

JVC

CAMCORDER

Detailed User Guide

GC-PX100

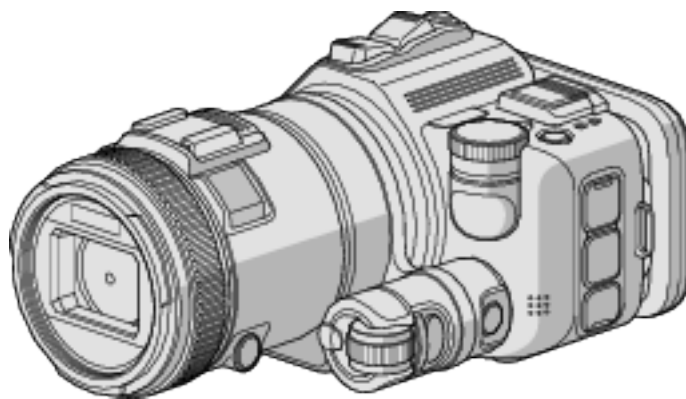


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Introducing the Various Shooting Techniques!



■ “Holiday Season/Christmas” (p. 4)

Record the happy Christmas celebration with your family!



■ “Wedding” (p. 5)

Create an awesome wedding video for the bride and groom!



■ “Travel” (p. 7)

Capture all the good times of your domestic or overseas trips!



■ “Amusement Park” (p. 9)

Take more shots of the smiling faces of everyone in the family!

Holiday Season/Christmas

Record the happy Christmas celebration with your family!



Decorating the Tree and Preparing the Dinner

The decoration of tree and preparation of dinner are part of the joy of Christmas. Be sure to record these happy family times!

■ Decorating the tree



A tree is the most important thing to bring out the mood of Christmas. Simply the scene of all family members engaging in the decorating of a fir tree with various colorful ornaments is full of the feeling of happiness.

■ Preparing the Dinner



Record the scenes as everyone helps to prepare the feast of the night. You can film the mother who is cooking, the children who are helping, and of course, the process of making a cake!

Recording the Christmas Party



After all preparations, it is finally the Christmas party itself. Not only should you record the candle-blowing scene, but also the smiles of the family while being surrounded by good food, or even the father who is slightly drunk from champagne!

Finding the Presents



For children, the greatest joy of Christmas is receiving presents the next morning. Their expression of delight when finding a present next to their pillow is a recording opportunity not to be missed. Get ready to shoot before the children wake up!

Wedding

Create an awesome wedding video for the bride and groom!



Discussing and Planning Before the Event

Before the day of the wedding reception, it is important to discuss with the bride and groom about various details such as the order of the ceremony and whether there are any entertainment programs or change of clothes. By understanding the preferences of the bride and groom, you will be able to shoot more appropriately.

■ Finding out the route of entrance



The highlight of a wedding reception is the entrance of the bride and groom. Find out which door they will enter from and the route they will take from the person-in-charge of the wedding hall in advance. Set up the tripod at a place where you can follow the couple using zoom without having to move around.

■ Number of times and timing of clothes-changing

Find out the timing of any changing of clothes so as to capture the scene well when the bride and groom enter again.

You can also make use of the time while the bride and groom are changing to record comments of well wishes from the guests.

Finding the Right Angle to Capture Both Bride and Groom

■ Composing the picture with the groom in front and the guests at the back



The main characters of a wedding are of course the bride and groom. Record their expressions clearly during the toast, speech, entertainment programs, and other scenes. Another recommendation is to capture the face shots of the guests, then pan towards the groom. Picture composition containing the crowd of guests only lacks fun, so be sure to pay attention to the shooting angle and size.

Recording the Expressions and Comments of Guests

■ Setting the shot from eye level to chest level



You can record comments from the guest by going around asking, "Please say a few words for the bride and groom". This can be done at the guests' waiting room, when the bride and groom are changing, or during the entertainment programs.

Advanced Operation with Two Camcorders

If video-editing is to be done, record using two camcorders so that a video with varying scenes can be created. You can try asking a close friend who has a camcorder at home. Set the borrowed camcorder on a tripod to focus on taking close-up shots of the bride and groom. In this way, the other camcorder can be moved around to record other scenes, enabling an interesting video with changing scenes to be created through editing and compilation. As most people own at least a digital camera nowadays, even if you are really unable to find an extra camcorder, inserting still pictures to the video at various points is also a good way to add variety. Do give it a try!

■ <Camcorder 1> Closing up on the bride and groom all the time



■ <Camcorder 2> Recording the congratulatory messages from friends at the same time



Travel

Capture all the good times of your domestic or overseas trips!



Bringing the Necessary Equipment

The necessary things to bring on a trip depends on your traveling purpose and the destination. For overseas trips in particular, you have to think about what to bring in accordance to the local conditions. Here are some suggestions for your consideration.

■ Camcorder

Think about how many hours of shooting you will usually perform in a day. Be sure to prepare enough recording medium especially for long overseas trips.

If you are recording in SD cards, get ready the sufficient number of cards, including some for backup.

■ Battery Pack

Prepare a battery pack that is ready for three times the expected recording time in a day. For example, if you plan to record for 2 hours a day, prepare a battery pack that is ready for 6 hours (actual recording time).

For a day trip, you can prepare a battery with low capacity but for a long trip, do prepare a few batteries with high capacities.

■ AC Adapter

The JVC AC adapter supports voltages from 110 V to 240 V, and hence can be used anywhere in the world.

Bring along the adapter if you are traveling for a long time. Charge the battery pack while sleeping so that you can record with full battery power the next day.

■ Power Plug Adapter



The shape of the power plug varies according to countries. Be sure to check the shape of the power plug beforehand, and bring the appropriate power plug adapter.

“Charging the Battery Pack Overseas” (電 p. 23)

■ Battery Charger



Recording cannot be performed when an AC adapter is connected to the camcorder for battery charging.

You can bring an additional battery charger to charge battery packs if you plan to use the camcorder for recording at night. You can also charge multiple battery packs by using both the battery charger and this camcorder at the same time.

■ Tripod



A tripod is an essential item to take stable images. Select an appropriate tripod in accordance to your purpose and style of traveling, such as a compact one to be used on a table or one that is at least 1 m tall.

Recording the Excitement Before Departure

It may be a little abrupt to start your travel video at the destination suddenly. Record also the preparations prior to departure if it is a family trip, or the time when everyone is gathered at the meeting place if you are traveling with your friends. For overseas trips, taking a shot of the signs and displays at the airport of the flight you are taking may be useful for future reference.



Useful Shooting Techniques

Using Pan at the Places of Interest

Tourist spots with beautiful scenery or historical sites are places that you would certainly want to record. To capture the magnificence of a scene which cannot be fitted into a single frame, try the panning technique. Refer to “Shooting Tips” found in the “Beginner’s Guide” on this website on how to use panning effectively. In addition, you may also like to take a shot of the signs or monuments that can often be found at the tourist spots.



Showing Everyone Having a Good Time

When taking a video, it is rather dull to shoot only the scenery or historical sites. Talk about your feelings while recording the breath-taking scenery of an attraction so that it will be an interesting scene to view later.

Amusement Park

Take more shots of the smiling faces of everyone in the family!



Taking Videos or Still Images According to the Attraction

You may choose to take videos all the time. However, you may want to take some still images too.

The following section explains the scenarios suitable for taking videos or still images.

■ Scenarios suitable for taking videos



Scenarios with changes in body movement are suitable for taking videos. This includes situations where there are rapid changes in facial expressions or voices of surprise and delight.

*Some amusement parks do not allow passengers to perform any recording. Be sure to check beforehand.

[Examples]

- Merry-go-round, go kart, coffee cup, etc.

■ Scenarios suitable for taking still images (photos)



Scenarios with little movement of the subject are suitable for taking still images.

Try to take the still images from an angle such that the surroundings can be seen clearly.

[Examples]

- Carousel, ferris wheel, fun bicycle rides, etc.

Inducing Responses by Calling Out



Videos with no waving of hands nor laughter are not only dull when you view them later, but also put the capability of the audio-recording function of the camcorder to a waste. When recording, induce more reactions by enthusiastically waving your hands or shouting out "Is it fun?" and the like.

Capturing the Best Moment in a Video as a Still Image

Shots with the eyes closed are often taken by accident. To reduce such mistakes, make use of the function to capture still images from videos. As videos are actually continuous recording of 50 still images within 1 minute, using this function allows you to select the best moment and save it as a still image.

"Capturing a Still Image from One Scene in Video" (p. 71)



Photo by just that good guy jim

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Video Playback in Progress



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Video Playback in Progress

Advanced Operation with Backlight Compensation

When the subject's face is in backlight or when the expression cannot be seen clearly, the Intelligent Auto function of this unit automatically increases its brightness for recording.

If Intelligent Auto fails to function as expected or if the brightness correction is insufficient, you can increase the brightness by using "BACKLIGHT COMP." in the SCN mode.

"Setting Details" (☰ p. 33)

■ <Without backlight compensation>

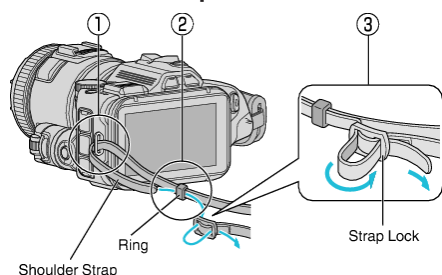


■ <With backlight compensation>



Attaching the Accessories

Attaching the Shoulder Strap



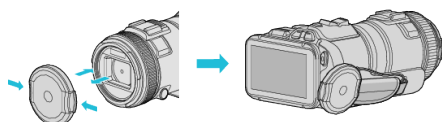
- 1 Insert the tip of shoulder strap into the attachment part of this unit (1).
- 2 Insert the shoulder strap into the ring (2).
- 3 Adjust the length of the belt, and then fix with the strap lock (3).

Caution :

- Be careful not to drop this unit during transportation.
- Guardians should pay close attention when this unit is used by children.

Attaching the Lens Cap

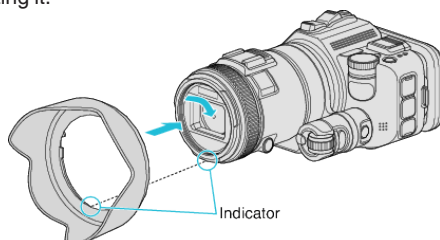
Attach the lens cap when this unit is not used or during transportation.
Attach the lens cap to the grip belt while recording is in progress.



Attaching the Lens Hood

Use of the lens hood is recommended for shooting outdoors with exposure to direct sunlight.

Align the indicators (● mark) of lens hood and this unit, and attach the lens hood by rotating it.



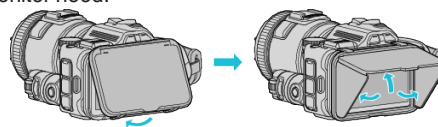
Caution :

- Remove the lens hood when flash and/or light are used.
Vignetting (the screen getting dark, or appearance of shadow) may occur.

Attaching the Monitor Hood

Attach the monitor hood if the monitor screen is difficult to see due to the sunlight.

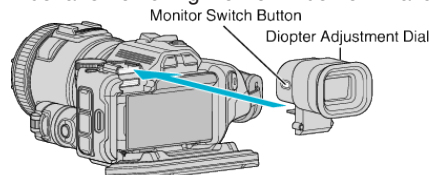
Attach the claw located at the upper part of the monitor hood to insertion point at the upper part of the LCD monitor. Then attach the claw at the bottom part of the monitor hood.



Attaching the Viewfinder

Attach the viewfinder for shooting in a bright area, such as outdoors, if the monitor screen is difficult to see.

Attach a viewfinder after removing the viewfinder terminal cover.



Caution :

- Attach or remove the viewfinder after turning off the power of the main unit.

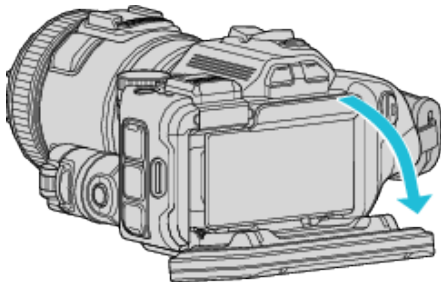
Memo :

- By pressing the Monitor Switch button located on the side of the viewfinder, monitor display is switched between the LCD monitor and the viewfinder.
- Make adjustments with the diopter adjustment dial if images displayed on viewfinder is difficult to see.

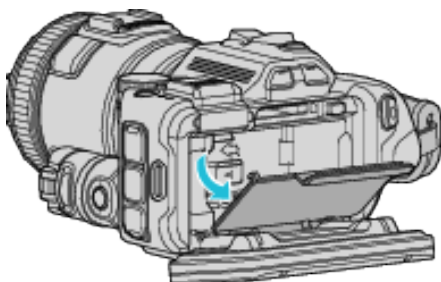
Charging the Battery Pack

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.

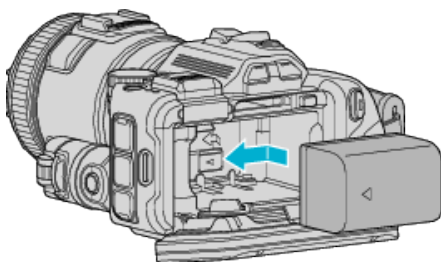
1 Open the LCD monitor.



2 Open the battery cover.

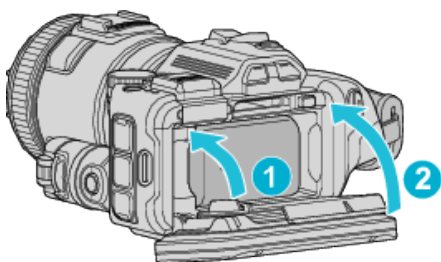


3 Attach the battery pack.

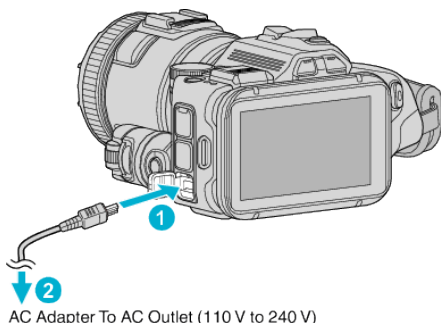


- Place the battery toward the right side. Push the battery into the main unit, and slide in until the battery clicks into place.

4 Close the battery cover, and then close the LCD monitor.



5 Connect the AC adapter to the DC connector and plug in the power.



- The charging lamp blinks when charging is in progress. It goes out when charging is finished.

Warning

- Make sure not to insert the battery pack in the wrong direction. It may cause damage to the unit and battery pack.

Caution :

Be sure to use JVC battery packs.

- If you use any other battery packs besides JVC battery packs, safety and performance cannot be guaranteed.
- Charging time: Approx. 2 h 10 m (using supplied battery pack)
The charging time is when the unit is used at 25°C. If the battery pack is charged outside the room temperature range of 10°C to 35°C, charging may take a longer time or it may not start.
CHARGE lamp blinks 2 times in a slow cycle for notification if the battery charge does not start. In such case, leave the battery for a while, and charge the battery again.
- If malfunctions (overvoltage, etc) occur, or if any battery manufactured other than JVC is attempted for battery charge, charging stops. In these cases, CHARGE lamp blinks quickly for notification.
- When carrying this unit by putting it in a bag, the power button may be pressed accidentally, which may cause the battery to be consumed. Before recording an important scene, it is recommended that you remove the battery when carrying this unit.



Be sure to use the supplied AC adapter.

- If you use any other AC adapters besides the supplied AC adapter, malfunctions may occur.
- You can record or play back videos while the AC adapter is connected. (Battery charging cannot be performed during recording or playback.) Remove the battery when the unit is to be used for a long time. Performance of the battery may drop if it is left attached to the unit.

Battery charging cannot be performed when the power of this unit is on.

- In order to charge the battery, be sure to turn off the power.

Rechargeable Batteries :

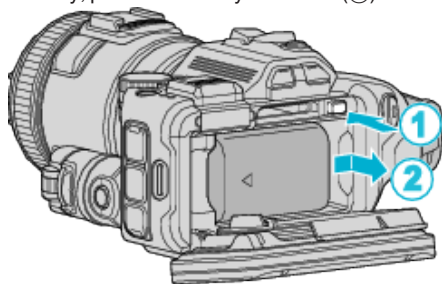
- When using the battery in a low temperature environment (10°C or below), the operating time may be shortened, or it may not function properly. When using this unit outdoors in the winter weather, warm the battery, such as by placing it in the pocket, before attaching it. (Keep away from direct contact with a warm pack.)
- Do not expose the battery to excessive heat, such as direct sunlight or fire.
- After removing the battery, store it in a dry place between 15°C to 25°C.
- 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 ().

Memo :

- You can connect this unit to the AC adapter to shoot for long hours indoors.

Detaching the Battery Pack

To remove the battery, press the battery lock lever (1) and slide the battery.



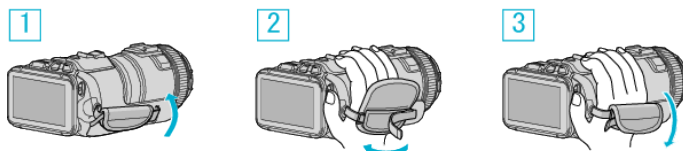
Approximate Battery Charging Time (Using AC Adapter)

Battery Pack	Charging time
BN-VF815U	2 h 10 m

- When the battery life is reached, the recording time becomes shorter even if the battery pack is fully charged.
(Replace the battery pack with a new one.)

* The charging time is when the unit is used at 25°C. If the battery pack is charged outside the room temperature range of 10°C to 35°C, charging may take a longer time or it may not start. The recordable and playable time may also be shortened under some usage conditions such as at low temperature. "Approximate Recording Time (Using Battery)" (p. 51)

Grip Adjustment



- Open the pad
- Adjust the length of the belt
- Close the pad

Caution :

- Be sure to fasten the grip belt properly.
If the belt is loose, this unit may drop and result in injuries or damages.
- Wi-Fi antenna is located inside the pad.
Do not pull out the Wi-Fi antenna when adjusting the belt.

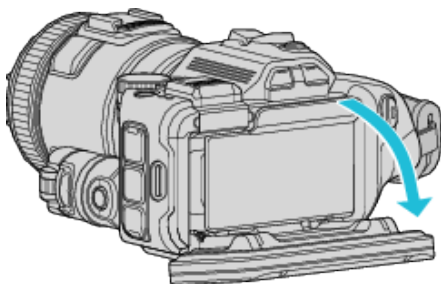
Inserting an SD Card

Insert a commercially available SD card before recording.

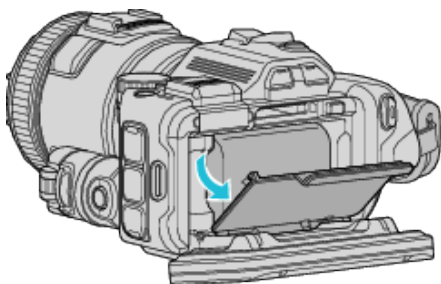
“Types of Usable SD Card” (p. 14)

“Approximate Video Recording Time” (p. 51)

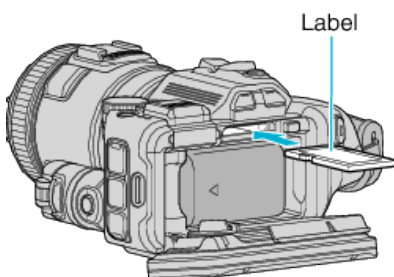
- 1 Turn off the power.
- 2 Open the LCD monitor.



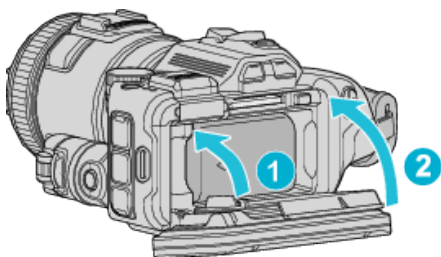
- 3 Open the battery cover.



- 4 Insert an SD card.



- 5 Close the battery cover, and then close the LCD monitor.



Warning

- Make sure not to insert the SD card in the wrong direction. It may cause damage to the unit and SD card.
- Turn off the power of this unit before inserting or removing an SD card.
- Do not touch the metal contact area when inserting the SD card.

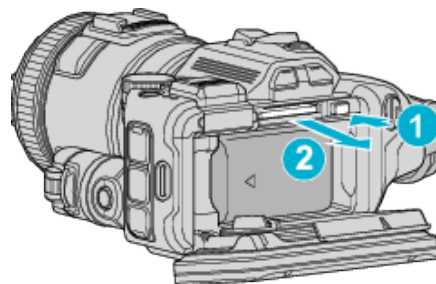
Memo :

- Both videos and still images can be recorded on one SD card. It is recommended to confirm the video operation of the SD card before usage.
- To record to the SD card, it is necessary to perform media settings.
- To use SD cards that have been used on other devices, it is necessary to format (initialize) the SD card using “FORMAT SD CARD” from media settings.

“FORMAT SD CARD” (p. 186)

Removing the Card

Push the SD card inward once, then pull it out straight.



Types of Usable SD Card

The following SD cards can be used on this unit.

Operations are confirmed on the SD cards from the following manufacturers.

- Panasonic
- TOSHIBA
- SanDisk

SD Card



- This unit supports 256 MB to 2 GB SD cards.
- Use a Class 4 or higher compatible SD card (2 GB) for video recording.

SDHC Card



- Use a Class 4 or higher compatible SDHC card (4 GB to 32 GB) for video recording.

SDXC Card



- Use a Class 4 or higher compatible SDXC card (Max. 128 GB) for video recording.

Memo :

- Using SD cards (including SDHC/SDXC cards) other than those specified above may result in recording failure or data loss.
- This unit is not guaranteed to operate with all SD cards. Some SD cards may not work due to specification changes, etc.
- To select "MOV 1080p LPCM", "MP4 1080p" or "iFrame 720p" in "VIDEO QUALITY", use a Class 6 or higher compliant SDHC/SDXC card.
- To select "50p" in "SYSTEM SELECT", use a Class 6 or higher compliant SDHC/SDXC card.
- Class 4 and Class 6 are guaranteed to have a minimum transfer rate of 4 MB/s and 6 MB/s respectively during reading or writing of data.
- You can also use a Class 10 compliant SDHC/SDXC card.
- Both videos and still images can be recorded on one SD card. It is recommended to confirm the video operation of the SD card before usage.
- To protect the data, do not touch the terminals of the SD card.
- UHS-I SDHC/SDXC cards can be used in the same manner as standard SDHC/SDXC cards.
UHS Speed Class is not supported.

When your computer cannot recognize the SDXC card

Confirm and update the OS of your computer.

Windows XP	<ul style="list-style-type: none"> • Make sure that the operating system version is SP2 or higher. • Download and install the updating program (KB955704) from the following URL. http://www.microsoft.com/downloads/details.aspx?FamilyID=1cbe3906-ddd1-4ca2-b727-c2dff5e30f61&displaylang=en
Windows Vista	<ul style="list-style-type: none"> • Make sure that the operating system version is SP1 or higher. • Download and install the updating program (KB975823) from the following URL. 32 bit version http://www.microsoft.com/downloads/en/details.aspx?FamilyID=2d1abe01-0942-4f8a-abb2-2ad529de00a1 64 bit version http://www.microsoft.com/downloads/en/details.aspx?FamilyID=7d54c53f-017c-4ea5-ae08-34c3452ba315
Windows 7	<p>Download and install the updating program (KB976422) from the following URL.</p> <p>32 bit version http://www.microsoft.com/downloads/en/details.aspx?FamilyID=3ee91fc2-a9bc-4ee1-aca3-2a9aff5915ea 64 bit version http://www.microsoft.com/downloads/en/details.aspx?FamilyID=73f766dd-7127-4445-b860-47084587155f</p>
Mac OS X 10.4 Tiger / Mac OS X 10.5 Leopard	Not compatible.
Mac OS X 10.6 Snow Leopard	Update the OS version to 10.6.5 or later.

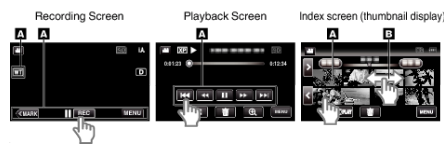
Using the Touch Screen

Icon operation buttons, thumbnails, and menu items are displayed on the touch screen according to the mode in use.

- 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 selection.

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

**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.
- Tap the buttons (icons) on the touch screen accurately. The buttons may not respond if they are not tapped on the right area.
- 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.
- Perform "TOUCH SCREEN ADJUST" if the reactive area of the screen is misaligned with the touched area. (Adjust by lightly tapping with a corner of an SD card, etc. Do not press with an object with a sharp tip or do not press hard.)

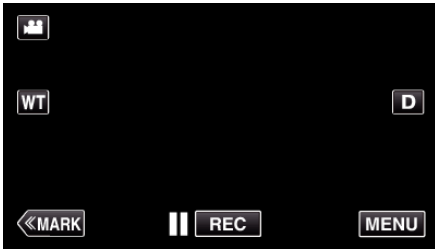
"Adjusting the Touch Panel" (p. 16)

Getting Started

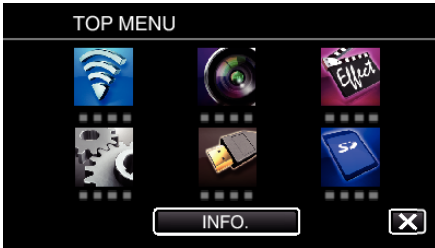
Adjusting the Touch Panel

Adjusts the response position of the buttons on the touch screen.

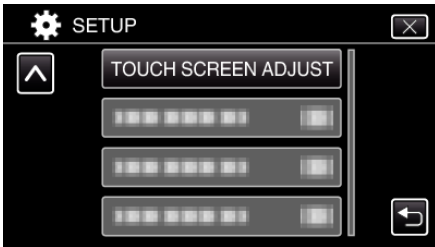
1 Tap "MENU".



2 Tap "SETUP".



3 Tap "TOUCH SCREEN ADJUST".



- The touch screen adjustment screen appears.

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



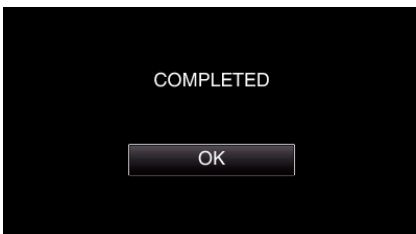
- Keep tapping "+" as its position changes with every tap.
- If areas other than the "+" mark are tapped, errors will occur. Make sure to tap the "+" mark.

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



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

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.

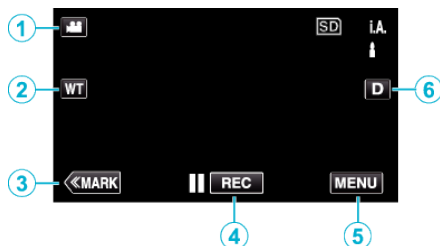
Memo :

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

Names of Buttons and Functions on the LCD Monitor

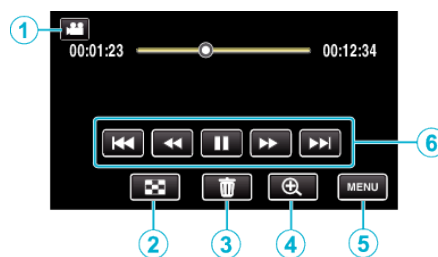
The following screens are displayed during the video and still image modes, and operate as the touch screens.

Recording Screen (Video/Still Image)



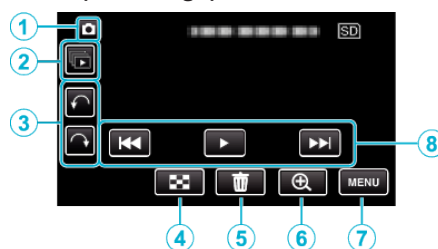
- 1 (Video/Still Image) Mode Button
 - Switches between video and still image modes.
- 2 Memory Zoom Button
“Zooming” (☞ p. 31)
- 3 Mark Button (for video only)
 - Switches to the mark mode, which enables you to insert various marks during shooting. Marked scenes can be easily played back. “Marking the Video While Recording” (☞ p. 42)
- 4 Recording Start/Stop Button
 - : Video Recording Start Button
 - : Video Recording Stop Button
- 5 Menu Button
“Operating the Menu” (☞ p. 169)
- 6 Display Button
Switches the display between full (**D_F**) and simple (**D**) with every tap of the button.
 - Simple display: Some displays disappear after approximately 3 seconds.
 - Full display: Displays everything. The display button changes from **D** to **D_F**.
 - When the power is turned off, full display (**D_F**) will be set.

Playback Screen (Video)



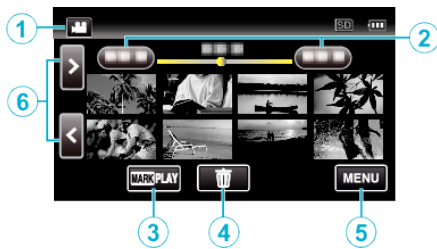
- Operations buttons on the touch screen disappear if the unit is not operated for about 5 seconds. Tap on the screen to display the operation buttons again.
- 1 (Video/Still Image) Mode Button
 - Switches between video and still image modes.
 - 2 Index Screen (Thumbnail Display) Button
“Operation Buttons for Video Playback” (☞ p. 54)
 - 3 Delete Button
“Deleting the Currently Displayed File” (☞ p. 69)
 - 4 Playback Zoom Button
 - Enlarges the video image that is played back.
 - 5 Menu Button
“Operating the Menu” (☞ p. 169)
 - 6 Operation Buttons
“Operation Buttons for Video Playback” (☞ p. 54)

Playback Screen (Still Image)



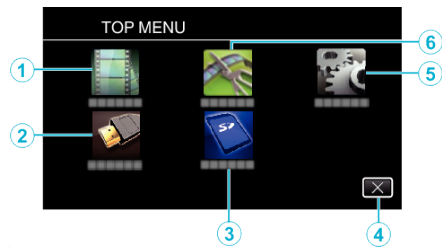
- Operations buttons on the touch screen disappear if the unit is not operated for about 5 seconds. Tap on the screen to display the operation buttons again.
- 1 (Video/Still Image) Mode Button
 - Switches between video and still image modes.
 - 2 Group Playback Button
Continuous playback of still images that are recorded with the continuous shooting mode.
“Playing Back Still Images” (☞ p. 63)
 - 3 Rotate Button
Rotates a still image 90°. (Clockwise/Counterclockwise)
 - 4 Index Screen (Thumbnail Display) Button
“Operation Buttons for Still Image Playback” (☞ p. 63)
 - 5 Delete Button
“Deleting the Currently Displayed File” (☞ p. 69)
 - 6 Playback Zoom Button
 - Enlarges the still image that is being played back.
 - 7 Menu Button
“Operating the Menu” (☞ p. 169)
 - 8 Operation Buttons
“Operation Buttons for Still Image Playback” (☞ p. 63)

Index Screen (Thumbnail Display) Display



- 1 (Video/Still Image) Mode Button
 - Switches between video and still image modes.
- 2 Date Button
 - “Operation Buttons for Video Playback” (p. 54)
 - “Operation Buttons for Still Image Playback” (p. 63)
- 3 Mark Playback button (video only)
 - “MARKING PLAYBACK” (p. 56)
- 4 Delete Button
 - “Deleting Selected Files” (p. 69)
- 5 Menu Button
 - “Operating the Menu” (p. 169)
- 6 Page Forward/Back Button
 - “Operation Buttons for Video Playback” (p. 54)
 - “Operation Buttons for Still Image Playback” (p. 63)

Menu screen (playback mode)



- 1 PLAYBACK SETTING Menu
 - “PLAYBACK SETTING Menu (video)” (p. 179)
 - “PLAYBACK SETTING Menu (still image)” (p. 181)
- 2 CONNECTION SETTINGS Menu
 - “CONNECTION SETTINGS (video/still image)” (p. 185)
- 3 MEDIA SETTINGS Menu
 - “MEDIA SETTINGS (video/still image)” (p. 186)
- 4 Close Button
 - Exit the menu.
- 5 SETUP Menu
 - “SETUP (video/still image)” (p. 183)
- 6 EDIT Menu
 - “EDIT Menu (video)” (p. 180)
 - “EDIT Menu (still image)” (p. 182)

Menu screen (recording mode)



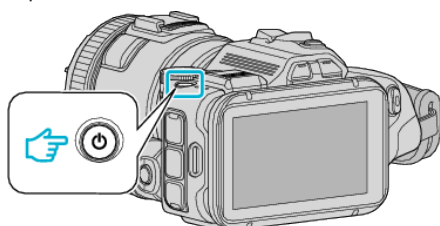
- 1 Wi-Fi menu
 - “Wi-Fi Capabilities” (p. 85)
- 2 SETUP Menu
 - “SETUP (video/still image)” (p. 183)
 - “MEDIA SETTINGS (video/still image)” (p. 186)
- 3 CONNECTION SETTINGS Menu
 - “CONNECTION SETTINGS (video/still image)” (p. 185)
- 4 INFO. Button
 - “Checking the Remaining Recording Time” (p. 50)
- 5 Close Button
 - Exit the menu.
- 6 MEDIA SETTINGS Menu
 - “MEDIA SETTINGS (video/still image)” (p. 186)
- 7 SPECIAL RECORDING Menu
 - “SPECIAL RECORDING Menu (video)” (p. 174)
- 8 RECORD SETTING Menu
 - “RECORD SETTING Menu (video)” (p. 170)

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.

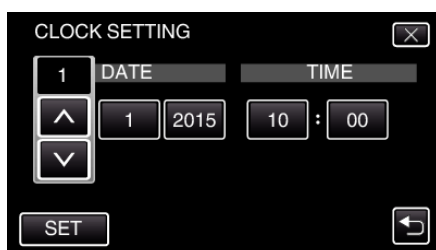
- 1 Turn on the power.



- 2 Tap “YES” when “SET DATE/TIME!” is displayed.

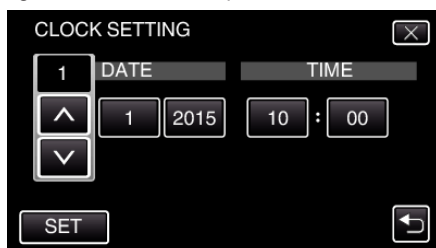


- 3 Set the date and time.

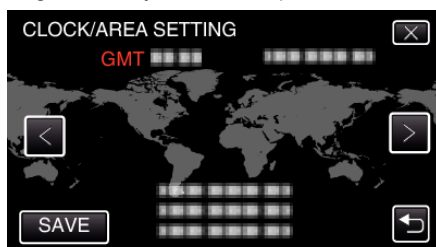


- “^” and “v” are displayed when items in “DATE” and “TIME” are tapped.
- Set “DATE” and “TIME” by tapping ^ or v.
- Repeat this step to enter “DATE” and “TIME”.

- 4 After setting the date and time, tap “SET”.



- 5 Select the region where you live and tap “SAVE”.



- Time difference between the selected city and the GMT (Greenwich Mean Time) is displayed.
- Tap < or > to select the city name.

Memo :

- The clock can be reset again later.

“Resetting the Clock” (☞ p. 20)

- When using this unit overseas, you can set it to the local time for recording.

“Setting the Clock to Local Time when Traveling” (☞ p. 23)

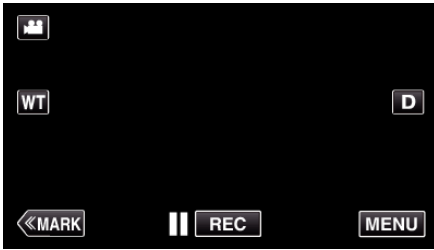
- “SET DATE/TIME!” is displayed when you turn on this unit after it has not been used for a prolonged period.

Connect the AC adapter for more than 24 hours to charge the internal clock battery of this unit before setting the clock.

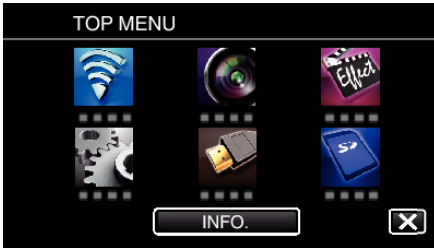
Resetting the Clock

Set the clock with "CLOCK ADJUST" from the menu.

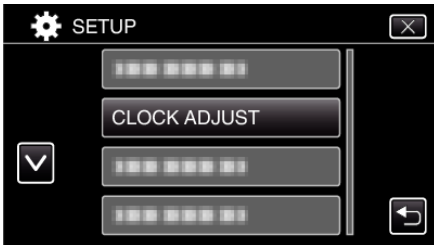
1 Tap "MENU".



2 Tap "SETUP".

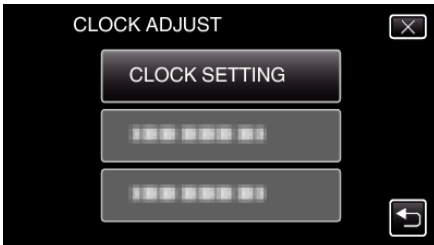


3 Tap "CLOCK ADJUST".

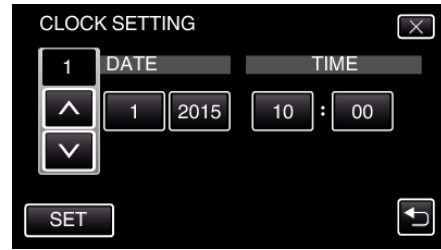


- Tap ^ or v to scroll the screen.

4 Tap "CLOCK SETTING".

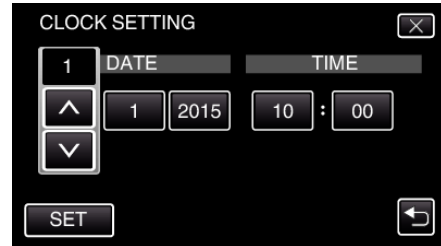


5 Set the date and time.

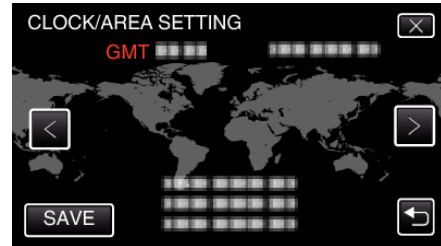


- " ^ " and " v " are displayed when items in "DATE" and "TIME" are tapped.
- Set "DATE" and "TIME" by tapping ^ or v.
- Repeat this step to enter "DATE" and "TIME".

