recording, ● REC turns yellow to alert.

■ About 4K2K recording (4K2K mode)

- Insert an SDHC/SDXC card into each of slots A to D. "Inserting an SDHC/SDXC Card" (☞ p. 29)
- The memory card needs to be formatted in advance if it has not been used for recording in the 4K2K mode before. "Formatting (Initializing) SDHC/SDXC Cards" (☞ p. 30)
- If you want to eliminate any seam between two images during playback, set "EDGE BLENDING" to "16 PIXEL" (default setting). "EDGE BLENDING" (☞ p. 62)

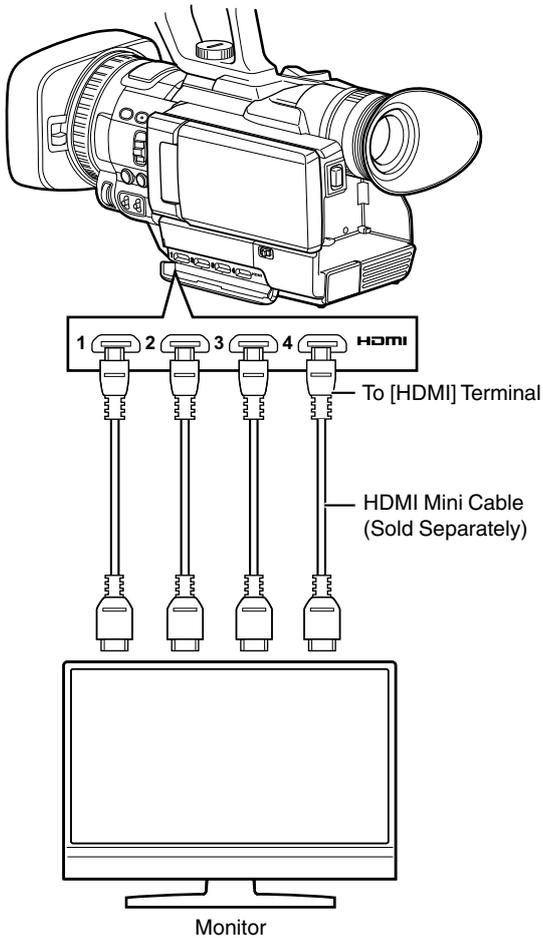
■ About HD recording (1920 mode)

- Insert an SDHC/SDXC card into slot A. (☞ p. 29)

Checking Image on Monitor before Shooting

■ Recording in 4K2K mode

1 Connect to a monitor.



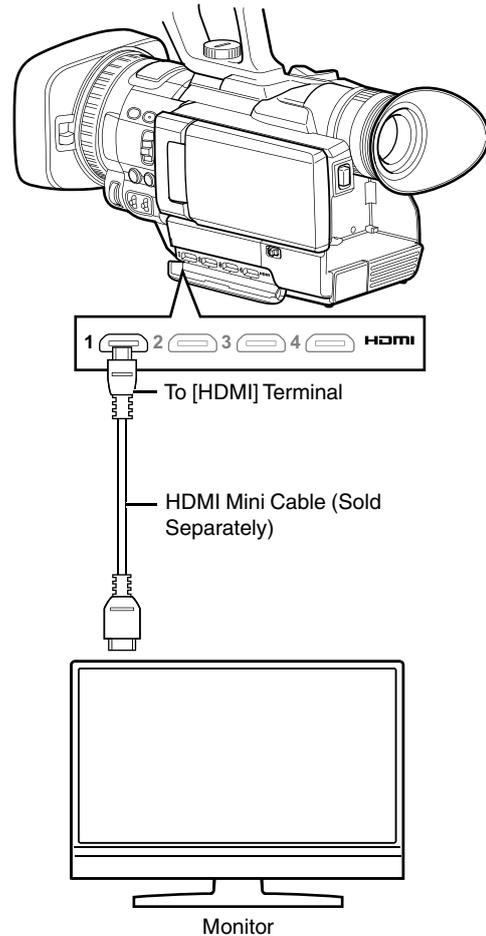
- Connect all the four [HDMI] terminals to a monitor that supports 4K2K output. 4K2K output is not possible unless all the four [HDMI] terminals are connected.
- If only the [HDMI 1] terminal is connected, images are output in the 1920 mode.

Memo :

- When recorded in 4K2K mode, menu won't be displayed on the monitor.
- When the temperature rises during recording,  mark may be displayed. Recording is continued even after this mark is displayed, but the output from [HDMI] terminal will be stopped to protect inside of this unit. To play back videos from the monitor again, wait for a while after recording is completed to connect the HDMI Mini cable, or turn off and on this unit.

■ Recording in 1920 mode

1 Connect to a monitor.



- Connect the [HDMI 1] terminal to the monitor. Video is not output if the monitor is connected to a terminal other than [HDMI 1].

Zoom Operation

Applicable to: Full Auto shooting mode **[A]**, Manual shooting mode **[M]**

Adjusts the angle of view.

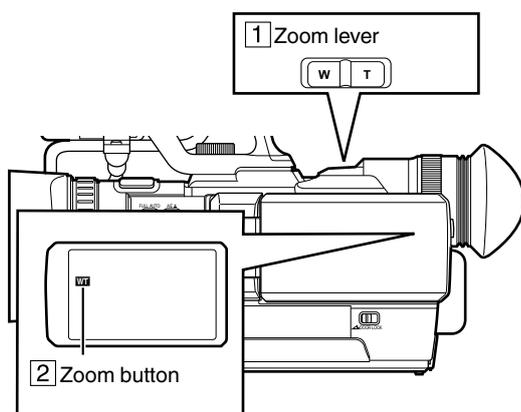
- Use the W end (wide angle end) to shoot a wider field of view.
- Use the T end (telephoto end) to magnify the subject for shooting.
- Zoom ratio:
10x, optical
20x, dynamic (1920 mode only)*

* Set using "ZOOM" in the recording menu.

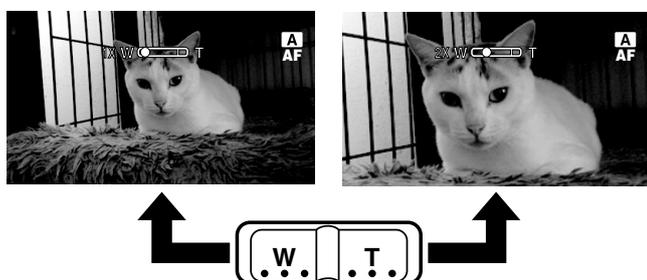
"ZOOM" (p. 62)

- Zooming can be operated using any of the 2 below.

- 1 Camera recorder's zoom lever on the top surface
- 2 Zoom button on touch panel (W/T)



■ A zoom bar appears during zoom operation.



Adjusting the Focus Manually

Applicable to: Full Auto shooting mode **[A]**, Manual shooting mode **[M]**

■ Setting to the Manual Focus mode

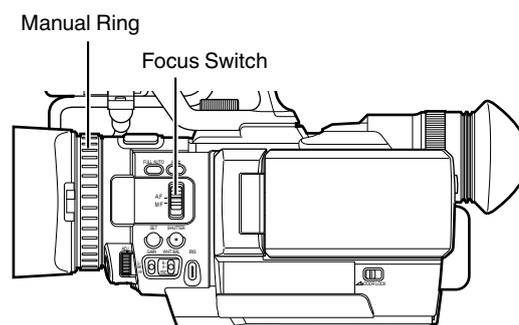
- 1 Set the focus switch to [MF] to display the Manual Focus icon (MF) on the screen.

"MF" : Manual Focus Mode



- 2 Turn the manual ring to adjust the focus.

- Using the Focus Assist function helps to enable easy focusing.

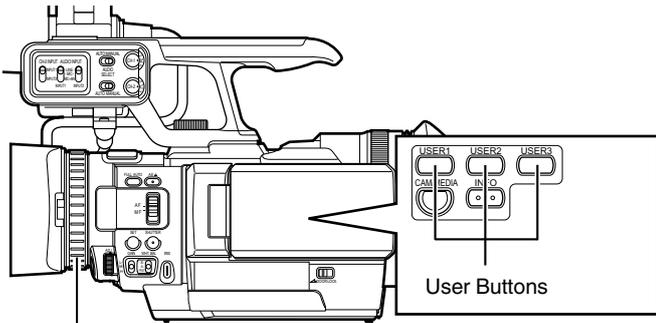


Using the Focus Assist Function

This feature temporarily switches the screen to black-and-white, and adds color to the contour of the focused image.

There are two ways to activate the Focus Assist function.

- 1 Set "FOCUS ASSIST" in the recording menu to "ON".
" FOCUS ASSIST " (☞ p. 60)
- 2 Assign the Focus Assist function to a user button and press the button.
 - Set any one of "USER1"/"USER2"/"USER3" in the recording menu to "FOCUS ASSIST". (☞ p. 63)



Manual Ring

Turn the manual ring to add color to where you want to focus.

■ Disabling Focus Assist

Set "FOCUS ASSIST" in the recording menu to "OFF".
" FOCUS ASSIST " (☞ p. 60)

Alternatively, press the user button that is assigned the Focus Assist function.

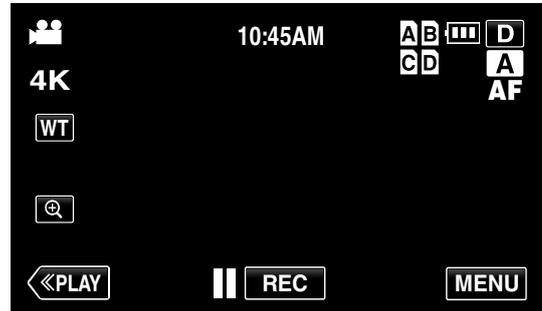
Memo :

- To change the contour color, set "FOCUS ASSIST COLOR" in the recording menu.
("MULTICOLOR"/"RED"/"GREEN"/"BLUE")
 - Selecting "MULTICOLOR" changes the contour color in sequence from red to green, and then blue according to the sharpness of the focus.
 - When using the Focus Assist function at a dark place, the point where color is added may appear grainy, making the contour color unclear.
 - Regardless of the setting at "DISPLAY ON TV" in common menu, the Focus Assist display won't be output to a monitor that supports 4K2K output.
- " DISPLAY ON TV " (☞ p. 64)

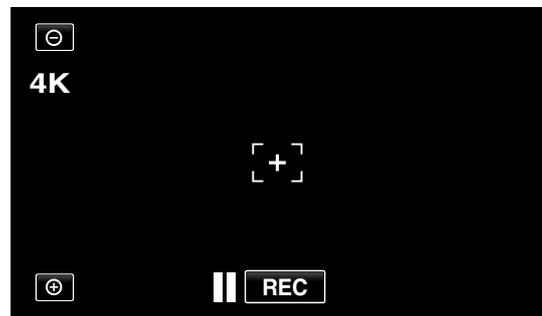
Using the Magnifying Function

You can ease focusing by magnifying the display of the area you want to focus.

- 1 Tap .

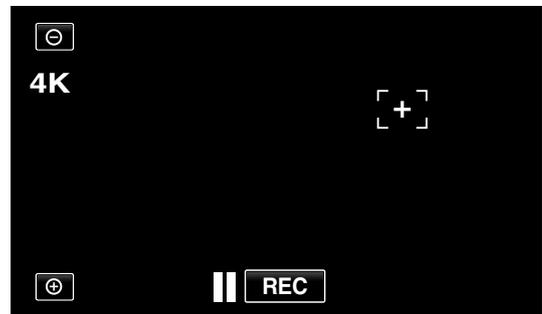


- 2 Tap on the area to magnify.



- The "+" mark moves to the tapped position.

- 3 Tap .



- The display is magnified with the "+" mark as the center.
- You can tap the screen to move the display position.
- Tap  to return to step 2.
Tapping  again at step 2 restores the normal screen.

Memo :

- Magnified display is only supported in the 4K2K mode.
- Displays on the monitor that supports 4K2K output will not be magnified.

Using the Tele Macro Feature

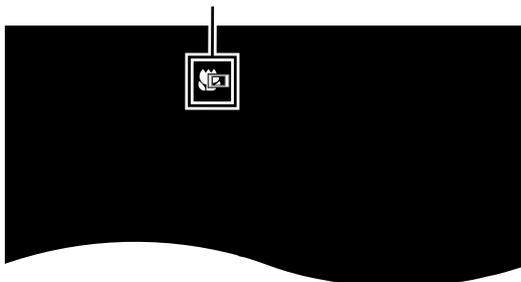
Applicable to: Full Auto shooting mode **[A]**, Manual shooting mode **[M]**

Shortens the closeup distance at the telephoto (T) end of the zoom. (1 m → approx. 60 cm)

There are two ways to set this feature.

- 1 Set "TELE MACRO" in the recording menu to "ON".
 - You can only select this setting from the menu in the Manual mode.
 - "TELE MACRO" (p. 61)
- 2 Assign the tele macro function to a user button and press the button.
 - Set any one of "USER1"/"USER2"/"USER3" in the recording menu to "TELE MACRO". (p. 27)
- When the tele macro feature is turned "ON", a tele macro icon appears on the screen.

Tele Macro Icon



Displaying the Zebra Pattern

Applicable to: Full Auto shooting mode **[A]**, Manual shooting mode **[M]**

During shooting, diagonal lines (zebra pattern) are displayed only at areas with the specified luminance levels. You can specify the luminance level range for displaying the zebra pattern.

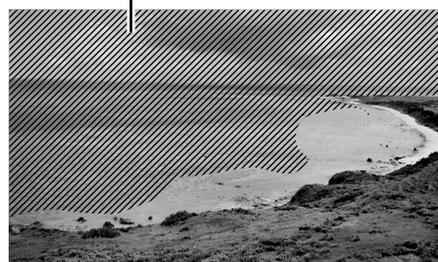
There are two ways to display the zebra pattern.

- 1 Set "ZEBRA" in the recording menu to "70-80%" or "OVER100%".
 - "ZEBRA" (p. 60)
- 2 Assign the zebra function to a user button and press the button.
 - Set any one of "USER1"/"USER2"/"USER3" in the recording menu to "ZEBRA". (p. 27)
 - Pressing the user button each time switches the setting in order of "OFF", "70-80%", and "OVER100%".

Setting Values

- 70-80%:
Sections that are close to be over-exposed are displayed in striped pattern.
- OVER100%:
Sections that are over-exposed are displayed in striped pattern.

Zebra Pattern



Clearing the zebra pattern display

There are two ways to clear the zebra pattern display.