6 After setting the date and time, tap "SET".



7 Select the region where you live and tap "SAVE".

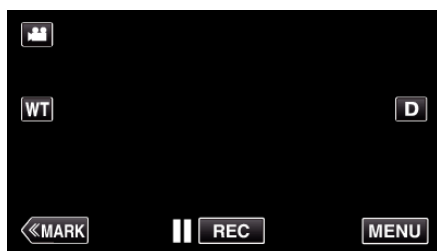


- Time difference between the selected city and the GMT (Greenwich Mean Time) is displayed.
- Tap < or > to select the city name.

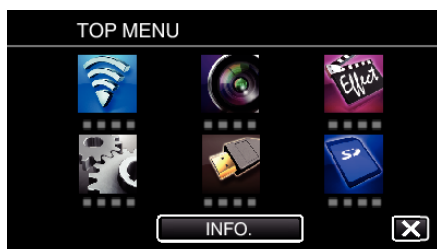
Changing the Display Language

The language on the display can be changed.

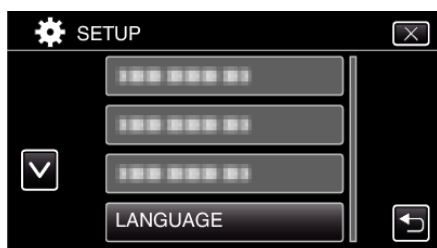
- 1 Tap "MENU".



- 2 Tap "SETUP".



- 3 Tap "LANGUAGE".



- Tap ^ or v to scroll the screen.

- 4 Tap to the desired language.



- Tap ^ or v to scroll the screen.

Holding this Unit

When holding this unit, keep your elbows close to your sides to prevent camera shake.



Caution :

- Be careful not to drop this unit during transportation.
- Guardians should pay close attention when this unit is used by children.

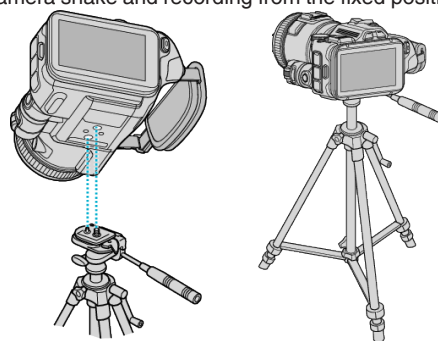
Memo :

- If camera shake is excessive, use the image stabilizer.

"Reducing Camera Shake" (p. 41)

Tripod Mounting

This unit can be mounted on a tripod (or monopod). This is useful for preventing camera shake and recording from the fixed position.



- To prevent this unit from falling off, check the tripod mounting screw holes and positioning holes on the unit carefully before mounting, and turn the screws until they are fastened firmly.

Caution :

- To prevent injuries or damages which may result if this unit falls off, read the instruction manual of the tripod (or monopod) to be used and make sure that it is securely attached.

Memo :

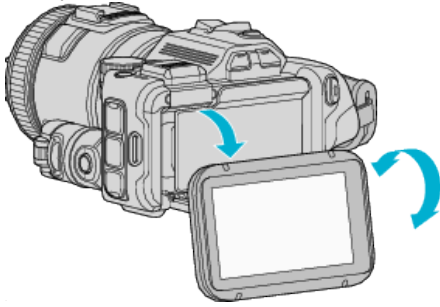
- It is recommended to use a tripod or monopod when recording in conditions prone to camera shake (such as in dark places or when zoomed to the telephoto end).

- Set the image stabilizer to "OFF" when using a tripod for shooting.

"Reducing Camera Shake" (p. 41)

Adjusting the Angle of the LCD Monitor

Angles of the LCD monitor can be adjusted when shooting by holding this unit in a high or low positions.



Caution :

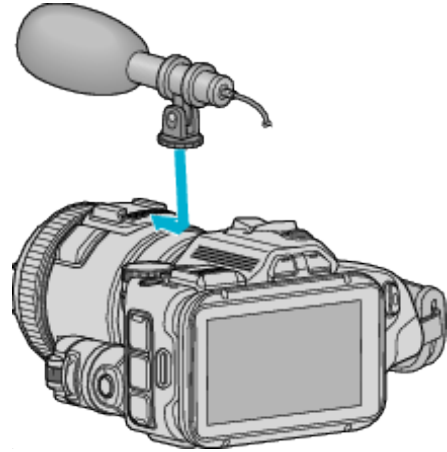
- To move the LCD monitor, do not apply excessive force so as not to damage the connected part.
- When this unit is not used or during transportation, set the LCD monitor to its original position.

Attaching the External Microphone

You can attach an external microphone (commercially available) to this unit.

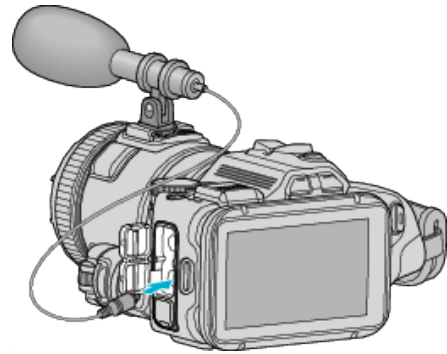
- Use a microphone that supports plug-in power.

1 Attach an external microphone (commercially available) to the shoe.



2 Open the cover of the microphone connector and connect the cable of the external microphone.

3 Connect the cable of the external microphone to the microphone connector.



Memo :

- Recommended microphone: use MZ-V10 (sold separately).
- Do not apply excessive force when attaching an external microphone, etc, to this unit.
- The microphone level can be displayed or set in the settings menu.

“MIC LEVEL” (p. 173)

“MIC LEVEL SETTING” (p. 173)

Using this Unit Overseas

The shape of the power outlet varies according to countries and regions. To charge the battery pack, you need a converter plug that matches the shape of the outlet.

“Charging the Battery Pack Overseas” (p. 23)

Change the date and time display to the local time by selecting your travel destination in “AREA SETTING” of “CLOCK ADJUST”.

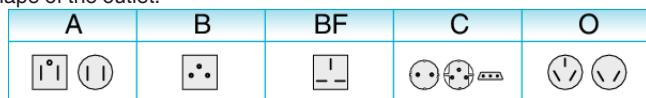
“Setting the Clock to Local Time when Traveling” (p. 23)

When “ON” is selected in “DST SETTING” of “CLOCK ADJUST”, the time is set 1 hour ahead.

“Setting Daylight Saving Time” (p. 24)

Charging the Battery Pack Overseas

The shape of the power outlet varies according to countries and regions. To charge the battery pack, you need a converter plug that matches the shape of the outlet.

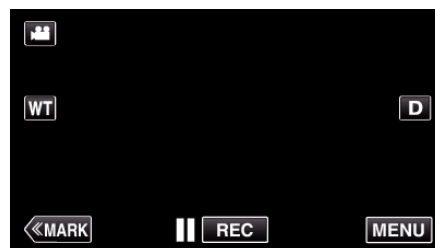


North America	Europe	Oceania	Middle East
United States A	Iceland C	Australia O	Israel C
Canada A	Ireland C	Guam A	Iran C
Mexico A	United Kingdom B, BF	Tahiti C	Kuwait B, C
	Italy C	Tonga O	Jordan B, BF
Asia	Austria C	New Zealand O	
Japan A	Netherlands C	Fiji O	Africa
India B, C, BF	Canary Islands C		Algeria A, B, BF, C
Indonesia C	Greece C	Latin	Egypt B, BF, C
Singapore B, BF	Switzerland C	Argentina O	Guinea C
Sri Lanka B, C, BF	Sweden C	Colombia A	Kenya B, C
Thailand A, BF, C	Spain A, C	Jamaica A	Zambia B, BF
South Korea A, C	Denmark C	Chile B, C	Tanzania B, BF
China A, B, BF, C, O	Germany C	Haiti A	Republic of South Africa B, C, BF
Nepal C	Norway C	Panama A	Mozambique C
Pakistan B, C	Hungary C	Bahamas A	Morocco C
Bangladesh C	Finland C	Puerto Rico A	
Philippines A, BF, D	France C	Brazil A, C	
Vietnam A, C	Belgium C	Venezuela A	
Hong Kong Special Administrative Region B, BF	Poland B, C	Peru A, C	
Macau Special Administrative Region B, C	Portugal B, C		
Malaysia B, BF, C	Romania C		

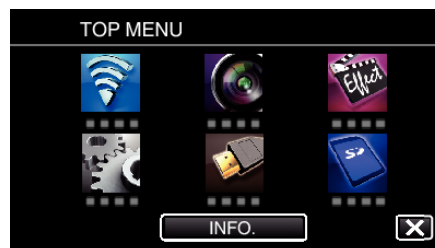
Setting the Clock to Local Time when Traveling

Change the date and time display to the local time by selecting your travel destination in “AREA SETTING” of “CLOCK ADJUST”. Restore the region settings after you returned from the trip.

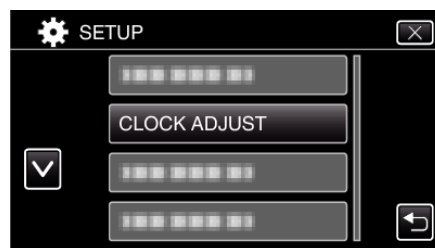
1 Tap “MENU”.



2 Tap “SETUP”.

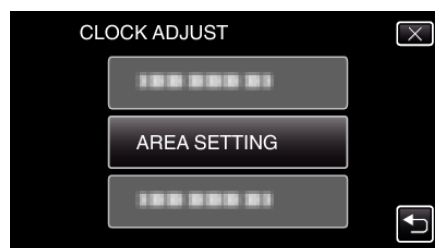


3 Tap “CLOCK ADJUST”.

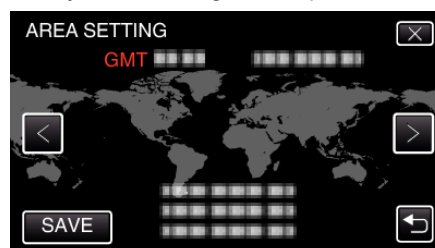


- Tap ^ or v to scroll the screen.

4 Tap “AREA SETTING”.



5 Select the area you are traveling to and tap “SAVE”.



- Time difference between the selected city and the GMT (Greenwich Mean Time) is displayed.
- Tap < or > to select the city name.

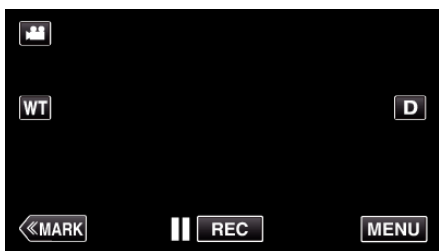
Memo :

- Setting “AREA SETTING” changes the clock time such that time difference is accounted for. After returning to your country, re-select the region that was set initially to restore the original clock settings.

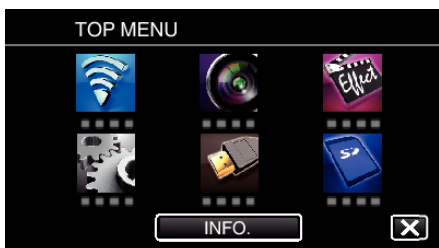
Setting Daylight Saving Time

When "ON" is selected in "DST SETTING" of "CLOCK ADJUST", the time is set 1 hour ahead.

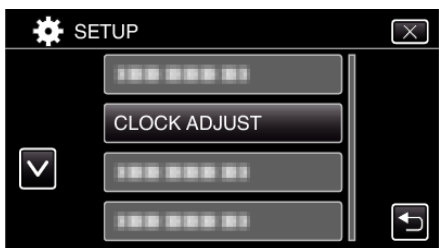
1 Tap "MENU".



2 Tap "SETUP".



3 Tap "CLOCK ADJUST".

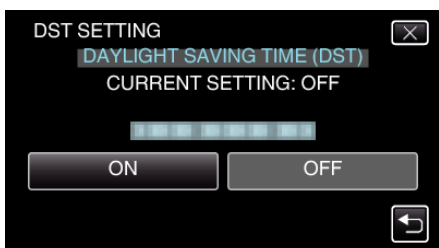


- Tap ^ or v to scroll the screen.

4 Tap "DST SETTING".



5 Tap "ON".



Memo :

- What is daylight saving time?
Daylight saving time is the system of setting the clock 1 hour ahead for a fixed period in summer.
It is used mainly in the Western countries.
- Restore the daylight saving time settings after you returned from the trip.

Optional Accessories

You can record for a longer time by using the optional battery pack.

Product Name	Description
Battery Pack BN-VF815U (Supplied)	<ul style="list-style-type: none"> • Provides a longer recording time. It can also be used as a spare battery pack.
HDMI Mini Cable • VX-HD310 • VX-HD315	<ul style="list-style-type: none"> • Allows viewing in high picture quality when connected to a TV. • Transmits video, audio, and control signals between devices.

Memo :

- For more information, refer to the catalog.
- BN-VF815U is the same product as the battery that is provided with this unit.

Approximate Recording Time (Using Battery)

Battery Pack	Actual recording time	Continuous recording time (Maximum Recording Time)
BN-VF815U (Supplied)	1 h	2 h

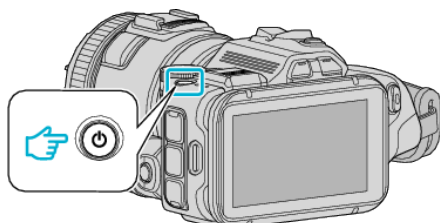
- The above are values when "LIGHT" is set to "OFF" and "MONITOR BRIGHTNESS" is set to "3" (standard).
- The actual recording time is an estimate in case that such operations as zooming is used or recording is stopped repeatedly. It may be shorter in the actual usage.
(It is recommended to prepare battery packs ready for three times the expected recording time.)
- When the battery life is reached, the recording time becomes shorter even if the battery pack is fully charged.
(Replace the battery pack with a new one.)

Taking Videos in Auto Mode

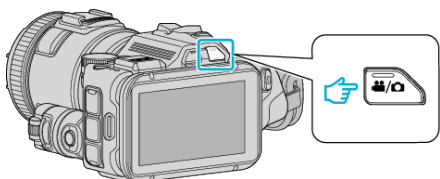
You can record without worrying about the setting details by using the Intelligent Auto mode. Settings such as exposure and focus will be adjusted automatically to suit the shooting conditions.

- In case of specific shooting scenes such as person etc., its icon is displayed on the screen.
- Before recording an important scene, it is recommended to conduct a trial recording.

1 Turn on the power.

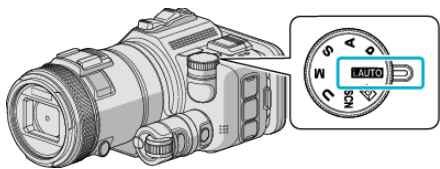


2 Select video mode.

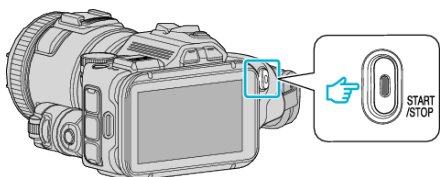


- The icon on LCD display is switched to video mode.

3 Set the shooting dial to "i.AUTO".

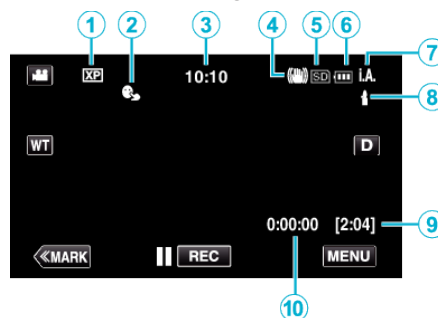


4 Press the START/STOP button to start recording.



- Press again to stop.
- Some displays disappear after approximately 3 seconds. Use the **D** button to change the displays.

Indications for Video Recording



	Display Icon	Description
①	Video Quality	Displays the icon of the "VIDEO QUALITY" setting selected in the recording menu. "VIDEO QUALITY" (☞ p. 172)
②	TOUCH PRIORITY AE/AF	Displays the setting of "TOUCH PRIORITY AE/AF". By default, it is set to "FACE TRACKING". "Capturing Subjects by Tracking Automatically (TOUCH PRIORITY AE/AF)" (☞ p. 34)
③	Time	Displays the current time. "Clock Setting" (☞ p. 19)
④	Image Stabilizer	Displays the image stabilizer setting. "Reducing Camera Shake" (☞ p. 41)
⑤	Recording Media	Displays the icon of the media where videos are recorded to.
⑥	Battery Indicator	Displays the approximate remaining battery power during use.
⑦	Recording Mode	Current shooting mode is displayed.
⑧	Setting Scenes of Intelligent Auto	Displays scenes detected automatically in the Intelligent Auto function. Multiple scenes may be detected.
⑨	Remaining Recording Time	Displays the remaining time for video recording. "Checking the Remaining Recording Time" (☞ p. 50)
⑩	Scene Counter (Recorded Time)	Displays the elapsed time of the video that is currently being recorded.

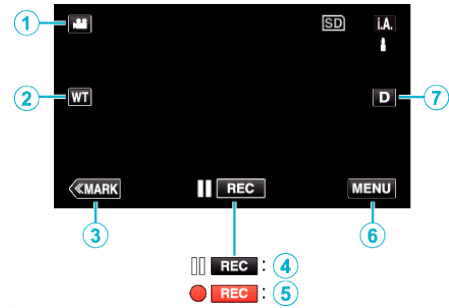
■ Scenes of Intelligent Auto

Display Icon	Description
	Captures one's skin beautifully.
	Allows people to be captured naturally.
	Record a group of people with the most suitable settings.
	Record the smiling face clearly.
	Records while focusing on a near object.
	Focuses at a far distance and captures a sharp image with vivid colors.
	Records in dark places with minimal noise in the overall image.
	Allows night scenes to be captured accurately with minimal noise in the overall image.
	Prevents colors from fading even when recording in a bright environment, such as snowfield and beaches.
	Prevents colors from fading when recording a subject in a spotlight.
	Reproduces the green color of trees vividly.
	Reproduces the colors of sunset naturally.
	Adjusts settings so that the subject does not appear too dark due to backlight.
	Records while emphasizing the brightness of the colors.
	Reproduces the natural colors of the outdoors during the day.
	Reproduces the natural colors of the indoors in a cold-color illumination.
	Reproduces the natural colors of the indoors in a warm-color illumination.
	Selects the most suitable settings for handheld shooting.
	Selects the most suitable settings when a tripod is used for shooting.

Memo :

- Scenes can be detected according to the shooting conditions and automatically adjusted in Intelligent Auto mode.
- Multiple scenes may be detected depending on the recording conditions.
- Some functions may not work properly depending on the shooting conditions.

Operation Buttons for Video Recording



	Operation Buttons	Description
①	Video/Still Image Mode 	Switches between video and still image modes.
②	T/W Memory Zoom	Store the zoom position to recall it at the touch of a button. Also, zooming to the W end (wide angle end) and the T end (telephoto end) can be set at a touch of a button "Zooming" (☞ p. 31)
③	MARK	Switches to the mark mode, which enables you to insert various marks during shooting. Marked scenes can be easily played back.
④ / ⑤	Recording Start Record-Standby 	Functions as the START/STOP button.
⑥	MENU	Displays the various menus of video recording. "Operating the Menu" (☞ p. 169)
⑦	Display Button D	Switches the display between full (D_F) and simple (D) with every tap of the button. <ul style="list-style-type: none"> • Simple display: Some displays disappear after approximately 3 seconds. • Full display: Displays everything. The display button changes from D to D_F. • When the power is turned off, full display (D_F) will be set.

Useful Settings for Recording

- When “QUICK RESTART” is set to “ON”, shooting can be started immediately after pressing the power button if the power is turned off within 5 minutes.
- “QUICK RESTART” (☞ p. 184)
- When “AUTO POWER OFF” is set to “ON”, this unit turns itself off automatically to conserve power when it is not operated for 5 minutes.
- “AUTO POWER OFF” (☞ p. 184)
- When “TOUCH PRIORITY AE/AF” is set to “FACE TRACKING”, this unit detects faces and automatically adjusts its brightness and focus to record the faces more clearly.
- “Capturing Subjects by Tracking Automatically (TOUCH PRIORITY AE/AF)” (☞ p. 34)
- When “DATE/TIME RECORDING” is used, the date and time can be recorded together with the video.
- “Recording Videos with Date and Time” (☞ p. 49)

Caution :

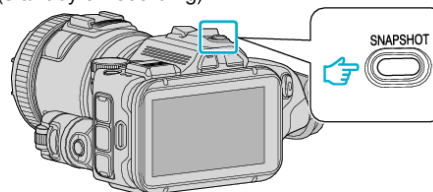
- Do not expose the lens to direct sunlight.
- Do not use this unit in the rain, snow, or places with high humidity like the bathroom.
- Do not use this unit in places subject to excessive humidity or dust, as well as places exposed to steam or smoke directly.
- The power may turn off to protect the circuit if the temperature of this unit rises too much.
- Do not remove the battery pack, AC adapter, or SD card when the access lamp is lighted. The recorded data may become unreadable.
- 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.
- Disclaimer
 - We shall not be held responsible for loss of recorded contents when recording videos/audio or playback cannot be operated due to malfunctions in this unit, provided parts, or SD card.
 - Once deleted, recorded contents (data), including data loss due to malfunctions in this unit, cannot be restored. Please be forewarned.
 - JVC will not be responsible for any lost data.
 - In order for quality improvement, defective recording medium is subject to be analyzed. Therefore, it may not be returned.

Memo :

- Check the remaining recording time in the media before you start shooting. If there is not enough space, move (copy) the data to a computer or disc.
- When there are many files in the media, it may take time for them to be displayed on the playback screen. Wait for a while as the access lamp appears blinking, which indicates normal operation.
- Do not forget to make copies after recording!
- Recording stops automatically as it cannot be performed for 12 or more consecutive hours according to specifications. (It may take some time to resume recording.)
- For long recordings, the file is split into two or more files if the size exceeds 4 GB.
- You can connect this unit to the AC adapter to record for long hours indoors.
- Depending on the subject and shooting conditions, recording may not be performed properly even in the Intelligent Auto mode.
- Depending on the shooting conditions, the four corners of the screen may appear dark, but this is not a malfunction. In this case, change the shooting conditions by moving the zoom lever, etc.

Capturing Still Images During Video Recording

Still images can be captured by pressing the SNAPSHOT button while in the video mode (standby or recording).



- “PHOTO” lights up on the screen when a still image is being captured.



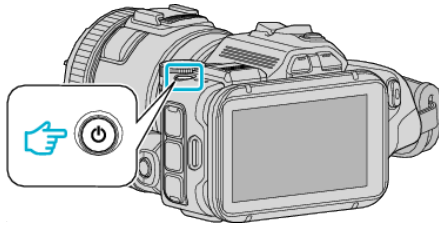
Memo :

- The size of the still image that is captured in the video mode is 1,920 x 1,080.
- Operation is invalid under the following conditions:
 - when menu is being displayed
 - when remaining recording time is being displayed
 - when “VIDEO QUALITY” is set to “MP4 720p” or “iFrame 720p”
 - when “HIGH SPEED RECORDING” is set
 - when “TIME-LAPSE RECORDING” is being recorded
 - when any functions in “SPECIAL RECORDING” is set

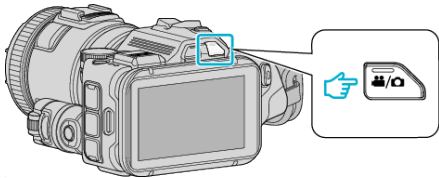
Taking Still Images in Auto Mode

You can record still images without worrying about the setting details by using the Intelligent Auto mode.

1 Turn on the power.

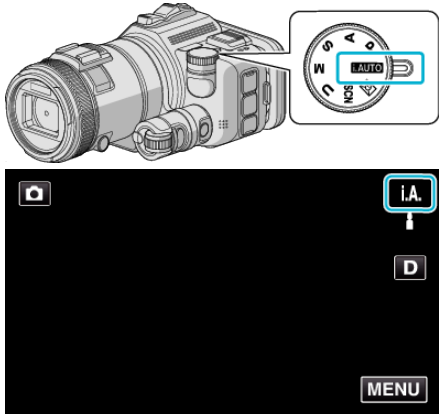


2 Select still image mode.

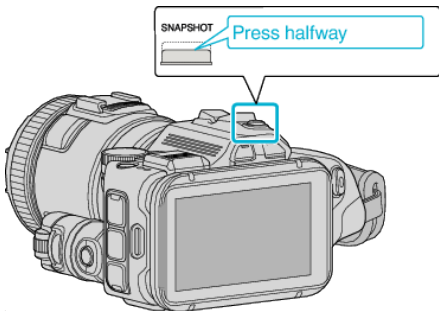


- The icon on LCD display is switched to still image mode.

3 Set the shooting dial to "i.AUTO".

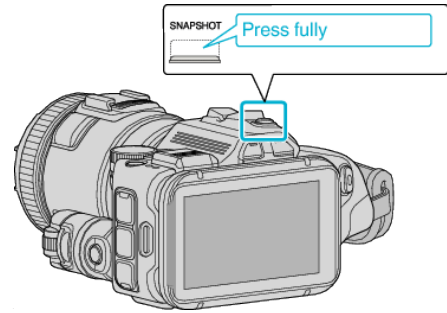


4 Set the focus on the subject.



- When focused, the focus icon lights up in green.

5 Take a still image.

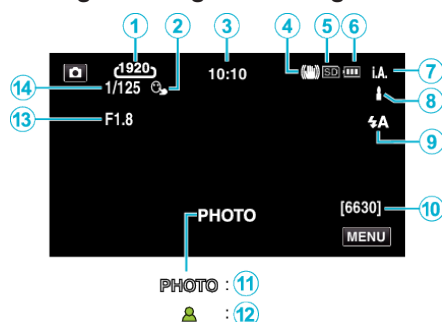


- PHOTO lights up when a still image is being captured.

Memo :

- Depending on the subject and shooting conditions, recording may not be performed properly even in the Intelligent Auto mode.
- Image stabilization only starts when the button is pressed halfway.

Indications During Still Image Recording



- Some displays disappear after approximately 3 seconds. Use the **D** button to change the displays.

	Display Icon	Description
①	Image Size	Displays the icon of the image size. <ul style="list-style-type: none"> The size of still images can be changed. "IMAGE SIZE" (☞ p. 177)
②	TOUCH PRIORITY AE/AF	Displays the setting of "TOUCH PRIORITY AE/AF". By default, it is set to "FACE TRACKING". "Capturing Subjects by Tracking Automatically (TOUCH PRIORITY AE/AF)" (☞ p. 34)
③	Time	Displays the current time. "Clock Setting" (☞ p. 19)
④	Image Stabilizer	Displays the image stabilizer setting. "Reducing Camera Shake" (☞ p. 41)
⑤	Recording media	Displays the icon of the media where still images are recorded to.
⑥	Battery Indicator	Displays the approximate remaining battery power during use. "Checking the Remaining Recording Time" (☞ p. 50)
⑦	Recording Mode	Current shooting mode is displayed.
⑧	Setting Scenes of Intelligent Auto	Displays scenes detected automatically in the Intelligent Auto function. Multiple scenes may be detected.
⑨	Flash Mode	Displays the flash mode.
⑩	Remaining Number of Shots	Displays the remaining number of shots for still image recording. "Approximate Number of Still Images (Unit: Number of Shots)" (☞ p. 51)
⑪	Recording in Progress	"PHOTO" appears when a still image is being captured.
⑫	Focus	Lights up in green when focused.
⑬	Aperture Value	Displays the aperture value.
⑭	Shutter Speed	Displays the shutter speed.

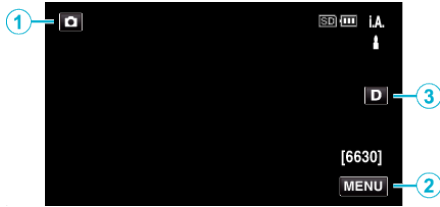
Scenes of Intelligent Auto

Display Icon	Description
	Captures one's skin beautifully.
	Allows people to be captured naturally.
	Record a group of people with the most suitable settings.
	Record the smiling face clearly.
	Records while focusing on a near object.
	Focuses at a far distance and captures a sharp image with vivid colors.
	Records in dark places with minimal noise in the overall image.
	Allows night scenes to be captured accurately with minimal noise in the overall image.
	Prevents colors from fading even when recording in a bright environment, such as snowfield and beaches.
	Prevents colors from fading when recording a subject in a spotlight.
	Reproduces the green color of trees vividly.
	Reproduces the colors of sunset naturally.
	Adjusts settings so that the subject does not appear too dark due to backlight.
	Records while emphasizing the brightness of the colors.
	Reproduces the natural colors of the outdoors during the day.
	Reproduces the natural colors of the indoors in a cold-color illumination.
	Reproduces the natural colors of the indoors in a warm-color illumination.
	Selects the most suitable settings for handheld shooting.
	Selects the most suitable settings when a tripod is used for shooting.

Memo :

- Scenes can be detected according to the shooting conditions and automatically adjusted in Intelligent Auto mode.
- Multiple scenes may be detected depending on the recording conditions.
- Some functions may not work properly depending on the shooting conditions.

Operation Buttons for Still Image Recording



	Operation Buttons	Description
①	Video/Still Image Mode	Switches between video and still image modes.
②	MENU	Displays the various menus of still image recording. “Operating the Menu” (p. 169)
③	Display Button D	Switches the display between full (D_F) and simple (D) with every tap of the button. <ul style="list-style-type: none"> • Simple display: Some displays disappear after approximately 3 seconds. • Full display: Displays everything. The display button changes from D to D_F. • When the power is turned off, full display (D_F) will be set.

Useful Settings for Recording

- When “QUICK RESTART” is set to “ON”, shooting can be started immediately after pressing the power button if the power is turned off within 5 minutes.
“QUICK RESTART” (p. 184)
- When “AUTO POWER OFF” is set to “ON”, this unit turns itself off automatically to conserve power when it is not operated for 5 minutes.
“AUTO POWER OFF” (p. 184)
- When “TOUCH PRIORITY AE/AF” is set to “FACE TRACKING”, this unit detects faces and automatically adjusts its brightness and focus to record the faces more clearly.
“Capturing Subjects by Tracking Automatically (TOUCH PRIORITY AE/AF)” (p. 34)

Caution :

- Do not expose the lens to direct sunlight.
- Do not use this unit in the rain, snow, or places with high humidity like the bathroom.
- Do not use this unit in places subject to excessive humidity or dust, as well as places exposed to steam or smoke directly.
- The power may turn off to protect the circuit if the temperature of this unit rises too much.
- Do not remove the battery pack, AC adapter, or SD card when the access lamp is lighted. The recorded data may become unreadable.
- 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.

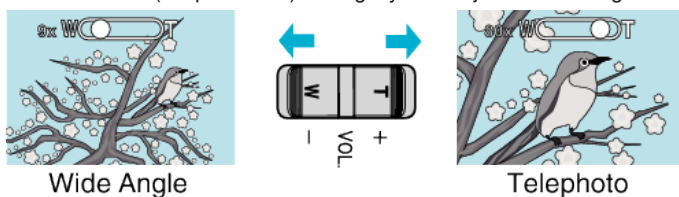
Memo :

- Before recording an important scene, it is recommended to conduct a trial recording.
- Depending on the shooting conditions, the four corners of the screen may appear dark, but this is not a malfunction. In this case, change the shooting conditions by moving the zoom lever, etc.

Zooming

The angle of view can be adjusted using zoom.

- 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.



Memo :

- When digital zoom is used, the image becomes grainy as it is digitally enlarged.
- The zoom ratio range can be changed.

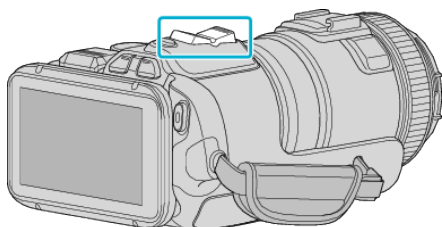
“ZOOM” (p. 172)

Zoom Memory

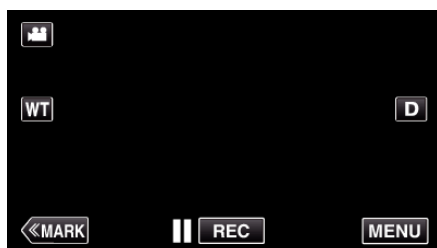
In video mode, zoom position can be stored by the Zoom Memory icon (WT) on the touch panel.

■ Storing Method

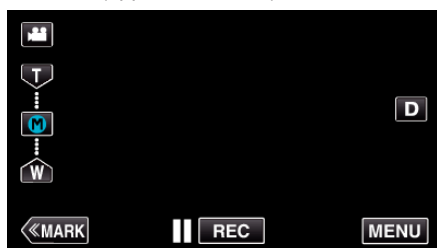
- 1 Zoom to the position to reach to the desired position for storing.



- 2 Tap “WT”.



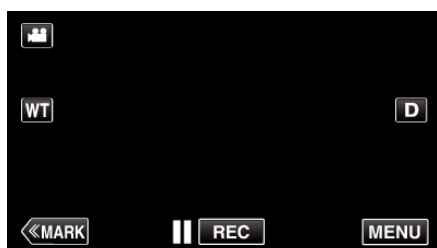
- 3 Press and hold “M” (approx. 1 second).



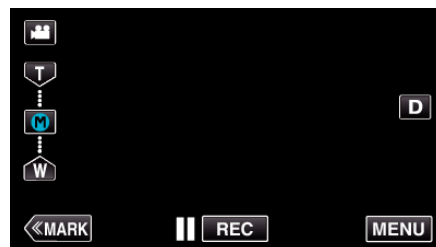
- Store the zoom position.

■ Operating Detail

- 1 Tap “WT”.



- 2 Tap “M”.



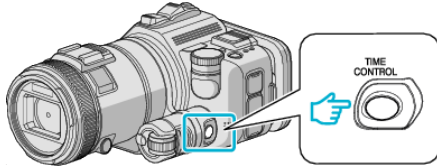
- Zoom to the point that is stored in advance.
- Zoom to the W end (wide angle end) or the T end (telephoto end) by tapping “W” or “T”.

Continuous Shooting

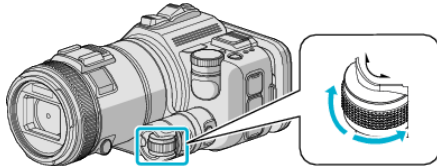
In still image mode, continuous shooting is performed while the SNAPSHOT button is being pressed.

Item	Details
L	Approx. 2 frames/sec, number of images unlimited
H1	Approx. 6 frames/sec, maximum 115 images
H2	Approx. 12 frames/sec, maximum 115 images
H3	Approx. 25 frames/sec, maximum 115 images
H4	Approx. 50 frames/sec, maximum 115 images

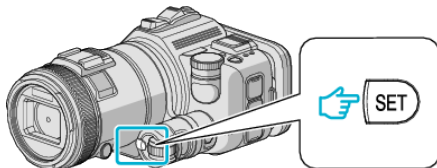
1 Press the TIME CONTROL button.



2 Select the speed of continuous shooting by using the adjustment dial.



3 Press the SET button.




- TIME CONTROL button can be used as well.

Caution :

- When "H1" to "H4" is selected, "SMILE SHOT" and "SMILE%" are not displayed.

Shooting by Changing the Settings

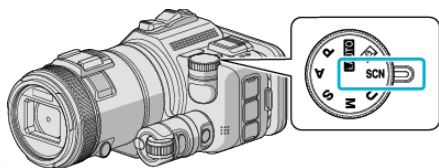
Select the shooting methods suitable for purposes by using the shooting dial.

Shooting Dial	Details
i.AUTO	You can record without worrying about the setting details by using the Intelligent Auto mode. "Taking Videos in Auto Mode" (☞ p. 25) "Taking Still Images in Auto Mode" (☞ p. 28)
P	Adjusts aperture and shutter speed automatically depending on brightness of the subject. "P: Adjusts exposure (i.e., brightness) (Programmed Auto)." (☞ p. 35)
A	Adjusts aperture manually, and shutter speed is adjusted automatically. "A: Adjusts aperture (Aperture Priority)" (☞ p. 35)
S	Adjusts shutter speed manually, and aperture is adjusted automatically. "S: Adjusts the shutter speed (Shutter Speed Priority)" (☞ p. 36)
M	Adjust aperture and shutter speed manually. "M: Adjusts aperture and shutter speed at the same time (Manual)" (☞ p. 36)
U	Frequently-used settings can be registered to U. "Saving setting values of the USER dial" (☞ p. 36)
SCN	Shoots scenes according to the shooting conditions. (Scene Selection) "Shooting According to Scene (Subject)" (☞ p. 33)
	Captures the subject by tracking the subject automatically. (Face Priority/Touch Priority) "Capturing Subjects by Tracking Automatically (TOUCH PRIORITY AE/AF)" (☞ p. 34)

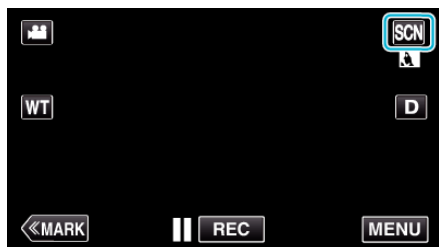
Shooting According to Scene (Subject)

Set the shooting dial to Scene Selection (SCN) to automatically adjust exposure and shutter speed depending on the subject.

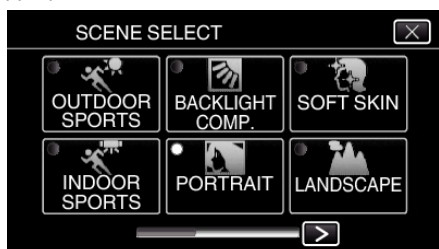
- 1 Set the shooting dial to SCN.



- 2 Tap "SCN".

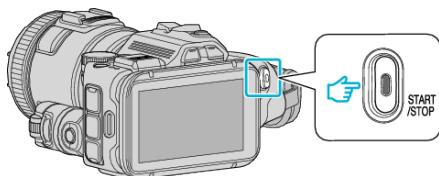


- 3 Tap the appropriate scene.



- Tap < or > to scroll the screen.
- Tap X to exit the menu.

- 4 Start shooting.