- Set "ZEBRA" in the recording menu to "OFF".
- Press the user button that is set as "ZEBRA" in the recording menu.

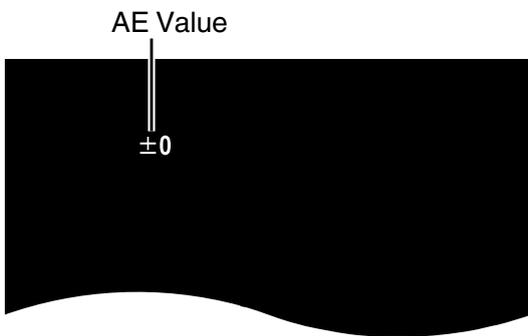
Adjusting the Exposure Manually

Applicable to: Full Auto shooting mode **[A]**, Manual shooting mode **[M]**

Generally, the brightness of the subject that is being shot is automatically adjusted according to the reference values of the camera. However, the brighter or darker areas of an image may appear unclear depending on the shooting conditions. To prevent this from occurring, you can correct the exposure manually.

1 Set to the Manual Exposure mode.

- Press the [AE ±] button on the recorder unit.
- The AE value appears on the screen, and the adjustment mode is enabled.

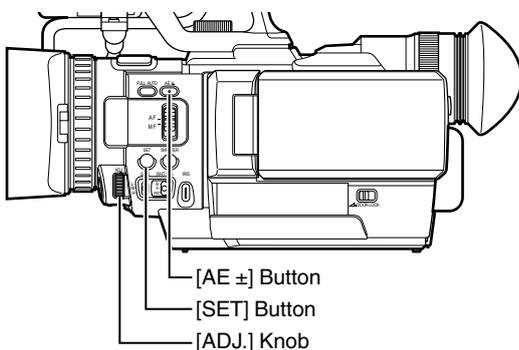


2 Adjust the exposure.

- Operate with the [ADJ.] knob on the recorder unit.
- Turn upward to increase the value and make the image brighter.
- Turn downward to decrease the value and make the image darker.

3 Confirm the setting value.

- Press the [SET] button on the recorder unit.
- The manual setting value is set.
(The setting value (-6 to +6) is displayed on the screen.)



■ Setting exposure compensation to Auto

- 1 Press the [AE ±] button several times until the AE value display disappears.

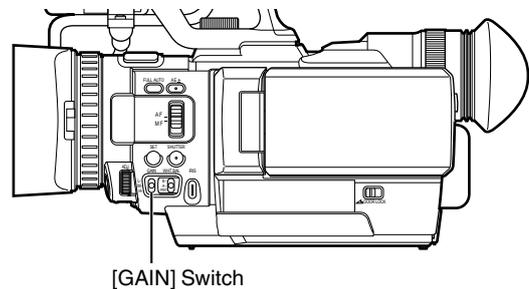
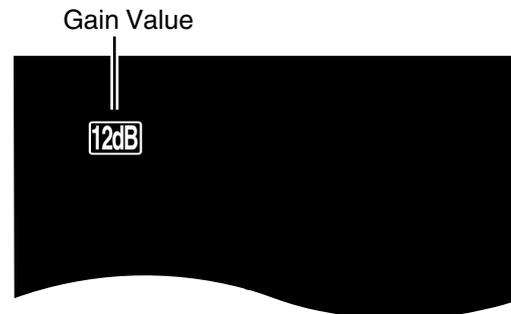
Adjusting Manual Gain

Applicable to: Manual shooting mode **[M]**

You can select the gain of the video amplifier using the [GAIN] switch on the camera recorder. The default positions of the switch are as follows.

The light sensitivity can be electrically boosted using the [GAIN] switch when there is insufficient illumination on the object. (3 positions)

[GAIN] Switch	Details
L	0 dB (No boosting is applied.)
M	9 dB (Boosts sensitivity by about 3 times.)
H	18 dB (Boosts sensitivity by about 8 times.)



Memo :

- The gain value of each position can be set to "GAIN L"/"GAIN M"/"GAIN H" in the recording menu within the range of "0dB" to "18dB" (in increments of 3 dB), as well as to "AGC" or "AUTO SLOW-SHUTTER". (p. 61)
- Boosting the sensitivity causes the screen to appear grainier.

Automatic Gain Mode (Automatic Gain Adjustment)

Set the camera recorder to the Full Auto shooting mode to activate the Auto Gain Control mode. The gain of the video amplifier is automatically set according to the brightness of the object. (Selecting "AUTO SLOW-SHUTTER" switches to slow shutter, while selecting any setting other than "AUTO SLOW-SHUTTER" switches to "AGC".)

Adjusting the Shutter Speed

Applicable to: Manual shooting mode **M**

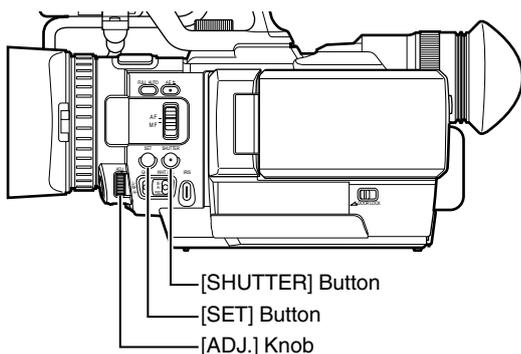
The shutter speed can be set to a value according to the user's preference. When this is set to Auto, the shutter speed is automatically controlled.

- 1** Set to the Manual shooting mode.
- 2** Set to the shutter speed adjustment mode.
 - Press the [SHUTTER] button to set to the shutter speed adjustment mode.
 - The last shutter speed setting in the Manual mode is displayed.
- 3** Select a shutter speed value.
 - Operate with the [ADJ.] knob.
 - The selected value is displayed.

Shutter speed



- 4** Confirm the shutter speed value.
 - Press the [SET] button.
 - Doing so exits the adjustment mode and the shutter speed is displayed.



Setting Values

- Frame rate 60/50
1/2, 1/2.5, 1/3, 1/4, 1/5, 1/6, 1/8, 1/10, 1/13, 1/15, 1/20, 1/25, 1/30, 1/40, 1/50, 1/60, 1/80, 1/100, 1/120, 1/160, 1/200, 1/250, 1/320, 1/400, 1/500, 1/640, 1/800, 1/1000, 1/1250, 1/1600, 1/2000, 1/2500, 1/3200, 1/4000
- Frame rate 24
1/24, 1/32, 1/40, 1/48, 1/60, 1/80, 1/100, 1/120, 1/160, 1/200, 1/250, 1/320, 1/400, 1/500, 1/640, 1/800, 1/1000, 1/1250, 1/1600, 1/2000, 1/2500, 1/3200, 1/4000

Setting shutter speed to Auto

- 1** Press the [SHUTTER] button several times until the shutter speed value display disappears.

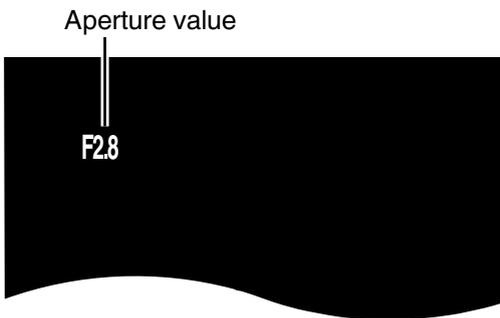
Adjusting the Aperture

Applicable to: Manual shooting mode **M**

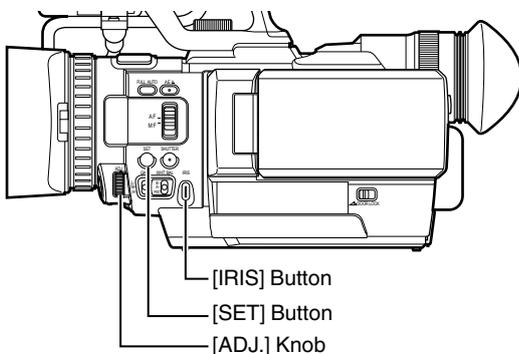
The aperture value (F-number) of the lens can be set as follows.

F-number	Details
Decrease	The subject appears brighter. The focused range becomes sharper, while the background is blurred to produce a soft image.
Increase	The subject appears darker. Background of image becomes focused as well.

- 1 Set to the Manual shooting mode.
- 2 Set to the aperture adjustment mode.
 - Press the [IRIS] button to set to the aperture adjustment mode.
 - The current F-number is displayed.
- 3 Set the F-number.
 - Operate with the [ADJ.] knob.
 - The selected F-number is displayed.



- 4 Confirm the F-number.
 - Press the [SET] button.
 - Doing so exits the adjustment mode and the F-number is displayed.



Setting Values

- F2.8 - F5.6 (7 steps)
The open F-number of the aperture varies according to the zoom position.
Wide-angle (W) end: F2.8
Telephoto (T) end: F4.5

Memo :

- When zooming to the Tele end, the aperture value is set according to the zoom and indicated in yellow.
Set the zoom to the wide angle end to enable the smallest F-number to be set.

Setting aperture to Auto

- 1 Press the [IRIS] button several times until the F-number display disappears.

Adjusting the White Balance

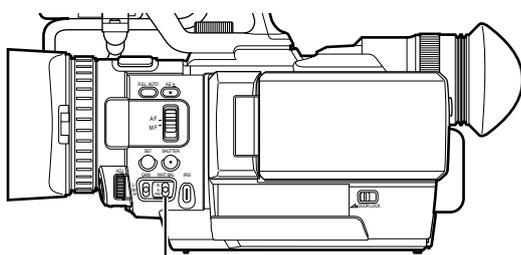
Applicable to: Manual shooting mode **M**

1 Set to the Manual shooting mode.

- Select a white balance type using the [WHT.BAL] switch.
- You can select one of the three white balance types using the [WHT.BAL] switch.

[WHT.BAL] switch	Details
B	Switches to the white balance type that is stored in Position [B]. If automatic white balance adjustment is performed at this position, the adjusted white balance is saved to Position [B].
A	Switches to the white balance type that is stored in Position [A]. If automatic white balance adjustment is performed at this position, the adjusted white balance is saved to Position [A].
PRST(PRESET)	Switches to the white balance setting ("3200K" or "5200K") in "PRESET TEMP." of the recording menu. "PRESET TEMP." (see p. 60)

White Balance Icon



[WHT.BAL] Switch

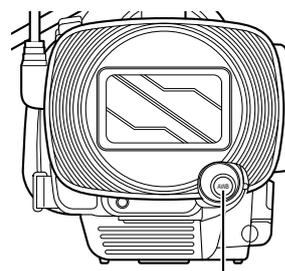
Memo :

- You can assign the FAW (Full Auto White Balance) mode to the [WHT.BAL] switch.
"FAW" (see p. 61)

Adjusting Automatic White Balance

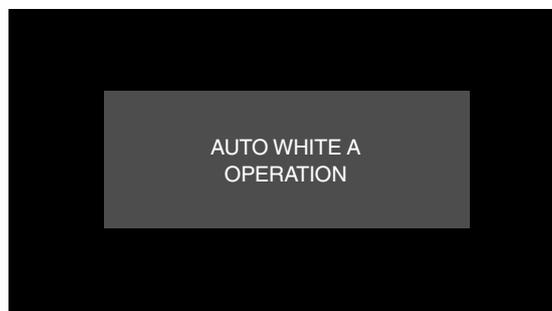
As the color of the light (color temperature) varies according to the light source, it is necessary to readjust the white balance when the main light source illuminating the object changes. You can store two white balance types in memories [A] and [B].

- 1 Setting to the Manual shooting mode.
- 2 Set the [WHT.BAL] switch to [A] or [B].
- 3 Locate a place with similar lighting conditions as the object to be shot, place a white object near the center of the screen and zoom in to fill the screen with white.
- 4 Press the [AWB] button.

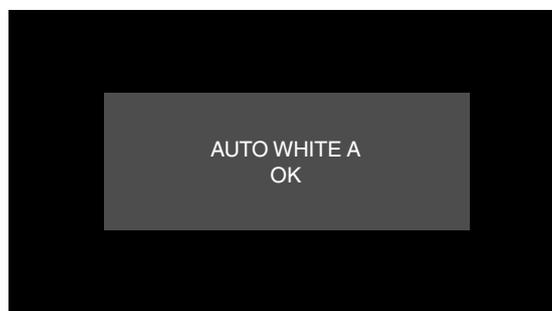


[AWB] Button

- "AUTO WHITE *OPERATION" appears when Auto White Balance is activated.
- When the correct white balance is achieved, "AUTO WHITE *OK" appears for about 3 seconds.



[AWB] Activated



Result Display

Caution :

- Do not use highly reflective objects, such as metals. Doing so may result in improper white balance adjustment.
- The Auto White function cannot provide optimum white balance with an object outside the adjustment range, for example when it contains only a single color or not enough white color.

■ Error Message

If the auto white balance adjustment is not correctly completed, one of the following messages will appear for about 5 seconds.

Error Message	Status
NG: OBJECT	The object used is defective. Displayed when there is not enough white color on the object, or when the color temperature is not suitable. Use another white object and adjust the white balance again.
ERROR: LOW LIGHT	Insufficient illumination. Displayed when the lighting is dark. Increase the lighting and adjust the white balance again.
ERROR: OVER LIGHT	Excessive illumination. Displayed when the lighting is too bright. Decrease the lighting and adjust the white balance again.

Using the Full Auto White (FAW) Function

The FAW function adjusts the white balance value automatically as the lighting condition changes.

This mode is convenient when you have no time to adjust the white balance or when the camera recorder is moved frequently in and out of places with different lighting conditions.

- 1 Set to the Manual shooting mode.
- 2 Set "FAW" in the recording menu.
"FAW" (☞ p. 61)
You can assign FAW (Fulltime Auto White balance) to any of the three positions on the [WHT.BAL] switch ([A], [B], [PRST(PRESET)]).
- 3 Set the [WHT.BAL] switch to the position that is assigned the FAW function.

Memo : _____

- Set the camera recorder to the Full Auto shooting mode to activate the FAW mode. White balance is automatically adjusted according to the color temperature of the lighting on the object.
- In these cases, white balance switching with the [WHT.BAL] selection switch is disabled.

Caution : _____

- The FAW function cannot provide optimum white balance with a subject outside the FAW adjustment range, for example when it contains only a single color or not enough white color.
- The accuracy of FAW is inferior to that of Auto White Balance.
- When the power of the camera recorder is turned on with the FAW mode selected, it takes about 10 seconds for the FAW adjustment to complete. Do not start recording during this interval.