Setting	Effect
OUTDOOR SPORTS	Captures fast-moving subjects clearly in every single frame when shooting outdoors.
INDOOR SPORTS	Captures fast-moving subjects clearly in every single frame when shooting indoors.
BACKLIGHT COMP.	You can correct the image when the subject appears too dark due to backlight.
PORTRAIT	Blurs the background to bring out the people in the picture.
SOFT SKIN	Smooths the skin of the subject's face.
LANDSCAPE	Use this when shooting natural scenery, etc.
LANDSCAPE & PORTRAIT	Use this when shooting a subject in the background of natural scenery.
NIGHT	Captures night scenes naturally. <ul style="list-style-type: none"> • Capture the image brighter than the actual scene by using a slow shutter in the still image mode.
NIGHT & PORTRAIT (still image only)	Fires flash to capture the subject while capturing the night atmosphere accurately.
NIGHTLIVE	Increases gain and brightens the scene automatically using a slow shutter when the surrounding is dark. To prevent camera shake, use a tripod.
SNOW	Prevents the subject from appearing too dark when recording snow scenes on a sunny day.
BEACH	Captures the sea and beaches on a sunny day brightly and vividly.
SPOTLIGHT	Prevents the human subject from appearing too bright under light.
FIREWORKS	Use this when shooting fireworks.
SUNSET	Use this when shooting a sunset or sunrise.

Memo :

- All scenes of "SCENE SELECT" cannot be set during "AUTO REC".
- In LANDSCAPE/NIGHT/FIREWORKS/SUNSET modes, focus is adjusted only at a far distance.

Recording

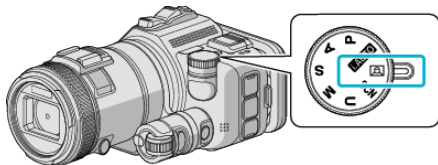
Capturing Subjects by Tracking Automatically (TOUCH PRIORITY AE/AF)

“TOUCH PRIORITY AE/AF” is a function that adjusts focus and brightness based on a tapped position.

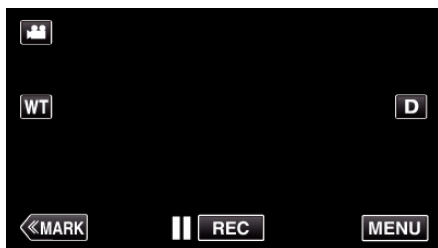
This function is available for both videos and still images.

- This function is available when the shooting dial is set to .

- 1 Set the shooting dial to .

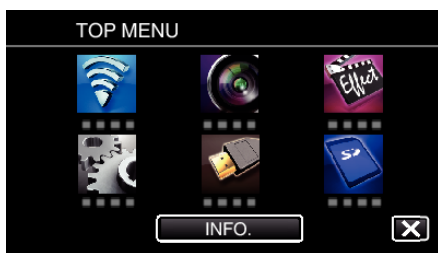


- 2 Tap “MENU”.

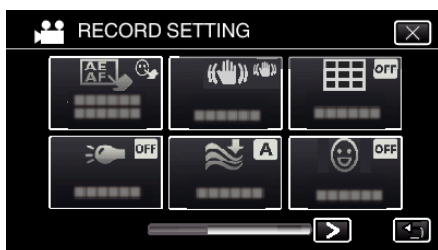



- The top menu appears.

- 3 Tap “RECORD SETTING”.



- 4 Tap “TOUCH PRIORITY AE/AF”.



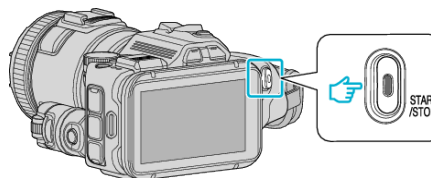
- Tap X to exit the menu.
- Tap  to return to the previous screen.




- 5 Tap the desired setting.



- Focus and brightness will be adjusted automatically based on the tapped position (face/color/area). A blue frame appears around the selected subject (face/color), while a white frame appears around the selected area.
- To reset, tap the desired position (face/color/area) again.
- To cancel “FACE TRACKING” or “COLOR TRACKING”, tap the blue frame.
- To cancel “AREA SELECT”, tap the white frame.

- 6 Press the START/STOP button to start recording.



Setting	Details
OFF	Deactivates the function.
FACE TRACKING	 appears on the screen. Recording is performed while tracking and automatically adjusting the tapped face (subject) with appropriate focus and brightness. In addition, a blue frame appears around the tapped face (subject).
COLOR TRACKING	 appears on the screen. Recording is performed while tracking and automatically adjusting the tapped color (subject) with appropriate focus. In addition, a blue frame appears around the tapped color (subject).
AREA SELECT	 appears on the screen. 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. AREA SELECT in TOUCH PRIORITY AE/AF is only available within the optical zoom range. (unavailable when digital zoom is being used)

Memo :

- When "TOUCH PRIORITY AE/AF" is set, "FOCUS" will be set to "AUTO" automatically.
- Tap the selected position (face/color/area) again to cancel the setting.
- Tap on an unselected position (face/color/area) to reset.
- If the camera loses track of a subject, tap the subject again.
- Settings are canceled when zoom operation is performed. ("AREA SELECT" only)
- When "COLOR TRACKING" is set, the targeted subject (color) may change if similar colors are detected. In this case, tap the subject again. The targeted subject (color) may also be tracked back again if it appears in the center of the screen within a specific time.

Caution :

- 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.
- "FACE TRACKING" may not work properly depending on the shooting conditions (distance, angle, brightness, etc.) and the subject (direction of face, etc.). It is also particularly difficult to detect faces in backlight.
- "COLOR TRACKING" may not function properly in the following cases:
 - when recording subjects with no contrast
 - when recording subjects that are moving at high speed
 - when recording in a dark place
 - when the surrounding brightness changes
- "AREA SELECT" is not available while the digital zoom is in use.

■ To display the smile level

Set "SMILE%" in the menu to "ON".

"SMILE% (📷 only)" (📖 p. 171)

- Smile level (smile %) is displayed in numerical value. (maximum 3 faces)
- To hide the display, set "SMILE%" to "OFF".

■ To capture a still image of smiling faces

Set "SMILE SHOT" in the menu to "ON".

"SMILE SHOT (📷 only)" (📖 p. 171)

- Captures a still image automatically whenever a subject with a frame smiles.

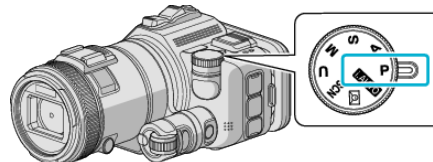
Manual Adjustment for Shooting

Adjust the shutter speed and aperture value manually for shooting. These settings are adjusted separately for videos and still images.

P: Adjusts exposure (i.e., brightness) (Programmed Auto).

Once exposure is adjusted, "APERTURE" and "SHUTTER SPEED" are adjusted automatically according to the brightness of the subject.

- 1 Set the shooting dial to P.



- Exposure is automatically adjusted.

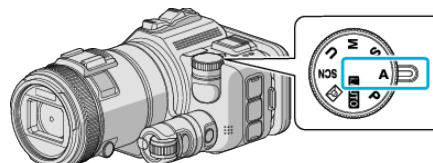
■ To adjust exposure further by manual operation

- Press the "EXPOSURE" button. Change the numerical value by using the adjustment dial, and then press the "SET" button.

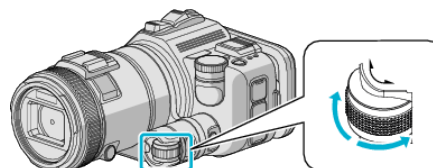
A: Adjusts aperture (Aperture Priority)

"SHUTTER SPEED" is adjusted automatically to maintain an optimal exposure.

- 1 Set the shooting dial to A.



- 2 Change the numerical value by using the adjustment dial.

**Memo :**

- By decreasing the numerical value, background appears blurry, making the subject stand out.

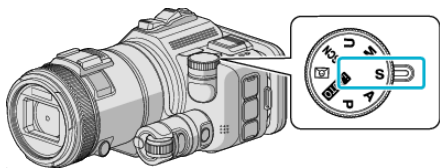
■ To adjust exposure further by manual operation

- Press the "EXPOSURE" button. Change the numerical value by using the adjustment dial, and then press the "SET" button.

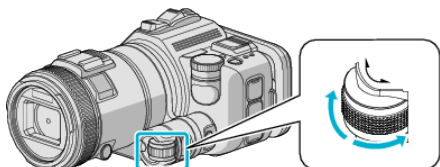
S: Adjusts the shutter speed (Shutter Speed Priority)

“APERTURE” is adjusted automatically to maintain an optimal exposure.

- 1 Set the shooting dial to S.



- 2 Change the numerical value by using the adjustment dial.



Memo :

- By decreasing the numerical value, a fast-moving subject can be captured clearly, without appearing blurry.

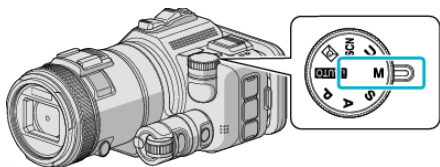
■ To adjust exposure further by manual operation

- Press the “EXPOSURE” button. Change the numerical value by using the adjustment dial, and then press the “SET” button.

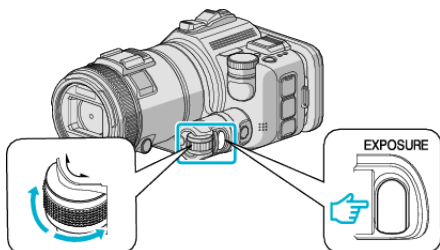
M: Adjusts aperture and shutter speed at the same time (Manual)

Exposure (brightness) is fixed by adjusting the aperture and shutter speed.

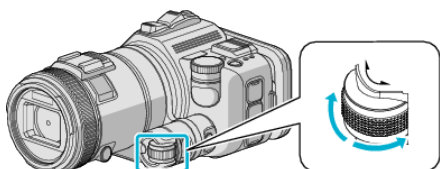
- 1 Set the shooting dial to M.



- 2 Change the numerical value of “SHUTTER SPEED” by using the adjustment dial, and then press the “EXPOSURE” button.



- 3 Change the numerical value of “APERTURE” by using the adjustment dial.



Memo :

- When the shutter speed is adjusted manually (M), an appropriate exposure may not be obtained.
- When the shutter speed is set to 4 seconds, focus is fixed to manual, and “GAIN UP” is fixed to “OFF”.

U: Saves the setting values of frequently-used functions (User Settings)

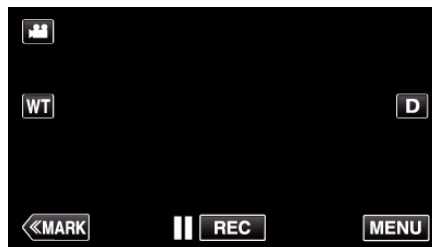
When adjusting aperture and shutter speed, settings can be easily completed by saving the setting values if these values are used repeatedly. Setting values can be saved at the User Settings (U) of the shooting dial. Different setting values can be saved for videos and still images.

■ Items to be Set

Item	Icon	Reference
SHUTTER SPEED	Both	-
APERTURE	Both	-
WHITE BALANCE	Both	“Setting White Balance” (p. 39)
GAIN UP (AGC)	Person only	“GAIN UP(P, A, S and M only)” (p. 170)
GAIN (ISO)	Camera only	“GAIN(P, A, S, M and U only)” (p. 176)

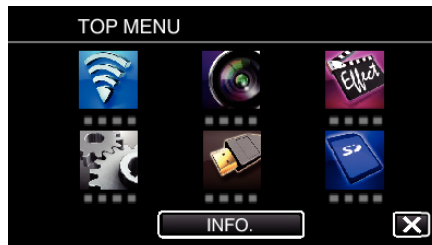
■ Saving setting values of the USER dial

- 1 Tap “MENU”.

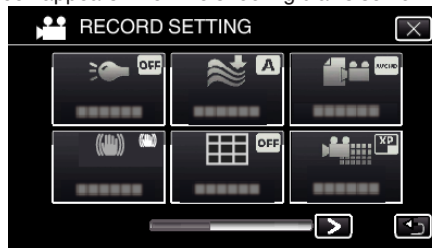


- The top menu appears.

- 2 Tap “RECORD SETTING”.



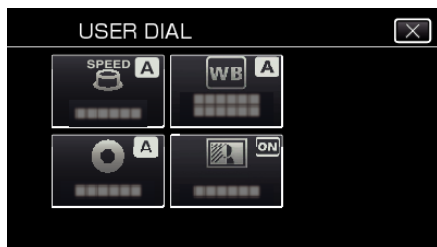
- 3 Tap > on the lower right of the screen.
(This screen appears when the shooting dial is set to i.AUTO)



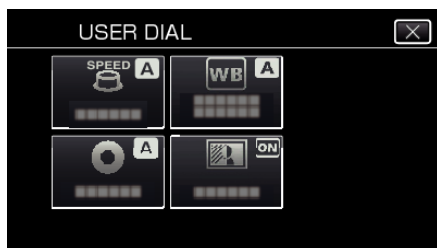
- 4 Tap “USER DIAL”.



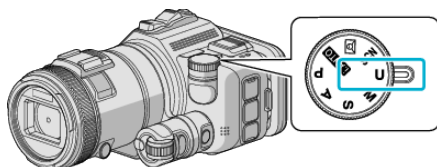
- 5 Tap the setting items.



- 6 Tap the setting value.
- For “SHUTTER SPEED” and “APERTURE”, to tap “MANUAL”, select the setting values by tapping </>, and the tap “SET”.
 - Repeat step 5 to 6 to set other items.
- 7 Tap X.



- 8 Set the shooting dial to U, then start shooting.

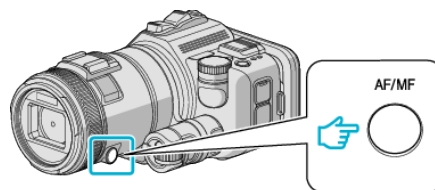


Adjusting Focus Manually

Set this when the focus is not clear in Intelligent Auto or when manual focusing is desired.

- This function is available when the shooting dial is set to P, A, S, M, U or SCN.

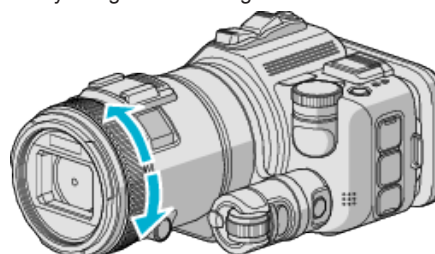
- 1 Press the AF/MF button.



- Focus adjustment screen is displayed.



- 2 Adjust focus by using the focus ring.



- If ▲ appears blinking, focus cannot be set any further.
- If ♀ appears blinking, focus cannot be set any nearer.

Memo :

- Focus remains stable if focus is set at the telephoto (T) end, and the zoom is set to the wide angle end (W).

■ To resume Auto Focus (automatic adjustment)

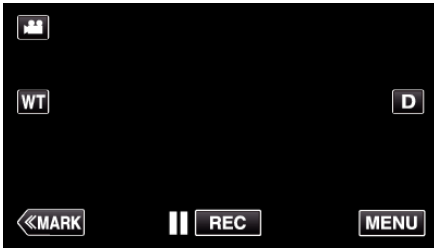
Press the AF/MF button to erase ▲ and ♀.

Adjusting Focus by Using Focus Assist

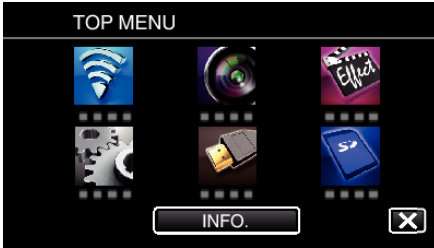
Focused subject is outlined in color for more precise focus.

- This function is available when the shooting dial is set to P, A, S, M, U or SCN.

1 Tap "MENU".



2 Tap "RECORD SETTING".

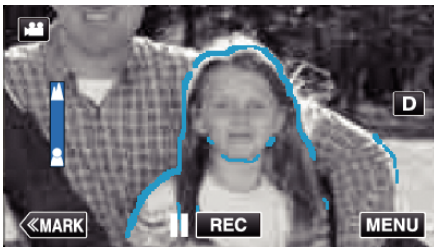
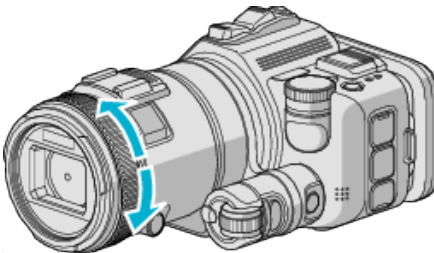


3 Tap "FOCUS ASSIST".



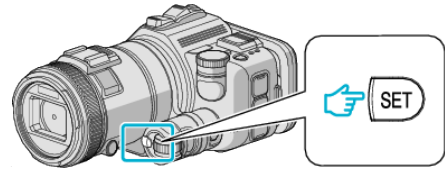
- Tap X to exit the menu.
- Tap ↶ to return to the previous screen.

4 Adjust focus by using the focus ring.



- If ▲ appears blinking, focus cannot be set any further.
- If ▼ appears blinking, focus cannot be set any nearer.

5 Tap the SET button to confirm.



Memo :

When setting the Focus Assist function, screen is displayed in black and white, and contour of focused parts are highlighted in pre-set color. Change the color if the contour line is difficult to see.

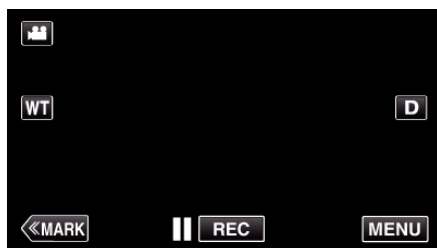
- Change the color in "ASIST COLOR" of the "RECORD SETTING" menu. ("RED", "GREEN", "BLUE")

Setting White Balance

You can set the color tone to suit the light source.
This function is available for both videos and still images.

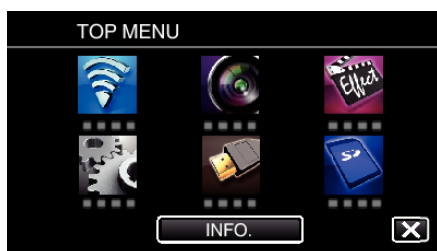
- This function is available when the shooting dial is set to P, A, S or M.

1 Tap "MENU".



- The top menu appears.

2 Tap "RECORD SETTING".

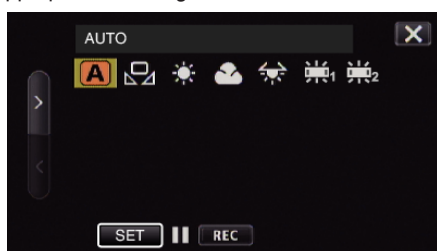


3 Tap "WHITE BALANCE".



- Tap X to exit the menu.
- Tap ↶ to return to the previous screen.

4 Tap the appropriate shooting environment.



- Select the item by using < or >, then tap "SET". (Tap the icon directly to select.)
- The White Balance icon appears on the screen upon completing the setting.

Setting	Details
A AUTO	Adjusts automatically to the natural colors.
MWB	Use this when the problem of unnatural colors is not resolved.
FINE	Set this when shooting outdoors on a sunny day.
CLOUD	Set this when shooting on a cloudy day or inside a shade.
HALOGEN	Set this when shooting under illumination such as a video light.
FLUORESCENT 1	Set this when shooting under the natural-white fluorescent lighting.
FLUORESCENT 2	Set this when shooting under the daylight fluorescent lighting.

Using MWB

1 Hold a sheet of plain white paper in front of the lens so that the white paper fills the screen.

2 Position the cursor to "MWB", and press and hold "SET".
Or, press and hold the "MWB" icon.

3 Release your touch after the menu disappears and lights up.

Memo :

- The setting will not change if "MWB" is being tapped too fast (less than 1 second).
- When the shooting dial is set to either i.AUTO or SCN, setting is fixed to "AUTO".
- When the shooting dial is set to U, setting can be done at "WHITE BALANCE" or "USER DIAL".

Recording

Taking Close-up Shots

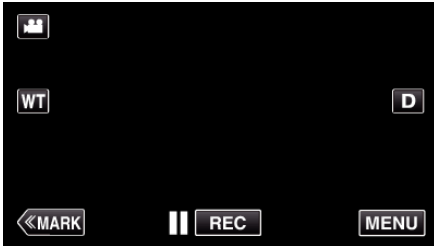
You can take close-up shots of an object using the tele macro function. This function is available for both videos and still images.

- This function is available when the shooting dial is set to P, A, S, M or U.



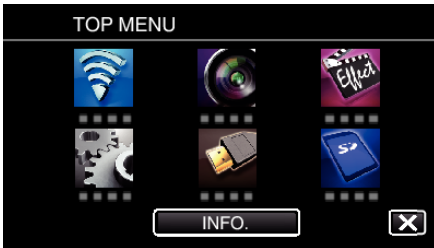
*The image is only an impression.

- 1 Tap "MENU".

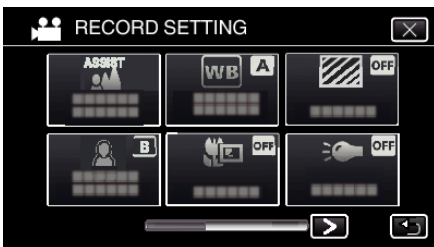


- The top menu appears.

- 2 Tap "RECORD SETTING".

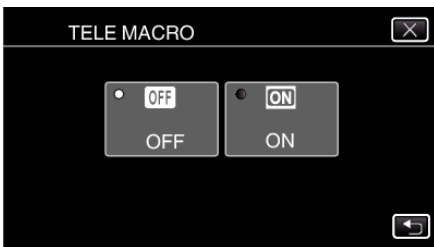



- 3 Tap "TELE MACRO".



- Tap X to exit the menu.
- Tap ↶ to return to the previous screen.

- 4 Tap "ON".



- After setting, the tele macro icon  appears.

Setting	Details
OFF	Enables close-up shots up to 1 m at the telephoto (T) end. Enables close-up shots up to 5 cm at the wide angle (W) end.
ON	Enables close-up shots up to 60 cm at the telephoto (T) end. Enables close-up shots up to 5 cm at the wide angle (W) end.

Memo :

- When the shooting dial is set to P, A, S, M or U, the tele macro function can be set.

Caution :

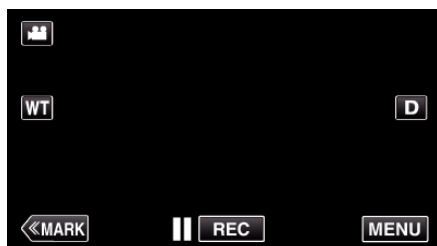
- When you are not taking close-up shots, set "TELE MACRO" to "OFF". Otherwise, the image may be blur.

Checking for Overexposed Areas (ZEBRA)

During video recording, diagonal lines (zebra pattern) are displayed only at areas with the specified luminance levels.

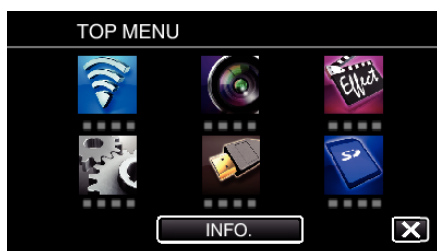
- This function is available when the shooting dial is set to P, A, S, M or U.

1 Tap "MENU".



- The top menu appears.

2 Tap "RECORD SETTING".



3 Tap "ZEBRA".



- Tap X to exit the menu.
- Tap ↶ to return to the previous screen.

4 Tap "70-80%" or "OVER 100%".

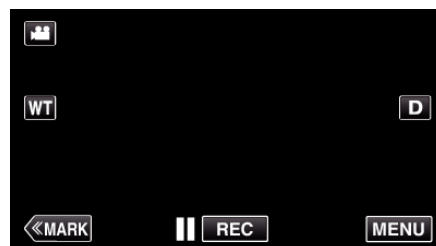


Setting	Details
OFF	Deactivates the function.
70-80%	Sections that are close to be overexposed are displayed in striped pattern.
OVER 100%	Sections that are overexposed are displayed in striped pattern.

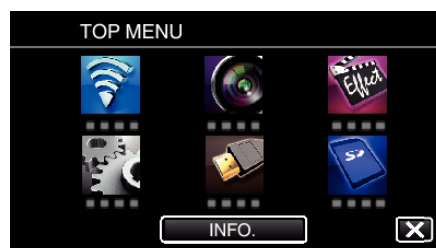
Reducing Camera Shake

When the image stabilizer is set, camera shake during video recording can be effectively reduced.

1 Tap "MENU".



2 Tap "RECORD SETTING".



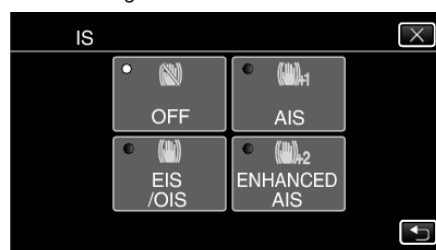
3 Tap "IS".

(This screen appears when the shooting dial is set to i.AUTO)



- Tap X to exit the menu.
- Tap ↶ to return to the previous screen.

4 Tap the desired setting.



Setting	Details
OFF	Deactivates image stabilizer.
EIS /OIS	Reduces camera shake under normal shooting conditions.
AIS (video mode only)	Reduces camera shake more effectively when shooting bright scenes on the wide angle end. Only on the wide angle end (approx. 5x).
ENHANCED AIS (video mode only)	The area of correction is greater than that in "AIS". Camera shake can be reduced more effectively even when recording is performed by zooming from wide angle to telephoto, or moving together with the subject.

Memo :

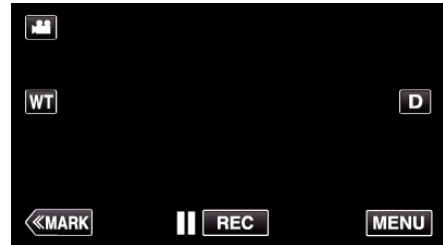
- It is recommended to set the image stabilizer to "OFF" when shooting a subject of little movement with the unit on a tripod.
- Complete stabilization may not be possible if camera shake is excessive.
- When "AIS" is set, the angle of view becomes narrower. In "ENHANCED AIS", the angle of view becomes even narrower than "AIS".
- Image stabilization only starts when the SNAPSHOT button is pressed halfway during still image recording.

Marking the Video While Recording

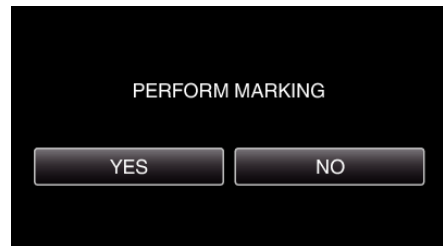
You can mark a specific scene while recording video. When a mark is made, the marked position is recorded to make it easy to find the position and start a digest playback.

Marking the Video While Recording (Normal)

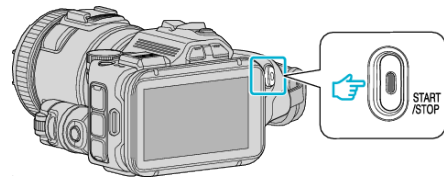
- 1 Tap "MARK".



- 2 Tap "YES" to enter into the mark mode.

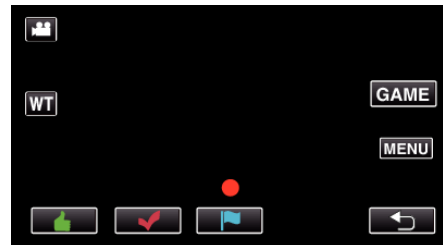


- 3 Start recording a video.

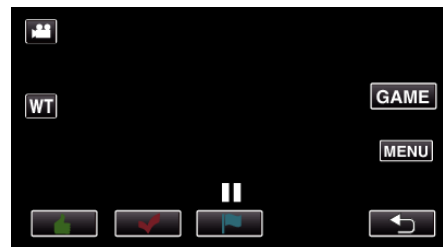


- Press the START/STOP button again to stop recording.

- 4 Tap or or at the scene you want to mark.

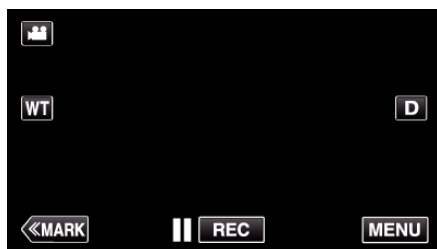


- 5 End recording a video by pressing the START/STOP button, and end the mark mode by tapping .

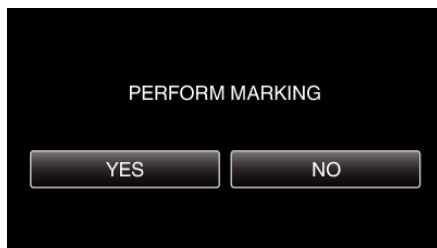


Marking the Video While Recording (Game)

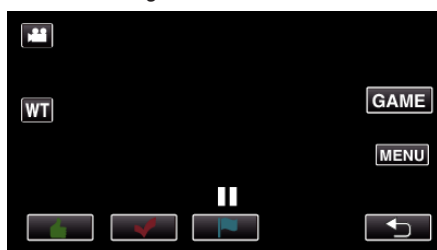
- 1 Tap "MARK".



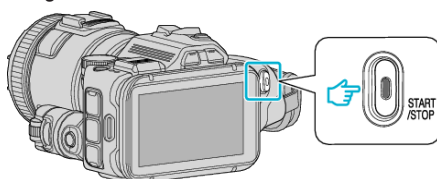
- 2 Tap "YES" to enter into the mark mode.



- 3 Tap "GAME" to start the game.

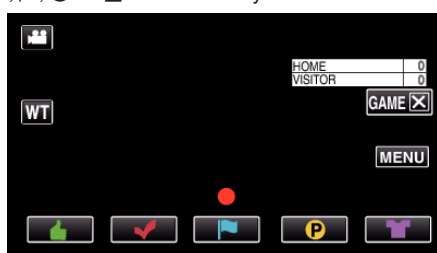


- 4 Start recording a video.



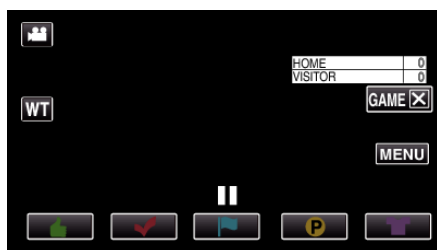
- Press the START/STOP button again to stop recording.

- 5 Tap , , , or at the scene you want to mark.

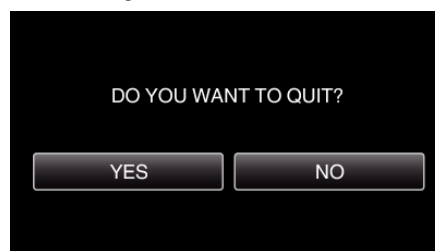


- Tap to display the score selection screen.

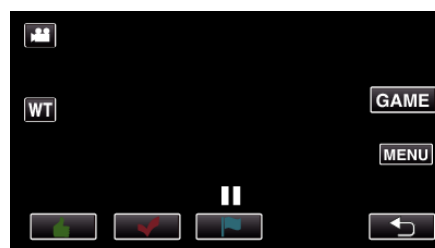
- 6 End recording a video by pressing the START/STOP button, and tap "GAMEX".



- 7 Tap "YES" to end the game.



- 8 Tap to end the mark mode.



Item	Usage Example
(Good)	Use this when the athlete is playing well.
(Check)	Use this when the athlete is not playing well.
(Free)	Use this when you want to check the particular play later.
(Score)	Use this when a score is entered.
(Substitution)	Use this when a player is replaced.

Caution :

- The score display is recorded if you start recording after performing an operation to start a game. A recorded score display cannot be deleted later.
- Marking function is unavailable during high-speed recording.

Memo :

- Tap "MARK " after a marking is made, to cancel the previous mark.
- Refer to the below for playing back the marked scenes. "MARKING PLAYBACK" (p. 56)
- By installing a specialized application in your smartphone, the mark operation can be done from the smartphone.

"Use of Marking" (p. 123)

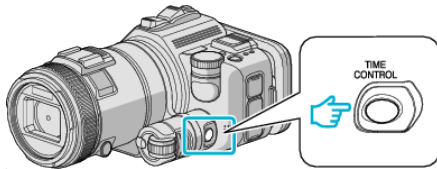
Slow-motion (High-speed) Recording

You can record videos in slow-motion by increasing the recording speed to emphasize the movements, and play back the slow-motion video smoothly. This is a handy function for checking movements, such as golf swings. (Video files in MP4 only)

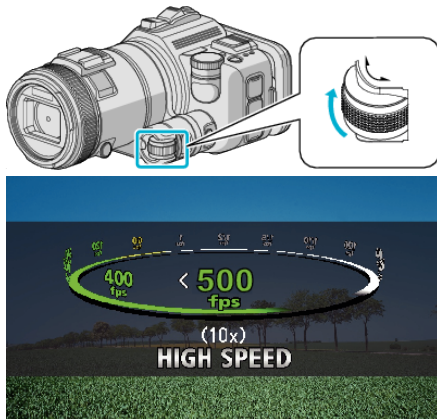
Recording Speed	Image Size
500fps(10x)	320×176
400fps(8x)	320×176
250fps(5x)	640×360
200fps(4x)	640×360
100fps(2x)	640×360

- Playback time when recording speed is 250 fps will be 5 times of the actual recorded time. (Example: If the recorded time is 1 minute, then playback time will be 5 minutes.)

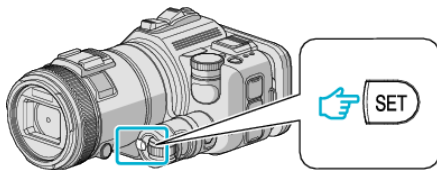
1 Press the TIME CONTROL button.



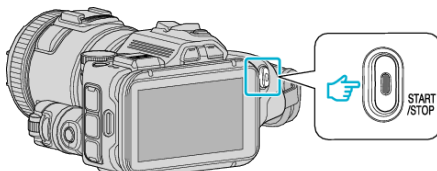
2 Select the recording speed by using the adjustment dial.



3 Press the SET button.



4 Start recording.



Memo :

- Images may appear grainier recording is performed at high speed and with reduced resolution. In addition, it is recommended that a tripod be used, and recording be performed in a bright location, by setting "GAIN UP" to "AUTO", since it is darker than normal shooting.
- Audio sound is not recorded together with the video.
- When high-speed recording is enabled, only the optical zoom can be used.
- During high-speed recording, "TOUCH PRIORITY AE/AF" is set to "OFF".
- During high-speed recording, scene counter may not operate smoothly.

- When a SDXC card is used in high-speed (500fps) recording, recording time is limited to 3 minutes.

■ To return to the normal recording mode

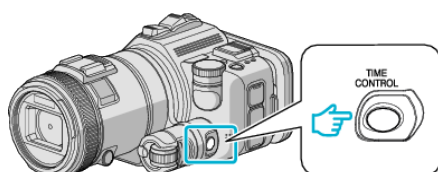
- Press the TIME CONTROL button, and then select "50fps" by the adjustment dial.
- Normal recording mode can be resumed by turning off the power of this unit.

Recording at Intervals (TIME-LAPSE RECORDING)

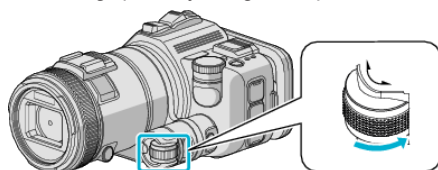
This function enables the changes of a scene that occur slowly over a long period to be shown within a short time by taking frames of it at a certain interval.

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

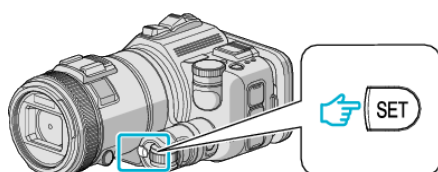
- 1 Press the TIME CONTROL button.



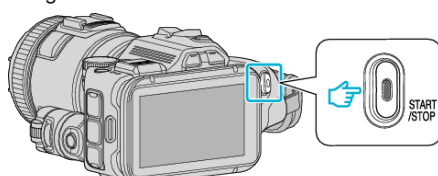
- 2 Select the recording speed by using the adjustment dial.



- 3 Press the SET button.



- 4 Start recording.



- A frame is taken at intervals of the selected period.
- When the recording interval is set to "20SEC INTERVAL" or higher, this unit switches to the power-saving mode between recordings. At the next point to record, the power-saving mode will be turned off and recording will start automatically.

■ To return to the normal recording mode

- Press the TIME CONTROL button, and then select "50fps" by the adjustment dial.
- Normal recording mode can be resumed by turning off the power of this unit.

Indications During Time-Lapse Recording



	Display	Description
①	Recording interval	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	Actual Elapsed Time	Displays the actual elapsed time after recording starts.
④	Remaining Recording Time	Remaining time left to record with the currently selected video quality.

Time-Lapse Setting

The lesser the setting value is, the longer the recording interval becomes.

Setting	Details
1fps	Takes a frame at 1-second intervals. Recorded videos will be played back at 25 times speed.
1/2fps	Takes a frame at 2-second intervals. Recorded videos will be played back at 50 times speed.
1/5fps	Takes a frame at 5-second intervals. Recorded videos will be played back at 125 times speed.
1/10fps	Takes a frame at 10-second intervals. Recorded videos will be played back at 250 times speed.
1/20fps	Takes a frame at 20-second intervals. Recorded videos will be played back at 500 times speed.
1/40fps	Takes a frame at 40-second intervals. Recorded videos will be played back at 1000 times speed.
1/80fps	Takes a frame at 80-second intervals. Recorded videos will be played back at 2000 times speed.

Caution :

- Audio cannot be recorded during time-lapse recording.
- Zooming, simultaneous still image recording, and image stabilizer are not available in time-lapse recording.
- When recording is stopped with the recorded time less than "0:00:00:14", the video will not be saved.

Memo :

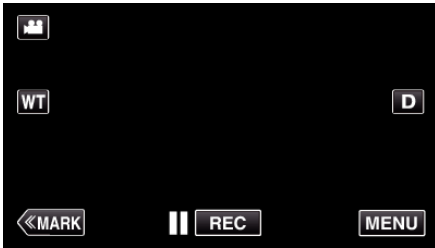
- Settings of time-lapse recording are reset when the power is turned off. To start time-lapse recording again, it is necessary to make the selection once more.
- Recording stops automatically 99 hours after it is started.
- Make use of a tripod and AC adapter for time-lapse recordings with long intervals. It is also recommended to fix the focus and white balance manually.
 - "Tripod Mounting" (☞ p. 21)
 - "Adjusting Focus Manually" (☞ p. 37)
 - "Setting White Balance" (☞ p. 39)
- If the video is recorded in progressive format (except for iFrame), the playback speed is doubled. (Example) A video recorded using "1fps" is played back at 50 times speed.