Adjusting the Camera Image

Applicable to: Full Auto shooting mode [A], Manual shooting mode [M]

The picture quality of the camera can be set using the recording menu below. As the adjustments are shown on the screen, you can adjust the values while checking the picture quality on the camera.

- "GAMMA" (☞ p. 60)
- "GAMMA LEVEL" (☞ p. 60)
- "COLOR MATRIX" (☞ p. 60)

For details of the respective items, refer to the recording menu.

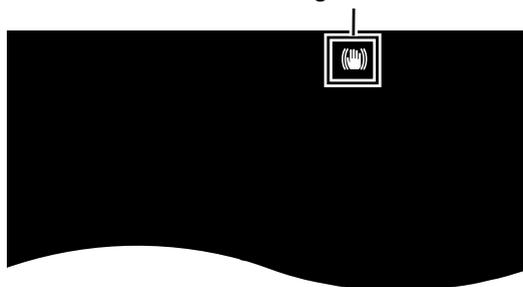
Using the Image Stabilizer Feature

Applicable to: Full Auto shooting mode **[A]**, Manual shooting mode **[M]**

Reduces blurring of images due to camera shake.

- Set "OIS" in the recording menu to "ON".
- "OIS" (☞ p. 61)

Image Stabilizer Icon



Memo :

- When the image appears significantly blurry, correction by the Image Stabilizer may not be sufficient.

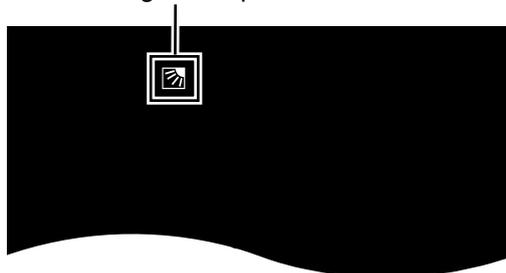
Setting Backlight Compensation

Applicable to: Full Auto shooting mode **[A]**, Manual shooting mode **[M]**

You can correct the image when the subject appears too dark due to backlight.

- Set "BACKLIGHT COMP." in the recording menu to "ON".
- "BACKLIGHT COMP." (☞ p. 60)

Backlight Compensation Icon



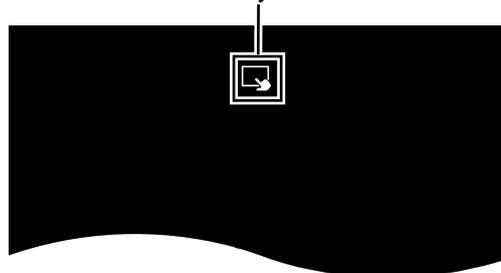
Setting Touch Priority AE/AF

Applicable to: Full Auto shooting mode **[A]**, Manual shooting mode **[M]**

Adjusts the focus and brightness automatically based on information of the touched area.

- Set "TOUCH PRIORITY AE/AF" in the recording menu to "ON".
- "TOUCH PRIORITY AE/AF" (☞ p. 61)

Touch Priority AE/AF Icon

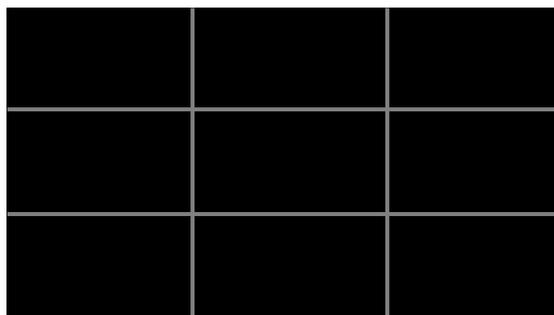


Setting the Grid

Applicable to: Full Auto shooting mode **[A]**, Manual shooting mode **[M]**

Displays gridlines to make it easier to detect when the subject appears slanted.

- Set "GRID" in the recording menu to "ON".
- "GRID" (☞ p. 62)



Setting Time-lapse Recording

Applicable to: Full Auto shooting mode **[A]**, Manual shooting mode **[M]**

Enables the changes of a scene that occur slowly over a long period to be shown within a short time by taking frames of it at a certain interval.

This is useful for making observations such as the opening of a flower bud.

- Set "TIME-LAPSE RECORDING" in the recording menu to "1SEC INTERVAL", "5SEC INTERVAL", or "40SEC INTERVAL". (p. 62)

Memo :

- A frame is taken at intervals of the selected period.

■ Indications During Time-Lapse Recording



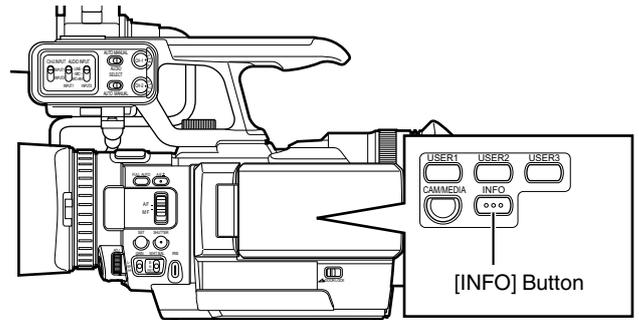
NO	Display	Description
①	Speed Indicator	Displays the recording interval that is set.
②	Recorded Time	Displays the actual recorded time of the video. Recorded time increases in units of frames.
③	Remaining Recording Time	Remaining time left to record with the currently selected video quality.
④	Actual Elapsed Time	Displays the actual elapsed time after recording starts.

Checking the Remaining Recording Time

Applicable to: Full Auto shooting mode **[A]**, Manual shooting mode **[M]**

You can check the remaining recording time on the SDHC/SDXC card as well as the remaining battery power.

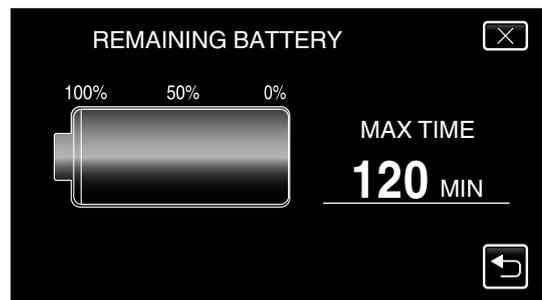
- Press the **[INFO]** button.



- Remaining recording time is displayed.



- will not be displayed when the AC adapter is connected.
- Remaining recording time is displayed if **[INFO]** is pressed one more time.



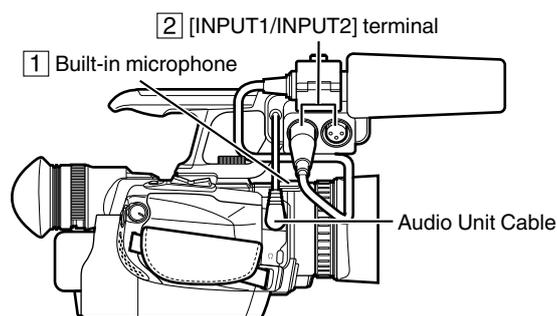
- Remaining battery power is not displayed while the AC adapter is connected.

Audio Recording

Applicable to: Camera mode

There are two ways to input audio sound.

- 1 Built-in microphone
- 2 [INPUT1] terminal / [INPUT2] terminal
 - The priority order of the input is in the sequence of 2>1.
 - When you want to use the built-in microphone, remove the audio unit cable from the [AUDIO IN] terminal.
 - To use the [INPUT1/INPUT2] terminal, an optional microphone is needed.



Setting the Reference Audio Recording Level

Applicable to: Full Auto shooting mode **A**, Manual shooting mode **M**

Menu setting

Set "AUDIO REF. LEVEL" in the recording menu. ("–20dB"/"–12dB") (p. 62)

Using the Built-in Microphone

Applicable to: Full Auto shooting mode **A**, Manual shooting mode **M**

Setting the input level.

Set "INTERNAL MIC LEVEL" in the recording menu ("–2" to "+2"). (p. 62)

Using an External Microphone Connected to the [INPUT1/INPUT2] Terminal

* Microphone is optional.

Applicable to: Full Auto shooting mode **A**, Manual shooting mode **M**

Preparation: Connect a microphone to the [INPUT1/INPUT2] terminal.

Terminals	Audio Input
INPUT1	Input to [CH1(L)] at all times. Input to [CH2(R)] can be enabled using the [CH-2 INPUT] switch.
INPUT2	Input to [CH2(R)] can be enabled using the [CH-2 INPUT] switch.

Selecting [CH-2] audio

Configure the [CH-2 INPUT] switch.

- INPUT1: Inputs audio from the [INPUT1] connector to [CH-2].
- INPUT2: Inputs audio from the [INPUT2] connector to [CH-2].

Memo :

- Audio from the [INPUT1] connector is also input to [CH-1] regardless of the setting.

Selecting the audio input to the [INPUT1] or [INPUT2] terminal

Configure the [AUDIO INPUT 1/2] switch.

Item	Details
LINE	Use this setting when connecting to an audio device or other equipment.
MIC	Use this setting when connecting to a dynamic microphone.
MIC+48V	Use this setting when connecting to a microphone that requires a +48V power supply (phantom microphone).

Caution :

- When connecting a device that does not require a +48 V power supply, make sure that it is not set to the [MIC+48V] position.

Shooting

■ Adjusting the audio recording level

Select a method for adjusting the audio recording level.

- Set the [CH1/CH2 AUDIO SELECT] switch.
- Select whether to set each channel to the [AUTO] or [MANUAL] mode.

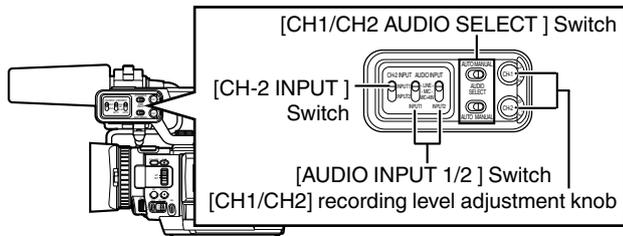
AUTO:

Use this setting to enable the auto adjustment mode.

MANUAL:

Use this setting to enable the manual adjustment mode.

Adjust the audio recording level using the [CH1/CH2] recording level adjustment knob.



Reducing Wind Noise

Wind noise for each microphone can be reduced.

■ Menu setting

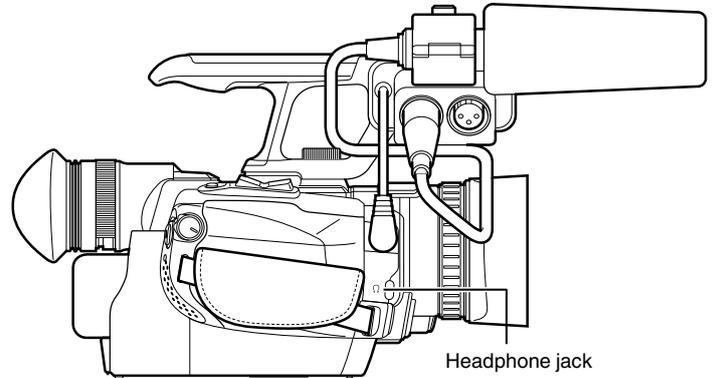
Set each of the items on “WIND CUT” in the recording menu to “ON”.
“WIND CUT” (p. 62)

Monitoring Audio Sound Using a Headphone

Applicable to: Camera mode and Media mode

1 Connect the headphone.

- Connect the headphone to the headphone jack.

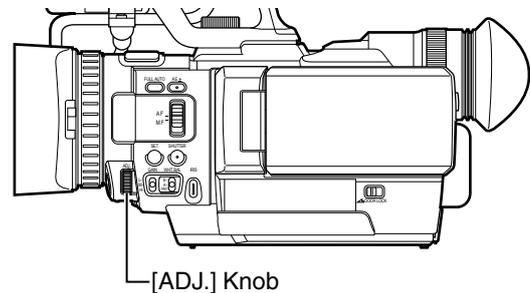


2 Set the headphone sound to mixed sound or stereo sound.

- Set “AUDIO MONITOR” in the recording menu.
 (“MIX”/“STEREO”) (p. 63)

3 Adjust the volume level of the headphones.

- Operate with the [ADJ.] knob.



Memo :

- The built-in speaker is usable only in the Media mode. Audio is not output from the built-in speaker during Camera mode.
- Audio level in the Camera mode and Media mode can be adjusted separately.
- When in the Media mode, the volume of the headphone and speaker are adjusted at the same time.
- The built-in speaker cannot be used when the headphone jack is connected.

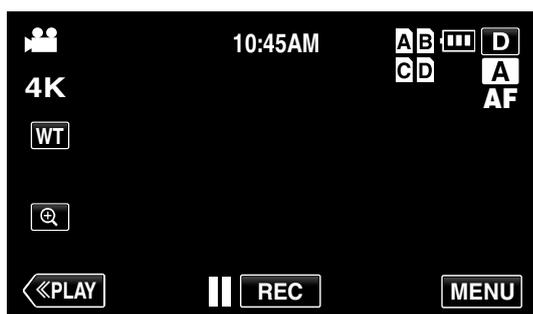
Playing Back Videos

You can select and play back the recorded videos from an index screen (thumbnail display).

■ Playback in 4K2K mode

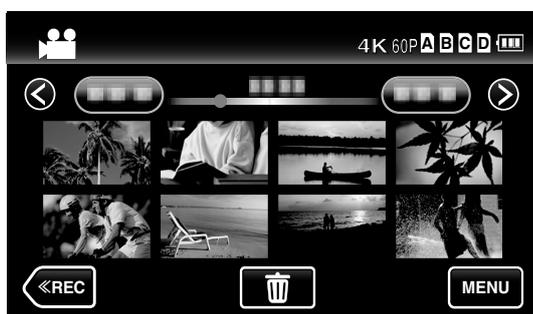
Preparation: Insert into slots A to D the four SDHC/SDXC cards that are used for recording in the 4K2K mode
 “Inserting an SDHC/SDXC Card” (p. 29)

1 Tap “<<PLAY” to select the playback mode.



- While in the Camera mode, you can turn the [CAM/MEDIA] switch or press the [CAM/MEDIA] button to switch this unit to the Media mode and start playback.

2 Tap on the file to start playback.



- Tap  during playback to pause.
- Tap  during playback to return to the index screen.