Recording Automatically by Sensing Movements (AUTO REC)

This function enables the unit to record automatically by sensing the changes in subject's movement (brightness) within the red frame displayed on the LCD monitor.

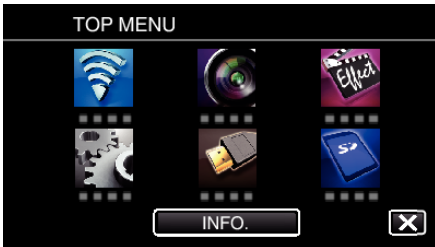
It can be set for both video and still image modes.

- 1 Compose the picture according to the subject.
 - Adjust the angle of view with the zoom, etc.
- 2 Tap "MENU".



- The top menu appears.

- 3 Tap "SPECIAL RECORDING".

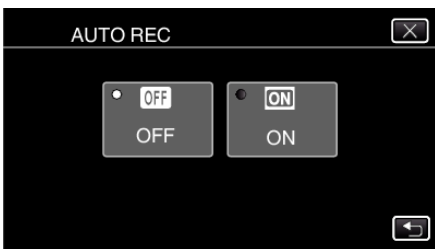


- 4 Tap "AUTO REC".

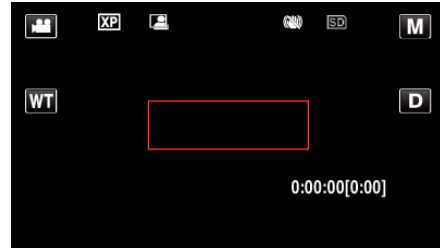


- Tap X to exit the menu.
- Tap ↶ to return to the previous screen.

- 5 Tap "ON".



- 6 Recording starts automatically when the subject within the red frame moves.



- A red frame appears 2 seconds after the menu display disappears.
- For video recording, recording continues while there are still movements of the subject (changes in brightness) within the red frame. When there are no more movements of the subject (changes in brightness) within the red frame, recording will stop in 5 seconds.
- To stop video recording manually, press the START/STOP button. However, as the "AUTO REC" setting remains at "ON" even after the video recording is stopped, recording starts again when movements of the subject (changes in brightness) are detected within the red frame. To cancel "AUTO REC", set it to "OFF".

Caution :

- Digital zoom, image stabilizer, self-timer, and continuous shooting are not available after "AUTO REC" is set.
- "AUTO REC" cannot be used together with "TIME-LAPSE RECORDING". When both are set, priority is given to "TIME-LAPSE RECORDING".
- "IMAGE SIZE" cannot be changed after "AUTO REC" is selected. Set it before selecting "AUTO REC".
- The auto power off and power-saving modes are not available after "AUTO REC" is set.

Memo :

- Recording stops when there are no changes for 5 seconds during video recording.
- Settings of "AUTO REC" are not saved when the power is turned off.
- Recording may not start when the movements of the subject within the red frame are too fast or the changes in brightness are too small.
- Recording may start due to changes in brightness even if there is no movement within the red frame.
- While zooming, recording cannot be started.

Taking Group Shots (Self-timer)

The 10-second self-timer and Face Detection self-timer are convenient functions for taking group photos. The 2-second self-timer is useful for preventing camera shake caused by pressing the shutter button. This function is available in still image mode. Not available in video mode.

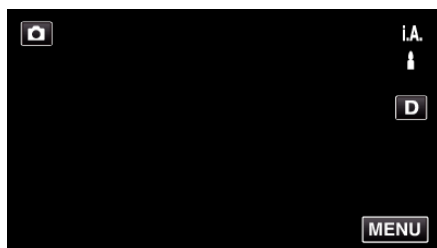
Memo :

When shooting a photo using the self-timer function, use of a tripod is recommended.

“Tripod Mounting” (☞ p. 21)

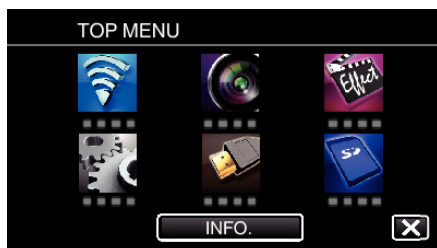
Using the 2-/10-second Self-timer

1 Tap “MENU”.

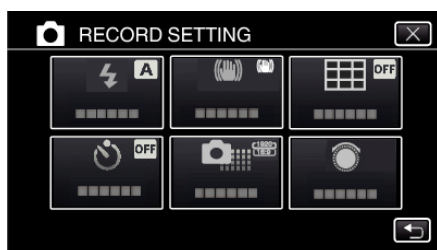


- The top menu appears.

2 Tap “RECORD SETTING”.

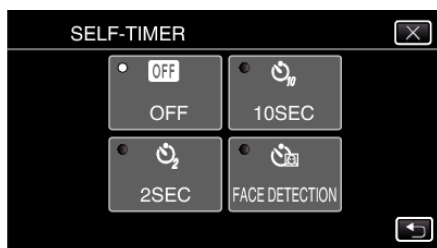


3 Tap “SELF-TIMER”.

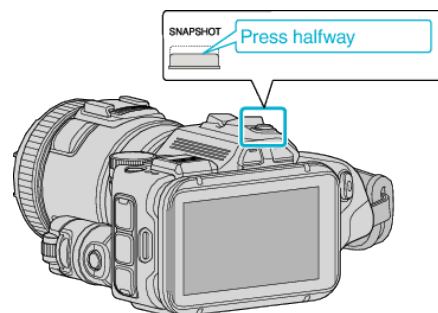


- Tap X to exit the menu.
- Tap ↩ to return to the previous screen.

4 Tap “2SEC” or “10SEC”.

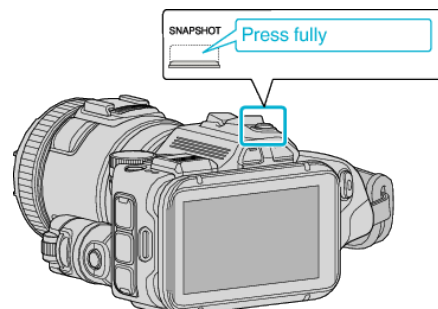


5 Set the focus on the subject.



- When focused, the focus icon lights up in green.

6 Take a still image.



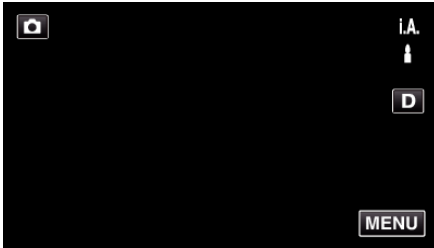
- A timer appears and countdown to shooting starts.
- To stop the self-timer, press the SNAPSHOT button again.

Recording

Using the Face Detection Self-timer

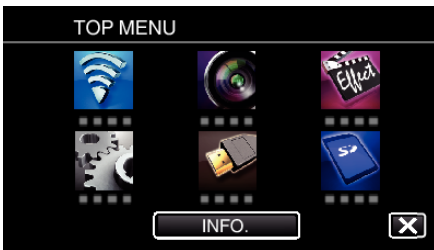
Pressing the SNAPSHOT button starts face detection, and shooting is performed three seconds after another person enters the frame. This function is useful when you want to include the photographer in the group photo. This function is available in still image mode. Not available in video mode.

1 Tap "MENU".

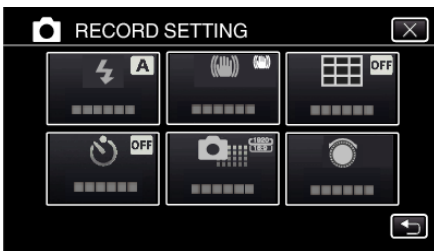


- The top menu appears.

2 Tap "RECORD SETTING".



3 Tap "SELF-TIMER".

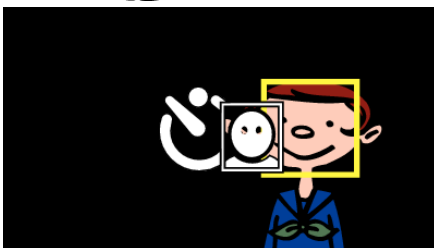
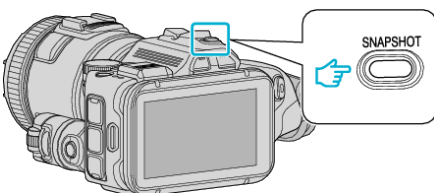


- Tap X to exit the menu.
- Tap ↶ to return to the previous screen.

4 Tap "FACE DETECTION".



5 After making sure that everyone is facing the camera, press the SNAPSHOT button.

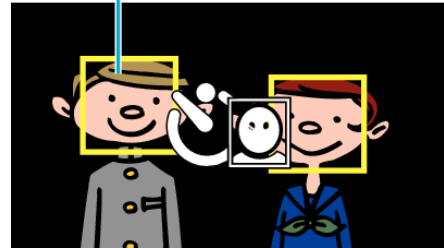


- Frames appear around the faces of the subjects.

- Pressing the SNAPSHOT button again starts the 10-second self-timer.

6 The photographer enters the frame.

Photographer



- The shutter is released 3 seconds after the photographer enters the frame.
- To stop the self-timer, press the SNAPSHOT button again.

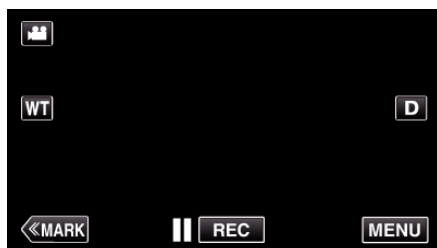
Memo :

- The "FACE DETECTION" function may fail to detect faces depending on the shooting environment.

Recording Videos with Date and Time

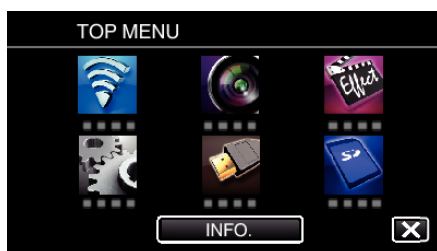
You can record videos together with the date and time.
Set this when you want to save the file with date and time display.
(The date and time cannot be deleted after recording.)

1 Tap "MENU".

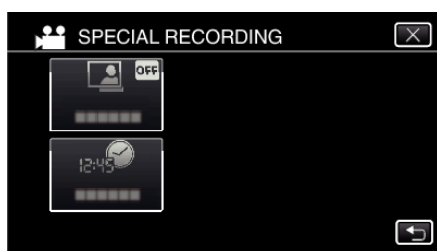


- The top menu appears.

2 Tap "SPECIAL RECORDING".

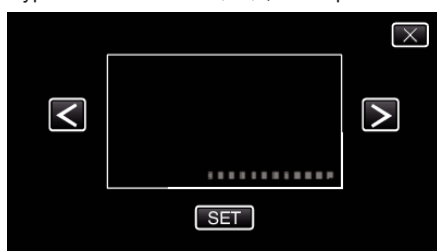


3 Tap "DATE/TIME RECORDING".



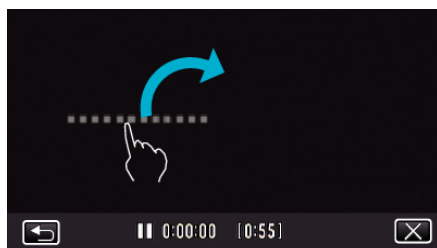
- Tap X to exit the menu.
- Tap ↶ to return to the previous screen.

4 Select the type if the clock with < or >, and tap "SET".



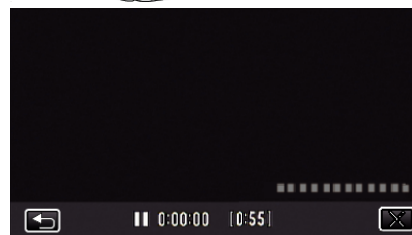
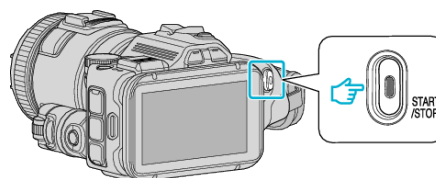
- When "SET" is tapped, the precaution for date/time recording appears.
- Tap X to exit the menu.

5 Adjust the display position of the date and time display with a finger mark by touching it with your finger and dragging it.



- Move the date and time display while touching it with your finger and tracing it on a screen.

6 Press the START/STOP button to start recording.



- Press the START/STOP button again to stop recording.
- Tap ↶ to return to the screen for selecting the types of clock.
- Tap X to exit "DATE/TIME RECORDING".
(To perform operations other than recording, tap X to cancel the "DATE/TIME RECORDING" first.)

Memo : _____

- Can be set for time-lapse recording.

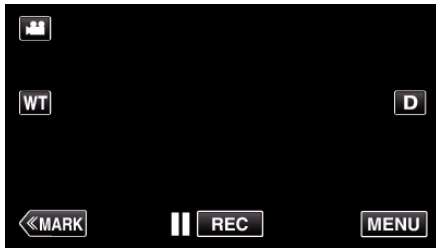
Caution : _____

- The date and time cannot be deleted after recording.

Checking the Remaining Recording Time

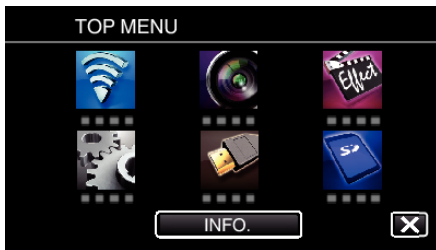
You can check the remaining recording time on the SD card as well as the remaining battery power.

1 Tap "MENU".



- The top menu appears.



2 Tap "INFO".



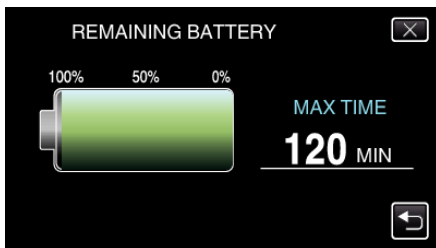
- If in the still image mode, go directly to step 4.


3 Display the remaining recording time.



- The remaining recording time is displayed only in the video recording mode.
- To display the remaining battery power, tap .
-  will not be displayed when the AC adapter is connected.
- To exit the display, tap X.

4 Display the remaining battery power.



- For video recording, tap  to return to the remaining recording time display. This display does not appear while recording still images.
- Tap X to exit the display.
- Remaining battery power will not be displayed when the AC adapter is connected.

Memo :

- You can change to the desired video quality by tapping on it from the remaining recording time display.

Approximate Video Recording Time

■ VIDEO REC FORMAT: AVCHD

Picture quality	SDHC/SDXC card						
	4GB	8GB	16GB	32GB	48GB	64GB	128 GB
50p	15 m	35 m	1 h 10 m	2 h 30 m	3 h 50 m	5 h	10 h 10 m
XP	30 m	1 h	2 h	4 h	6 h	8 h 10 m	16 h 20 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	57 h 50 m

■ VIDEO REC FORMAT: MP4/MOV

Picture quality	SDHC/SDXC card						
	4GB	8GB	16GB	32GB	48GB	64GB	128 GB
MOV 1080p LPCM (1920x1080)	10 m	25 m	50 m	1 h 40 m	2 h 30 m	3 h 30 m	7 h
MP4 1080p (1920x1080)	10 m	25 m	55 m	2 h	2 h 50 m	3 h 50 m	7 h 50 m
MP4 720p (1280x720)	40 m	1 h 20 m	2 h 50 m	5 h 40 m	8 h 30 m	11 h 20 m	22 h 50 m
iFrame 720p (1280x720)	10 m	30 m	1 h	2 h	3 h	4 h	8 h

- The actual recording time may shorten depending on the shooting environment.

Approximate Number of Still Images (Unit: Number of Shots)

Image size	SDHC/SDXC card						
	4GB	8GB	16GB	32GB	48GB	64GB	128GB
4000X3000(12M)(4:3)	500	1100	2200	4500	6700	9000	9999
2816x2112(5.9M)(4:3)	1100	2200	4500	9200	9999	9999	9999
2048x1536(3.1M)(4:3)	2100	4200	8500	9999	9999	9999	9999
1920x1080(2M)(16:9)	3100	6500	9999	9999	9999	9999	9999
640x480(0.3M)(4:3)	9999	9999	9999	9999	9999	9999	9999

- Still images that are captured during video recording or video playback are saved at a size of 1920 x 1080.

Approximate Recording Time (Using Battery)

Battery Pack	Actual recording time	Continuous recording time (Maximum Recording Time)
BN-VF815U	1 h	2 h


- The above are values when "LIGHT" is set to "OFF" and "MONITOR BRIGHTNESS" is set to "3" (standard).
- The actual recording time is an estimate in case that such operations as zooming is used or recording is stopped repeatedly. It may be shorter in the actual usage. (It is recommended to prepare battery packs ready for three times the expected recording time.)
- Recording time may differ depending on the shooting environment and usage.
- When the battery life is reached, the recording time becomes shorter even if the battery pack is fully charged. (Replace the battery pack with a new one.)

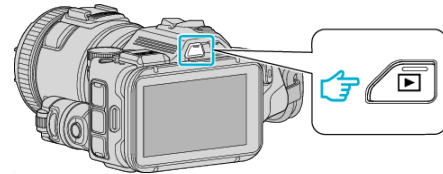
Playing Back Videos






The followings are the types of playback that can be performed by this unit.

Item	Description
Normal Playback	Plays back the recorded videos.
Mark Playback (Mark playback/game playback)	The scenes marked while recording the video and the scoring scenes recorded in the game recording mode (by using the smartphone application) can be searched. To start, tap "MARK PLAY" on the playback screen. For the game recording mode, refer to the game score settings. "Game Score Settings" (p. 137)
DIGEST PLAYBACK	From the recorded video, scenes are extracted automatically, pieced together for a digest playback within the specified length. Start playback from "DIGEST PLAYBACK" in the "PLAYBACK SETTING" menu.
PLAYBACK OTHER FILE	Videos with defective management information can be played back. Start playback from "PLAYBACK OTHER FILE" in the "PLAYBACK SETTING" menu.

Switching to the video playback screen

- Press the  button to select the playback mode.




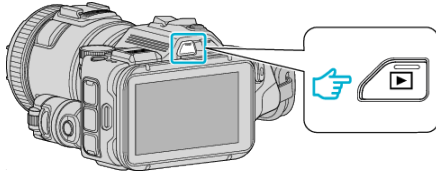
- Check if the playback mode is .
- If the mode is  still image, tap  on the playback screen to display the mode switching screen.
Tap  to switch the mode to video. (You can also use the  button on this unit.)

Caution :

- Make a backup of important recorded data.
It is recommended to copy your important recorded data to a DVD or other recording media for storage.
- 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.
- Disclaimer
 - We shall not be held responsible for loss of recorded contents when recording videos/audio or playback cannot be operated due to malfunctions in this unit, provided parts, or SD card.
 - Once deleted, recorded contents (data), including data loss due to malfunctions in this unit, cannot be restored. Please be forewarned.
 - JVC will not be responsible for any lost data.
 - In order for quality improvement, defective recording medium is subject to be analyzed. Therefore, it may not be returned.

Checking the Recording Date and Other Information

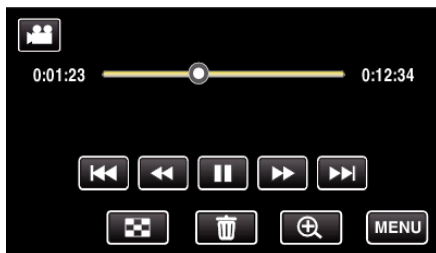
1 Press the  button to select the playback mode.



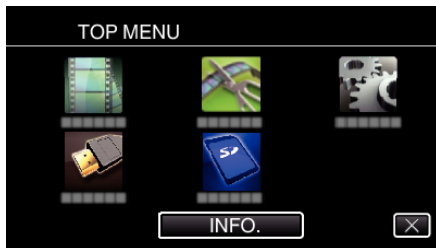
2 Tap on the file to start playback.



3 Tap "MENU".

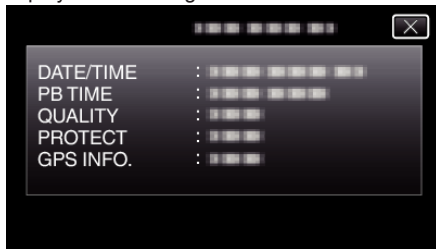


4 Tap "INFO.".



- Tap X to exit the menu.


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

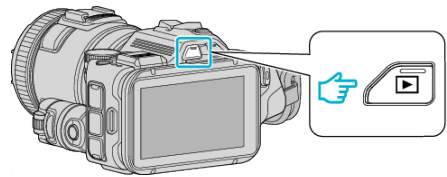







- The screen is a display when "VIDEO REC FORMAT" is set to "AVCHD".
- "FILE" and "FOLDER" are added when "VIDEO REC FORMAT" is set to "MP4/MOV".
- "FILE", "FOLDER", "DATE/TIME", "SIZE", "PROTECT" and "GPS INFO." are displayed in still image mode.

Normal Playback

Plays back the recorded videos.




1 Press the  button to select the playback mode.



- Check if the playback mode is .
- If the mode is  still image, tap  on the playback screen to display the mode switching screen. Tap  to switch the mode to video. (You can also use the  button on this unit.)

2 Tap on the file to start playback.



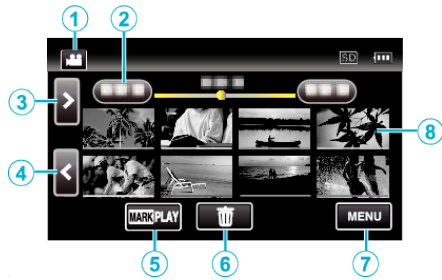
- Tap  to pause.
- Tap  to return to the index screen.
-  appears on the last image played back.
- Lines in different colors are displayed under the thumbnail display to distinguish the recording date.

Memo :

- Other than using the touch panel, forward slow-motion, forward search and reverse search can be performed by using the SET button.

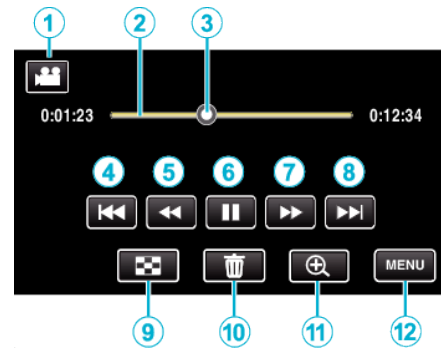
Operation Buttons for Video Playback

During Index Screen Display



	Display	Description
①	Video/Still Image Mode 	Switches between video and still image modes.
②	Date	Moves to the previous/next date
③	>	Displays the next index screen (thumbnail display) • You can perform the same operation with the zoom lever.
④	<	Displays the previous index screen (thumbnail display) • You can perform the same operation with the zoom lever.
⑤	MARK PLAY	Moves to the mark playback mode. “ MARKING PLAYBACK ” (see p. 56)
⑥		Displays the index screen (thumbnail display) to perform deletion
⑦	MENU	Displays the menu screen
⑧	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) Images with the same underlined color indicates the same recording date.

During Video Playback



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

	Display	Description
①	Video/Still Image Mode 	Switches between video and still image modes.
②	Timeline Bar	Tap on a random position - Moves to the tapped position Drag playback point to the left or right - Starts playback from the new position Tap on a random position - Moves to the tapped position
③	Pointer	Displays the current estimated playback position within the scene
④		Returns to the beginning of the scene Returns to the previous scene if tapped at the beginning of a scene. • Allows the same functions as the zoom lever to be performed while pausing playback.
⑤		Reverse search (speed increases with each tap) • The same operation can be performed by using the adjustment dial. (each turn of the dial increases the speed)
⑤		Reverse slow-motion / Press and hold to start reverse slow playback • Reverse slow-motion can be performed by using the adjustment dial.
⑥		Playback/pause • The same operation can be performed by using the SET button.
⑦		Forward search (speed increases with each tap) • The same operation can be performed by using the adjustment dial. (each turn of the dial increases the speed)
⑦		Forward slow-motion / Press and hold to start slow playback • Forward slow-motion can be performed by using the adjustment dial.
⑧		Advances to the next scene • Allows the same functions as the zoom lever to be performed while pausing playback.
⑨		Stop (returns to index screen)
⑩		Deletes the currently displayed video.

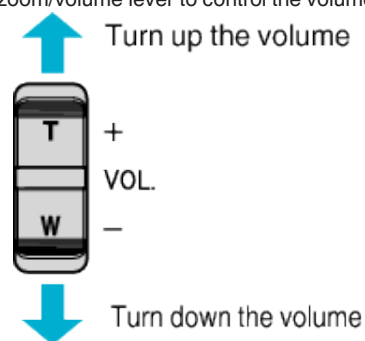
⑪	⊕	Press this button to pause and enlarge the image.
⑫	MENU	Displays the menu screen

Memo :

- Tap or drag on the operation area of the touch screen.
- You can search for a specific file by the recording date.
“Searching for a Specific Video/Still Image by Date” (p. 64)
- The recording date and time can be displayed on the screen during playback.
“DISPLAY DATE/TIME” (p. 179)
- Displays the approximate remaining battery power during use.
- While playing back a video being recorded in high-speed recording, pressing the TIME CONTROL switches between normal recording speed and recording speed in high-speed recording.


Adjusting the Volume of Videos

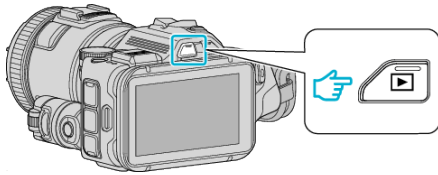
You can use the zoom/volume lever to control the volume.









MARKING PLAYBACK

- The scenes marked while recording the video and the scoring scenes recorded in the game recording mode (by using the smartphone application) can be searched.
- Switch to the mark playback mode by tapping “MARK PLAY” on the video playback screen.

1 Press the  button to select the playback mode.



- Check if the playback mode is .
- If the mode is  still image, tap  on the playback screen to display the mode switching screen. Tap  to switch the mode to video. (You can also use the /  button on this unit.)

2 Tap “MARK PLAY” to open the mark playback mode.

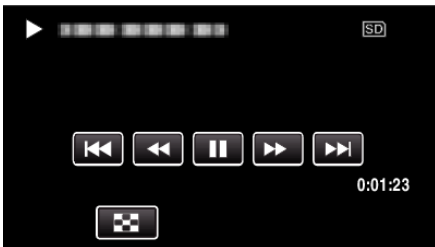


3 In the thumbnail file which lists videos with marks, tap the video to play back.



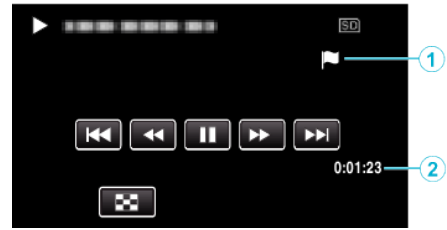
- List of recorded game is displayed when “GAME” is selected. “GAME PLAYBACK” (see p. 57)
- “EDIT INDEX MARKING” screen is displayed when “EDIT” is selected. “EDIT INDEX MARKING” (see p. 58)

4 Marking playback starts.



Indications during the Marking Playback

During the Normal Marking Playback

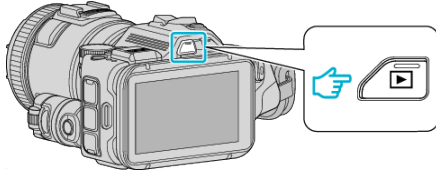


	Display	Description
①	Mark Icon	Indicates that the current scene is marked. There are 3 types of icons.
②	Elapsed Time	Displayed the playback time of the video.

GAME PLAYBACK

- Game playback is a function to playback the goal scenes and/or marked scene that is recorded by marking function of this unit or smartphone application "Wireless sync."
- To start, tap "MARK PLAY" on the playback screen.
- For the game recording mode, refer to "Marking the Video While Recording" (p. 42) or "Game Score Settings" (p. 137) .

1 Press the button to select the playback mode.



- Check if the playback mode is .
- If the mode is still image, tap on the playback screen to display the mode switching screen. Tap to switch the mode to video. (You can also use the / button on this unit.)

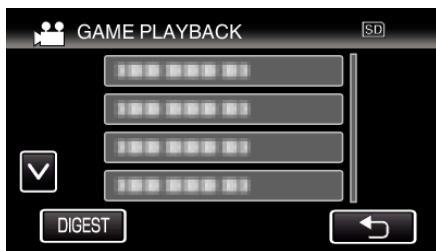
2 Tap "MARK PLAY" to open the mark playback mode.



3 Tap "GAME" to select the game playback mode.



4 Tap the recorded game.



- Tap DIGEST to extract the score and marked scenes from the game, and to start a DIGEST playback.

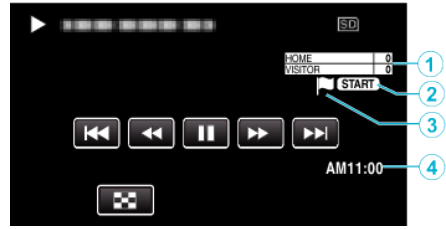
5 Playback of the selected game starts.



- Playback stops after all the scenes are played back.

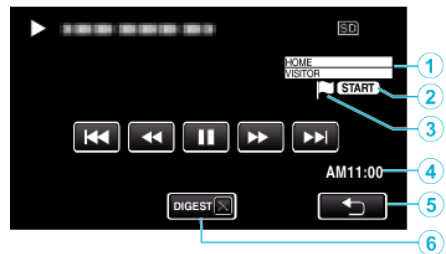
Indications during the Game Playback

■ **During the Normal Game Playback**



	Display	Description
①	Score	Displays the score of the game.
②	Game playback mode	Indicates that the game playback is in progress.
③	Mark Icon	Indicates that the current scene is marked. There are 5 types of icons.
④	Recorded time	Displays the time that the video is recorded.

■ **During the DIGEST/Game Playback**




	Display	Description
①	Score	Displays the score of the game.
②	Game playback mode	Indicates that the game playback is in progress.
③	Mark Icon	Indicates that the current scene is marked. There are 5 types of icons.
④	Recorded time	Displays the time that the video is recorded.
⑤	↶ Button	Returns to the previous screen
⑥	DIGEST Playback Cancel Button	Moves to the normal mark playback.

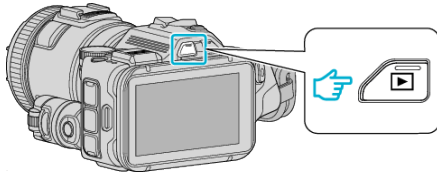
EDIT INDEX MARKING







When playing back the marked videos, the following settings can be edited.

Setting	Details
EDIT TEAM NAME	Edits the team name.
ADD/DELETE	Adds/deletes the marks.
P/B TIME PER SCENE	Sets the playback time per scene.
P/B POSITION ADJUST	Adjusts the marked position.

EDIT TEAM NAME

- 1 Press the  button to select the playback mode.



- Check if the playback mode is .
- If the mode is  still image, tap  on the playback screen to display the mode switching screen. Tap  to switch the mode to video. (You can also use the /  button on this unit.)

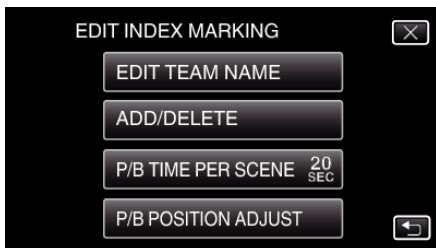
- 2 Tap "MARK PLAY" to open the mark playback mode.



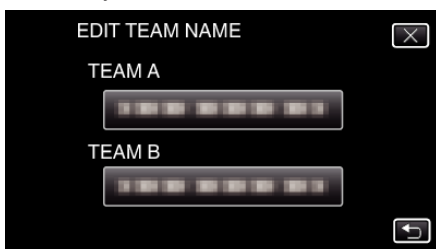
- 3 Tap "EDIT".



- 4 Tap "EDIT TEAM NAME".



- 5 Tap the team name you want to edit.



- 6 Edit the team name.

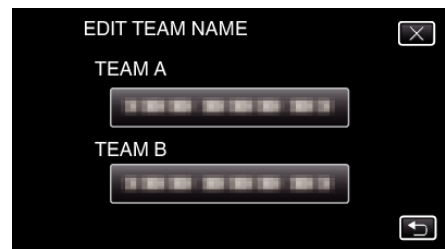




- Tap on the on-screen keyboard to enter characters. The character changes with every tap. "ABC", for example, enter "A" by tapping once, "B" by tapping twice, or "C" by tapping 3 times.
- Tap "DELETE" to delete a character.
- Tap "CANCEL" to exit.
- Tap ← or → to move one space to the left or right.

- 7 Tap "SET".




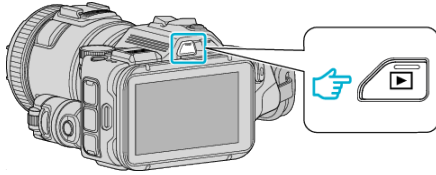
- 8 Tap another team name if you want to continue editing the team names.









- Tap  to return to the previous screen.
- Tap  to exit the mark editing menu.

ADD/DELETE

1 Press the  button to select the playback mode.



- Check if the playback mode is .
- If the mode is  still image, tap  on the playback screen to display the mode switching screen.
Tap  to switch the mode to video. (You can also use the /  button on this unit.)

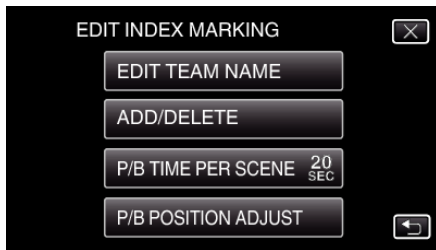
2 Tap "MARK PLAY" to open the mark playback mode.






3 Tap "EDIT".

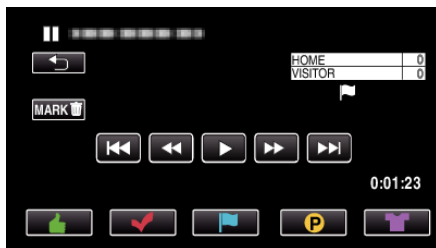






4 Tap "ADD/DELETE".




- Tap  to return to the previous screen.
- Tap  to exit the mark editing menu.

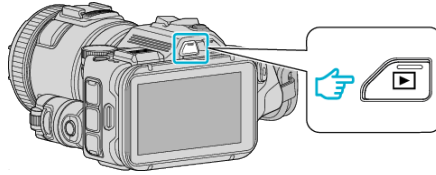
5 Tap  to start playback.









- Tap the desired mark button at the scene you want to add a mark.
- To delete a mark, tap the "MARK " button while the "MARK  is displayed.
-  or  cannot be set for video files other than game.
- Marks can be added/deleted only in the last scene of a recorded video.

P/B TIME PER SCENE

1 Press the  button to select the playback mode.



- Check if the playback mode is .
- If the mode is  still image, tap  on the playback screen to display the mode switching screen.
Tap  to switch the mode to video. (You can also use the /  button on this unit.)

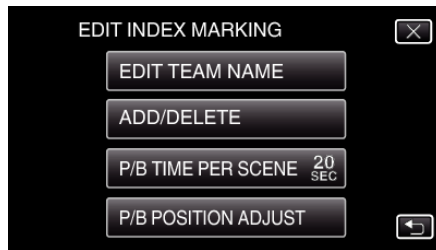
2 Tap "MARK PLAY" to open the mark playback mode.



3 Tap "EDIT".





4 Tap "P/B TIME PER SCENE".




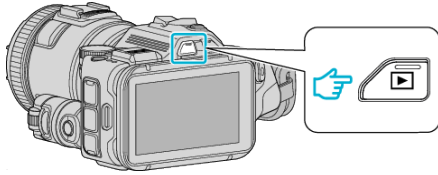
5 Select the playback time per scene.








- Tap  to return to the previous screen.
- Tap  to exit the menu.

P/B POSITION ADJUST

1 Press the  button to select the playback mode.



- Check if the playback mode is .
- If the mode is , tap  on the playback screen to display the mode switching screen. Tap  to switch the mode to video. (You can also use the  button on this unit.)

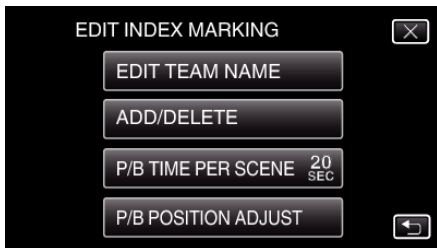
2 Tap “MARK PLAY” to open the mark playback mode.



3 Tap “EDIT”.

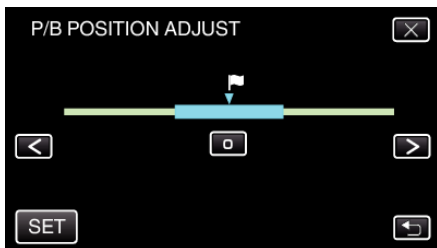




4 Tap “P/B POSITION ADJUST”.



- Proceed to step 5 if “P/B TIME PER SCENE” is selected, and proceed to step 6 if “P/B POSITION ADJUST” is selected.


5 Adjust the playback position.



- Shift the playback position back and forth. Playback time that is set in “P/B TIME PER SCENE” is unchanged.
- Adjust by using < or >, then tap “SET”.
- Tap  to return to the previous screen.
- Tap  to exit the menu.


Indications during the Marking Edition

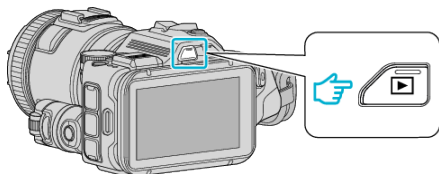








	Display	Description
①	 Button	Returns to the previous screen
②	Mark Delete button	Deletes the mark that is currently displayed.
③	Playback Mark Button	Enter a mark while playback is in progress.
④	Elapsed Time	Displayed the playback time of the video.
⑤	Score	Displays the score of the game (displayed only if the score is registered.)

DIGEST PLAYBACK

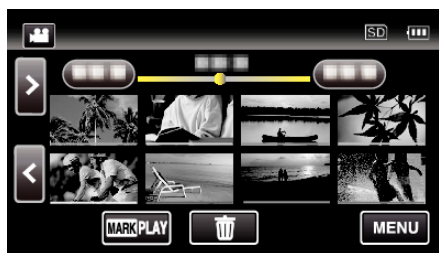
You can play back a digest of recorded videos (Digest Playback). This is useful for checking the content of videos quickly. (For videos recorded in AVCHD format)

1 Press the  button to select the playback mode.



- Check if the playback mode is .
- If the mode is  still image, tap  on the playback screen to display the mode switching screen. Tap  to switch the mode to video. (You can also use the /  button on this unit.)

2 Tap "MENU".



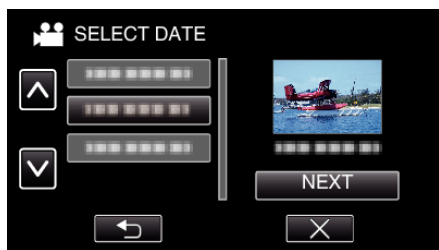
3 Tap "PLAYBACK SETTING".





4 Tap "DIGEST PLAYBACK".



5 Tap to select a date for Digest Playback.



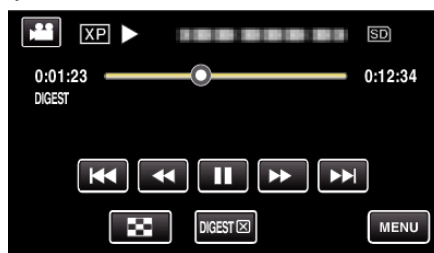
- After selecting a date, tap "NEXT".
- When "ALL" is tapped, Digest Playback will be performed for all the dates.
- Tap  to exit the menu.
- Tap  to return to the previous screen.



6 Select the Digest Playback time



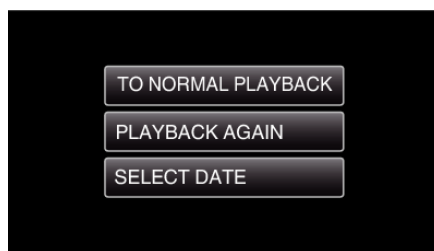
- The time display of Digest Playback varies according to the recording time.
- When it takes time (more than 2 seconds) for "DIGEST PLAYBACK" to start after selecting Digest Playback time, a progress status will be displayed.
- The Digest Playback time is only a guide.

7 Digest Playback starts.



- Tap  to pause.
- Tap  to return to the index screen.
- Tap "DIGEST X" to return to the normal playback screen.
- Operations During Video Playback "Operation Buttons for Video Playback" (p. 54)


8 Digest playback stops automatically, or display the next screen by tapping "MENU".

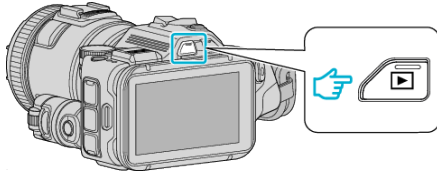







- TO NORMAL PLAYBACK: start normal playback.
- PLAYBACK AGAIN: start the digest playback again.
- SELECT DATE: return to step 5.

PLAYBACK OTHER FILE

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.
(Video files in AVCHD only)

1 Press the  button to select the playback mode.



- Check if the playback mode is .
- If the mode is  still image, tap  on the playback screen to display the mode switching screen.
Tap  to switch the mode to video. (You can also use the  button on this unit.)

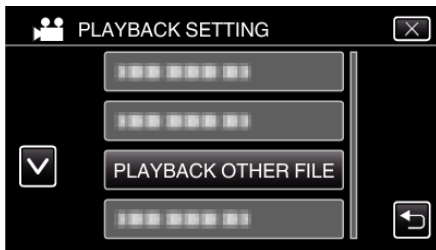
2 Tap "MENU".



3 Tap "PLAYBACK SETTING".



4 Tap "PLAYBACK OTHER FILE".



5 Tap on the file to start playback.




"Operation Buttons for Video Playback" (p. 54)

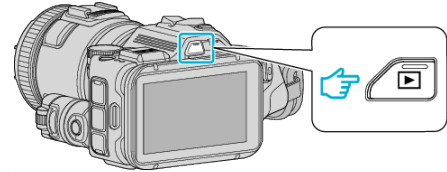
Memo :






- 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.

Playing Back Still Images

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



1 Press the  button to select the playback mode.



- Check if the playback mode is .
- If the mode is  video, tap  on the playback screen to display the mode switching screen.
Tap  to switch the mode to still image. (You can also use the  button on this unit.)

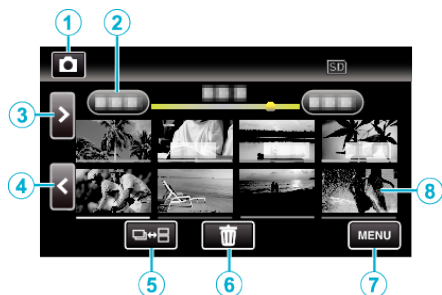
2 Tap on the file to start playback.



- Tap  to return to the index screen.
-  appears on the last image played back.
- Lines in different colors are displayed under the thumbnail display to distinguish the recording date.

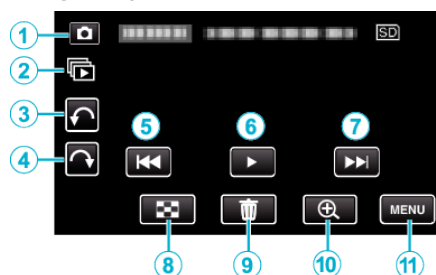
Operation Buttons for Still Image Playback

During Index Screen Display



	Display	Description
①	Video/Still Image Mode 📺/📷	Switches between video and still image modes.
②	Date	Moves to the previous/next date
③	>	Displays the next index screen (thumbnail display) • You can perform the same operation with the zoom lever.
④	<	Displays the previous index screen (thumbnail display) • You can perform the same operation with the zoom lever.
⑤	📷↔️📺	Switches between the group or full index screen displays.
⑥	🗑️	Displays the index screen (thumbnail display) to perform deletion
⑦	MENU	Displays the menu screen
⑧	File (Still Image)	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)

During Still Image Playback



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

	Display	Description
①	Video/Still Image Mode 📺/📷	Switches between video and still image modes.
②	📷	Continuous playback of still images that are recorded with the continuous shooting mode.
③	↶	Rotates to the left (rotates by -90° with each tap)
④	↷	Rotates to the right (rotates by 90° with each tap)
⑤	⏮	Returns to the previous still image • You can perform the same operation with the zoom lever. • The same operation can be performed with the adjustment dial.
⑥	▶/⏸	Starts/pauses slideshow • The same operation can be performed with the SET button. "Slideshow Playback" (📖 p. 64)
⑦	⏭	Advances to the next still image • You can perform the same operation with the zoom lever. • The same operation can be performed with the adjustment dial.
⑧	📷	Returns to index screen
⑨	🗑️	Deletes the currently displayed still image.
⑩	🔍	Enlarges the still image that is being played back.
⑪	MENU	Displays the menu screen
-	◀	Starts reverse playback. • Displayed during slideshow playback.

Memo :

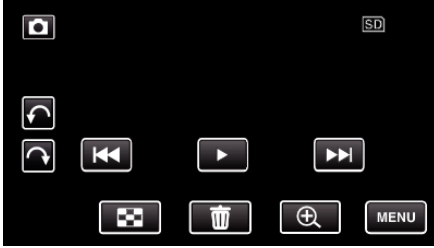
- Tap or drag on the operation area of the touch screen.
- You can rotate a still image 90° to the right or left during playback. Rotation applies to the on-screen display only.
- You can search for a specific file by the recording date. This is useful when searching from a large number of files. "Searching for a Specific Video/Still Image by Date" (📖 p. 64)

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.

Slideshow Playback

Still images can be played back in a slideshow.
Tap **▶** during still image playback to start the slideshow.

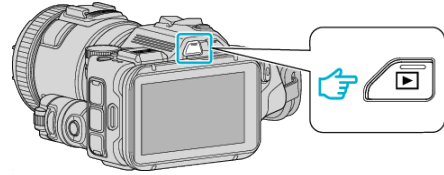


“Operation Buttons for Still Image Playback” (p. 63)

Searching for a Specific Video/Still Image by Date

When there is a large number of recorded videos and still images, it is difficult to look for the desired file from the index screen. Use the search function to find the file you want. You can search and play videos or still images according to recording dates.

- 1 Press the **▶** button to select the playback mode.

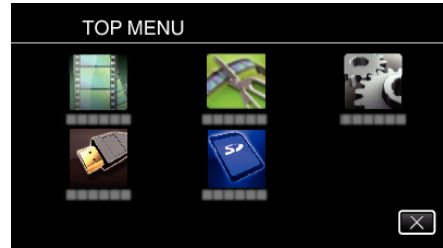


- 2 Tap “MENU”.

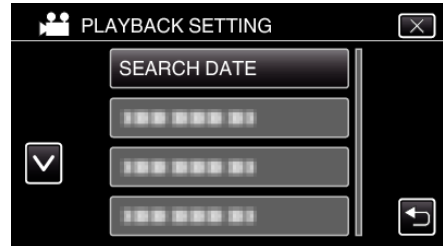


- Searching can be performed in both the video and still image modes.
*The image shows the video mode.

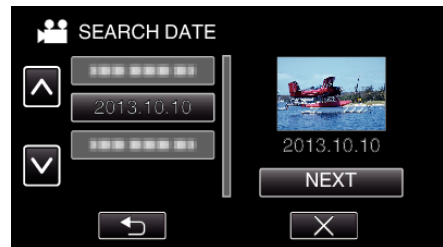
- 3 Tap “PLAYBACK SETTING”.



- 4 Tap “SEARCH DATE”.

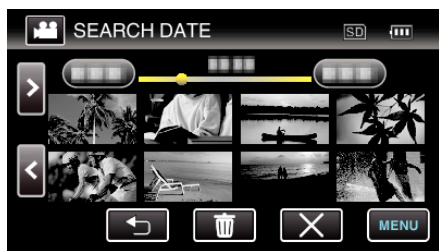


- 5 Tap a recording date, then tap “NEXT”.



- Tap again to cancel the selected date.

6 Tap on the file to start playback.



- You can select videos in the video mode and still images in the still image mode.
- Only the files recorded on the selected date are displayed.
- Tap X to stop searching and return to the index screen (thumbnail display).

Deleting Files of a Selected Date : _____
 Tap on the index screen (thumbnail display) to delete unwanted files.
 "Deleting Unwanted Files" (☞ p. 69)

Connecting to and Viewing on TV

You can connect this unit to a TV for playback. The image quality on TV varies with the type of TV and the connecting cable. Select the connector that best suits your TV.

- Refer also to the instruction manual of the TV in use.
 "Connecting via the HDMI Mini Connector" (☞ p. 66)
 "Connecting via the AV Connector" (☞ p. 67)
- To display the date and time on TV, set both "DISPLAY DATE/TIME" and "DISPLAY ON TV" to "ON".
 "DISPLAY DATE/TIME" (☞ p. 179)
 "DISPLAY ON TV" (☞ p. 185)

Unnatural Displays on TV

Trouble	Action
Images do not appear on the TV properly.	<ul style="list-style-type: none"> • Disconnect the cable and connect again. • Turn off and on this unit again. • Images may not appear properly when the remaining battery power is low. Use an AC adapter.
Images are projected vertically on the TV.	<ul style="list-style-type: none"> • Set "VIDEO OUTPUT" in the "CONNECTION SETTINGS" menu to "4:3". "VIDEO OUTPUT" (☞ p. 185)
Images are projected horizontally on the TV.	<ul style="list-style-type: none"> • Adjust the TV's screen accordingly.
The color of images looks strange.	<ul style="list-style-type: none"> • Adjust the TV's screen accordingly.
HDMI-CEC functions do not work properly, and the TV does not work in conjunction with this unit.	<ul style="list-style-type: none"> • TVs may operate differently depending on the specifications, even if they are HDMI-CEC compliant. Therefore, the HDMI-CEC functions of this unit cannot be guaranteed to operate in combination with all the TVs. In such cases, set "HDMI CONTROL" to "OFF". "HDMI CONTROL" (☞ p. 185)
The language on the display changed.	<ul style="list-style-type: none"> • It may occur when you connect this unit to a TV with different language setting using an HDMI mini cable.

Caution : _____

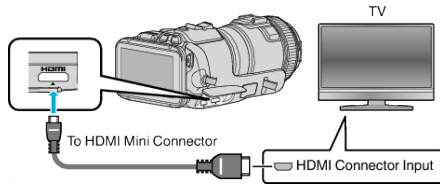
- Do not remove the recording medium or perform any other operation (such as turning off the power) while accessing files. Also, be sure to use the provided AC adapter, as the data on the recording medium may be corrupted if the battery becomes exhausted during operation. If the data on the recording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

Connecting via the HDMI Mini Connector

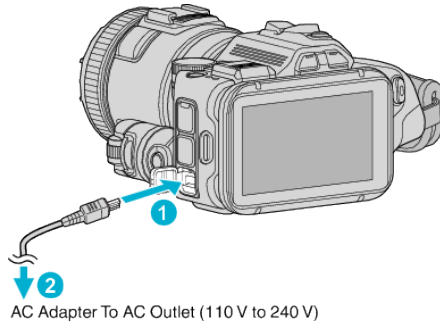
If you are using an HDTV, you can play back in HD quality by connecting to the HDMI mini connector.

- Use a High Speed HDMI mini cable as the HDMI mini cable when not using the provided one.
- Refer also to the instruction manual of the TV in use.

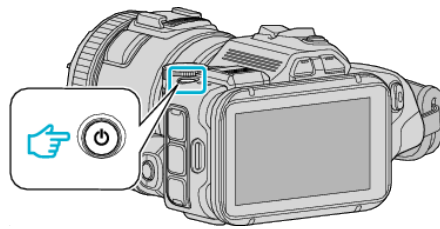
1 Connect to a TV.



2 Connect the AC adapter to this unit.



3 Turn on the power.



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



5 Play back a file.



“Playing Back Videos” (p. 52)

“Playing Back Still Images” (p. 62)

Memo :

- Change the settings in “HDMI OUTPUT” according to the connection. “HDMI OUTPUT” (p. 185)
- When connected to the TV via the HDMI mini cable, images and sounds may not be output properly depending on the TV connected. In such cases, perform the following operations.
 - 1) Disconnect the HDMI mini cable and connect it again.
 - 2) Turn off and on this unit again.
- For questions about the TV or method of connection, contact your TV's manufacturer.

Operating in Conjunction with TV via HDMI

Connecting this unit to an HDMI-CEC enabled TV using the HDMI mini cable allows linked operations with the TV to be performed.

- HDMI-CEC (Consumer Electronics Control) is an industry standard that enables interoperability between HDMI-CEC compliant devices that are connected via HDMI cables.

Memo :

- Not all HDMI control devices comply with the HDMI-CEC standard. The HDMI control function of this unit will not work when connected to these devices.
- This unit is not guaranteed to operate with all HDMI-CEC enabled devices.
- Depending on the specifications of each HDMI-CEC enabled device, some functions may not work with this unit. (For details, refer to the instruction manual of your TV.)
- Unintended operations may occur with some connected devices. In these cases, set "HDMI CONTROL" to "OFF".

"HDMI CONTROL" (p. 185)

Preparations

- Connect an HDMI mini cable between this unit and the TV.
"Connecting via the HDMI Mini Connector" (p. 66)
- Turn on the TV and set the HDMI-CEC related setting to "ON". (For details, refer to the instruction manual of the TV.)
- Set "HDMI CONTROL" in the CONNECTION SETTINGS menu to "ON".
"HDMI CONTROL" (p. 185)

Operation Method 1

- 1 Turn on this unit.
- 2 Select the playback mode.
- 3 Connect the HDMI mini cable.
 - TV turns on automatically and switches to HDMI input mode when this unit is turned on.

Operation Method 2

- 1 Turn off the TV.
 - This unit turns off automatically.

Memo :

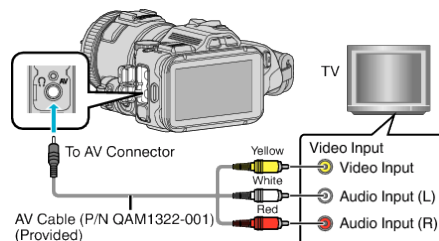
- Depending on the TV connected, the display language of this unit will automatically switch to the language that is selected for the TV when this unit is turned on.
(This is applicable only if this unit supports the language selected for the TV.) To use this unit with a language that differs from the display language of the TV, set "HDMI CONTROL" to "OFF".
- The display language of the TV will not switch automatically, even if the display language of this unit is changed.
- These functions may not work correctly when devices such as amplifier and selector are connected. Set "HDMI CONTROL" to "OFF".
- If HDMI-CEC does not work properly, turn off and on this unit again.

Connecting via the AV Connector

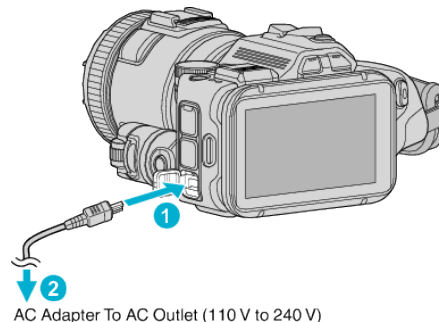
To playback videos on TV, connect the provided AV cable (P/N QAM1322-001) to the AV terminal of this unit.

- Refer also to the instruction manual of the TV in use.

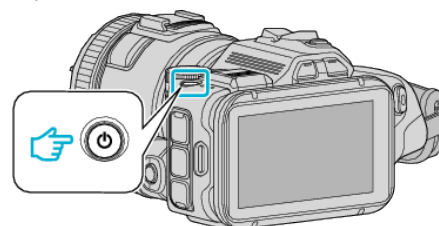
- 1 Connect to a TV.



- 2 Connect the AC adapter to this unit.



- 3 Turn on the power.



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



5 Play back a file.



“Playing Back Videos” (☞ p. 52)

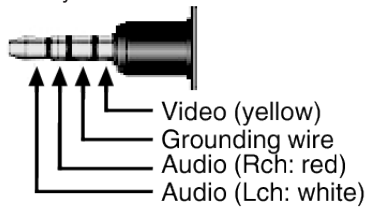
“Playing Back Still Images” (☞ p. 62)

Memo :

- For questions about the TV or method of connection, contact your TV's manufacturer.
- AV cable (P/N: QAM1322-001)

Wiring specifications (for video/audio) of the 4-pole mini plug are described in the following.

For purchasing, consult your nearest JVC service center.



Deleting Unwanted Files

Delete unwanted videos and still images when the space in the recording media is running out.

Doing so frees up more space in the recording media.

“Deleting the Currently Displayed File” (p. 69)

“Deleting Selected Files” (p. 69)

Memo :

- Deleted files cannot be restored.
 - Files that are protected cannot be deleted.
Release protection before deleting the file.
- “Protecting Files” (p. 70)
- Be sure to back up important files on a computer.
- “Backing Up All Files” (p. 78)

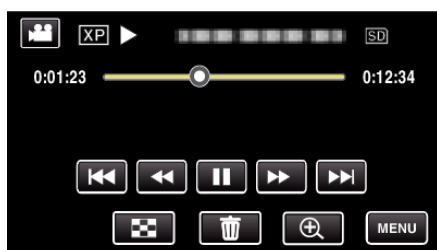
Deleting the Currently Displayed File

Deletes the currently displayed file.

Caution :

- Deleted files cannot be restored.



- 1 Tap .



- While the video mode is shown in the image, the same operations apply for the still image mode.

- 2 Tap “YES”.




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

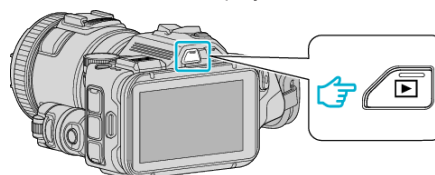
Deleting Selected Files











Deletes the selected files.

Caution :

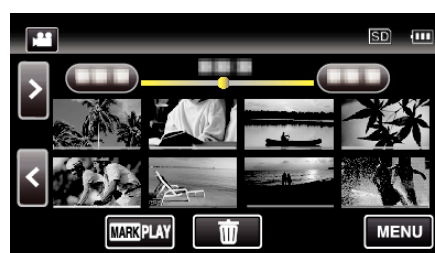
- Deleted files cannot be restored.

- 1 Press the  button to select the playback mode.

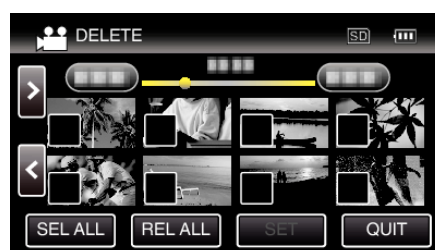




- Tap  or  to select the video or still image mode.
 - Tap  or  on the recording screen to display the mode switching screen.
Tap  to switch to the video mode .
 - Tap  to switch to the still image mode .
- (You can also use the  /  button on this unit.)

- 2 Tap .

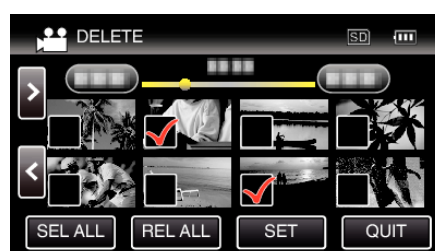


- 3 Tap on the files to delete.

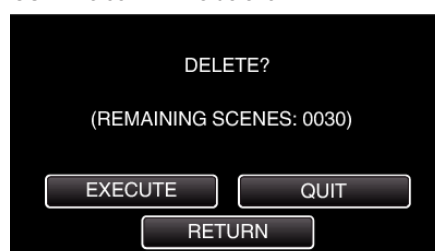


-  appears on the selected files.
To remove  from a file, tap on the file again.
- Tap “SEL ALL” to select all files.
- Tap “REL ALL” to release all selections.

- 4 Tap “SET”.



- 5 Tap “EXECUTE” to confirm the deletion.



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

Protecting Files

Prevent important videos/still images from being deleted accidentally by protecting them.

“Protecting/Releasing Protection of the Currently Displayed File”

(☞ p. 70)

“Protecting/Releasing Protection of Selected Files” (☞ p. 70)

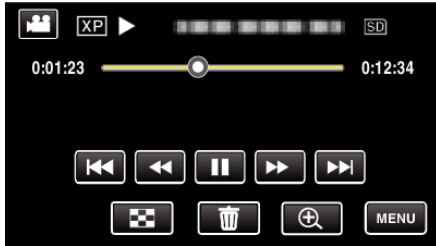
Caution :

- When the recording media is formatted, even the protected files will be deleted.

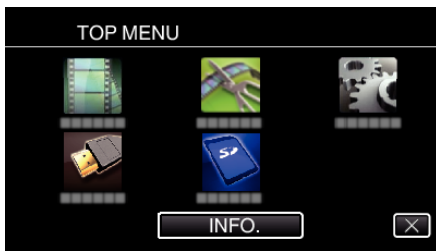
Protecting/Releasing Protection of the Currently Displayed File

Protects or releases protection of the currently displayed file.

- 1 Tap “MENU”.



- 2 Tap “EDIT”.



- 3 Tap “PROTECT/CANCEL”.



- 4 Tap “YES”.

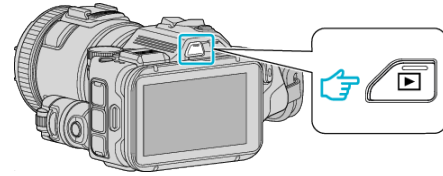


- Tap ◀◀/▶▶ to select the previous or next file.
- After setting, tap “OK”.

Protecting/Releasing Protection of Selected Files

Protects or releases protection of the selected files.

- 1 Press the [] button to select the playback mode.

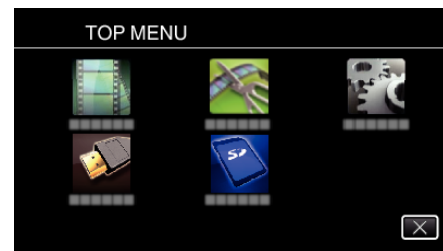


- Tap [] or [] to select the video or still image mode.
- Tap [] or [] on the recording screen to display the mode switching screen.
Tap [] to switch to the video mode [].
Tap [] to switch to the still image mode [].
(You can also use the []/[] button on this unit.)

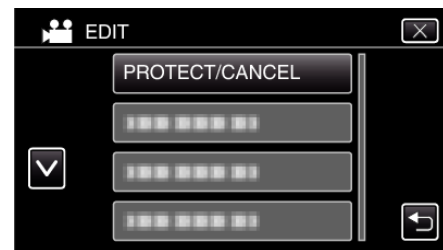
- 2 Tap “MENU”.



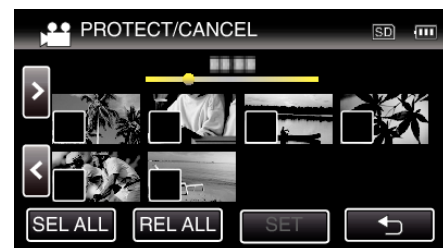
- 3 Tap “EDIT”.



- 4 Tap “PROTECT/CANCEL”.

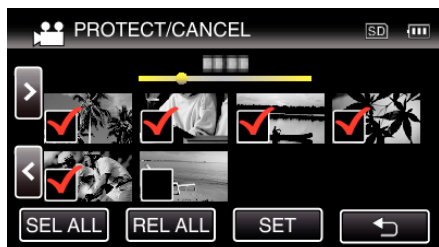


- 5 Tap on the files to protect or release protection of.



- ✓ appears on the selected files.
To remove ✓ from a file, tap on the file again.
- [] and ✓ are 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.

- 6 Tap “SET” to complete the setting.

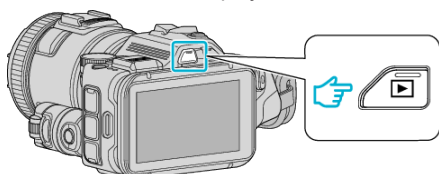


- Protect marks appear on the selected files.
Protect marks disappear from the deselected files.

Capturing a Still Image from One Scene in Video

You can capture still images of the scenes you like in the recorded videos.

- 1 Press the button to select the playback mode.

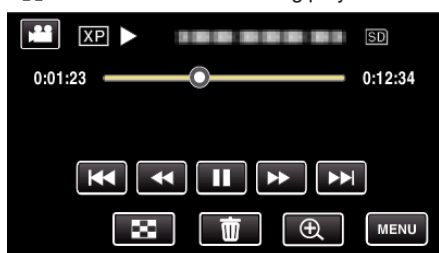


- Check if the playback mode is .
- If the mode is still image, tap on the playback screen to display the mode switching screen.
Tap to switch the mode to video. (You can also use the / button on this unit.)

- 2 Tap on the desired video.

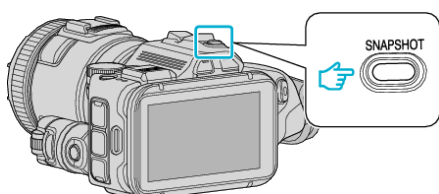


- 3 Tap pause at the desired scene during playback.



- After pausing the video, you can fine-tune the point to capture by tapping forward slow-motion and reverse slow-motion .

- 4 Press the SNAPSHOT button.



Memo : _____

- Still images are captured with a size of 1920×1080.

■ Select “IMAGE CAPTURE TYPE”.

Make a selection at “IMAGE CAPTURE TYPE” in the “PLAYBACK SETTING” menu.

Item	Details
1 SHOT	Captures 1 frame of still image.
9 CONTINUOUS SHOTS	Shoots 9 frames of still images continuously.
9 MULTI	Shoots 9 frames of still images continuously. These images are displayed in one screen, and considered as one still image.

If “9 CONTINUOUS SHOTS” or “9 MULTI” is selected toward the end of the video being played back, the numbers of captured still images may be less than 9.

■ Select “CAPTURE INTERVAL”.


Make a selection at “CAPTURE INTERVAL” in the “PLAYBACK SETTING” menu.

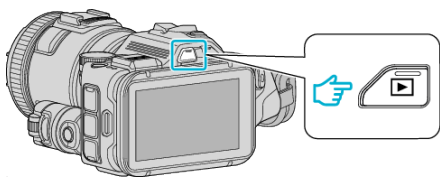
Item	Details
2 FRAMES	Captures in an interval of 2 frames.
4 FRAMES	Captures in an interval of 4 frames.
8 FRAMES	Captures in an interval of 8 frames.
15 FRAMES	Captures in an interval of 15 frames.
30 FRAMES	Captures in an interval of 30 frames.






Capturing a Required Part in the Video (TRIMMING)

Select the required part of a video and save it as a new video file.

- The original video remains in its existing location.

1 Press the  button to select the playback mode.

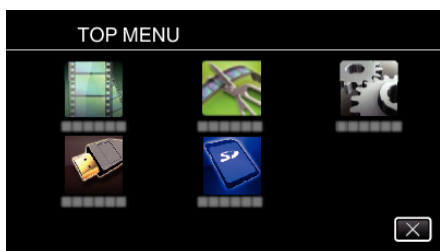


- Check if the playback mode is .
- If the mode is , tap  on the recording screen to display the mode switching screen. Tap  to switch the mode to video. (You can also use the  button on this unit.)

2 Tap "MENU".



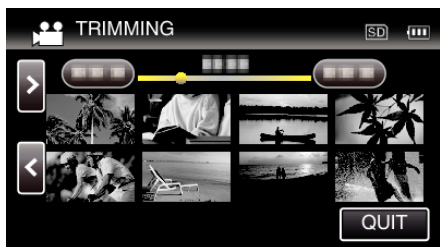
3 Tap "EDIT".




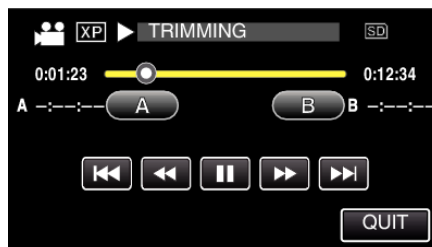
4 Tap "TRIMMING".





5 Tap the video to edit.

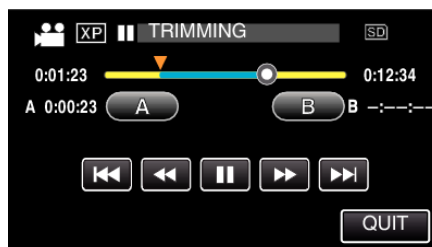


6 Tap  to pause playback at the desired start point, then tap "A".



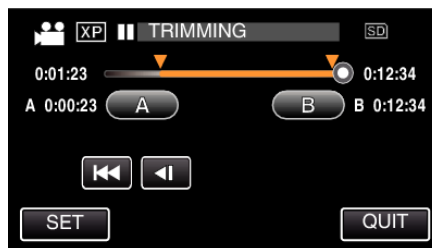
- When "A" is tapped, the start point is set.
- After setting the start point, tap  to continue playback.

7 Tap  to pause playback at the desired end point, then tap "B".



- When "B" is tapped, the end point is set.
- To reset the start or end point, tap "A" or "B" at the desired scene (position).

8 Tap "SET".



- When "SET" is tapped, the trimming area is confirmed.

9 Tap "YES".



- After copying, tap "OK".
- When copying finishes, the copied file is added to the index screen.

Memo : _____

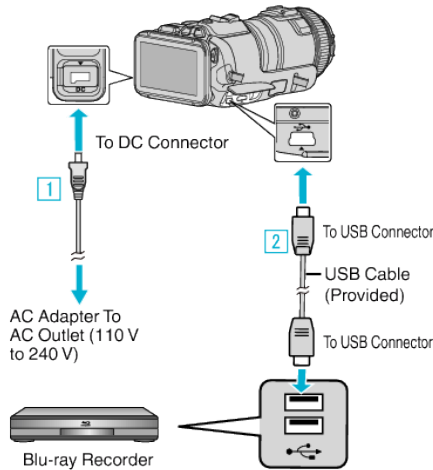
- The division point may deviate slightly from the selected scene.

Creating a Disc Using a Connected Blu-ray Recorder

You can create discs using a Blu-ray recorder by connecting it to this unit using a USB cable.

1 Connect to a Blu-ray recorder.

- 1 Turn on the power after connecting the AC adapter to the DC connector, and plugging in the power.
- 2 Connect this unit and Blu-ray recorder by using the provided USB cable.



2 Tap "CONNECT TO OTHER".



- The following screen is displayed after the camera operation is completed.



- Operations are to be performed on the Blu-ray recorder after the screen switches.

3 Perform dubbing on the Blu-ray recorder.

- Refer also to the instruction manual of the Blu-ray recorder.
- After dubbing is complete, disconnect the USB cable. Operations cannot be performed on this unit until the USB cable is disconnected.

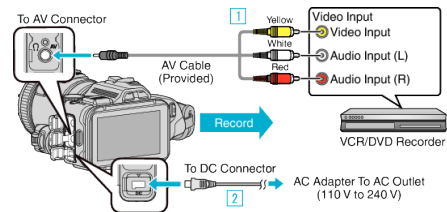
Dubbing Files to a Disc by Connecting to a DVD Recorder

You can dub videos in standard quality by connecting to a DVD recorder.

- Refer also to the instruction manuals of the TV and DVD recorder.

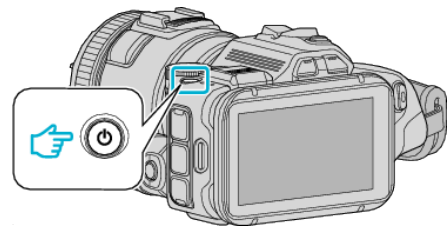
1 Remove the AC adapter and battery pack from this unit.

2 Connect to a DVD recorder.

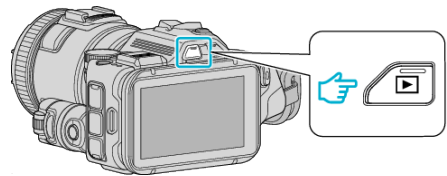


- 1 Connect using the provided AV cable.
- 2 Connect the AC adapter to this unit.
 - Be sure to use the supplied AC adapter.

3 Turn on the power.



4 Press the [▶] button to select the playback mode.



- Check if the playback mode is .
- If the mode is still image, tap on the playback screen to display the mode switching screen. Tap to switch the mode to video. (You can also use the button on this unit.)

5 Prepare the TV/DVD recorder for recording.

- Switch to a compatible external input.
- Insert a disc (DVD-R, etc.) into the DVD recorder.

6 Prepare this unit for playback.

- Set "VIDEO OUTPUT" in the "CONNECTION SETTINGS" menu to the aspect ratio ("4:3" or "16:9") of the connecting TV. "VIDEO OUTPUT" (☞ p. 185)

7 Start recording.

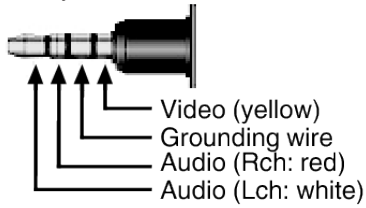
- Start playback on this unit and press the record button on the recorder.
- "Playing Back Videos" (☞ p. 52)
- After playback is complete, stop the recording.

Memo :

- AV cable (P/N: QAM1322-001)

Wiring specifications (for video/audio) of the 4-pole mini plug are described in the following.

For purchasing, consult your nearest JVC service center.



Memo :

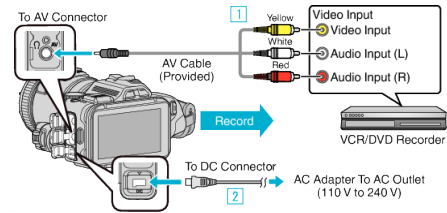
- To include the recording date and time during dubbing, set “DISPLAY DATE/TIME” in the “PLAYBACK SETTING” menu to “ON”. Or, set “DISPLAY ON TV” in the “CONNECTION SETTINGS” menu to “ON”.

Dubbing Files to a VHS Tape by Connecting to a VCR

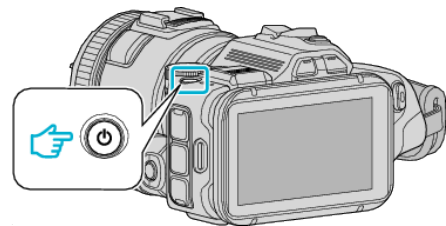
You can dub videos in standard quality by connecting to a VCR.

- Refer also to the instruction manuals of the TV and VCR.

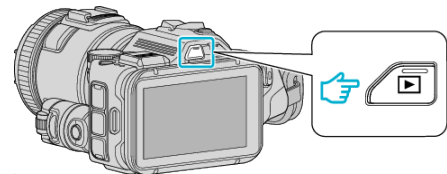
- 1 Remove the AC adapter and battery pack from this unit.
- 2 Connect to a VCR/DVD recorder.



- 1 Connect using the provided AV cable.
- 2 Connect the AC adapter to this unit.
 - Be sure to use the supplied AC adapter.
- 3 Turn on the power.



- 4 Press the button to select the playback mode.



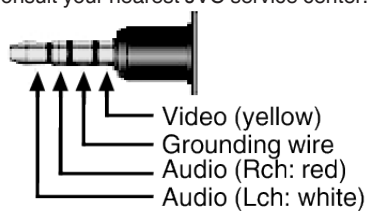
- Check if the playback mode is .
 - If the mode is still image, tap on the playback screen to display the mode switching screen. Tap to switch the mode to video. (You can also use the button on this unit.)
- 5 Prepare the TV/VCR for recording.
 - Switch to a compatible external input.
 - Insert a video tape.
 - 6 Prepare this unit for playback.
 - Set “VIDEO OUTPUT” in the “CONNECTION SETTINGS” menu to the aspect ratio (“4:3” or “16:9”) of the connecting TV. “VIDEO OUTPUT” (ⓘ p. 185)
 - 7 Start recording.
 - Start playback on this unit and press the record button on the recorder.
 - “Playing Back Videos” (ⓘ p. 52)
 - After playback is complete, stop the recording.

Memo : _____

- AV cable (P/N: QAM1322-001)

Wiring specifications (for video/audio) of the 4-pole mini plug are described in the following.

For purchasing, consult your nearest JVC service center.