Caution :

- A message showing “INCORRECT COMBINATION OF CARDS” appears if the SDHC/SDXC card combination is incorrect. Insert the right SDHC/SDXC card combination.
- A message showing “CARD NOT INSERTED IN THE CORRECT SLOT” appears if an SDHC/SDXC card is not inserted into the correct slot. Insert the card again into the correct slot.

■ Playback in 1920 mode

Preparation: Insert into slot A an SDHC/SDXC card used for recording in the 1920 mode.
 “Inserting an SDHC/SDXC Card” (p. 29)

1 Tap “<<PLAY” to select the playback mode.



- While in the Camera mode, you can turn the [CAM/MEDIA] switch or press the [CAM/MEDIA] button to switch this unit to the Media mode and start playback.

2 Tap on the file to start playback.

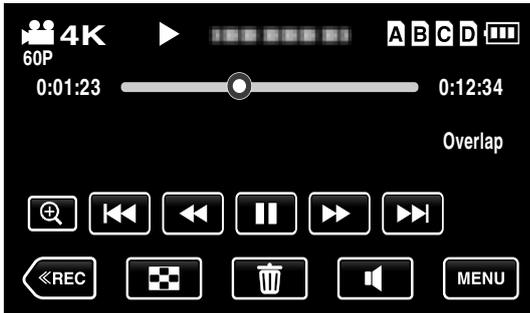


Playback

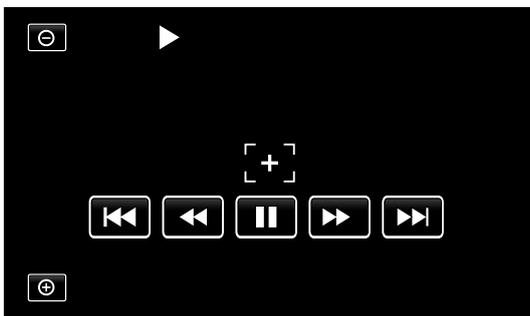
Playing Back in Magnified Display

You can play back in magnified display to view the details.

1 Tap .

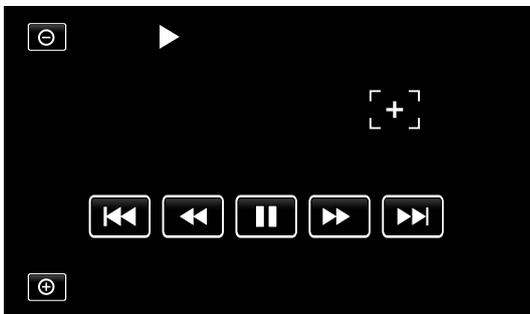


2 Tap on the area to magnify.



- The "+" mark moves to the tapped position.

3 Tap .



- The display is magnified with the "+" mark as the center.
- You can tap the screen to move the display position.
- Tap  to return to step 2.
Return to the playback screen by tapping  again in the step 2 screen.

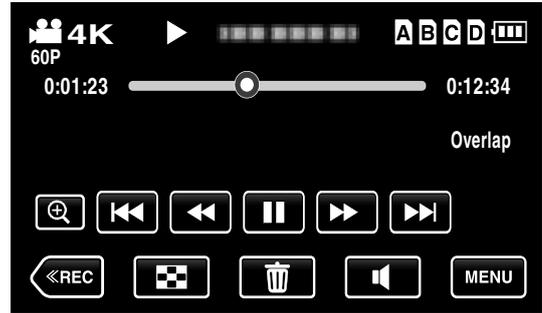
Memo :

- Magnified display is only supported in the 4K2K mode.
- Displays on the monitor that supports 4K2K output will not be magnified.

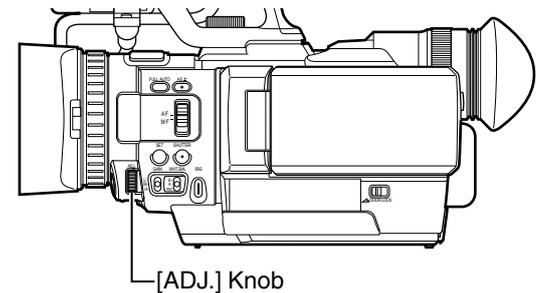
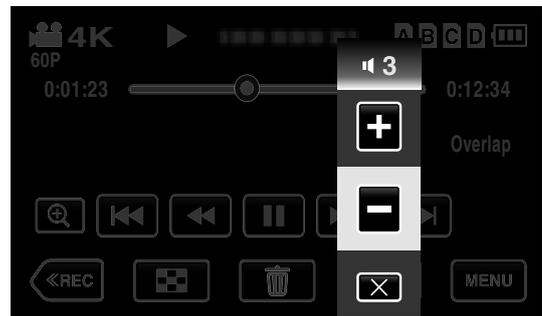
Adjusting the Volume of Videos

The volume level of the playback video can be adjusted.

1 Tap .



2 Adjust the volume level



- Raise volume: turn the [ADJ.] knob in the "+" direction, or tap "+"
- Lower volume: turn the [ADJ.] knob in the "-" direction, or tap "-"
- Tap x to exit volume adjustment.

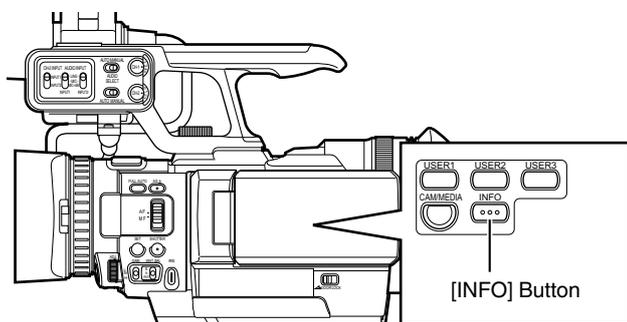
Memo :

- The built-in speaker is usable only in the Media mode. Audio is not output from the built-in speaker during Camera mode.
- When in the Media mode, the volume of the headphone and speaker are adjusted at the same time.
- The built-in speaker cannot be used when the headphone jack is connected.

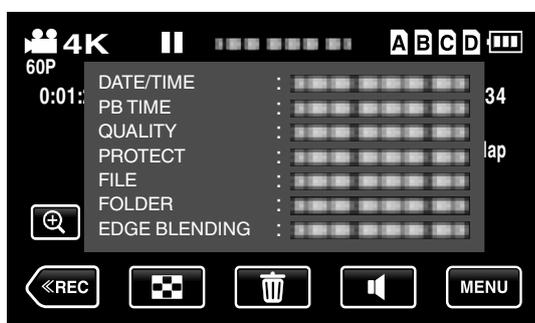
Checking the Recording Date and Other Information

You can view the recording information of the recorded videos.

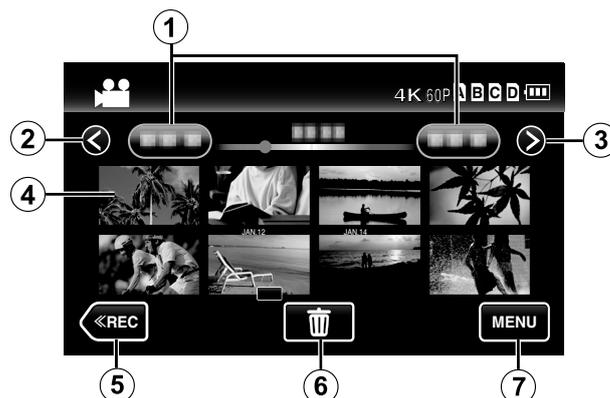
- 1 Press the INFO button while playback of the video is paused.



- You can display the recording date and duration of the selected file.

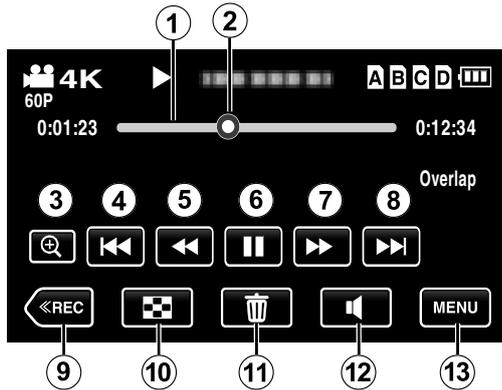


Index Screen Display



	Display	Description
①	Date	Moves to the previous/next date
②	<	Displays the previous index screen (thumbnail display) <ul style="list-style-type: none"> You can perform the same operation with the zoom lever.
③	>	Displays the next index screen (thumbnail display) <ul style="list-style-type: none"> You can perform the same operation with the zoom lever.
④	Thumbnail (File)	Tap on thumbnail - Starts playback Drag to right - Scrolls to the right to show the previous index screen (thumbnail display) Drag to left - Scrolls to the left to show the next index screen (thumbnail display)
⑤	<<REC	Switches to the recording mode.
⑥	🗑️	Displays the index screen (thumbnail display) to perform deletion
⑦	MENU	Displays the menu screen

Screen Display During Playback



	Display	Description
①	Timeline Bar	Enables to change the playback position by tapping the desired scene.
②	Pointer	Displays the current estimated playback position within the scene
③		Magnifies the display.
④		Returns to the beginning of the scene
⑤		Starts reverse search.
⑤		Reverse slow-motion/Press and hold to start reverse slow playback (1920 mode only)
⑥		Playback/pause
⑦		Starts forward search.
⑦		Forward slow-motion/Press and hold to start slow playback (1920 mode only)
⑧		Advances to the next scene.
⑨	<<REC	Switches to the recording mode.
⑩		Stop (returns to index screen)
⑪		Deletes the selected scene.
⑫		Adjusts the volume.
⑬	MENU	Displays the menu screen

Memo :

- Tap or drag on the operation area of the touch screen.
- Operations buttons on the touch screen disappear if the unit is not operated for about 5 seconds. Tap on the screen to display the buttons again.

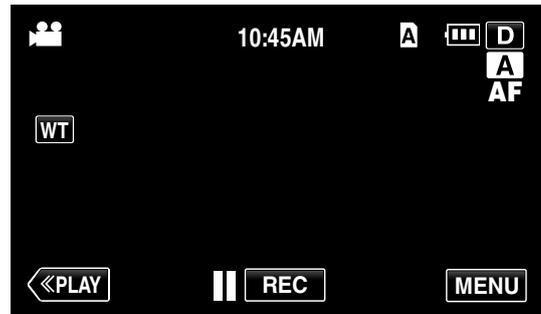
Caution :

- This unit is a microcomputer-controlled device. Electrostatic discharge, external noise and interference (from a TV, a radio, etc.) might prevent it from functioning properly. In such a case, turn off the power, then remove the AC adapter and battery pack. This unit will be reset.

Playing a Video with Defective Management Information

The management information of a video may be damaged if recording is not performed correctly, such as turning off the power in the middle of recording. You can perform the following operations to play back the videos with defective management information.

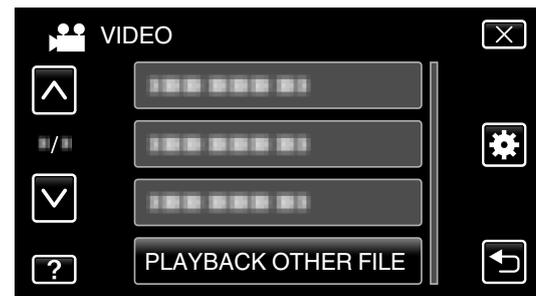
- 1 Tap “<<PLAY” to select the playback mode.



- 2 Tap “MENU”.



- 3 Tap “PLAYBACK OTHER FILE”.



4 Tap on the file to start playback.



Memo :

- An MTS file is created in the EXTMOV folder when management information is corrupted.
- Depending on the condition of the damaged file, playback might fail or may not run smoothly.
- Files recorded in the 4K2K mode are not displayed.

Viewing Images on a Monitor

You can connect this camera recorder to a monitor that is equipped with an HDMI terminal.

- Use a High Speed HDMI Mini Cable for the HDMI mini cable.
- Refer also to the instruction manual of the monitor in use.

Caution :

- Do not remove the SD card 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 SD card becomes corrupted, format the SD card..

“Formatting (Initializing) SDHC/SDXC Cards” (☞ p. 30)

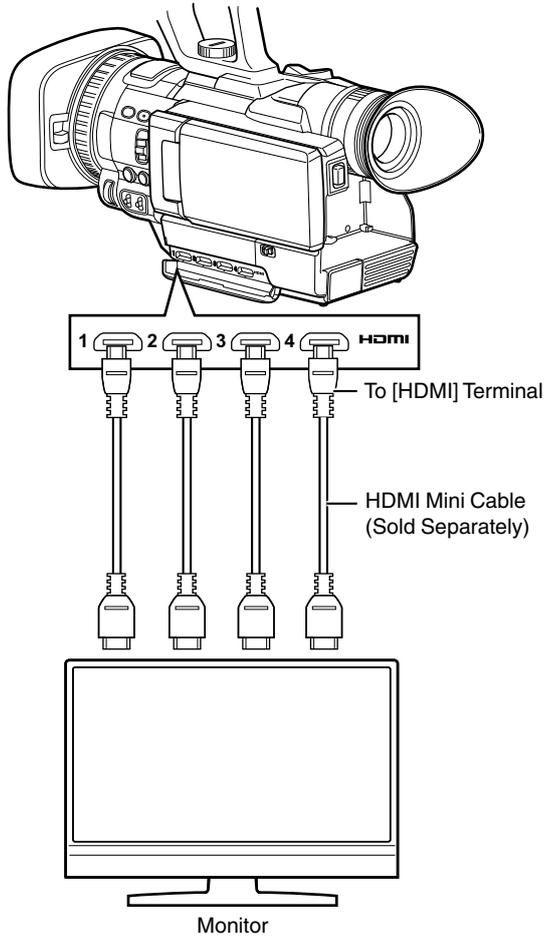
Memo :

- Change the settings in “HDMI OUTPUT” of the common menu as necessary.
“HDMI OUTPUT ” (☞ p. 64)
- When connected to the monitor via an HDMI cable, images and sounds may not be output properly depending on the monitor connected. In such cases, perform the following operations.
 - Disconnect the HDMI cable and connect it again.
 - Turn off and on this unit again.
- For questions about the monitor or method of connection, contact your monitor’s manufacturer.