Memo : _____

- To include the recording date and time during dubbing, set "DISPLAY DATE/TIME" in the "PLAYBACK SETTING" menu to "ON". Or, set "DISPLAY ON TV" in the "CONNECTION SETTINGS" menu to "ON".

"DISPLAY DATE/TIME" (☞ p. 179)

"DISPLAY ON TV" (☞ p. 185)

Copying to Windows PC

You can copy files to a computer using the provided software.

Discs can also be created using the computer's DVD or Blu-ray drive.

If the provided software is not installed, this unit will be recognized as an external storage when connected.

Memo :

- To record to discs, a recordable DVD or Blu-ray drive is required for the computer in use.
- Still images cannot be recorded to discs using the provided software.
- Backing up of files using other softwares is not supported.

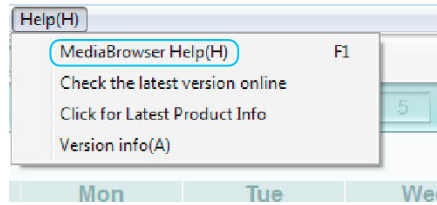
Trouble with Using the Provided Software MediaBrowser

Consult the customer service center below.

- Pixela User Support Center

Telephone	USA and Canada (English): +1-800-458-4029 (toll-free) Europe (UK, Germany, France, and Spain) (English/German/French/Spanish): +800-1532-4865 (toll-free) Other Countries in Europe (English/German/French/Spanish): +44-1489-564-764 Asia (Philippines) (English): +63-2-438-0090 China (Chinese): 10800-163-0014 (toll-free)
Homepage	http://www.pixela.co.jp/oem/jvc/mediabrowser/e/

- For details on how to use the software, refer to "MediaBrowser Help" in the "Help" menu of MediaBrowser.



Verifying System Requirements (Guideline)

Right-click on "Computer" (or "My Computer") in the "Start" menu and select "Properties" to check the following items.

Windows Vista/Windows 7

- Refer to the operating instructions found in the animation on the Detailed User Guide.

Windows XP

- Refer to the operating instructions found in the animation on the Detailed User Guide.

	Windows Vista/Windows 7	Windows XP
OS	Windows Vista 32/64-bit Home Basic or Home Premium (Pre-installed versions only) Service Pack 2 Windows 7 32/64-bit Home Premium (Pre-installed versions only) Service Pack 1	Windows XP Home Edition or Professional (Pre-installed versions only) Service Pack 3
CPU	Intel Core Duo, CPU 1.66 GHz or higher (Intel Core 2 Duo, CPU 2.13 GHz or higher recommended) *To edit or process videos in MP4/MOV/AVCHD(50p) format: CPU Intel Core i7 2.53 GHz or higher is recommended	Intel Core Duo, CPU 1.66 GHz or higher (Intel Core 2 Duo, CPU 2.13 GHz or higher recommended) *To edit or process videos in MP4/MOV/AVCHD(50p) format: CPU Intel Core i7 2.53 GHz or higher is recommended
RAM	At least 2 GB	At least 1 GB

Other requirements

Display: 1024x768 pixels or above (1280x1024 pixels or above recommended)

Graphic: Intel G965 or higher recommended

Memo :

- If your PC does not meet the above system requirements, operations of the provided software cannot be guaranteed.
- There is no guarantee that the operations will work with all computer environments.
- For more information, contact your PC's manufacturer.

Installing the Provided Software

You can display the recorded images in calendar format and perform editing using the provided software.

Windows Vista/Windows 7

- Refer to the operating instructions found in the animation on the Detailed User Guide.
-

Windows XP

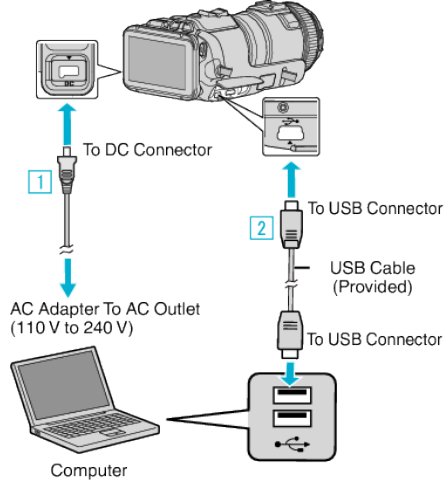
- Refer to the operating instructions found in the animation on the Detailed User Guide.

Backing Up All Files

Before making backup, make sure that enough free space is left in the computer's hard disk (HDD). Backup will not start if there is not enough free space.

1 Connect the USB cable and the AC adapter.

- 1 Turn on the power after connecting the AC adapter to the DC connector, and plugging in the power.
- 2 Connect this unit and computer by using the provided USB cable.



2 Tap "CONNECT TO PC".

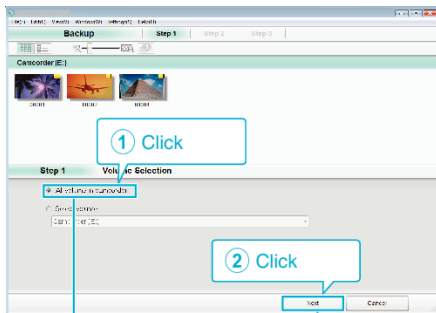


3 Tap "BACK UP".



- Tap X to exit the menu.
- Tap ↩ to return to the previous screen.
- The provided software MediaBrowser starts up on the computer. The subsequent operations are to be performed on the computer.

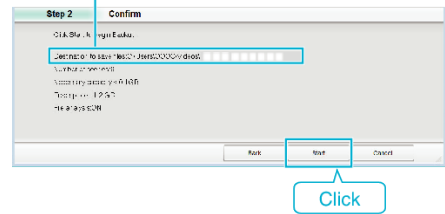
4 Select the source of the image file.



Click "All volume in camcorder"

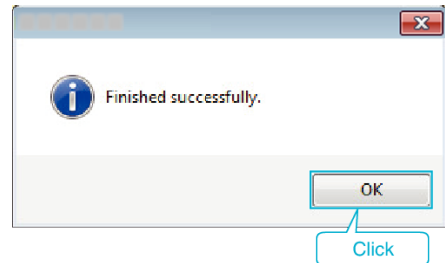
5 Start backup.

Saving Destination (PC)



- Backup starts.

6 After backup is complete, click "OK".



Memo :

- Before making backup, load the SD card in which the videos and still images are stored on this unit.
- If you encounter any problems with the provided software MediaBrowser, please consult the "Pixela User Support Center".

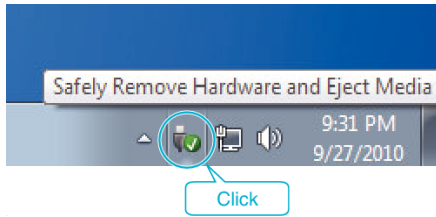
Telephone	USA and Canada (English): +1-800-458-4029 (toll-free) Europe (UK, Germany, France, and Spain) (English/German/French/Spanish): +800-1532-4865 (toll-free) Other Countries in Europe (English/German/French/Spanish): +44-1489-564-764 Asia (Philippines) (English): +63-2-438-0090 China (Chinese): 10800-163-0014 (toll-free)
Homepage	http://www.pixela.co.jp/oem/jvc/mediabrowser/e/

- Delete unwanted videos before making backup. It takes time to back up many videos.

"Deleting Unwanted Files" (p. 69)

Disconnecting this Unit from Computer

- 1 Click "Safely Remove Hardware and Eject Media".



- 2 Click "Safely Remove USB Mass Storage Device".
- 3 (For Windows Vista) Click "OK".
- 4 Remove the USB cable from computer, and turn off the power of this unit.

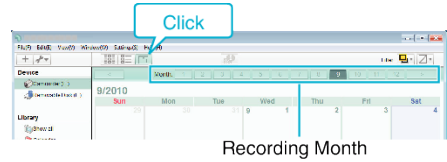
Organizing Files

After backing up your files, organize them by adding labels, such as "Family Trip", etc. This is useful not only for creating discs, but for viewing the files too.

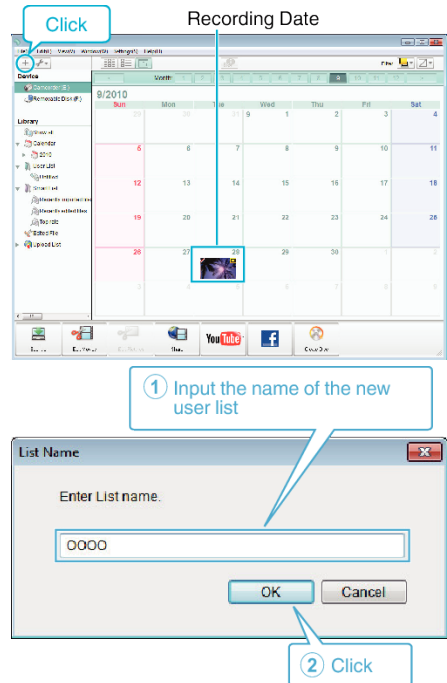
- 1 Double-click on the MediaBrowser icon.
 - The provided software starts up.



- 2 Display the month of the files to organize.



- 3 Create a user list.



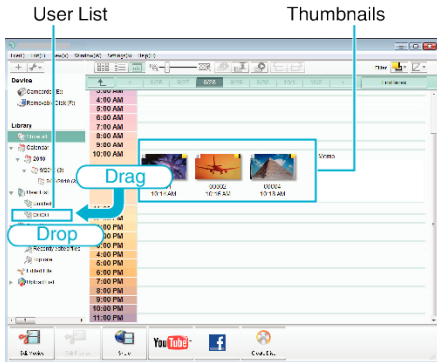
- A new user list is added to the user list library.

Copying

- 4 Click on the recording day.
 - The thumbnails of the files recorded on the day are displayed.



- 5 Register files to the created user list.



Identifying Video or Still Image :

- You can select files using the “SELECT” menu on the top right of the screen.
- Check the video/still image icon on the top right corner of the thumbnail.



Memo :

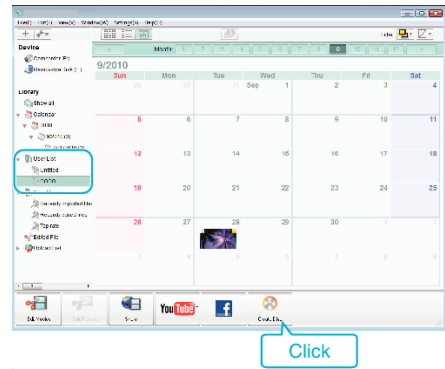
- If you encounter any problems with the provided software MediaBrowser, please consult the “Pixela User Support Center”.

Telephone	USA and Canada (English): +1-800-458-4029 (toll-free) Europe (UK, Germany, France, and Spain) (English/German/French/Spanish): +800-1532-4865 (toll-free) Other Countries in Europe (English/German/French/Spanish): +44-1489-564-764 Asia (Philippines) (English): +63-2-438-0090 China (Chinese): 10800-163-0014 (toll-free)
Homepage	http://www.pixela.co.jp/oem/jvc/mediabrowser/e/

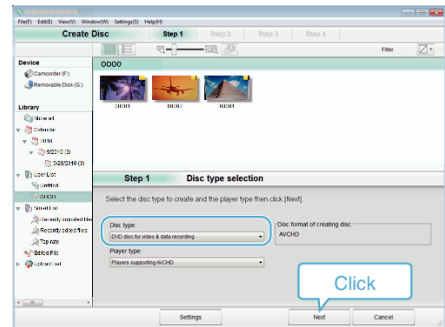
Recording Videos to Discs

Copy the files that are arranged using the user list to discs.

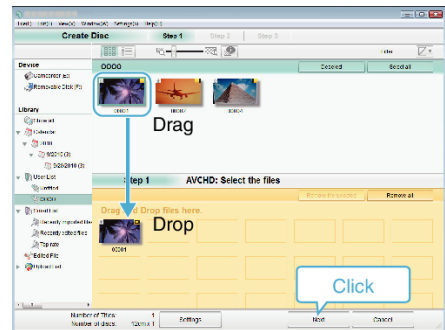
- 1 Insert a new disc into the PC’s recordable DVD drive.
- 2 Select the desired user list.



- 3 Select the disc type.

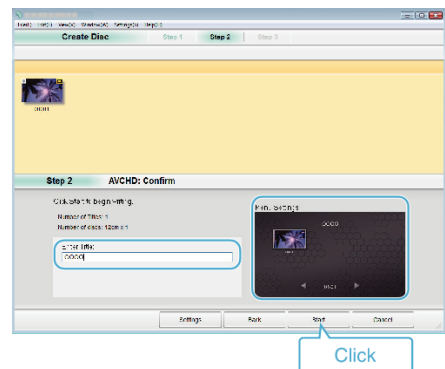


- 4 Select the files to copy to disc in order.



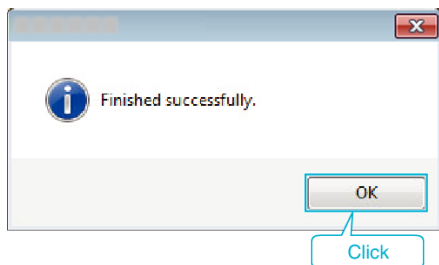
- Click “Settings” to select the disc type.
- Click “Select all” to select all the displayed files.
- After selecting, click “Next”.

- 5 Set the title of the top menu of the disc.



- Click “Settings” to select the menu background.
- After setting, click “Start”.

- 6 After copying is complete, click “OK”.



Memo : _____

- The following types of discs can be used on the provided software MediaBrowser.
 - DVD-R
 - DVD-R DL
 - DVD-RW
 - DVD+R
 - DVD+R DL
 - DVD+RW
- The following formats are supported by the provided software MediaBrowser.
 - AVCHD
 - DVD-Video*

*To create DVD-Video discs, it is necessary to install the additional software. For details, refer to the Pixela homepage.

- Use MediaBrowser Player to play back an AVCHD disc. Refer to the help file of the provided MediaBrowser software to operate.
- To view the help file of MediaBrowser, select "Help" from the MediaBrowser's menu bar or press F1 on the keyboard.
- If you encounter any problems with the provided software MediaBrowser, please consult the "Pixela User Support Center".

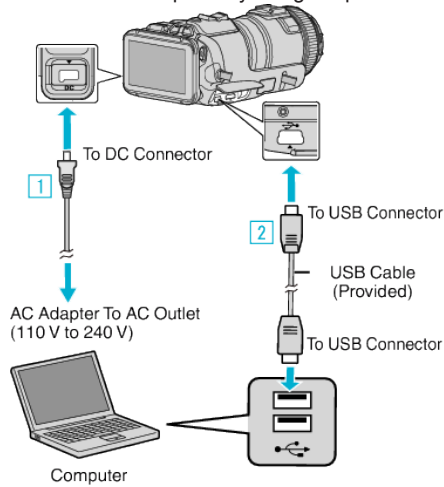
Telephone	USA and Canada (English): +1-800-458-4029 (toll-free) Europe (UK, Germany, France, and Spain) (English/German/French/Spanish): +800-1532-4865 (toll-free) Other Countries in Europe (English/German/French/Spanish): +44-1489-564-764 Asia (Philippines) (English): +63-2-438-0090 China (Chinese): 10800-163-0014 (toll-free)
Homepage	http://www.pixela.co.jp/oem/jvc/mediabrowser/e/

Copying

Backing Up Files Without Using Provided Software

Copy the files to a computer using the following method.

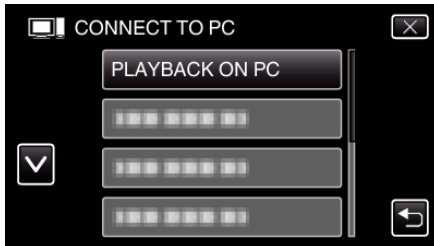
- 1 Connect the USB cable and the AC adapter.
 - 1 Turn on the power after connecting the AC adapter to the DC connector, and plugging in the power.
 - 2 Connect this unit and computer by using the provided USB cable.



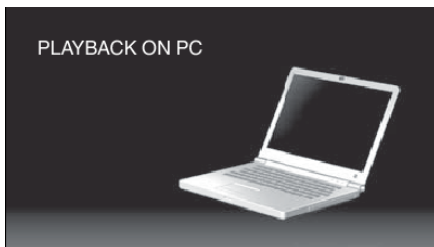
- 2 Tap "CONNECT TO PC".



- 3 Tap "PLAYBACK ON PC".



- Tap X to exit the menu.
- Tap ↶ to return to the previous screen.
- Close the MediaBrowser program, if it starts.
- The following screen is displayed after the camera operation is completed.



- Operations are to be performed on the computer after the screen switches.
- 4 Select "Computer" (Windows Vista)/"My Computer" (Windows XP)/"Computer" (Windows 7) from the "Start" menu, then click on the "JVCCAM_SD" icon.
 - Open the folder with the desired files.
 - "List of Files and Folders" (p. 83)
 - 5 Copy the files to any folder in the computer (desktop, etc).

Caution : _____

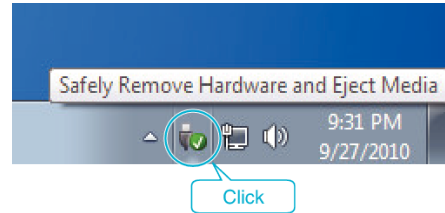
- When the camera and PC are connected by a USB cable, recorded media are read-only.

Memo : _____

- To edit/view the files, use a software that supports AVCHD (video)/JPEG (still image) files.
- The above operations on computer may vary with the system used.

Disconnecting this Unit from Computer

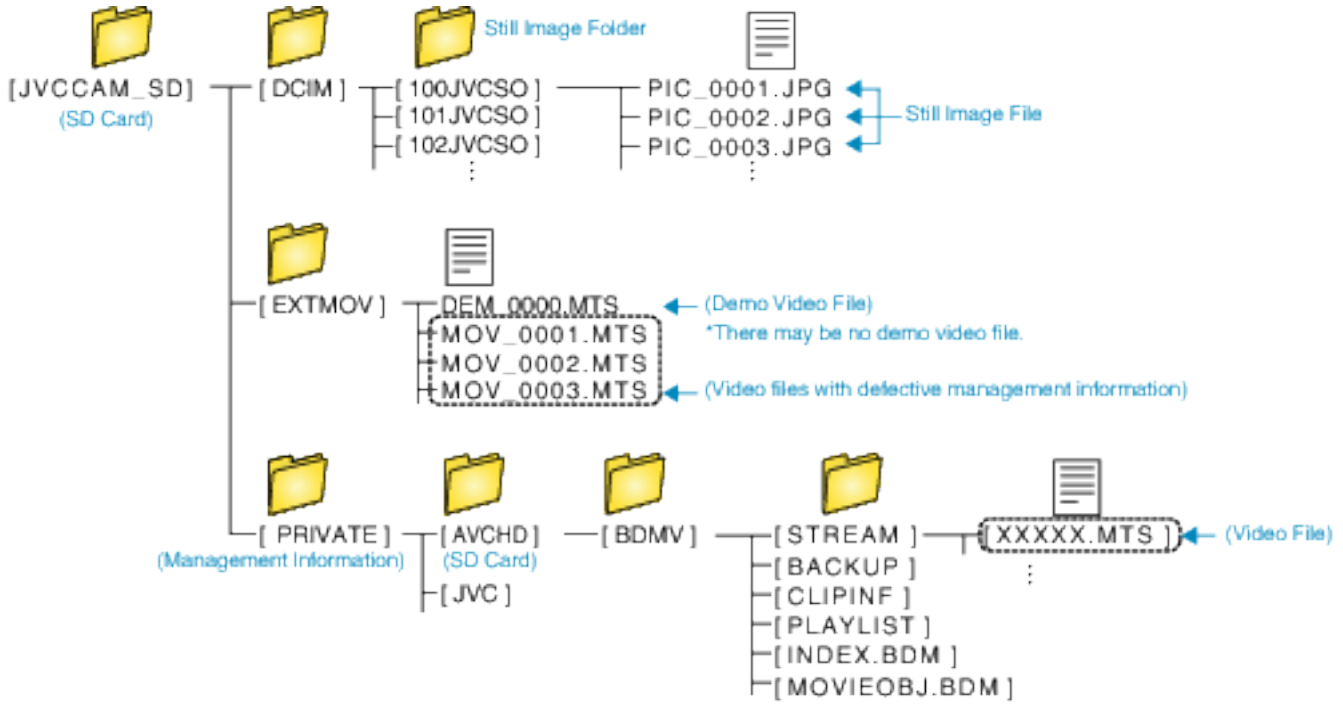
- 1 Click "Safely Remove Hardware and Eject Media".



- 2 Click "Safely Remove USB Mass Storage Device".
- 3 (For Windows Vista) Click "OK".
- 4 Remove the USB cable from computer, and turn off the power of this unit.

List of Files and Folders

They are created only when necessary.



Caution :

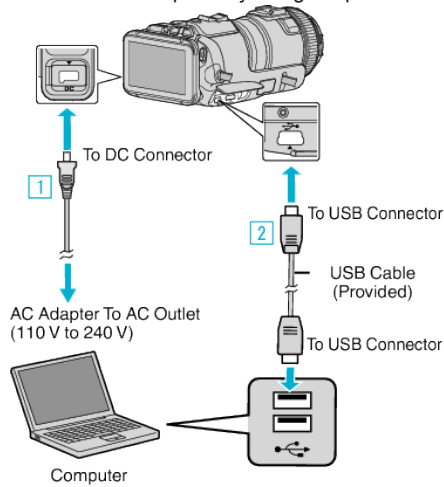
- When the camera and PC are connected by an USB cable, recorded media are read-only.

Copying to Mac Computer

Copy the files to a Mac computer using the following method.

1 Connect the USB cable and the AC adapter.

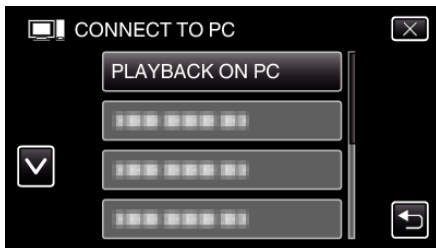
- 1 Turn on the power after connecting the AC adapter to the DC connector, and plugging in the power.
- 2 Connect this unit and computer by using the provided USB cable.



2 Tap "CONNECT TO PC".



3 Tap "PLAYBACK ON PC".



- Tap X to exit the menu.
- Tap ↶ to return to the previous screen.
- The following screen is displayed after the camera operation is completed.



- The "JVCCAM_SD" icon appears on the desktop.

4 Copy the files to a computer.

- The subsequent operations are to be performed on the Mac computer.
- Final Cut Pro is a recommended software for editing.

Caution :

- When the camera and PC are connected by an USB cable, recorded media are read-only.

Memo :

- To edit/view the files, use a software that supports iFrame (video)/ AVCHD (video)/JPEG (still image) files.
- When removing this unit from the computer, drag & drop the "JVCCAM_SD" icon on the desktop to the trash bin.
- Final Cut Pro is a registered trademark of Apple Inc. in the United States and other countries.

Wi-Fi Capabilities

This unit is equipped with Wi-Fi function.

You can do the following using a smartphone or computer via wireless connection.

Name of Function	Capability
DIRECT MONITORING	<ul style="list-style-type: none"> You can check the image on the camera via direct 1-to-1 connection (Wi-Fi Direct) with a smartphone (or computer), without the need for an access point (wireless LAN router). Recording of videos and still images may be performed while monitoring. (Videos and still images cannot be recorded while monitoring from the computer browser.) "Image Monitoring via Direct Connection (DIRECT MONITORING)" (☞ p. 87)
INDOOR MONITORING	<ul style="list-style-type: none"> Connect to the smartphone (or PC) via access point at home using the wireless LAN router, to monitor images captured by the camcorder. Recording of videos and still images may be performed while monitoring. (Videos and still images cannot be recorded while monitoring from the computer browser.) "Image Monitoring via an Access Point at Home (INDOOR MONITORING)" (☞ p. 90)
OUTDOOR MONITORING	<ul style="list-style-type: none"> You can check the image on the camera via internet connection with a smartphone (or computer) while you are outside. Recording of videos and still images may be performed while monitoring. (Videos and still images cannot be recorded while monitoring from the computer browser.) "Image Monitoring via the Internet (OUTDOOR MONITORING)" (☞ p. 95)
DETECT/MAIL	<ul style="list-style-type: none"> A still image is automatically captured and sent via e-mail when faces or movements are detected by the camera. You can also set to record videos on the camera during detection. "Sending Still Images via E-mail upon Detection of Face or Movement (DETECT/MAIL)" (☞ p. 98)
VIDEO MAIL	<ul style="list-style-type: none"> Videos of up to 15 seconds can be recorded and sent via e-mail. "Record and Send Videos via E-mail (VIDEO MAIL)" (☞ p. 99)
Record of the location information	<ul style="list-style-type: none"> You can record the location information of the venue where recording is taking place via direct connection (Wi-Fi Direct) with a smartphone supporting the GPS function. The recorded location information can be used on the software provided with this unit. "Recording the Location Information" (☞ p. 101)
Marking	<ul style="list-style-type: none"> Enter the mark in the desired scene to make it easy to find the scene later. "Use of Marking" (☞ p. 123)
Game Score	<ul style="list-style-type: none"> The scores of various sport games can be recorded with video images. Also, the recorded position can be marked to make it easy to find the scenes you want to view later. "Using the Game Score" (☞ p. 125)
JVC CAM Coach	<ul style="list-style-type: none"> Functions such as playback of recorded videos and displaying 2 different playback images for comparison are available by using tablet device. "Using Tablet Applications" (☞ p. 138)

Terms Used in this Guide: _____

- In this guide, operations on the touch panel are described as "tap".
- While the names of the buttons on a smartphone are written as "MENU" or "RETURN", they may vary according to the smartphone in use.

Refer also to the instruction manual of your smartphone. _____

Operating environment

To check the image on the camera from a computer or smartphone, and to transfer videos/still images, it is necessary to meet the following requirements.

Android Smartphone and Tablet Device

■ Wireless sync.

- 1 OS: Android2.3 or higher

(This unit is not guaranteed to operate with all models.)

- 2 Supports GPS function (for GPS recording)
- 3 Able to connect to the internet or Google Play (required for software installation)

■ JVC CAM Coach (tablet only)

- 1 OS: Android4.1 or higher

(This unit is not guaranteed to operate with all models.)

- 2 Display size: 7-inch or larger
- 3 Able to connect to the internet or Google Play (required for software installation)

iPhone/iPad/iPod touch

■ Wireless sync.

- 1 OS: iOS5.1 or higher

(This unit is not guaranteed to operate with all models.)

- 2 Able to connect to the internet or "App Store™" (required for software installation)

■ JVC CAM Coach (iPad only)

- 1 OS: iOS6.0 or higher

(This unit is not guaranteed to operate with all models.)

- 2 Able to connect to the internet or "App Store™" (required for software installation)

Computer

To check the image on the camera from a computer browser and to transfer videos/still images, it is necessary to meet the following requirements.

- 1 OS: Windows 7
- 2 Supports wireless LAN or wired LAN
(To connect the camera and computer directly by using the DIRECT MONITORING function, support for wireless LAN is required.)
- 3 Installation of Windows Media Player 12 or later

- Confirmed operating environment:
Internet Explorer 9 or later

Caution :

- There is no guarantee that the operations will work with all computer environments. For example, the video download feature of mobile safari browser, etc. is not supported.

Precautions on Using Wi-Fi

Cautions on Wi-Fi Function

- Operation is not guaranteed on all devices.
- This function is not designed for disaster or crime prevention.
- To prevent the situation of forgetting to turn off the power, this unit will turn off automatically after 10 days of continuous usage.
- Security of Wireless LAN
An advantage of wireless LAN is that instead of using a LAN cable, it transmits information using radio waves, thus enabling LAN connection to be established within the area covered by the radio waves. However, as radio waves penetrate through objects (such as walls) within the range that they cover, security issues, such as interception of transmission or illegal access, may arise if security settings are not configured. Before you connect to the network in a wireless LAN environment, read through the instruction manual for the wireless LAN device in use, and configure the security settings accordingly. Failure to do so may increase the risk of personal information being intercepted, such as user names, passwords, and the content of your mails, or illegal access to the network.
- Due to the design of wireless LAN, note that security may be breached by unusual or unforeseeable means.
- For more details on wireless LAN and network security, please consult the manufacturer of your wireless LAN device.
- JVC shall not be liable for any security issues, troubles, damages or losses arising from the use of this feature.

Radio Waves Used by this Product

This product makes use of radio waves in the ISM band (2.4 GHz). Although a radio station license is not required for using this product, please take note of the following.

■ Do not use this product near the following places.

- Industrial, scientific, or medical equipment, such as microwave ovens and pacemakers
- Industrial, scientific, or medical equipment, such as microwave ovens and pacemakers
- Specified low-power radio stations (radio station license not required)
- Bluetooth devices

Equipment such as the above mentioned devices makes use of the same frequency bandwidth as that of Wi-Fi.

Using this product near the above equipment may cause radio wave interference, and result in communication failure or a drop in communication speed. In this case, turn off the power of devices that are not in use.

■ Avoid using this product near a TV or radio set.

TV or radio sets make use of a radio wave frequency bandwidth that is different from that of Wi-Fi, and therefore has no effect on communication by this product or the TV/radio set.

However, when a TV/radio set is placed close to a Wi-Fi product, electromagnetic waves emitted by the Wi-Fi product may cause noise to occur in the sound or images of the TV/radio.

- Communication may not be carried out properly near radio equipment or broadcasting stations. In this case, change the location accordingly.

■ Radio signals are unable to penetrate through reinforced steel, metal, or concrete.

The radio waves used by this product are unable to penetrate through reinforced steel, metal, or concrete materials.

It may difficult for communication to be established if two rooms or floors are separated by these materials.

*Communication may also get weaker when there are human subjects or parts of the body in between the Wi-Fi devices.

■ Do not connect to wireless networks that you do not have authorization for.

Once connected, it may be considered as unauthorized access and legal actions can be taken against you.

■ Do not use the Wi-Fi function outside the country of purchase.

Depending on the country, there may be restrictions on the use of radio waves and any violations could be punishable by law.

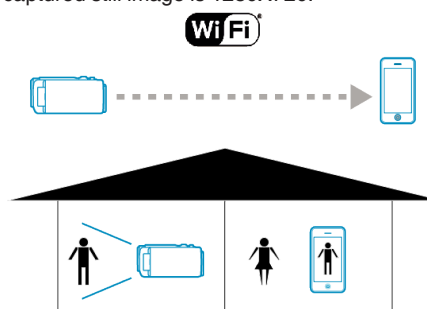
Exporting/Bringing the Unit Overseas

Permission from the U.S. government may be required when bringing the unit to an export controlled country set by the U.S. government (such as Cuba, Iraq, North Korea, Iran, Rwanda, and Syria. As of December, 2012). For more information, consult the U.S. Embassy Commercial Service.

Image Monitoring via Direct Connection (DIRECT MONITORING)

You can check the image on the camera via direct connection (Wi-Fi Direct) with a smartphone (or computer), without the need for an access point (wireless LAN router).

- Recording of videos and still images may be performed while monitoring.
- When "VIDEO REC FORMAT" is set to "AVCHD", video quality of the recorded video is XP.
- When "VIDEO REC FORMAT" is set to "MP4/MOV", video quality of the recorded video is 360p.
- Size of the captured still image is 1280X720.



Caution :

- This function is not designed for disaster or crime prevention.
- To prevent the situation of forgetting to turn off the power, this unit will turn off automatically after 10 days of continuous usage.
- When not monitoring from a smartphone (or computer), the focus of the camera is fixed.
- Even when monitoring from a smartphone (or computer), focus of the camera will be fixed if not operated for more than 3 hours. (Focus works again when the camera is operated.)
- You may have difficulty establishing a connection via direct monitoring in an environment where the camera is placed away from the smartphone (or computer). In this case, connect using the access point (wireless LAN router).

"Image Monitoring via an Access Point at Home (INDOOR MONITORING)"
(p. 90)

- Depending on the device in use or connecting environment, it may take some time to establish a connection.

What You Need

- Smartphone or Windows computer
(A wireless LAN that is compatible with WPA2 is necessary.)

Settings Required in Advance

Set up your camera and smartphone (or computer) by performing the following operations.

For a smartphone with WPS support, refer to the "Wi-Fi Protected Setup (WPS)".

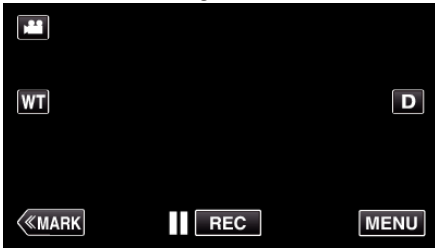
*WPS is a method to connect the camera and the smartphone wirelessly by easy button operations.

Connecting the Smartphone to the Camera Wirelessly

Connect the smartphone to the camera by either of the following methods.

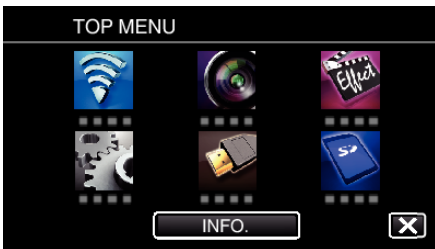
■ Connection by entering the Wi-Fi password

- 1 Tap "MENU".
(Operation on this camera)
Set the camera to the recording mode.



- The top menu appears.

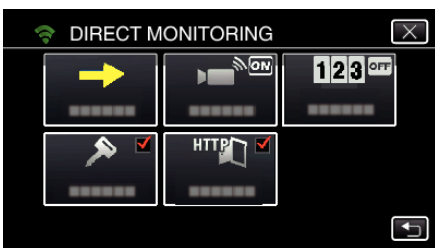
- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



- 3 Tap the "DIRECT MONITORING" (DIRECT MONITORING icon) in the "Wi-Fi" menu.
(Operation on this camera)



- 4 Tap "START" (START icon).
(Operation on this camera)



- 5 Check the SSID and the PASS being displayed on the screen of the camera.



- 6 Select the SSID in step 5 from the Wi-Fi network selection screen of your smartphone, and enter the PASS on the password screen.
(Operation on the smartphone (or computer))



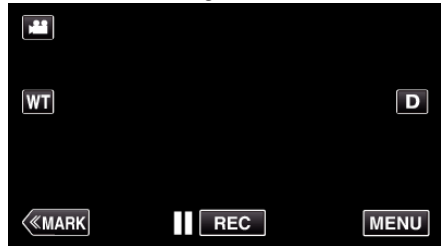
- For details on connecting your smartphone (or computer) to a Wi-Fi network, please refer to the instruction manual of the phone terminal in use.

- 7 A connection is established and Wi-Fi appears on the camera's screen.



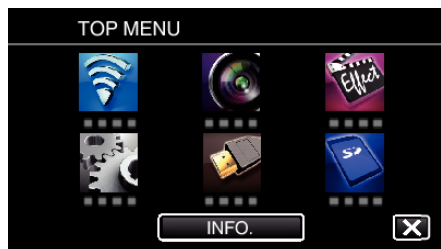
■ Connection by Wi-Fi Protected Setup (WPS)

- 1 Tap "MENU".
(Operation on this camera)
Set the camera to the recording mode.



- The top menu appears.

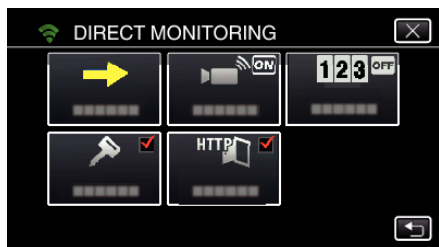
- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



- 3 Tap the "DIRECT MONITORING" (DIRECT MONITORING icon) in the "Wi-Fi" menu.
(Operation on this camera)



- 4 Tap "START" (START icon).
(Operation on this camera)



- 5 Tap "WPS".
(Operation on this camera)



- 6 Activate WPS on the smartphone (or computer) within 2 minutes.
(Operation on the smartphone (or computer))



- To activate WPS, refer to the instruction manual of the device in use.

- 7 A connection is established and  appears on the camera's screen.



Monitoring the Images from a Smartphone (or Computer)

■ Smartphone (Android / iPhone)

Memo : _____

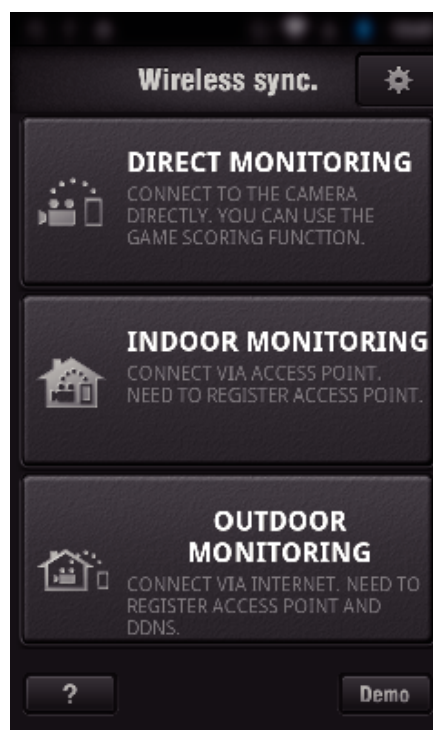
- Prior to use this function, a smartphone application needs to be installed on the smartphone.

"Installing Smartphone Applications" (p. 122)

- 1 Start "Wireless sync." on the smartphone after setting DIRECT MONITORING.



- 2 Tap "DIRECT MONITORING".



- 3 The recording screen is displayed.



- How to operate from a smartphone
"Using Smartphone Applications" (☞ p. 122)

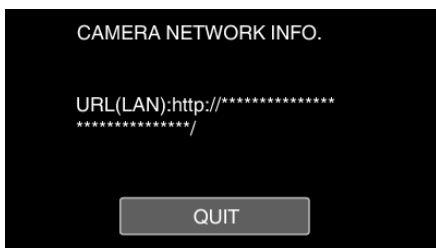
■ **Computer (Windows 7)**

- 1 Tap the URL button shown on the camera's screen.
(displayed when the computer and the camera are connected wirelessly.)



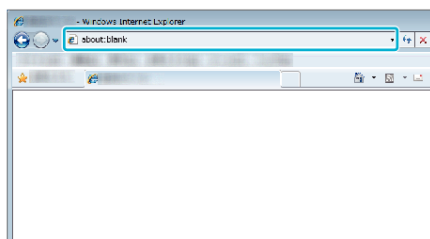
- The URL for the computer to connect to appears.

- 2 Check the URL displayed on the camera screen, which starts from "http://".



- After checking the URL, tap "QUIT" to return to the previous screen.

- 3 Start Internet Explorer (web browser) on the computer and enter the URL.

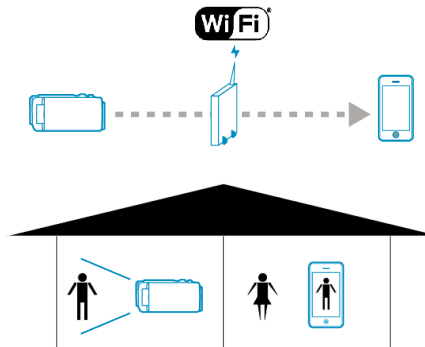


- Operations from the Web browser
"Using the Wi-Fi Function from a Web Browser" (☞ p. 139)

Image Monitoring via an Access Point at Home (INDOOR MONITORING)

Connect to the wireless LAN router at home, the camera and a smartphone (or computer) via access point wirelessly. From a smartphone (or computer) in connection, you can monitor the images captured by the camera.

- Recording of videos and still images may be performed while monitoring.
- When "VIDEO REC FORMAT" is set to "AVCHD", video quality of the recorded video is XP.
- When "VIDEO REC FORMAT" is set to "MP4/MOV", video quality of the recorded video is 360p.
- Size of the captured still image is 1280X720.



Caution :

- This function is not designed for disaster or crime prevention.
- To prevent the situation of forgetting to turn off the power, this unit will turn off automatically after 10 days of continuous usage.
- When not monitoring from a smartphone (or computer), the focus of the camera is fixed.
- Even when monitoring from a smartphone (or computer), focus of the camera will be fixed if not operated for more than 3 hours. (Focus works again when the camera is operated.)

What You Need

- Smartphone or Windows computer
- Wireless LAN router (use a product that has a Wi-Fi certification logo)

Memo :

- Depending on the wireless LAN router in use and signal strength, you may experience connection problems or slow connections.

Operation Method

Connect the camera to the access point (wireless LAN router)

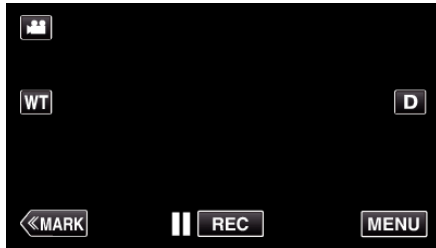


Connect the camera to the access point by either of the following methods.

■ Wi-Fi Protected Setup (WPS) Registration

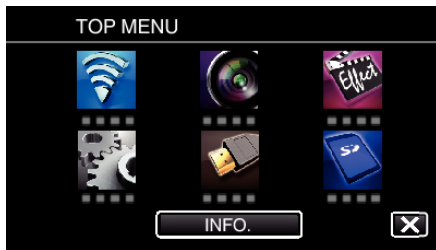
Follow the operations below if the access point (wireless LAN router) in use supports WPS.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

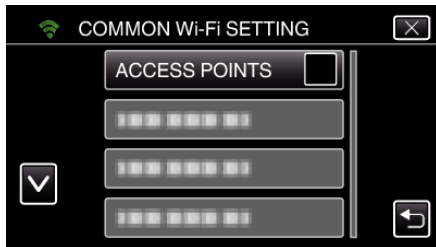
- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



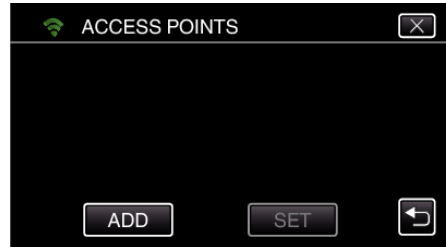
- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



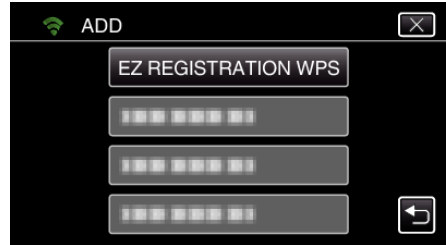
- 4 Tap "ACCESS POINTS".
(Operation on this camera)



- 5 Tap "ADD".
(Operation on this camera)



- 6 Tap "EZ REGISTRATION WPS".
(Operation on this camera)



- 7 Activate WPS of the access point (wireless LAN router) within 2 minutes.
 - To activate WPS, refer to the instruction manual of the device in use.

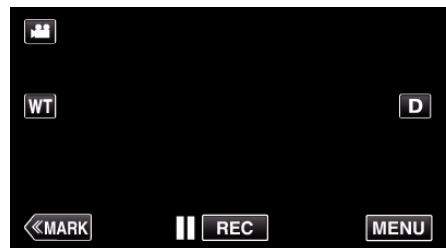
- 8 After registration is complete, tap "OK" on the camera's screen.
(Operation on this camera)



■ Search the access point, and select from the list.

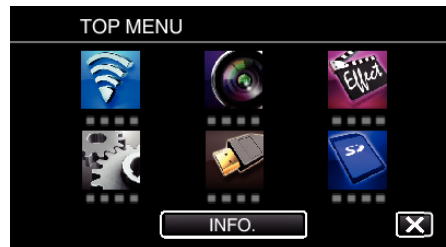
Set the name (SSID) of the access point (wireless LAN router) and the password beforehand.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

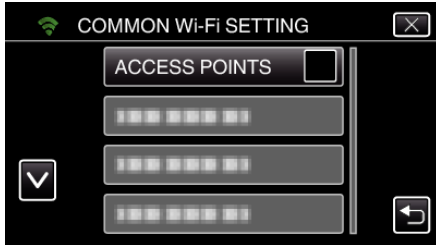
- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



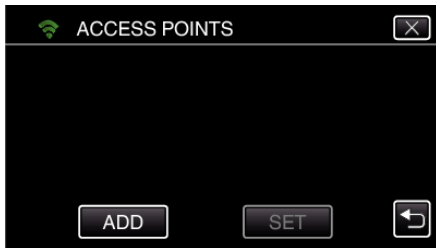
- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



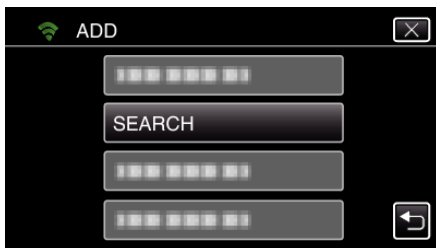
- 4 Tap "ACCESS POINTS".
(Operation on this camera)



- 5 Tap "ADD".
(Operation on this camera)

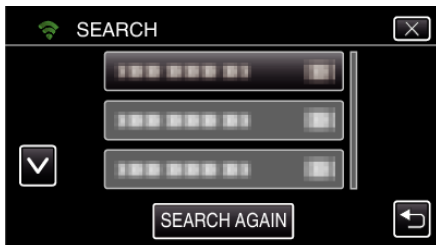


- 6 Tap "SEARCH".
(Operation on this camera)



- The search results appear on the camera's screen.
- "UNABLE TO FIND THE ACCESS POINT" message appears if there is no access point in the surrounding area.

- 7 Tap the name (SSID) of the desired access point from the list of search results.
(Operation on this camera)

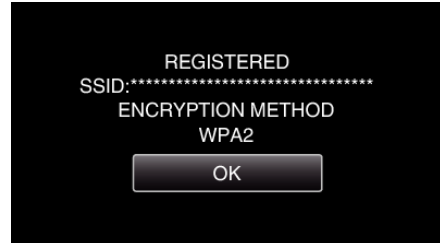


- 8 Register a password.
(Operation on this camera)



- Tap on the on-screen keyboard to enter characters. The character changes with every tap. "ABC", for example, enter "A" by tapping once, "B" by tapping twice, or "C" by tapping 3 times.
- Tap "DELETE" to delete a character.
- Tap "CANCEL" to exit.
- Tap "A/a/1" to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.
- The password is not required if the wireless LAN router is not security protected.

- 9 After registration is complete, tap "OK" on the camera's screen.
(Operation on this camera)



- Other methods, such as "Manual Registration" and "WPS PIN Registration" are also available. Refer to the following link for details. "Registering the Access Points of the Camera to Connect (ACCESS POINTS)" (p. 115)

Connecting the smartphone (or computer) to the access point (wireless LAN router)



- Connect the smartphone (or computer) to the access point (wireless LAN router) at home.
- For details on connections, refer to the instruction manuals of the device in use or the wireless LAN router.
- This setting is unnecessary if the smartphone (or computer) has already been connected to the access point (wireless LAN router) at home.

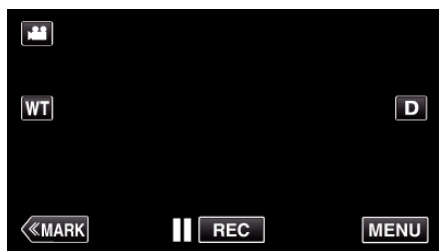
Monitoring the images by connecting the smartphone and the camera



- Install "Wireless sync." on the smartphone in advance. "Installing Smartphone Applications" (p. 122)

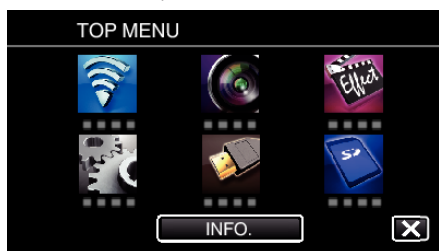
■ Operation on this camera

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

- 2 Tap the "Wi-Fi" icon.
(Operation on this camera)



- 3 Tap "INDOOR MONITORING" (house icon).
(Operation on this camera)



- 4 Tap "START" (right arrow icon).
(Operation on this camera)



- 5 Start making a connection.
(Operation on this camera)



- Name (SSID) of the access point (wireless LAN router) in connection is displayed.

- 6 The following is displayed when the camera is connected to the access point.



- Tap "URL" to display the URL required for connecting the camera from browser.

■ Operation on the smartphone

- 1 Start "Wireless sync." on the smartphone after setting INDOOR MONITORING.

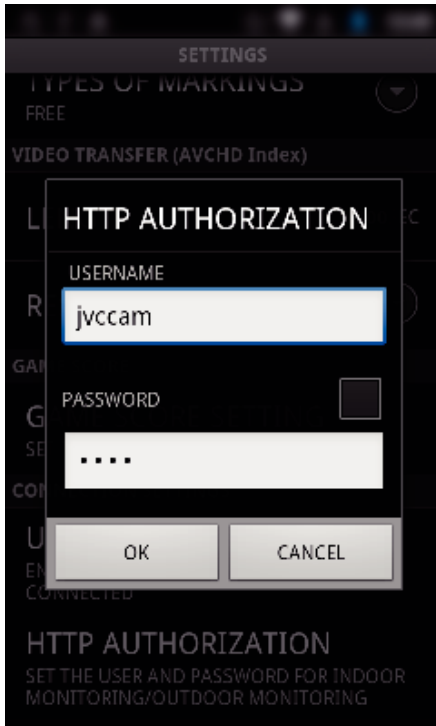


- Tap "START" in INDOOR MONITORING on the camera to start.

- 2 Tap "INDOOR MONITORING".



- 3 Log in with your username and password.
(if authentication cannot be achieved)



- The username is “jvccam” and the default password is “0000”.
“Changing the Settings” (p. 104)
- 4 The recording screen is displayed.



- How to operate from a smartphone
“Using Smartphone Applications” (p. 122)

■ Monitoring from the computer (Windows7)

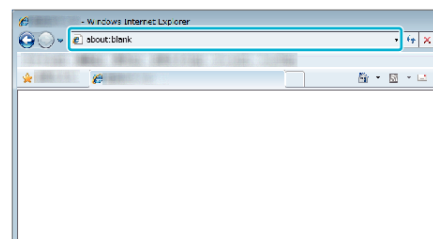
- 1 Tap the URL button shown on the camera’s screen.
(displayed when the computer and the camera are connected wirelessly.)



- The URL for the computer to connect to appears.
- 2 Check the URL displayed on the camera screen, which starts from “http://”.



- After checking the URL, tap “QUIT” to return to the previous screen.
- 3 Start Internet Explorer (web browser) on the computer and enter the URL.



- 4 Log in with your username and password.
 - The username is “jvccam” and the default password is “0000”.
“Changing the Settings” (p. 104)

- Operations from the Web browser
“Using the Wi-Fi Function from a Web Browser” (☞ p. 139)

Image Monitoring via the Internet (OUTDOOR MONITORING)

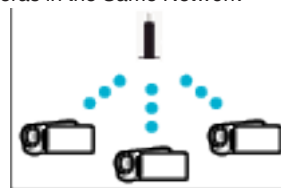
You can check the image on the camera via internet connection with a smartphone (or computer).

* To use this function, it is necessary to prepare for an UPnP (Universal Plug and Play) compatible wireless LAN router, and an internet connection from which the global IP address can be obtained.

- Recording of videos and still images may be performed while monitoring.
- When “VIDEO REC FORMAT” is set to “AVCHD”, video quality of the recorded video is XP.
- When “VIDEO REC FORMAT” is set to “MP4/MOV”, video quality of the recorded video is 360p.
- Size of the captured still image is 1280X720.



Setting Multiple Cameras in the Same Network:



- To set up multiple cameras, you need to fix the HTTP ports for each of the cameras.

“Changing the HTTP Port (DIRECT MONITORING/INDOOR MONITORING/OUTDOOR MONITORING)” (☞ p. 107)

What You Need

- Smartphone or Windows computer
- Wireless LAN router that supports UPnP (use a product that has a Wi-Fi certification logo)

To check whether UPnP is supported, please refer to the instruction manual of the wireless LAN router in use.

- Internet connection with an obtainable global IP address

* Global IP address is an IP address that is specific in all over the internet. For more information, contact your internet service provider.

Memo :

- Depending on the wireless LAN router in use and signal strength, you may experience connection problems or slow connections.
- When zooming is operated by using the smartphone or computer, it may take longer for responses as compared to the manual operations.

Settings Required in Advance

To operate, it is necessary to connect the camera to the internet via an access point (UPnP compatible wireless LAN router) in the house. As such, the following 3 settings are required.

*The above settings are not necessary if they have already been set for other functions.

1 Registering an access point

“Registering the Access Points of the Camera to Connect (ACCESS POINTS)” (☞ p. 115)

2 Obtaining a dynamic DNS account

“Obtaining a Dynamic DNS (DDNS) Account” (☞ p. 109)

3 Setting the account on this camera

“Setting Dynamic DNS on this Camera (OUTDOOR MONITORING)” (☞ p. 109)

Caution :

- Even if registration is done correctly to the camera, access may be temporarily unavailable such as when the dynamic DNS server is down. To check whether the dynamic DNS server is working properly, access and check the DDNS server with a computer, etc.

<https://dd3.jvckenwood.com/user/>

Operation Method

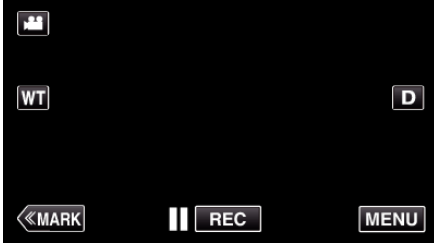
■ Operation on this camera

Memo : _____

- Prior to use this function, a smartphone application needs to be installed on the smartphone.

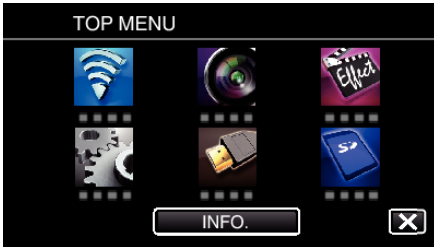
“Installing Smartphone Applications” (p. 122)

1 Tap “MENU”.
(Operation on this camera)

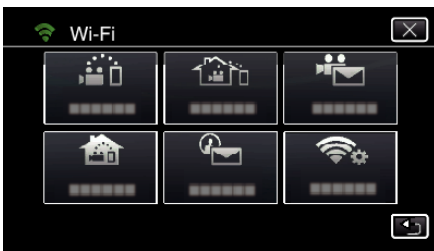


- The top menu appears.

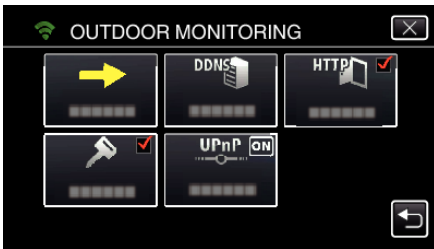
2 Tap the “Wi-Fi” (Wi-Fi icon).
(Operation on this camera)



3 Tap “OUTDOOR MONITORING” (house with Wi-Fi icon).
(Operation on this camera)



4 Tap “START” (right arrow).
(Operation on this camera)



5 Start making a connection.
(Operation on this camera)



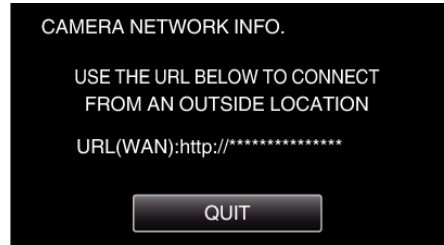
- Name (SSID) of the access point (wireless LAN router) in connection is displayed.

6 The following is displayed when the camera is connected to the access point.



- The URL (WAN) for the smartphone to connect to appears. (Does not appear if DDNS is not set or set incorrectly.)
- “XUPnP” is displayed when UPnP cannot be used.

7 Check the URL (WAN).



- After checking the URL, tap “QUIT” to return to the previous screen.
- “XUPnP” is displayed when UPnP cannot be used.

■ Operation on the smartphone

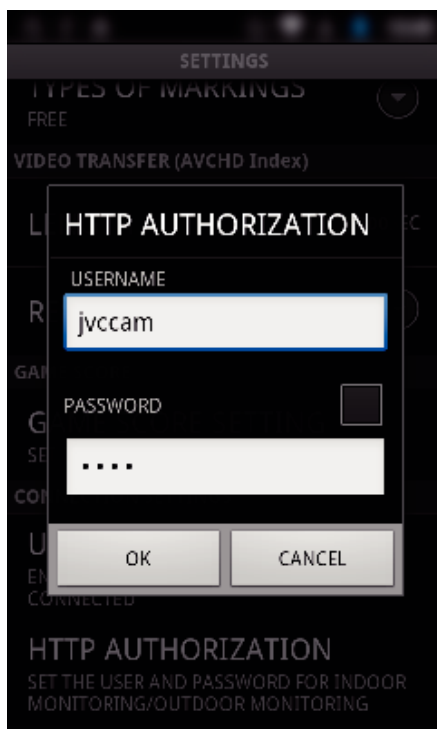
1 Start “Wireless sync.” on the smartphone after setting “OUTDOOR MONITORING”.



2 Tap “OUTDOOR MONITORING”.



3 Log in with your username and password.
(if authentication cannot be achieved)



- The username is “jvccam” and the default password is “0000”.
“Changing the Settings” (☞ p. 104)

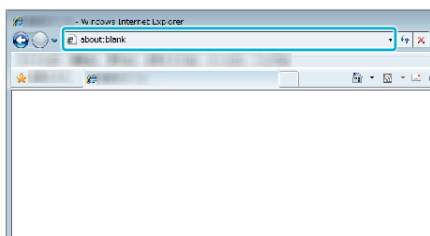
4 The recording screen is displayed.



- How to operate from a smartphone
“Using Smartphone Applications” (☞ p. 122)

■ Monitoring from the computer (Windows7)

1 On the Internet Explorer (web browser), enter the URL (WAN) that is checked by “Operation on this camera”.



2 Log in with your username and password.

- The username is “jvccam” and the default password is “0000”.
“Changing the Settings” (☞ p. 104)
- Operations from the Web browser
“Using the Wi-Fi Function from a Web Browser” (☞ p. 139)

Caution :

- To monitor images while you are out, make sure in advance that you can establish a connection via the Internet by entering the URL (WAN) displayed in “Network Information”. However, you cannot monitor (operate) in the same way as while you are out when your smartphone (or computer) is connected via access point (wireless LAN router) at home.
- Start using after changing the password.
If the password is not changed, there is a high risk of unauthorized access from others.
Also, avoid using easily guessable passwords, such as birth dates.
You are recommended to change your password periodically.
“Setting the Password (DIRECT MONITORING/INDOOR MONITORING/OUTDOOR MONITORING)” (☞ p. 106)
- There is no guarantee that the operations will work with all computer environments. For example, the video download feature of mobile safari browser, etc. is not supported.

Caution :

- Too much usage may cause high communication fees to be incurred, and there may be a limit to the volume of communication. For more details, please check your Internet or smartphone subscription.
- If the network connection is slow, video images may appear jumpy, or audio sound may be interrupted or delayed.
- This function is not designed for disaster or crime prevention.
- To prevent the situation of forgetting to turn off the power, this unit will turn off automatically after 10 days of continuous usage.
- When not monitoring from a smartphone (or computer), the focus of the camera is fixed.
- Even when monitoring from a smartphone (or computer), focus of the camera will be fixed if not operated for more than 3 hours. (Focus works again when the camera is operated.)

■ Checking OUTDOOR MONITORING While Being at Home

Perform the following operations by order.

- 1 Set the Wi-Fi setting of the device (smartphone or PC) to off.
- 2 Start up the browser from the device (smartphone or PC), and enter the URL which is displayed on LCD monitor of the camera.
- 3 Check if the images captured by the camera are displayed.

Sending Still Images via E-mail upon Detection of Face or Movement (DETECT/MAIL)

A still image is automatically captured and sent via e-mail when faces or movements are detected by the camera.



Memo :

- Videos are recorded in AVCHD mode. If recording is set to MP4/MOV mode, it is switched to AVCHD mode.
- Size of the still images shot by DETECT/MAIL is 640 x 360.
- "VIDEO QUALITY" is fixed to "XP".
- Operation via connection to a smartphone (or computer) using "INDOOR MONITORING"/"OUTDOOR MONITORING" may be performed even during detection standby.
- When the camera is connected to a smartphone (or computer), "DETECT/MAIL SETTING" will be temporarily unavailable.
- You can set to record videos on this unit automatically during detection. "Recording on this unit" (p. 104)
- To prevent too many e-mails from being sent in case of detections occurring frequently, you can set the interval of e-mail delivery. "Setting detection interval" (p. 104)

What You Need

- Wireless LAN router (use a product that has a Wi-Fi certification logo)
- Internet connection
- Account for sending e-mails (Supports SMTP. E-mail services that is only accessible from the web cannot be used.)

Settings Required in Advance

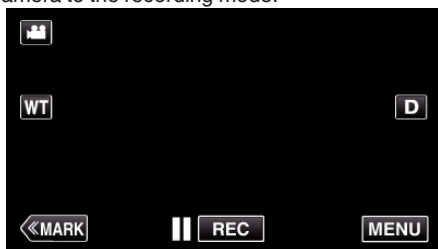
To send e-mails, the following settings are required in advance.
*The above settings are not necessary if they have already been set for other functions.

- 1 Registering an access point
"Registering the Access Points of the Camera to Connect (ACCESS POINTS)" (p. 115)
- 2 Setting the account for sending e-mails
"Setting the Sender's E-mail Address of the Camera" (p. 110)
3. Registering the recipient's e-mail address for notification mails (up to 8 addresses)
"Registering the Recipient's E-mail Address of the Camera" (p. 113)

Operation Method

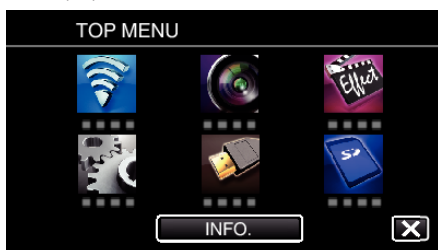
1 Tap "MENU".

Set the camera to the recording mode.



- The top menu appears.

2 Tap the "Wi-Fi" icon.



3 Tap "DETECT/MAIL" (Wi-Fi icon).



4 Tap "DETECT/MAIL ATTN.".

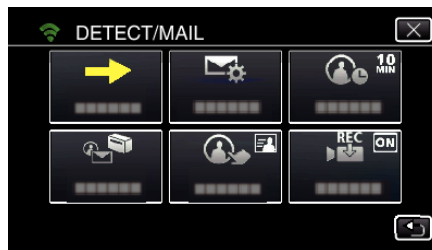


5 Select "DETECT/MAIL ATTN.", then tap ↶.

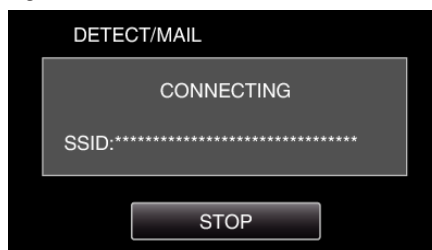


- To display the ↶ icon, tap the e-mail address.
- To cancel the e-mail address, press the icon one more time.
- Up to 8 e-mail addresses can be selected.

6 Tap "START" (➡).



7 Start making a connection.



8 DETECT/MAIL detection standby



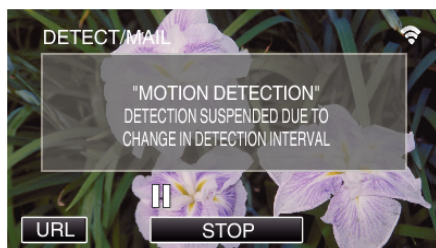
- Detection is suspended for the first 5 seconds.

9 DETECT/MAIL detection in progress (an e-mail is automatically sent out after detection is completed)



- The “PHOTO” icon appears on the screen for about 2 seconds upon detection.
- Images are captured automatically when moving subjects or human faces appear on the camera’s screen. (The PHOTO icon appears on the screen upon detection.)
- The captured still images will be sent via e-mail to the selected recipients.

10 Detection suspended



- Until the next detection is made, detection is suspended for the pre-set length of time.
 - “DETECTION INTERVAL” can be selected from 15 seconds, 1 minute, 3 minutes, 10 minutes, 30 minutes and 60 minutes.
- “Setting the Detection Interval of this Camera (DETECT/MAIL SETTING)” (☞ p. 114)

Caution :

- This function is not designed for disaster or crime prevention.
- To prevent the situation of forgetting to turn off the power, this unit will turn off automatically after 10 days of continuous usage.
- While on standby for notification mails, the focus is fixed. Perform the camera settings first, then enable the notification mails. Focus may not be set correctly if the notification mails start before camera settings are made. In this case, disable the notification mails temporarily, then enable it again.
- Be careful not to cause too much sending of e-mails. Depending on the internet provider that provides the e-mail service, the e-mails may be marked as spam or the usage limited may be exceeded. Be sure to check the terms of the internet provider in advance to find out if there are any restrictions on the number or size of e-mails that can be sent.
- When setting another person as the recipient, be sure to obtain his/her consent in advance.
- If you reply to the received e-mail by using this unit, the receiver can not check your replied e-mail by using this unit. Check the e-mails sent by this unit from computer, etc.
- JVC will not be responsible for any trouble that occurs upon the sending of mails.

Record and Send Videos via E-mail (VIDEO MAIL)

Videos of up to 15 seconds can be recorded and sent via e-mail. With this function, short videos can be delivered easily even on a daily basis, such as to show the growing up of small children to their distant grandparents.



Memo :

- Specifications of the videos sent via video mail are as follows:

Item	Details
System	MP4
Video	- H.264/MPEG-4 AVC baseline profile codec - 640 x 360 resolution - 25p frame rate - 1 Mbps bit rate
Audio	- Advanced Audio Coding (AAC) system - 48 kHz sampling rate - 16 bit - 2 channels

What You Need

- Wireless LAN router (use a product that has a Wi-Fi certification logo)
- Internet connection
- Account for sending e-mails (Supports SMTP. E-mail services that is only accessible from the web cannot be used.)

Settings Required in Advance

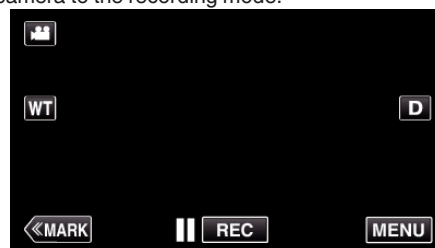
To send e-mails, the following settings are required in advance.

*The above settings are not necessary if they have already been set for other functions.

- 1 Registering an access point
“Registering the Access Points of the Camera to Connect (ACCESS POINTS)” (☞ p. 115)
- 2 Setting the account for sending e-mails
“Setting the Sender’s E-mail Address of the Camera” (☞ p. 110)
- 3 Registering the recipient’s e-mail address (up to 8 addresses)
“Registering the Recipient’s E-mail Address of the Camera” (☞ p. 113)

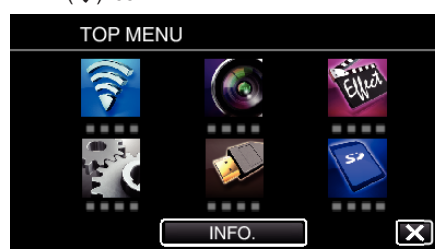
Operation Method

- 1 Tap “MENU”.
Set the camera to the recording mode.



- The top menu appears.

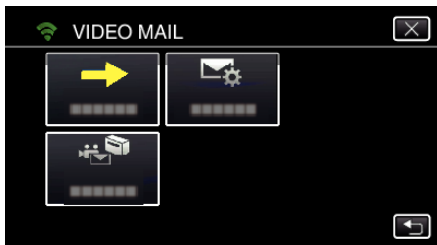
- 2 Tap the “Wi-Fi” (📶) icon.



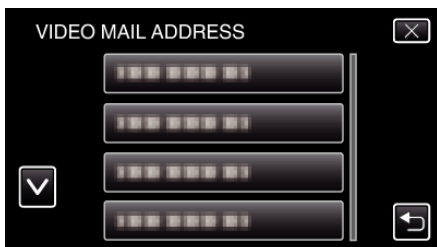
3 Tap "VIDEO MAIL" (✉).



4 Tap "VIDEO MAIL ADDRESS".

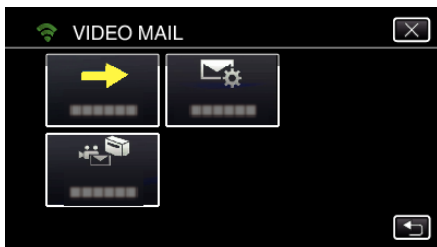


5 Select "VIDEO MAIL ADDRESS", then tap ↵.

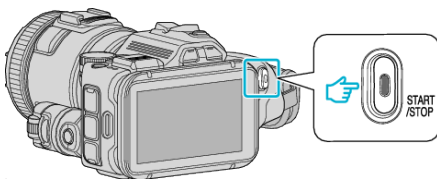


- To display the ✉ icon, tap the e-mail address.
- To cancel the e-mail address, press the icon one more time.
- Up to 8 e-mail addresses can be selected.

6 Tap "START" (➡).



7 Press the START/STOP button to start recording.



- Or, tap the REC on screen.

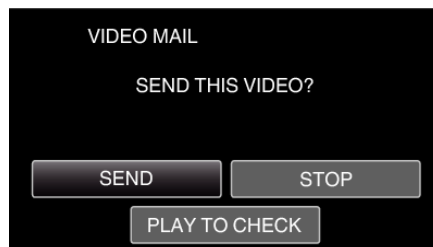
8 Recording starts after the 5-second countdown.

- Recording starts immediately after pressing the START/STOP button again during the countdown.



- You can allow the recording to be performed for 15 seconds or press the START/STOP button to stop.

9 Tap "SEND".



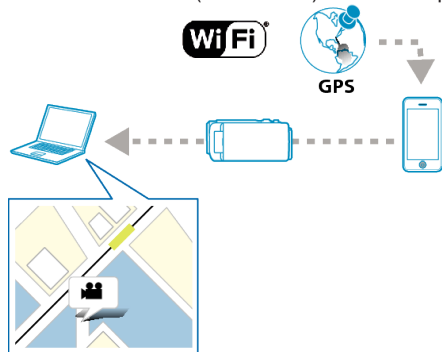
- Sending of the video mail starts.
- To check the file, tap "PLAY TO CHECK".
- When it is complete, tap "OK".

Caution :

- Be careful not to cause too much sending of e-mails. Depending on the internet provider that provides the e-mail service, the e-mails may be marked as spam or the usage limited may be exceeded. Be sure to check the terms of the internet provider in advance to find out if there are any restrictions on the number or size of e-mails that can be sent.
- When setting another person as the recipient, be sure to obtain his/her consent in advance.
- Depending on the e-mail service provider, the sending of video mail may not be supported.
- Too much usage may cause high communication fees to be incurred, and there may be a limit to the volume of communication. For more details, please check your Internet or smartphone subscription.
- If you reply to the received e-mail by using this unit, the receiver can not check your replied e-mail by using this unit. Check the e-mails sent by this unit from computer, etc.
- JVC will not be responsible for any trouble that occurs upon the sending of mails.
- Videos captured via video mail are not saved to the camera or SD card.
- Videos that have already been captured cannot be sent.

Recording the Location Information

You can record the location information of the venue where recording is taking place via direct connection (Wi-Fi Direct) with a smartphone.



Memo :

- To obtain the location information, it is necessary to connect the smartphone to the camera and start the smartphone application. Also, setting the “LOC INFO TRANS INT” for the smartphone application is necessary.
- “Smartphone Application Settings” (p. 136)
- Activate the GPS function of the smartphone in advance.
- The recorded location information can be used on the software provided with this unit.

What You Need

- Smartphone

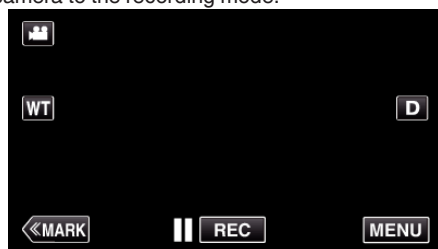
Settings Required in Advance

Set up your camera and smartphone by performing the following operations. For a smartphone with WPS support, refer to the “Wi-Fi Protected Setup (WPS)”.

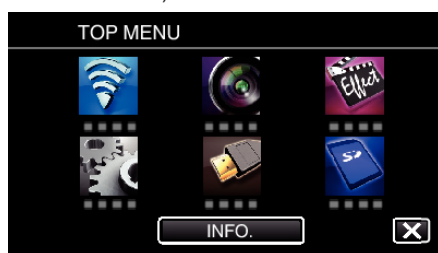
*WPS is a method to connect the camera and the smartphone wirelessly by easy button operations.

■ Connection by entering the Wi-Fi password

- Tap “MENU”.
(Operation on this camera)
Set the camera to the recording mode.



- The top menu appears.
- Tap the “Wi-Fi” (Wi-Fi icon) icon.
(Operation on this camera)



- Tap the “DIRECT MONITORING” (Wi-Fi Direct icon) icon in the “Wi-Fi” menu.
(Operation on this camera)



- Tap “START” (→).
(Operation on this camera)



- Check the SSID and the PASS being displayed on the screen of the camera.



- Select the SSID in step 5 from the Wi-Fi network selection screen of your smartphone, and enter the PASS on the password screen.
(Operation on the smartphone (or computer))



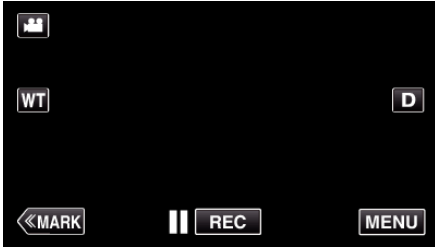
- For details on connecting your smartphone (or computer) to a Wi-Fi network, please refer to the instruction manual of the phone terminal in use.

- A connection is established and Wi-Fi appears on the camera’s screen.



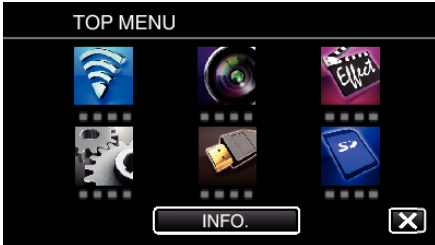
■ Connection by Wi-Fi Protected Setup (WPS)

- Tap “MENU”.
(Operation on this camera)
Set the camera to the recording mode.

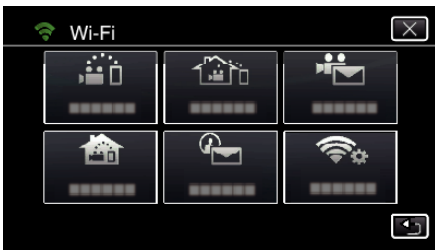


- The top menu appears.

- 2 Tap the "Wi-Fi" (📶) icon.
(Operation on this camera)



- 3 Tap the "DIRECT MONITORING" (📶) icon in the "Wi-Fi" menu.
(Operation on this camera)



- 4 Tap "START" (➡️).
(Operation on this camera)



- 5 Tap "WPS".
(Operation on this camera)



- 6 Activate WPS on the smartphone (or computer) within 2 minutes.
(Operation on the smartphone (or computer))
 - To activate WPS, refer to the instruction manual of the device in use.
- 7 A connection is established and 📶 appears on the camera's screen.



Operation Method

- 1 Activate the GPS function of the smartphone.
(Operation on the smartphone)

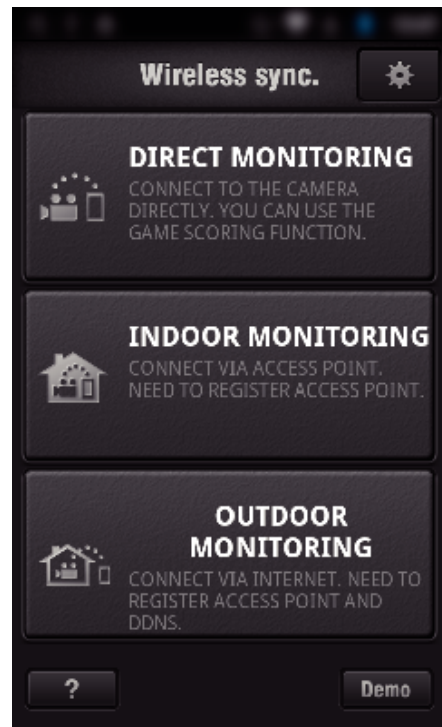


- For details on using the smartphone, refer to the instruction manual of the device in use.

- 2 Start "Wireless sync." on the smartphone.



- 3 Tap "DIRECT MONITORING".



- 4 Monitor screen is displayed.