Playing Videos Recorded in 4K2K Mode

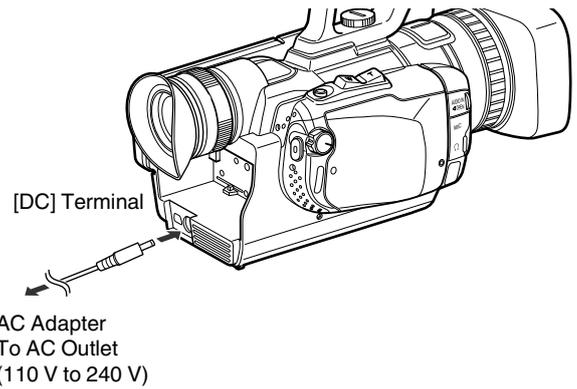
1 Connect to a monitor.

- Set the [STANDBY/ON OFF] switch to [OFF].



- Connect all the four [HDMI] terminals to a monitor that supports 4K2K output. 4K2K output is not possible unless all the four [HDMI] terminals are connected.
- If only the [HDMI 1] terminal is connected, images are output in the 1920 mode.

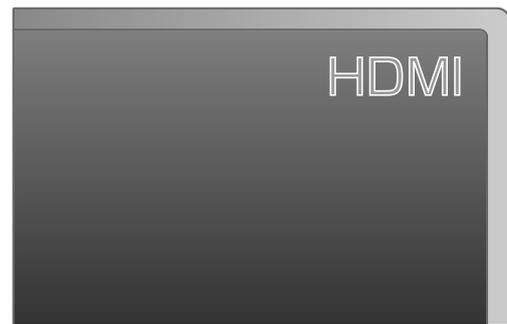
2 Connect the AC adapter to the [DC] terminal



3 Turn on the power and set to the Playback mode.

- “Turning On the Power” (p. 25)
- “Select the playback mode.” (p. 47)

4 Press the external input button on the monitor to switch to the input from this unit via the connected connector.



5 Play back a file.



- Displayed on the top left (1/4 of the monitor) when the index screen for the 4K2K mode is displayed on the monitor corresponding to the 4K2K output. “Playing Back Videos” (p. 47)

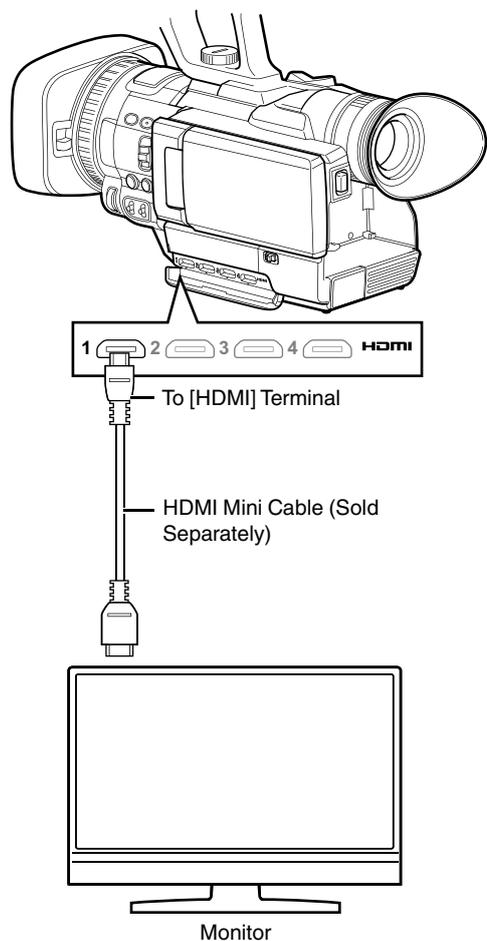
Memo :

- Buttons are displayed on the top left (1/4 of the monitor) when the 4K2K video is displayed on the monitor corresponding to the 4K2K output.

Playing Videos Recorded in 1920 Mode

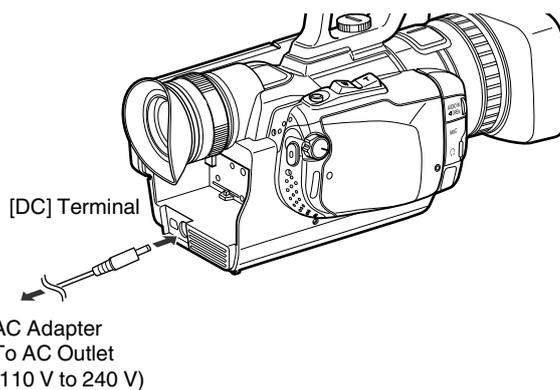
1 Connect to a monitor.

- Set the [STANDBY/ON OFF] switch to [OFF].



- Connect the [HDMI 1] terminal to the monitor. Video is not output if the monitor is connected to a terminal other than [HDMI 1].

2 Connect the AC adapter to the [DC] terminal



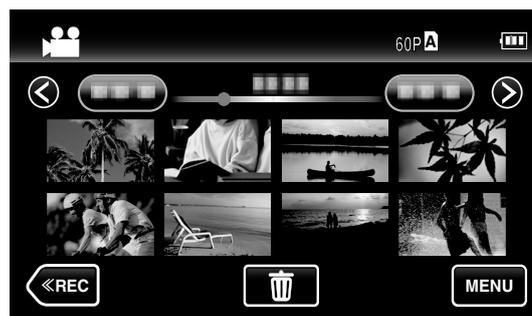
3 Turn on the power and set to the Playback mode.

- “Turning On the Power” (p. 25)
- “Select the playback mode.” (p. 47)

4 Press the external input button on the monitor to switch to the input from this unit via the connected connector.



5 Play back a file.



“Playing Back Videos” (p. 47)

Deleting Unwanted Files

If the remaining space on the SD card is running low, erase any unwanted videos.

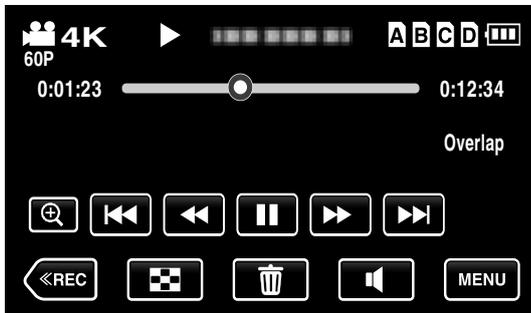
Memo : _____

- Deleted files cannot be restored.
- Files that are protected cannot be deleted.
- Be sure to back up important files on a PC.

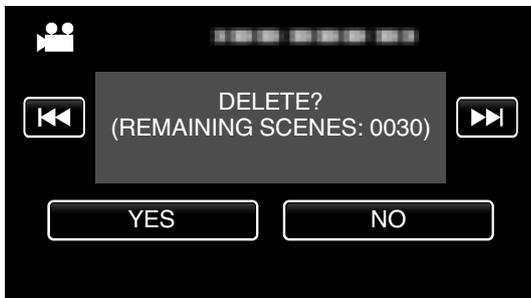
Deleting the Currently Displayed File

Deletes the currently displayed file.

1 Tap .



2 Tap "YES".

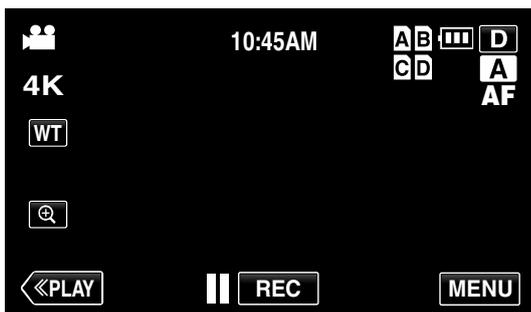


- Tap  /  to select the previous or next file.
- When no file remains, the screen returns to the index screen.

Deleting Selected Files

Deletes the selected files.

1 Tap "<<PLAY" to select the playback mode.



2 Tap .



3 Tap on the files to delete.



- ✓ appears on the selected files. To remove ✓ from a file, tap on the file again.
- Tap "SEL ALL" to select all files.
- Tap "REL ALL" to release all selections.

4 Tap "SET".



5 Tap "EXECUTE" to confirm the deletion.



- After deleting is complete, tap "OK".
- To cancel the deletion, tap "QUIT".

Protecting Files

Protect important videos to prevent them from being deleted accidentally.

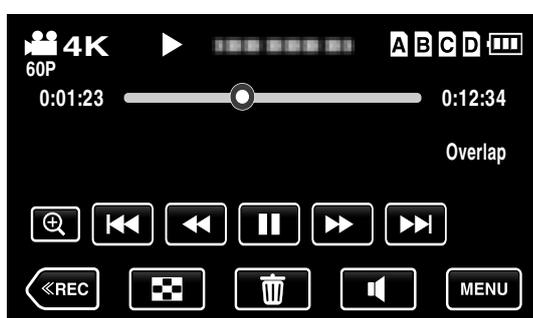
Caution :

- When an SD card is formatted, even the protected files will be deleted.

Protecting/Releasing Protection of the Currently Displayed File

Protects or releases protection of the currently displayed file.

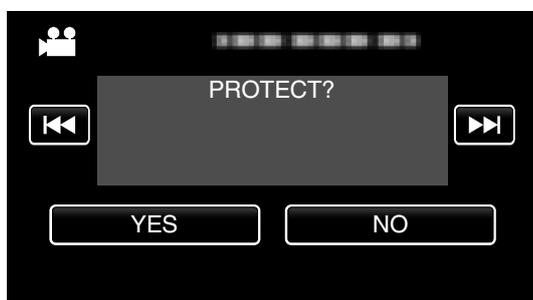
- 1 Tap "MENU".



- 2 Tap "PROTECT/CANCEL".



- 3 Tap "YES".

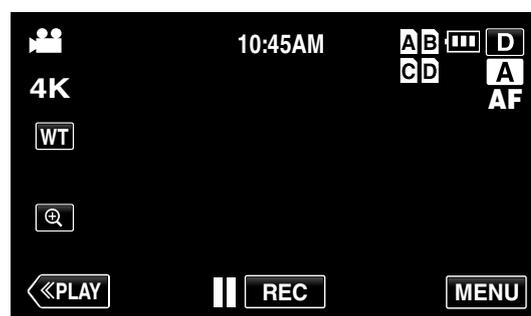


- Tap << / >> to select the previous or next file.
- After protection is complete, tap "OK".

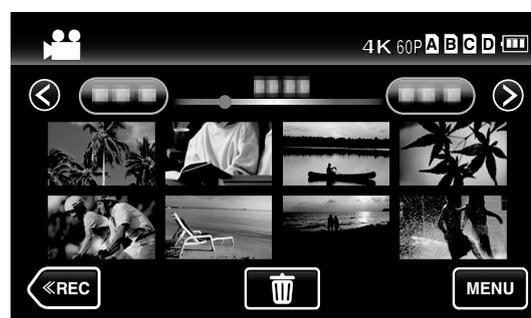
Protecting/Releasing Protection of Selected Files

Protects or releases protection of the selected files.

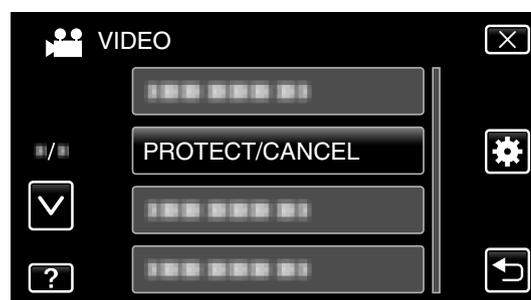
- 1 Tap "<<PLAY" to select the playback mode.



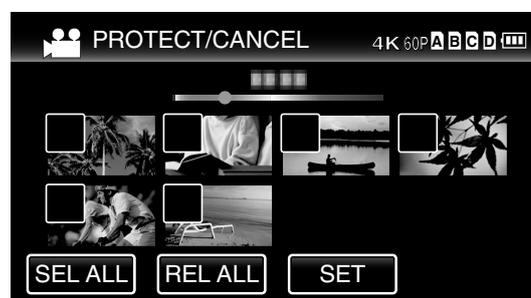
- 2 Tap "MENU".



- 3 Tap "PROTECT/CANCEL".

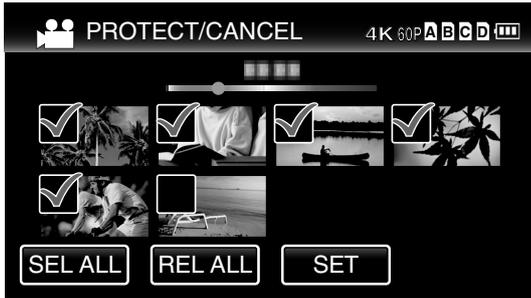


- 4 Tap on the files to protect or release protection of.



- ✓ appears on the selected files. To remove ✓ from a file, tap on the file again.
- ✓ is displayed on the files that are already protected. To release protection of a file, tap on the file such that ✓ is removed.
- Tap "SEL ALL" to select all files.
- Tap "REL ALL" to release all selections.

5 Tap “SET” to complete the setting.

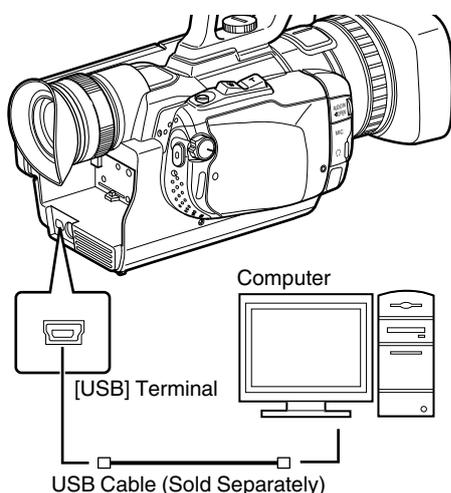


- Protect marks  appear on the selected files. Protect marks  disappear from the deselected files.

Copying to Computer

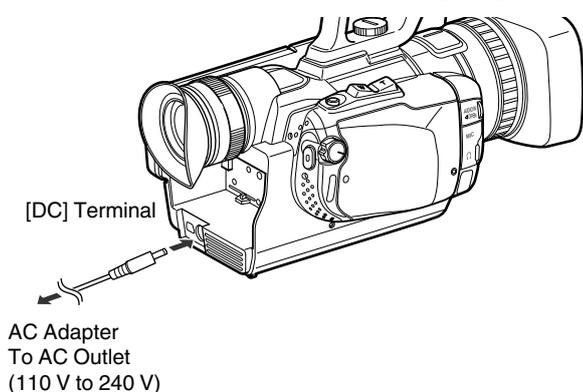
You can read and copy the files on the SD card by connecting this unit to a computer using a USB cable.

1 Connect to a computer.



- Set the [STANDBY/ON OFF] switch to [OFF].

2 Connect the AC adapter to the [DC] terminal



- Turn on the power. (p. 25)
- The subsequent operations are to be performed on the computer.

3 Windows

From the “Start” menu, select “Computer” (Windows 7/Windows Vista)/“My Computer” (Windows XP), and click the [JVCCAM_SDA]/[JVCCAM_SDB]/[JVCCAM_SDC]/[JVCCAM_SDD] (4K2K mode) or the [JVCCAM_SD] (1920 mode) icon.

Mac

Double-click the “No Name” icon, and click the [JVCCAM_SDA]/[JVCCAM_SDB]/[JVCCAM_SDC]/[JVCCAM_SDD] (4K2K mode) or the [JVCCAM_SD] (1920 mode) icon.

- Open the folder with the desired files.
“List of Files and Folders” (p. 58)

4 Copy the files to any folder in the computer (desktop, etc).

Caution :

- When the folders or files are deleted/moved/renamed in the computer, they cannot be played back on this unit anymore.

Memo :

- Files cannot be written to the SD card.
- To edit/view the files, use a software that supports AVCHD (video)/MP4 (video) files.
- The above operations on computer may vary with the system used.

Disconnecting this Unit from Computer

■ Windows

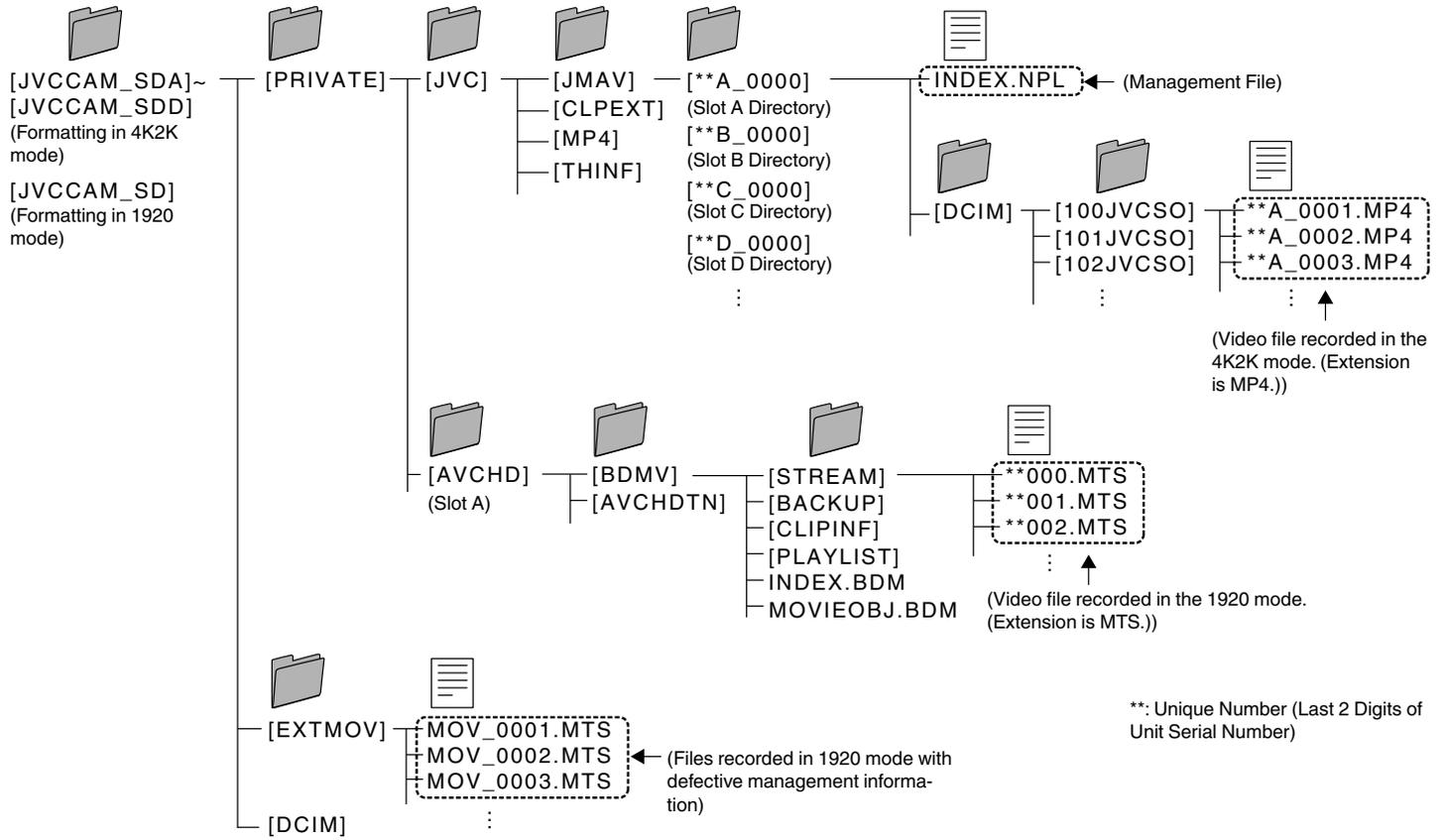
- 1 Click “Safely Remove Hardware and Eject Media”.
- 2 Click “Safely Remove USB Mass Storage Device”.
- 3 (For Windows Vista) Click “OK”.
- 4 Disconnect the USB cable and close the LCD monitor.

■ Mac

- 1 Throw the “No Name” icon into the trash can.

List of Files and Folders

Folders and files are created in the SD card as shown below.
They are created only when necessary.



Caution :

- When the folders or files are deleted/moved/rename in the computer, they cannot be played back on this unit anymore.

Operating the Menu

There are two types of menus in this unit.

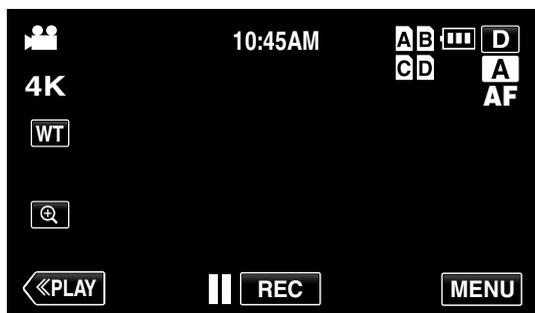
- **Main menu:**
Menu that contains all the items specific to the video recording and video playback respectively.
- **“⚙️” (Common) menu in main menu:**
Menu that contains all common settings related to the video recording and playback modes.

Operating the Main Menu

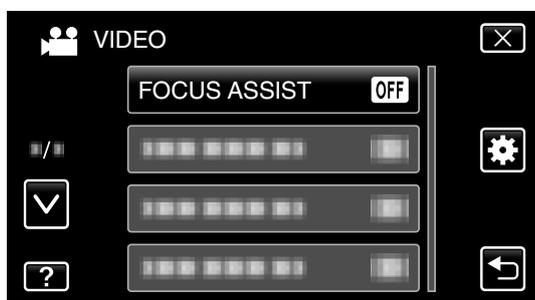
You can configure various settings using the menu.

1 Tap “MENU”.

- The menu differs according to the mode in use.

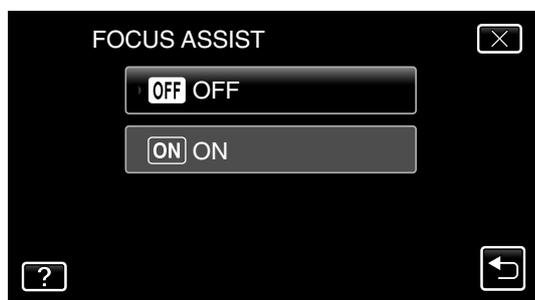


2 Tap the desired menu.



- Tap \wedge or \vee to move upward or downward for more selection.

3 Tap the desired setting.



Memo :

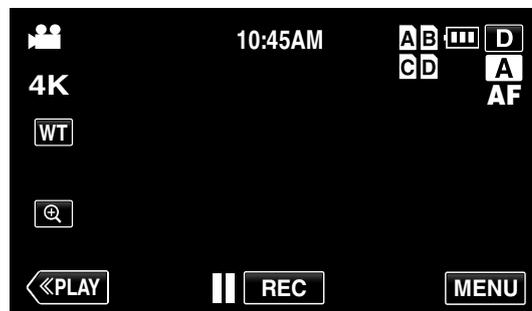
- To exit setting: tap “✕” (quit).
- To return to the previous screen: tap “↶” (return)
- To display Help: tap “?” (help), and tap the item.
- Help file may not be available for some items.

Operating the Common Menu

You can configure common setting items regardless of the mode using the common menu.

1 Tap “MENU”.

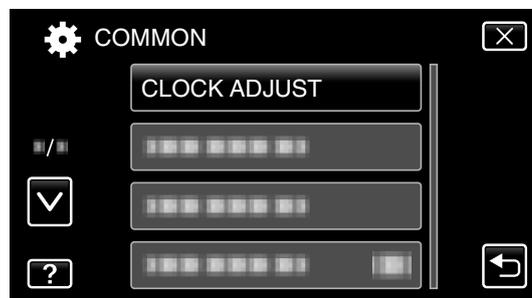
- The menu differs according to the mode in use.



2 Tap “⚙️” (Common).



3 Tap the desired setting.



- Tap \wedge or \vee to move upward or downward for more selection.

Memo :

- To exit setting: tap “✕” (quit).
- To return to the previous screen: tap “↶” (return)
- To display Help: tap “?” (help), and tap the item.
- Help file may not be available for some items.

Recording Menu

You can change the recording settings in this menu.

Setting	Details
FOCUS ASSIST	<p>When this is set to "ON", the focused subject is outlined in color for easier focusing.</p> <p>Memo : _____</p> <ul style="list-style-type: none"> When FOCUS ASSIST is enabled, the image becomes black and white, while the outline of the focused object is displayed in the selected color. Change outline color if it becomes difficult to see.
FOCUS ASSIST COLOR	<p>For setting the color of the outline of the focused object when "FOCUS ASSIST" is used.</p> <ul style="list-style-type: none"> Select "MULTICOLOR", "RED", "GREEN", or "BLUE".
ZEBRA	<p>Diagonal lines (zebra pattern) are displayed only at areas with the specified luminance levels. You can use this to check the bright areas (blowout) and adjust the brightness.</p> <p>OFF: Deactivates the function.</p> <p>70-80%: Sections that are close to be over-exposed are displayed in striped pattern.</p> <p>OVER100%: Sections that are over-exposed are displayed in striped pattern.</p>
GAMMA	<p>For adjusting the gamma curve that determines the gradation expression.</p> <p>OFF: Deactivates the function.</p> <p>STANDARD: shows a standard gamma curve.</p> <p>CINEMA: Sets to a gamma curve with similar gradation to the screen characteristics of movies.</p>
GAMMA LEVEL	<p>For adjusting the GAMMA LEVEL.</p> <ul style="list-style-type: none"> This item can be specified separately when "GAMMA" is set to "STANDARD" or "CINEMA". Tap \wedge or \vee, or turn the [ADJ.] knob to set the level (MIN (-5) - NORMAL (0) - MAX (+5)). <p>Increase value: enhances the gradation of black. However, the gradation of bright areas deteriorates.</p> <p>Decrease value: enhances the gradation of bright areas. However, the gradation of black deteriorates.</p>
COLOR MATRIX	<p>For setting the COLOR MATRIX.</p> <p>OFF: turns off the COLOR MATRIX feature.</p> <p>STANDARD: sets to the standard COLOR MATRIX.</p> <p>CINEMA VIVID COLOR: Sets to a vivid COLOR MATRIX that is similar to the screen characteristics of movies.</p> <p>CINEMA SUBDUED COLOR: Sets to a subdued COLOR MATRIX that is similar to the screen characteristics of movies.</p>
BACKLIGHT COMP.	<p>Set this to "ON" to correct the subject that appears dark under backlight.</p>
PRESET TEMP.	<p>For setting the basic color temperature during manual shooting when the [WHT.BAL.] switch is set to [PRST(PRESET)].</p> <p>3200K: sets the basic color temperature to 3200K. (For use in a low color temperature environment, such as under a halogen lamp.)</p> <p>5200K: sets the basic color temperature to 5200K. (For use in a high color temperature environment, such as under sunlight.)</p> <p>Memo : _____</p> <ul style="list-style-type: none"> This feature is not available during auto shooting. This feature is not available when "FAW" is set to "PRESET".

Setting	Details
FAW	<p>For setting the [WHT.BAL.] switch position to assign the FAW (Full Auto White Balance) function to during manual shooting.</p> <p>Not set: FAW function is not assigned.</p> <p>A: assigns FAW to the A position.</p> <p>B: assigns FAW to the B position.</p> <p>PRESET: assigns FAW to the PRESET position.</p> <p>Memo : _____</p> <ul style="list-style-type: none"> • This is fixed at FAW during auto shooting.
GAIN L GAIN M GAIN H	<p>For setting the gain value of each position on the [GAIN] switch during manual shooting.</p> <p>0dB/3dB/6dB/9dB/12dB/15dB/18dB: fixes gain value at the set value.</p> <p>AGC: sets gain automatically.</p> <p>AUTO SLOW-SHUTTER: sets gain automatically with the combined use of AUTO SLOW-SHUTTER.</p> <p>Memo : _____</p> <ul style="list-style-type: none"> • During auto recording, this is set to AGC or AUTO SLOW-SHUTTER.
TOUCH PRIORITY AE/AF	<p>When this is set to "ON", recording is performed while automatically adjusting the tapped area (fixed position) with appropriate focus and brightness. In addition, a white frame appears around the tapped area.</p> <ul style="list-style-type: none"> • To reset, tap the desired position (face/color/area) again. • To cancel the Area Select, tap the white frame. <p>Memo : _____</p> <ul style="list-style-type: none"> • Settings are canceled when zoom operation is performed. • Subjects near the sides of the LCD monitor may not respond or be recognized when tapped. In this case, move the subject to the center and tap again.
TELE MACRO	<p>Zooms to the telephoto (T) end during manual shooting for a closeup shot.</p> <p>OFF: This is the normal setting. Enables closeup shots up to about 1 m.</p> <p>ON: enables the TELE MACRO setting. You can take closeup shots from up to a distance of about 60 cm.</p> <p>Memo : _____</p> <ul style="list-style-type: none"> • This setting is not available in the menu during auto recording. • When you are not taking close-up shots, set to "OFF". Shooting in the "ON" setting may cause the image to turn out blurry.
OIS	<p>When this is set to "ON", camera shake during recording can be effectively reduced.</p>
SYSTEM SELECT	<p>For setting the recording resolution and frame rate.</p> <p>4K2K recording (4K2K mode)</p> <p>3840X2160/60p: resolution 3840 x 2160, frame rate 60p</p> <p>3840X2160/24p: resolution 3840 x 2160, frame rate 24p</p> <p>3840X2160/50p: resolution 3840 x 2160, frame rate 50p</p> <p>HD recording (1920 mode)</p> <p>1920X1080/60i: resolution 1920 x 1080, frame rate 60i</p> <p>1920X1080/60p: resolution 1920 x 1080, frame rate 60p</p> <p>1920X1080/50i: resolution 1920 x 1080, frame rate 50i</p> <p>1920X1080/50p: resolution 1920 x 1080, frame rate 50p</p> <ul style="list-style-type: none"> • The camera reboots each time this setting is altered.

Settings Menu

Setting	Details
REC MODE	<p>For setting the image quality when “SYSTEM SELECT” is in the 1920 mode.</p> <p>UXP: Enables recording in the best picture quality.</p> <ul style="list-style-type: none"> • Applies to Blu-ray discs only. Videos taken in high-definition quality cannot be saved to DVDs. <p>XP: Enables recording in high picture quality.</p> <p>SP: Enables recording in standard quality.</p> <p>EP: enables long recording.</p> <p>Memo : _____</p> <ul style="list-style-type: none"> • This setting is not available when “SYSTEM SELECT” is set to the 4K2K mode. • This setting is not available when the frame rate is 60p or 50p.
EDGE BLENDING	<p>Overlaps the seam of four images when “SYSTEM SELECT” is set to the 4K2K mode.</p> <p>0 PIXEL: does not overlap the seam of the images during recording.</p> <p>16 PIXEL: record with the borders overlapped. (A black band will appear on up, down, left and right).</p>
ZOOM	<p>Sets the maximum zoom ratio.</p> <p>10x/OPTICAL: Enables recording with 1 - 10x optical zoom. Set this when dynamic zoom is not desired.</p> <p>20x/DYNAMIC: Enables recording with 1 - 10x optical zoom and 11 - 20x digital zoom.</p> <p>Memo : _____</p> <ul style="list-style-type: none"> • This setting is not available when “SYSTEM SELECT” is set to the 4K2K mode.
WIND CUT	<p>Setting this to “ON” reduces any noise caused by the wind.</p> <p>Memo : _____</p> <ul style="list-style-type: none"> • You can specify a setting for each of the [INPUT1] (microphone), [INPUT2] (microphone), and [MIC] (microphone/built-in microphone) terminals.
GRID	<p>Setting this to “ON” displays gridlines (GRID) to make it easier to detect when the subject appears slanted.</p>
TIME-LAPSE RECORDING	<p>This function enables the changes of a scene that occur slowly over a long period to be shown within a short time by taking frames of it at a certain interval.</p> <p>OFF: disables TIME-LAPSE RECORDING.</p> <p>1SEC INTERVAL: records a frame at 1-second intervals. Recorded videos are played back at a 30x speed (when recorded at 60i).</p> <p>5SEC INTERVAL: records a frame at 5-second intervals. Recorded videos are played back at a 150x speed (when recorded at 60i).</p> <p>40SEC INTERVAL: records a frame at 40-second intervals. Recorded videos are played back at a 1200x speed (when recorded at 60i).</p> <p>Memo : _____</p> <ul style="list-style-type: none"> • Audio cannot be recorded during TIME-LAPSE RECORDING. • During TIME-LAPSE RECORDING, zooming and image stabilizer are not available. • When recording is stopped with the recorded time less than “0:00:00:17”, the video will not be saved. • Settings of TIME-LAPSE RECORDING are reset when the power is turned off. To start time-lapse recording again, it is necessary to make the selection once more. • Recording stops automatically 99 hours after it is started. • Make use of a tripod and AC adapter for TIME-LAPSE RECORDING with long intervals. It is also recommended to fix the focus and white balance manually.
AUDIO REF. LEVEL	<p>For setting the audio reference level.</p> <p>-20dB: Outputs signals of the reference level when the meter is at -20 dBFS.</p> <p>-12dB: Outputs signals of the reference level when the meter is at -12 dBFS.</p>
INTERNAL MIC LEVEL	<p>For setting the input level of the built-in microphone (-2 (low sensitivity) ~ 0 (standard) ~ +2 (high sensitivity)).</p>

Setting	Details
AUDIO MONITOR	For setting the audio sound of the headphone. MIX: Outputs mixed sound. STEREO: Outputs stereo sound.
MIC LEVEL METER	Setting this to "ON" displays the microphone level screen.
USER1 USER2 USER3	You can assign any one of the following functions to each of the [USER1], [USER2], and [USER3] buttons. • "FOCUS ASSIST", "TELE MACRO", "ZEBRA", "NONE". The functions are assigned as follows in the default setting. USER1: FOCUS ASSIST USER2: TELE MACRO USER3: ZEBRA

Playback Menu

You can change the playback settings in this menu.

Setting	Details
PROTECT/CANCEL	Protects files from being deleted accidentally. Memo : _____ • When the recording media is formatted, even the protected files will be deleted.
PLAYBACK OTHER FILE	Plays videos recorded in the HD mode with defective management information. Memo : _____ • Files recorded in the 4K2K mode are not shown. • Depending on the condition of the damaged file, playback might fail or may not run smoothly.
K2 TECHNOLOGY	Setting this to "ON" reproduces small or high-pitched sounds that cannot be recorded during recording, and plays back with a sound quality close to the original.

Common Menu

Setting	Details
CLOCK ADJUST	Resets the current time or sets to the local time when using this unit overseas.
DATE DISPLAY STYLE	Sets the order of year, month, day and the time display format (24H/12H). Memo : _____ • Tap the bottom of "DATE STYLE", then tap \wedge or \vee to set the order of year, month, and day. • Tap the bottom of time, then tap \wedge or \vee to set the time display format. • For date display, set to any format from "year.month.day", "month.day.year", and "day.month.year". • For time display, set to any format from "12h" and "24h".
LANGUAGE	For setting the language used for screen displays such as menus. "Changing the Display Language" (🗨️ p. 28)

Settings Menu

Setting	Details
MONITOR BRIGHTNESS	Sets the brightness of the LCD monitor. AUTO: Sets the brightness automatically to “4” when using outdoors and to “3” when using indoors. 4: Brightens the backlight of the monitor regardless of the surrounding conditions. 3: Sets to the standard brightness. 2: Darkens the backlight of the monitor regardless of the surrounding conditions. 1: Sets to dim brightness. Helps conserve the battery life when selected.
OPERATION SOUND	When this is set to “ON”, a sound is generated during operation.
AUTO POWER OFF	Setting this to “ON” turns off the power (when using battery) or sets to the standby mode (when using AC adapter) if this unit is not operated for five minutes.
TALLY	Setting this to “ON” turns on the tally lamp.
PRIORITY SETTING	For setting whether to show the display on the LCD screen or viewfinder if both are set to ON. LCD MONITOR: assigns priority to LCD MONITOR. VIEWFINDER: assigns priority to viewfinder.
TOUCH SCREEN ADJUST	For making adjustments when the response position of the buttons on the touch screen is misaligned. “Adjusting the Touch Panel Button Position” (p. 27)
DISPLAY ON TV	Set to “ON” to displays icons and date/time on a TV screen. Memo : _____ <ul style="list-style-type: none"> When “HDMI OUTPUT” is set to “480p/576p”, or connected to the monitor that supports only 480p/576p output, the monitor display is the same as the LCD monitor, regardless of the setting at “DISPLAY ON TV”.
HDMI OUTPUT	Sets the output from the HDMI terminal of this unit when it is connected to a HDMI terminal of the monitor. AUTO: Resolution is automatically set according to the connected monitor. Use this setting under normal circumstances. 480p/576p: select this when the video is not output in “AUTO” correctly.
HDMI ENHANCE SETTING	Sets the output from the HDMI terminal of this unit when it is connected to a DVI terminal of the monitor. OFF: set this to connect to a normal TV. The color gradation is ranged from 16 to 235. ON: select this setting when you are connecting to a PC monitor, etc. The color range is from 0 to 255.
RESET ALL MENU	Returns all the settings to their default values. This unit will reboot when the settings are restored to their default values.
UPDATE	Updates the functions of this unit to the latest version. For details, refer to the JVC Professional homepage. (When no program to update the software of this unit is available, nothing will be provided on the homepage.) http://pro.jvc.com/ or http://www.jvcpro.co.uk/
FORMAT SD CARD	Deletes all files on the SD card. FILE: Deletes all files on the SD card. FILE + MANAGEMENT NO: Deletes all files on the SD card and resets the folder and file numbers to “1”. Memo : _____ <ul style="list-style-type: none"> Not available for selection when no SD card is inserted. All data on the SD card will be deleted when it is formatted. Copy all files on the SD card to a computer before formatting. Make sure that the battery pack is fully charged or connect the AC adapter as the formatting process may take some time.

Error Displays and Actions

Error Message	Action
FORMAT ERROR!	<ul style="list-style-type: none"> • Check the operating procedure, and perform once again. “Formatting (Initializing) SDHC/SDXC Cards” (☞ p. 30) • Turn off and on this unit again.
MEMORY CARD ERROR!	<ul style="list-style-type: none"> • Check that the card is supported by this unit. “SDHC/SDXC Cards” (☞ p. 11) • Turn off and on this unit again. • Remove and re-insert the SD card. • Remove any dirt from the SD card terminals. • If the above does not solve the problem, back up your files and execute “FORMAT SD CARD” in the recording menu. (All data will be deleted.) “Formatting (Initializing) SDHC/SDXC Cards” (☞ p. 30)
NOT FORMATTED	<ul style="list-style-type: none"> • Select “YES”, then select “YES” on the “DO YOU WANT TO FORMAT?” screen.
RECORDING FAILURE	<ul style="list-style-type: none"> • Turn off and on this unit again.
UNSUPPORTED SCENE!	<ul style="list-style-type: none"> • Use files recorded with this unit. (Files recorded using other devices may not be playable.)
UNSUPPORTED FILE!	<ul style="list-style-type: none"> • Use files recorded with this unit. (Files recorded using other devices may not be playable.)
THIS FILE IS PROTECTED	<ul style="list-style-type: none"> • Cancel protection using “PROTECT/CANCEL” in the common menu. “Protecting Files” (☞ p. 55)
CHECK CARD'S WRITE PROTECTION SWITCH	<ul style="list-style-type: none"> • Set the write protect switch of the SD card to off.
INSUFFICIENT AVAILABLE SPACE	<ul style="list-style-type: none"> • Delete files, or move files to a PC or other devices. • Replace the SD card with a new one.
SCENE QUANTITY EXCEEDED LIMIT	<ul style="list-style-type: none"> • Move the files or folders to a computer or other device. (Back up your files.) • Select “FILE + MANAGEMENT NO” in “FORMAT SD CARD” of the common menu. (All data on the SD card will be deleted.)
NUMBER OF FOLDERS OVERFLOW	<ul style="list-style-type: none"> • Move the files or folders to a computer or other device. (Back up your files.) • Select “FILE + MANAGEMENT NO” in “FORMAT SD CARD” of the common menu. (All data on the SD card will be deleted.)
FILE QUANTITY LIMIT EXCEEDED	<ul style="list-style-type: none"> • Move the files or folders to a computer or other device. (Back up your files.) • Select “FILE + MANAGEMENT NO” in “FORMAT SD CARD” of the common menu. (All data on the SD card will be deleted.)
THIS CARD CANNOT BE USED FOR RECORDING OR EDITING ON THIS CAMERA	<p>The frame rate of this unit is different from the frame rate recorded on the card. Change the frame rate in “SYSTEM SELECT” of the recording menu.</p>
THIS CARD CANNOT BE USED FOR RECORDING ON THIS CAMERA	<p>The number of MP4 files on each card is different in the 4K2K mode. Use a computer to adjust the files on the four cards to a consistent number.</p>

Further Information

Error Message	Action
RECOVERY OF FILE FAILED UNABLE TO RECORD FURTHER WITH THIS COMBINATION OF CARDS	<ul style="list-style-type: none"> Adjust the number of files on the four cards to a consistent number by using a computer to delete the maximum file number in the folder with the maximum number. Alternatively, copy all the files to a computer, and format the SD cards.

Memo :

- This unit is a microcomputer-controlled device. Electrostatic discharge, external noise and interference (from a TV, a radio, etc.) might prevent it from functioning properly.
In such a case, turn off the power, then remove the AC adapter and battery pack. This unit will be reset.

Trouble

Before sending for repair, check the camera recorder's problem according to the table below.

If the problem persists, consult your nearest JVC dealer or JVC service center.

Trouble	Action
SDHC/SDXC card cannot be inserted.	<ul style="list-style-type: none"> Check that the SDHC/SDXC card is facing the right direction.
Power does not turn on.	<ul style="list-style-type: none"> Is the AC adapter properly connected? Is the battery charged? Is the power turned on immediately after it is turned off? Make sure to wait for an interval of at least 5 seconds before turning on the power again.
Unable to start recording.	<ul style="list-style-type: none"> Is the SDHC/SDXC card properly set? 4K2K recording (4K2K mode): Are the combination and sequence of the four SDHC/SDXC cards correct? Insert the cards into the slots according to the combination and sequence during formatting. HD recording (1920 mode): Is an SDHC/SDXC card inserted into slot A? "Inserting an SDHC/SDXC Card" (☞ p. 29) Is the write protection switch of the SDHC/SDXC card turned on? Turn off write protection if it is on. "Write-Protect Switch on the SDHC/SDXC Card" (☞ p. 29) Is the unit in the Camera mode? If the [CAM] indicating lamp does not light up in red, camera images are not output. Set the [CAM/MEDIA] switch to the [CAM] side to set to the Camera mode. "[CAM] Camera mode indicating lamp" (☞ p. 17)
Camera image is not output on the LCD monitor or viewfinder screen.	<ul style="list-style-type: none"> Is the camera recorder set to the Camera mode? If the [CAM] indicating lamp does not light up in red, camera images are not output. Set the [CAM/MEDIA] switch to the [CAM] side to switch to the Camera mode. "[CAM] Camera mode indicating lamp" (☞ p. 17) Is the viewfinder used with "PRIORITY SETTING" in the common menu set to "VIEWFINDER" and without pulling out the viewfinder? Pull out the viewfinder if this setting is used. "Viewing the Viewfinder/LCD Monitor" (☞ p. 31)

Trouble	Action
Shooting stops by itself.	<ul style="list-style-type: none"> • Shooting may stop halfway due to the nature of the SDHC/SDXC card. ➔ Check whether the card is a recommended SD card (Class 6 or higher). “SDHC/SDXC Cards” (☞ p. 11) ➔ Erase the contents of the SDHC/SDXC card (Delete, Format). “Formatting (Initializing) SDHC/SDXC Cards” (☞ p. 30)
Images on the LCD monitor and viewfinder screens appear dark or blurred.	<ul style="list-style-type: none"> • Readjust the brightness of the LCD monitor screen. “MONITOR BRIGHTNESS” (☞ p. 64) • Is the aperture setting too large? • Is the shutter speed setting too high?
The subject is too dark.	<ul style="list-style-type: none"> • Set exposure to the “+” side. “Adjusting the Exposure Manually” (☞ p. 38) • Set to the manual shooting mode and increase the sensitivity using the [GAIN] switch. “Setting to the Manual shooting mode” (☞ p. 32) • Set “GAIN L”, “GAIN M”, and “GAIN H” in the recording menu to “AGC” or “AUTO SLOW-SHUTTER”. (☞ p. 61) • Set the shutter speed to a slower value. “Adjusting the Shutter Speed” (☞ p. 39) • Set to open up the aperture. “Adjusting the Aperture” (☞ p. 40)
The color of the subject looks unnatural. (Reddish, bluish, etc.)	<ul style="list-style-type: none"> • Depending on the lighting conditions or when there are numerous light sources in the background, set to the manual shooting mode and perform auto white balance adjustment. “Adjusting the White Balance” (☞ p. 41)
Focus is not adjusted automatically.	<ul style="list-style-type: none"> • Clean any dirt or water droplets from the lens. • If you are shooting at a dark place or shooting a subject that has no contrast between dark and light, adjust the focus manually.
White balance cannot be adjusted.	<ul style="list-style-type: none"> • Is the camera recorder in the Full Auto shooting mode?
Screen appears dark or whitish.	<ul style="list-style-type: none"> • Adjust the angle and brightness of the screen. “Viewing the Viewfinder/LCD Monitor” (☞ p. 31) • When used in cold places, the screen may appear darker. • The screen may be reaching the end of its service life. Consult your nearest JVC dealer.
Screen display is difficult to see.	<ul style="list-style-type: none"> • The screen may be difficult to see if used in bright areas, such as under direct sunlight.
The remaining battery power is not correctly displayed.	<ul style="list-style-type: none"> • Charge the battery fully, use it up, and then charge again. “Charging the Battery Pack” (☞ p. 24) • If the camera recorder is used for long periods of time in high or low temperatures, or if the battery is repeatedly charged, the remaining battery level may not be displayed correctly.
Screen display is uneven.	<ul style="list-style-type: none"> • If the screen or surrounding parts have been pressed, remove your hands and leave the camera for a short while. (Applying pressure causes image unevenness.)
No display on the monitor.	<ul style="list-style-type: none"> • Connect all the four [HDMI] terminals to the monitor during output of video in the 4K2K mode. • [HDMI2] to [HDMI4] terminals can only be used for 4K2K video output. • For output of Full HD (1920) or lower, connect only the [HDMI1] terminal to the monitor.
File (image) does not play back when its thumbnail is selected.	<ul style="list-style-type: none"> • Is the selected file (image) a playable file (image)? A file with a different video format setting cannot be played back.
The actual recording time is shorter than the estimated time.	<ul style="list-style-type: none"> • The recording time may be shorter depending on the environment, such as when shooting a fast-moving subject.

Further Information

Trouble	Action
The [CH-1/CH-2] recording level adjustment knob does not work.	<ul style="list-style-type: none"> Is the [CH1/CH2 AUDIO SELECT] switch set to [AUTO]?
SDHC/SDXC card cannot be initialized (formatted).	<ul style="list-style-type: none"> Is the write protection switch of the SDHC/SDXC card turned on? Turn off write protection if it is on. "Write-Protect Switch on the SDHC/SDXC Card" (☞ p. 29)
Battery alarm appears even after loading a charged battery.	<ul style="list-style-type: none"> Replace the battery with a new one. To purchase a new battery, please visit a nearby JVC dealer.
The built-in microphone does not work.	<ul style="list-style-type: none"> Remove the audio unit cable from the [AUDIO IN] terminal of the camera recorder. "Using an External Microphone Connected to the [INPUT1/INPUT2] Terminal" (☞ p. 45)
Unable to adjust the built-in microphone using the [CH-1/CH-2] recording level adjustment knob	<ul style="list-style-type: none"> The recording level of the built-in microphone cannot be adjusted using the recording level knob. [CH-1/CH-2] recording level adjustment knob can be used for the [INPUT1/INPUT2] terminal. Set the volume of the built-in microphone using "INTERNAL MIC LEVEL" in the recording menu. "INTERNAL MIC LEVEL" (☞ p. 62)
Unable to switch from the Camera mode to Media mode.	<ul style="list-style-type: none"> You cannot switch to the Media mode while recording is in progress. To switch to the Media mode, stop the recording operation.
Sound or video is interrupted.	<ul style="list-style-type: none"> Sometimes playback is interrupted at the connecting section between two scenes.
Recorded files (images) cannot be found on the thumbnail screen.	<ul style="list-style-type: none"> Check the file format or video format. "Selecting a Video Recording Format" (☞ p. 33)
The camera recorder heats up.	<ul style="list-style-type: none"> The camera recorder may become warm when used for a long time. This is not a malfunction.
The camera recorder operates slowly when turning the power on or off.	<ul style="list-style-type: none"> If there are many videos files on the SDHC/SDXC card, it takes time for the camera recorder to process the files. Copy the files on the SDHC/SDXC card to a PC, and delete them from the SDHC/SDXC card.
The remote control does not work.	<ul style="list-style-type: none"> Replace the battery.
Operations do not work when this unit is connected to the USB devices.	<ul style="list-style-type: none"> Files recorded in the 1920 mode cannot be found. This unit may not be recognized by the devices that don't support the USB Hub. Use a card reader that is commercially available.

■ The following phenomena are not malfunctions.

- The screen momentarily turns red or black when the sun enters the field of view.
- Black dots, or shiny red, blue, or green spots appear on the screen.
The LCD screen contains 99.99% or more effective pixels, but 0.01% or fewer pixels may be inactive or lit at all times.

■ Reset the camera recorder when it does not function properly.

- 1 Turn off the power.
- 2 Remove the battery and AC adapter from the camera recorder, reattach them, and turn on the power.
- 3 Execute "RESET ALL MENU" in the common menu. (☞ p. 64)

Specifications

Camera

Item	Details
Power supply	Using AC adapter: DC 12 V Using SSL-JVC50 battery pack: DC 7.4 V
Power Consumption * When the HDMI cable is not connected	<ul style="list-style-type: none"> • 4K2K mode Approx. 17.5 W (when "MONITOR BRIGHTNESS" is set to "3" during the use of LCD monitor) Approx. 16.9 W (during the use of view finder) • 1920 mode Approx. 11.5 W (when "MONITOR BRIGHTNESS" is set to "3" during the use of LCD monitor) Approx. 10.9 W (during the use of view finder) Rated Current Consumption: 3 A
Dimensions (W x H x D)	118 mm x 121 mm x 271 mm (4-5/8" x 4-3/4" x 10-5/8") (without audio unit) 139 mm x 198 mm x 271 mm (5-1/2" x 7-3/4" x 10-5/8") (with audio unit)
Mass	Approx. 1,120 g (2.47 lbs) (without audio unit attached, camera only) Approx. 1,620 g (3.57 lbs) (including supplied battery pack)
Operating Environment	Allowable operating temperature: 0°C to 40°C (32°F to 104°F) Allowable storage temperature: -20°C to 50°C (-4°F to 122°F) Allowable relative humidity: 35 % to 80 %
Image Pickup Device	1/2.3" 12,760,000 pixels (CMOS)
Recording Area	<ul style="list-style-type: none"> • 4K2K mode 8,290,000 pixels • 1920 mode 8,290,000 pixels
Lens	<ul style="list-style-type: none"> • 4K2K mode F2.8 - F4.5, f= 6.7 mm to 67 mm 35 mm conversion: 42.4 mm to 424 mm • 1920 mode F2.8 - F4.5, f= 6.7 mm to 67 mm 35 mm conversion: 42.4 mm to 424 mm (dynamic zoom OFF) 35 mm conversion: 42.4 mm to 848 mm (dynamic zoom ON)
Zoom	Optical zoom: up to 10x Dynamic zoom: up to 20x

Item	Details
LCD monitor	3.5", 920,000 pixels, polysilicon color LCD
Viewfinder	0.24", 260,000 pixels
Recording media	Commercially available SDHC/SDXC card (Class 6 or higher) "Estimated Recordable Time of SDHC/SDXC Cards" (see p. 30)
Clock Battery	Rechargeable battery

Terminals

Item	Details
HDMI output connector	HDMI mini connector x 4
USB Connector	Mini USB Type B, USB 2.0 compliant (Built-in USB Hub)
Headphones output	ø 3.5 mm mini jack (stereo)
Remote terminal	ø 3.5 mm mini jack (4-pole)
Audio [INPUT1/INPUT2] terminal	MIC: -60dBu, 3 kΩ, XLR (balanced), +48 V output (phantom power supply) LINE: +4 dBu, 10 kΩ, XLR (balanced)

Further Information

Video (4K2K mode)

Item	Details
Recording/ Playback format	MP4 standard Video: MPEG-4 AVC/H.264 Audio: AAC 2ch
Extension	.MP4
Signal system	Digital HD system 2160/60p, 2160/50p, 2160/24p
Quality	3840 x 2160 pixels Maximum approx. 144 (36 x 4) Mbps
Sound quality (Audio)	48 kHz, 384 kbps (Max 480 kbps, Average 384 kbps)

Video (1920 mode)

Item	Details
Recording/ Playback format	AVCHD standard Video: MPEG-4 AVC/H.264 Audio: Dolby Digital 2ch
Extension	.MTS
Signal system	Digital HD system 1080/60i (NTSC), 1080/50i (PAL) 1080/60p (NTSC), 1080/50p (PAL)
Quality	60p/50p 1920 x 1080 pixels Average Approximate 27 Mbps UXP 1920 x 1080 pixels Average Approximate 24 Mbps XP 1920 x 1080 pixels Average Approximate 17 Mbps SP 1920 x 1080 pixels Average Approximate 12 Mbps EP 1920 x 1080 pixels Average Approximate 4.8 Mbps
Sound quality (Audio)	48 kHz, 256 kbps

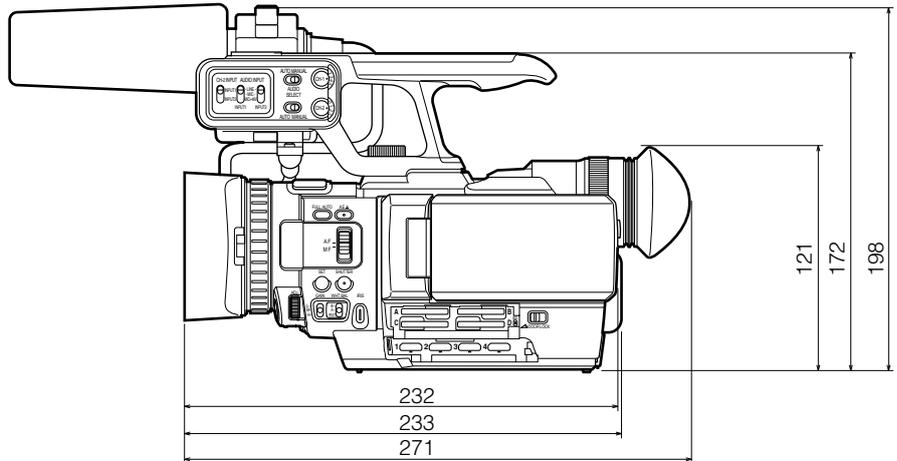
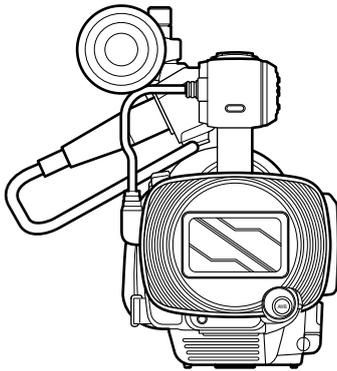
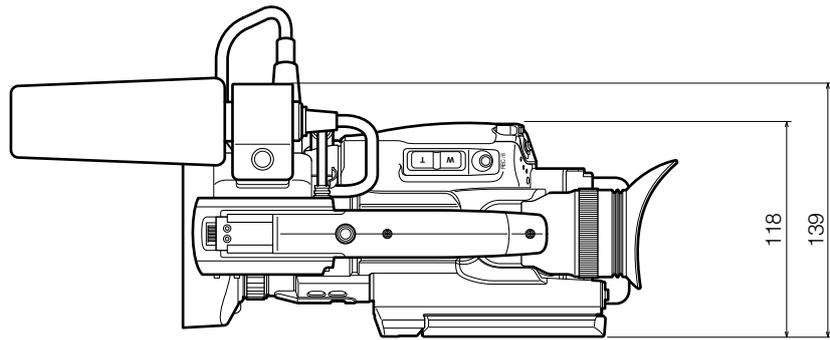
AC Adapter UIA336-12 / UIA336-1230

Item	Details
Power supply	AC 100 V to 240 V, 50 Hz/60 Hz
Output	DC 12 V, 3 A
Allowable Operating Temperature	0°C to 40°C (32°F to 104°F) (10°C to 30°C (50°F to 86°F) during charging)
Dimensions (W x H x D)	43.8 mm x 28.5 mm x 95.9 mm (1-3/4" x 1-1/8" x 3-3/4") (excluding cord and AC plug)
Mass	Approx. 175 g (0.39 lbs)

Battery SSL-JVC50

Item	Details
Power voltage	7.4 V
Capacity	4900 mAh
Dimensions (W x H x D)	43 mm x 47 mm x 70.4 mm (1-3/4" x 1-7/8" x 2-3/4")
Mass	Approx. 225 g (0.5 lbs)

Dimensional Outline Drawing (Unit: mm)



* Microphone is optional.

The specifications and appearance of this product are subject to changes for further improvement without prior notice.

GY-HMQ10U/GY-HMQ10E
4K MEMORY CARD CAMERA RECORDER

JVC