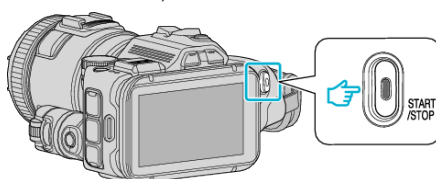
- To change the time interval for obtaining the GPS location information (OFF-15 sec.), tap .
“Smartphone Application Settings” (☞ p. 136)

5 Receiving the location information (Display on this camera)



- When the GPS location information is received from the smartphone, an icon () is displayed on the camera screen.

6 Start recording. (Operation on this camera)



- Press the “START/STOP” button to start a normal recording.

Memo :

- Manual recording cannot be performed.
- It is not possible to switch to the playback mode.
- Videos are recorded in AVCHD mode. Videos cannot be recorded in MP4/MOV mode.

Changing the Settings

To use the Wi-Fi function, it may be necessary to perform some settings on the camera and smartphone (or computer).

- Registering the access points to connect (wireless LAN router)
“Registering the Access Points of the Camera to Connect (ACCESS POINTS)” (☞ p. 115)
- Obtaining a dynamic DNS account
“Obtaining a Dynamic DNS (DDNS) Account” (☞ p. 109)
- Setting the account on this camera
“Setting Dynamic DNS on this Camera (OUTDOOR MONITORING)” (☞ p. 109)
- Setting the sender’s e-mail address
“Setting the Sender’s E-mail Address of the Camera” (☞ p. 110)
- Registering the recipient’s e-mail address
“Registering the Recipient’s E-mail Address of the Camera” (☞ p. 113)

Menu Settings

Setting	Details
DIRECT MONITORING	<p>Configures various settings related to DIRECT MONITORING.</p> <ul style="list-style-type: none"> • PASSWORD Sets the password to access the camera. “Setting the Password (DIRECT MONITORING/INDOOR MONITORING/OUTDOOR MONITORING)” (p. 106) • ENFORCED GROUP OWNER (Default: “ON”) Set whether or not to get the owner group permissions. <ul style="list-style-type: none"> • OFF: Set this if connection to devices that support Wi-Fi Direct fails. (When set to OFF, connection to devices that do not support Wi-Fi Direct will be disabled.) • ON: It is recommended to set this usually. “Setting the Enforced Group Owner (DIRECT MONITORING)” (p. 107) • HTTP PORT (Default: “80”) Changes the port number to access to the camera. “Changing the HTTP Port (DIRECT MONITORING/INDOOR MONITORING/OUTDOOR MONITORING)” (p. 107) • SCORE RECORDING (Default: “OFF”) Sets whether to record score displays in the video. This setting is available when Wireless sync. smartphone application is used. The recorded score display cannot be deleted later. “Setting the Score Display Record (DIRECT MONITORING)” (p. 108)
INDOOR MONITORING	<p>Configures various settings related to INDOOR MONITORING.</p> <ul style="list-style-type: none"> • PASSWORD (Default: “0000”) Selects the password to access the camera. “Setting the Password (DIRECT MONITORING/INDOOR MONITORING/OUTDOOR MONITORING)” (p. 106) • HTTP PORT (Default: “80”) Changes the port number to access to the camera. “Changing the HTTP Port (DIRECT MONITORING/INDOOR MONITORING/OUTDOOR MONITORING)” (p. 107)
OUTDOOR MONITORING	<p>Configures various settings related to OUTDOOR MONITORING.</p> <ul style="list-style-type: none"> • PASSWORD (Default: “0000”) Selects the password to access the camera. “Setting the Password (DIRECT MONITORING/INDOOR MONITORING/OUTDOOR MONITORING)” (p. 106) • UPnP (Default: “ON”) Sets the UPnP of the camera. <ul style="list-style-type: none"> • OFF: Disables UPnP. • ON: Enables UPnP. “Setting the UPnP of this Camera (OUTDOOR MONITORING)” (p. 108) • DDNS SETTING Configures various settings related to DDNS. “Setting Dynamic DNS on this Camera (OUTDOOR MONITORING)” (p. 109) • HTTP PORT (Default: “80”) Changes the port number to access to the camera. “Changing the HTTP Port (DIRECT MONITORING/INDOOR MONITORING/OUTDOOR MONITORING)” (p. 107)
DETECT/MAIL	<p>Configures various settings related to notification mails.</p> <ul style="list-style-type: none"> • DETECT/ MAIL ATTN. Selects the recipient’s e-mail address for Detect/Mail. “Sending Still Images via E-mail upon Detection of Face or Movement (DETECT/MAIL)” (p. 98) • MAIL SETTING Sets the e-mail addresses of the sender and recipient. “Setting the Sender’s E-mail Address of the Camera” (p. 110) “Registering the Recipient’s E-mail Address of the Camera” (p. 113) • DETECTION METHOD (Default: “MOTION DETECTION”) Sets the detection method to start recording. <ul style="list-style-type: none"> • MOTION DETECTION: Starts recording upon detection of subject’s movements. • FACE DETECTION: Starts recording upon detection of human faces. “Setting the Detection Method of this Camera (DETECT/MAIL SETTING)” (p. 114) • DETECTION INTERVAL (Default: “10 minutes”) Sets the time period to enable detection again after the previous one. “Setting the Detection Interval of this Camera (DETECT/MAIL SETTING)” (p. 114) • SELF RECORDING (Default: “ON”) Sets whether to record videos on this camera during detection.

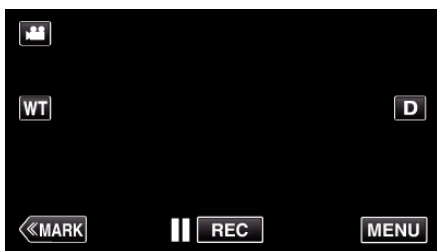
	<ul style="list-style-type: none"> • OFF: Does not record videos on this camera. • ON: Records videos on this camera. <p>“Setting Self Recording on this Camera (DETECT/MAIL SETTING)” (☞ p. 115)</p>
VIDEO MAIL	<ul style="list-style-type: none"> • VIDEO MAIL ADDRESS Selects the recipient’s e-mail address for video mails. “Sending Still Images via E-mail upon Detection of Face or Movement (DETECT/MAIL)” (☞ p. 98) • MAIL SETTING Sets the e-mail addresses of the sender and recipient. “Setting the Sender’s E-mail Address of the Camera” (☞ p. 110) “Registering the Recipient’s E-mail Address of the Camera” (☞ p. 113)
COMMON Wi-Fi SETTING	<p>Configures various settings related to the network.</p> <ul style="list-style-type: none"> • ACCESS POINTS Adds, deletes, or perform LAN settings of access points (wireless LAN router). “Registering the Access Points of the Camera to Connect (ACCESS POINTS)” (☞ p. 115) • MAIL SETTING Sets the e-mail addresses of the sender and recipient. “Setting the Sender’s E-mail Address of the Camera” (☞ p. 110) “Registering the Recipient’s E-mail Address of the Camera” (☞ p. 113) • MAC ADDRESS (Media Access Control address) Displays the MAC address of the camera. (The above shows the MAC address when connected to an access point, while the below shows the address during direct connection.) “Checking the MAC Address of this Camera” (☞ p. 120) • SET FROM QR CODE Perform the Wi-Fi setting after the camera reads the QR code generated by following the instruction in Detailed User Guide. “Using Wi-Fi by Creating a QR Code” (☞ p. 148) • LOCK SETTINGS Sets a password to prevent others from seeing the network settings. “Protecting the Network Settings with a Password” (☞ p. 121) • INITIALIZATION Returns the network settings to their default values. “Initializing the Wi-Fi Settings” (☞ p. 121)

Setting the Password (DIRECT MONITORING/INDOOR MONITORING/OUTDOOR MONITORING)

Sets the password required to access the camera.

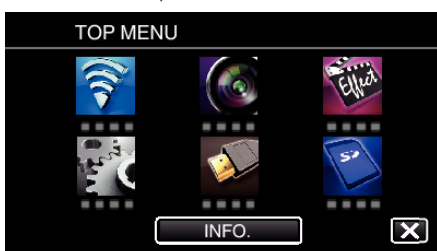
- Up to 8 characters (alphabets, numbers and symbols only), case-sensitive.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



- 3 Tap "DIRECT MONITORING" (DIRECT MONITORING icon), "INDOOR MONITORING" (INDOOR MONITORING icon) or "OUTDOOR MONITORING" (OUTDOOR MONITORING icon).
(Operation on this camera)



- 4 Tap "PASSWORD".
(Operation on this camera)



- 5 Register a password.
(Operation on this camera)



- By default, the password is set to "0000". (INDOOR MONITORING/OUTDOOR MONITORING)
- Tap on the on-screen keyboard to enter characters. The character changes with every tap. "ABC", for example, enter "A" by tapping once, "B" by tapping twice, or "C" by tapping 3 times.

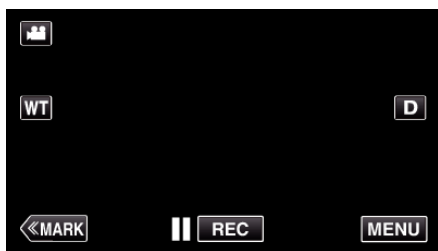
- Tap "DELETE" to delete a character.
- Tap "CANCEL" to exit.
- Tap "A/a/1" to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.

- 6 Tap "SET".
(Operation on this camera)
 - Settings will not be saved until "SET" is tapped.

Setting the Enforced Group Owner (DIRECT MONITORING)

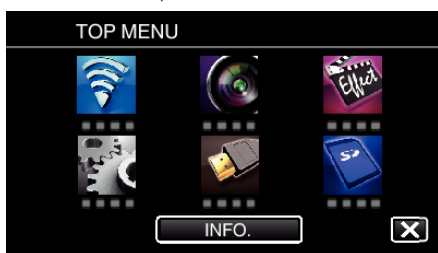
Sets whether to enforce authorization of the group owner.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

- 2 Tap the "Wi-Fi" (Wi-Fi icon) icon.
(Operation on this camera)



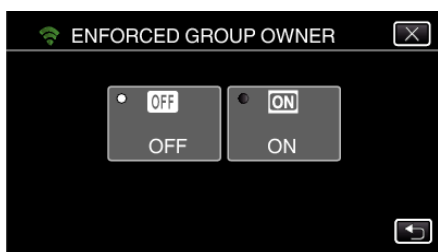
- 3 Tap the "DIRECT MONITORING" (DIRECT MONITORING icon) icon in the "Wi-Fi" menu.
(Operation on this camera)



- 4 Tap "ENFORCED GROUP OWNER".
(Operation on this camera)



- 5 Tap "ON" or "OFF".



- It is recommended to select "ON" usually.
If connection to devices that support Wi-Fi Direct fails, set to "OFF".

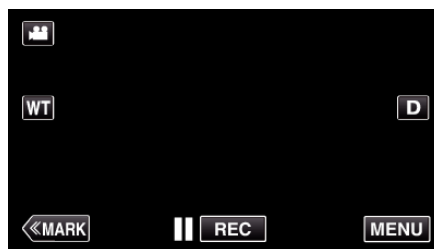
Memo :

- When set to "OFF", connection to devices that do not support Wi-Fi Direct will be disabled.

Changing the HTTP Port (DIRECT MONITORING/INDOOR MONITORING/OUTDOOR MONITORING)

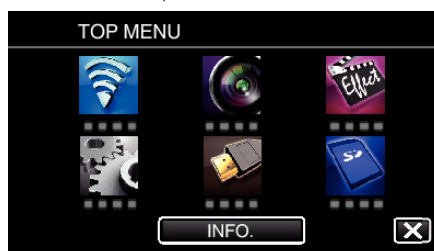
Changes the port number to access to the camera.
Valid when setting up multiple cameras for Outdoor Monitoring.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

- 2 Tap the "Wi-Fi" (Wi-Fi icon) icon.
(Operation on this camera)



- 3 Tap "DIRECT MONITORING" (DIRECT MONITORING icon), "INDOOR MONITORING" (INDOOR MONITORING icon) or "OUTDOOR MONITORING" (OUTDOOR MONITORING icon).
(Operation on this camera)



- 4 Tap "HTTP PORT".
(Operation on this camera)



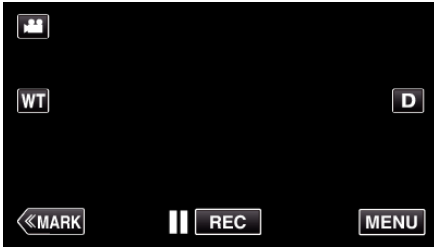
- 5 Enter a port number.
(Operation on this camera)



Setting the Score Display Record (DIRECT MONITORING)

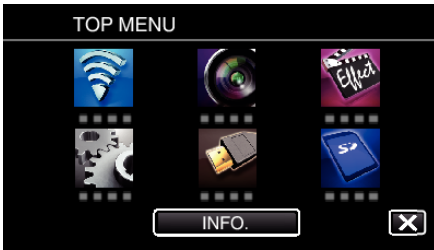
Sets whether to record score displays in the video.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



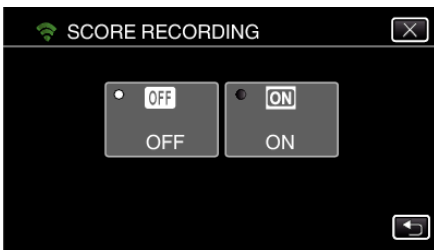
- 3 Tap the "DIRECT MONITORING" (DIRECT MONITORING icon) icon in the "Wi-Fi" menu.
(Operation on this camera)



- 4 Tap "SCORE RECORDING".
(Operation on this camera)



- 5 Tap "ON".



Setting the UPnP of this Camera (OUTDOOR MONITORING)

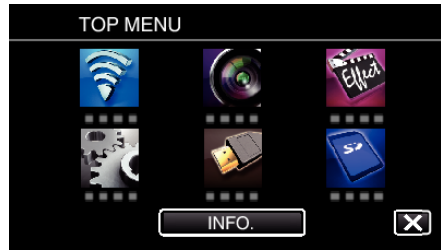
Sets the UPnP of the camera.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



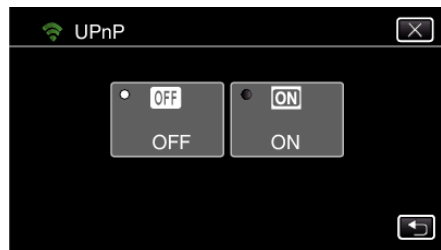
- 3 Tap "OUTDOOR MONITORING" (OUTDOOR MONITORING icon).
(Operation on this camera)



- 4 Tap "UPnP".
(Operation on this camera)



- 5 Tap "ON" or "OFF" to make a selection.



- Select "ON" to enable UPnP.
- Select "OFF" to disable UPnP.

Obtaining a Dynamic DNS (DDNS) Account

By obtaining a dynamic DNS account, this unit may be used on the web as usual even if the IP address changes when making an access to this unit via internet.

- Only the JVC dynamic DNS service can be set on this camera.

To obtain (register) an account, perform the following steps.

- 1 Access the following URL from a browser and register for an account.
(Operation on a computer or smartphone)

<https://dd3.jvckenwood.com/user/>

Set your e-mail address as the username.

- 2 Check that you have received a confirmation e-mail to the address used in registration, and access the URL stated in the e-mail.
(Operation on a computer or smartphone)

- 3 Set the username and password used in registration on the camera.
(Operation on this camera)
“Setting Dynamic DNS on this Camera (OUTDOOR MONITORING)”
(p. 109)

- 4 Execute OUTDOOR MONITORING.
(Operation on this camera)

If “OUTDOOR MONITORING” is executed while dynamic DNS settings are enabled, the camera will access the dynamic DNS server.

- 5 Tap “CAMERA NETWORK INFO.” to check that the URL (WAN) is displayed.
(Registration complete)

“Image Monitoring via the Internet (OUTDOOR MONITORING)”
(p. 95)

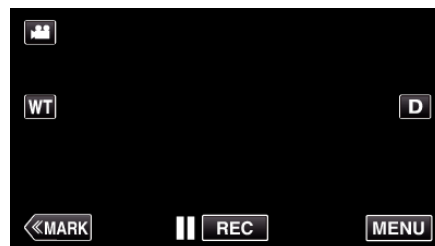
Caution :

- Registration will be canceled if you do not access the dynamic DNS server from the camera within 3 days.
Perform the registration again in this case.
- Registration will not be complete if the username and password set on this camera are incorrect. Be sure to check that they are correct.
- Successful registration will be canceled too if you do not access the dynamic DNS server for 1 year.

Setting Dynamic DNS on this Camera (OUTDOOR MONITORING)

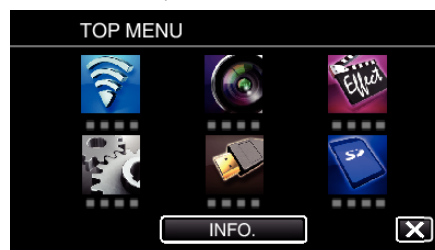
Sets the dynamic DNS information of the obtained account on the camera.
“Obtaining a Dynamic DNS (DDNS) Account” (p. 109)

- 1 Tap “MENU”.
(Operation on this camera)



- The top menu appears.

- 2 Tap the “Wi-Fi” (Wi-Fi icon).
(Operation on this camera)



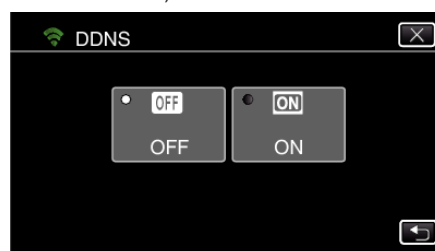
- 3 Tap “OUTDOOR MONITORING” (OUTDOOR MONITORING icon).
(Operation on this camera)



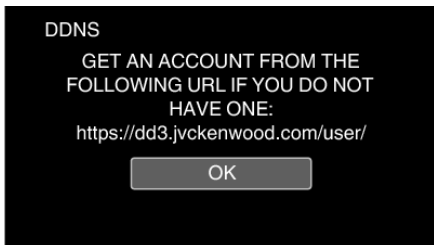
- 4 Tap “DDNS SETTING”.
(Operation on this camera)



- 5 Tap “DDNS”, then tap “ON”.
(Operation on this camera)



- 6 Tap “OK”.
(Operation on this camera)



- 7 Enter the DDNS settings (username/password).
(Operation on this camera)



- Tap on the on-screen keyboard to enter characters. The character changes with every tap. “ABC”, for example, enter “A” by tapping once, “B” by tapping twice, or “C” by tapping 3 times.
- Tap “DELETE” to delete a character.
- Tap “CANCEL” to exit.
- Tap “A/a/1” to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.
- After setting, tap “SET”.

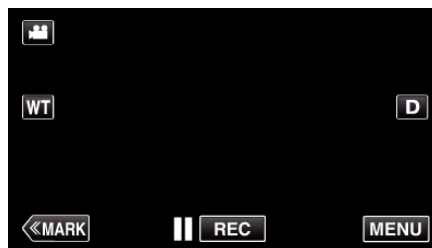
Memo : _____
 • Only the JVC dynamic DNS service can be set on this camera.

Setting the Sender's E-mail Address of the Camera

Sets the address to be used for sending e-mails on the camera.

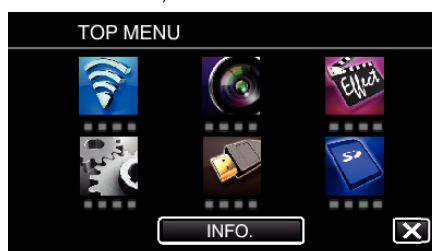
Memo : _____
 • By using Gmail as the sender's mail address, some of the settings can be omitted.
 Use of Gmail is recommended for users who have a Gmail account.

- 1 Tap “MENU”.
(Operation on this camera)



- The top menu appears.

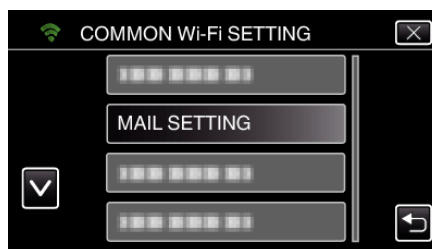
- 2 Tap the “Wi-Fi” (Wi-Fi icon).
(Operation on this camera)



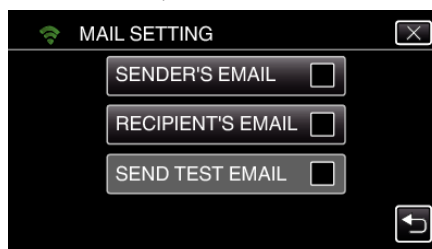
- 3 Tap “COMMON Wi-Fi SETTING”.
(Operation on this camera)



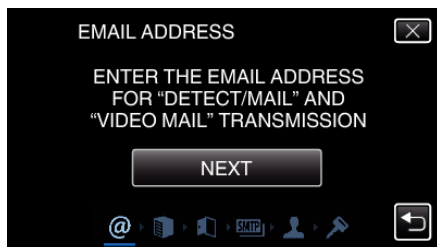
- 4 Tap “MAIL SETTING”.
(Operation on this camera)



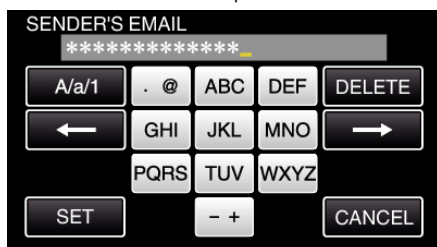
- 5 Tap “SENDER'S EMAIL”.
(Operation on this camera)



- 6 Tap “NEXT”.
(Operation on this camera)

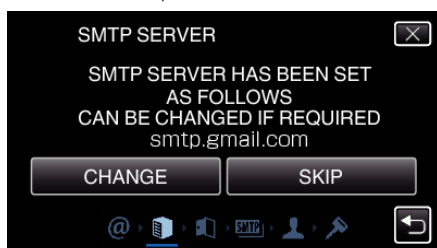


- Tap “CHANGE” to change the contents that are already set.
- Enter the e-mail address and tap “SET”.



- Tap on the on-screen keyboard to enter characters. The character changes with every tap.
- Tap “DELETE” to delete a character.
- Tap “CANCEL” to exit.
- Tap “A/a/1” to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.
- After setting, tap “SET”.

- 7 Tap “NEXT”.
(In case of Gmail, tap “SKIP”)
(Operation on this camera)

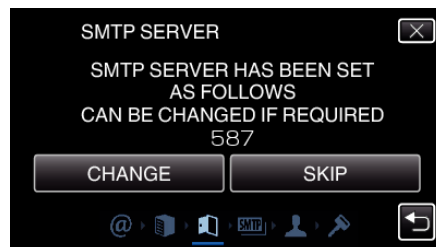


- Tap “CHANGE” to change the contents that are already set.
- Enter the SMTP server and tap “SET”.



- Tap on the on-screen keyboard to enter characters. The character changes with every tap.
- Tap “DELETE” to delete a character.
- Tap “CANCEL” to exit.
- Tap “A/a/1” to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.
- After setting, tap “SET”.

- 8 Tap “CHANGE” to change the SMTP port.
(In case of Gmail, tap “SKIP”)
(Operation on this camera)

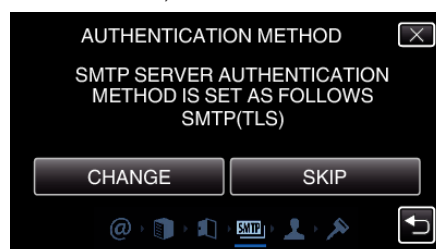


- Change the SMTP port number (if necessary) and tap “SET”.

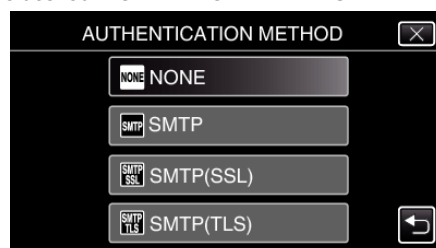


- Tap on the on-screen keyboard to enter characters. The character changes with every tap.
- Tap “DELETE” to delete a character.
- Tap “CANCEL” to exit.
- Tap ← or → to move one space to the left or right.
- After setting, tap “SET”.

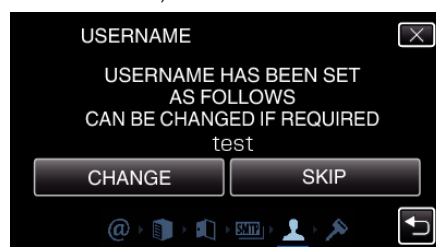
- 9 Tap “CHANGE” to change the authentication.
(In case of Gmail, tap “SKIP”)
(Operation on this camera)



- Tap the desired “AUTHENTICATE METHOD”.



- 10 Tap “NEXT”.
(In case of Gmail, tap “SKIP”)
(Operation on this camera)

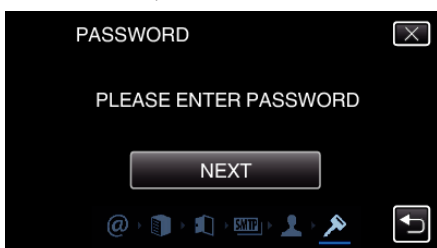


- The following does not appear if “AUTHENTICATE METHOD” is set to “NONE”.
- Tap “CHANGE” to change the contents that are already set.
- Enter the username and tap “SET”.



- Tap on the on-screen keyboard to enter characters. The character changes with every tap.
- Tap “DELETE” to delete a character.
- Tap “CANCEL” to exit.
- Tap “A/a/1” to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.
- After setting, tap “SET”.

11 Tap “NEXT”.
(Operation on this camera)



- The following does not appear if “AUTHENTICATE METHOD” is set to “NONE”.
- Tap “CHANGE” to change the contents that are already set.
- Enter the password and tap “SET”.



- Tap on the on-screen keyboard to enter characters. The character changes with every tap.
- Tap “DELETE” to delete a character.
- Tap “CANCEL” to exit.
- Tap “A/a/1” to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.
- After setting, tap “SET”.

12 Tap “QUIT” or “SEND TEST EMAIL”.
(Operation on this camera)



USERNAME	Enter the username.
PASSWORD	Enter the password.

Caution :

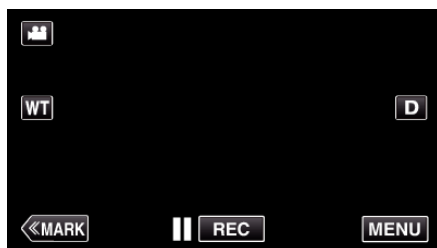
- It is necessary to obtain an e-mail account in advance.
- Some web-based mail addresses do not support this feature.
- These are Gmail settings as of March 2013.
Perform setting manually if changes have been made to the Gmail specifications.
- To make use of addresses other than Gmail, please consult the mail service provider (Internet provider, etc.) for information on the settings.

SENDER'S EMAIL	Enter the sender's e-mail address.
SMTP SERVER	Enter the SMTP server address.
SMTP PORT	Set this when the SMTP port number needs to be changed.
AUTHENTICATE METHOD	Set this when the authentication method needs to be changed.

Registering the Recipient's E-mail Address of the Camera

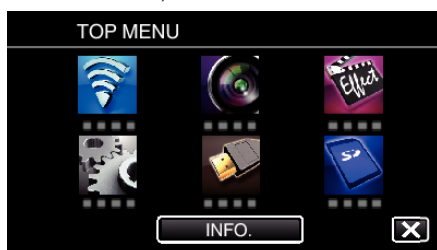
Registers the e-mail addresses of recipients on the camera.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

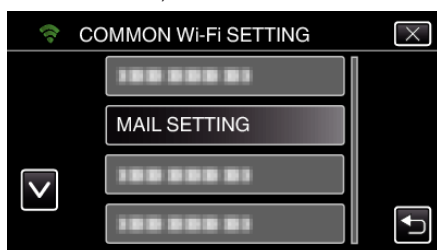
- 2 Tap the "Wi-Fi" (Wi-Fi icon) icon.
(Operation on this camera)



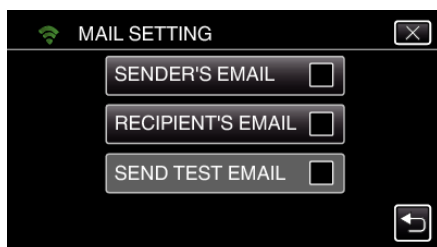
- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



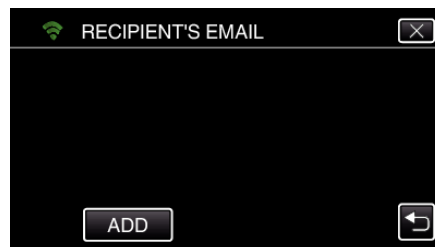
- 4 Tap "MAIL SETTING".
(Operation on this camera)



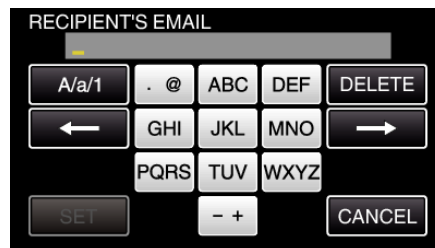
- 5 Tap "RECIPIENT'S EMAIL".
(Operation on this camera)



- 6 Tap "ADD".
(Operation on this camera)

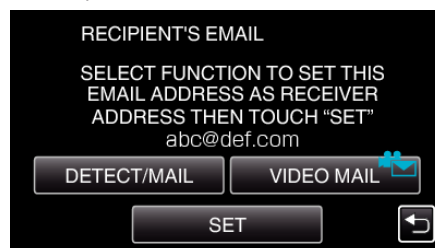


- 7 Enter the recipient's e-mail address.



- Tap on the on-screen keyboard to enter characters. The character changes with every tap. "ABC", for example, enter "A" by tapping once, "B" by tapping twice, or "C" by tapping 3 times.
- Tap "DELETE" to delete a character.
- Tap "CANCEL" to exit.
- Tap "A/a/1" to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.
- After setting, tap "SET".

- 8 After tapping "DETECT/MAIL" or "VIDEO MAIL" depending on the function in use, tap "SET".



- An icon (📧) appears after tapping "DETECT/MAIL", and the recipient's e-mail address for the Detect/Mail.
- An icon (📹) appears after tapping "VIDEO MAIL", and the recipient's e-mail address for the VIDEO MAIL.
- To cancel, press the icon one more time.

Memo : _____

- Up to 8 e-mail addresses can be registered as recipients.

Caution : _____

- When setting another person as the recipient, be sure to obtain his/her consent in advance.
- Check whether notifications indicating errors have been sent to the sender's e-mail address. (Make use of a computer or similar devices as it is not possible to check from the camera.)

If no notifications are received: Refer to "Unable to send e-mails." and adjust the settings accordingly.

If notifications are received: Check the content of the notification.

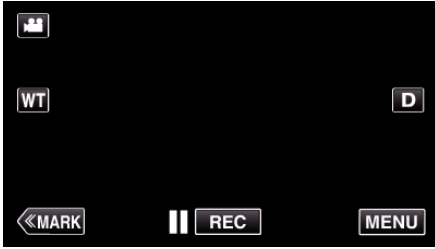
*Note

Do not continue sending e-mails with the same settings if you receive error notifications. Depending on the provider, you may be marked as a sender of spam (junk mail).

Setting the Detection Method of this Camera (DETECT/MAIL SETTING)

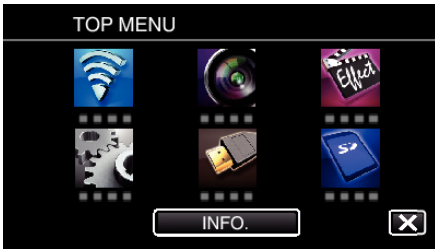
Sets the detection method to start recording.

- 1 Tap "MENU".
(Operation on this camera)

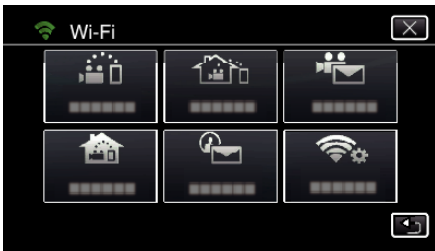


- The top menu appears.

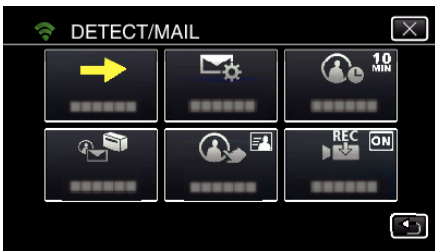
- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



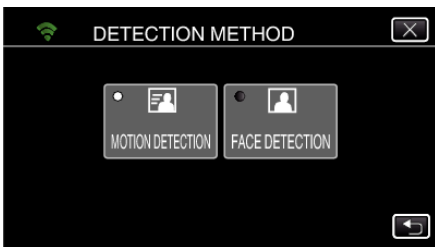
- 3 Tap "DETECT/MAIL" (DETECT/MAIL icon).
(Operation on this camera)



- 4 Tap "DETECTION METHOD".
(Operation on this camera)



- 5 Tap "MOTION DETECTION" or "FACE DETECTION" to make a selection.



- Select "MOTION DETECTION" to start recording upon detection of subject's movements.
- Select "FACE DETECTION" to start recording upon detection of human faces.

Setting the Detection Interval of this Camera (DETECT/MAIL SETTING)

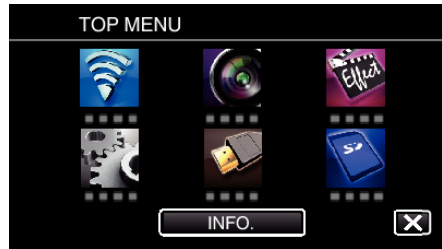
Sets the time period to enable detection again after the previous one.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

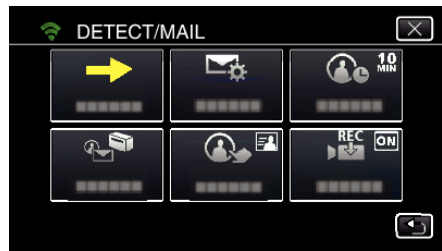
- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



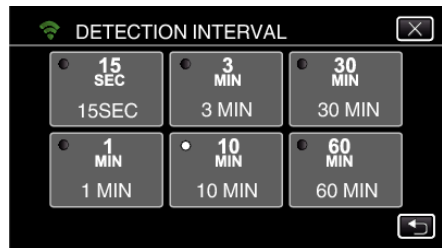
- 3 Tap "DETECT/MAIL" (DETECT/MAIL icon).
(Operation on this camera)



- 4 Tap "DETECTION INTERVAL".
(Operation on this camera)



- 5 Tap the desired detection interval.

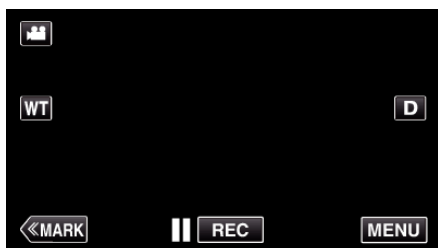


- Set the interval to perform detection. By default, it is set to 10 minutes.

Setting Self Recording on this Camera (DETECT/MAIL SETTING)

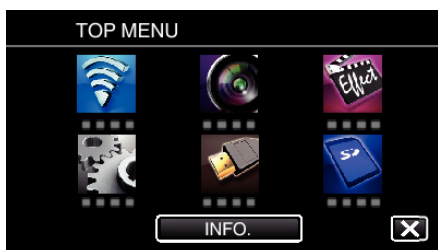
Sets whether to record videos on this camera during detection.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



- 3 Tap "DETECT/MAIL" (DETECT/MAIL icon).
(Operation on this camera)



- 4 Tap "SELF RECORDING".
(Operation on this camera)



- 5 Tap "ON" or "OFF" to make a selection.



- Select "ON" to record videos on this camera.
- Select "OFF" not to record videos on this camera.

Registering the Access Points of the Camera to Connect (ACCESS POINTS)

There are 4 ways to register the access points (wireless LAN router) for connection.

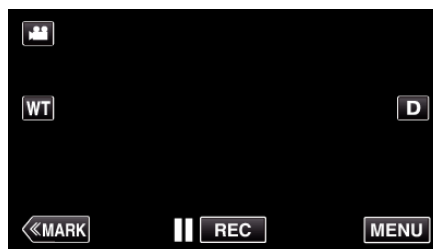
Wi-Fi Protected Setup (WPS) Registration	This is the easiest way of registration. Authentication method and wireless LAN setup are performed automatically in WPS, allowing easy registration of connection settings between devices.
Search and Register	A search is conducted to locate access points. Select and register an access point from the list of search results.
Manual Registration	Enter the name and authentication method manually to register an access point.
WPS PIN Registration	Enter the WPS PIN code of the camera to the access point to register.

Memo :

- By registering multiple access points, you can change connection to another access point by tapping on the desired one from the list.

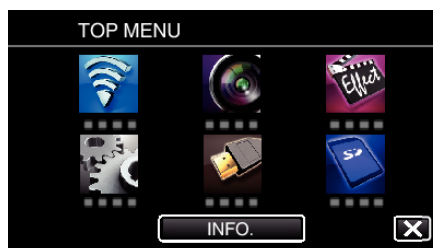
■ Wi-Fi Protected Setup (WPS) Registration

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



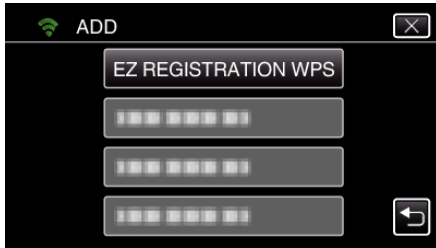
- 4 Tap "ACCESS POINTS".
(Operation on this camera)



- 5 Tap "ADD".
(Operation on this camera)



- 6 Tap "EZ REGISTRATION WPS".
(Operation on this camera)



- 7 Activate WPS of the access point (wireless LAN router) within 2 minutes.
 - To activate WPS, refer to the instruction manual of the device in use.

- 8 After registration is complete, tap "OK" on the camera's screen.
(Operation on this camera)



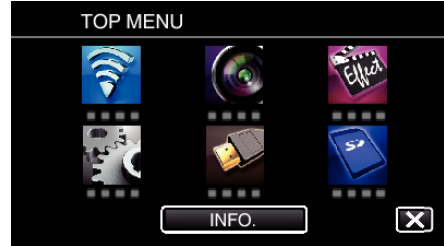
■ Search and Register

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

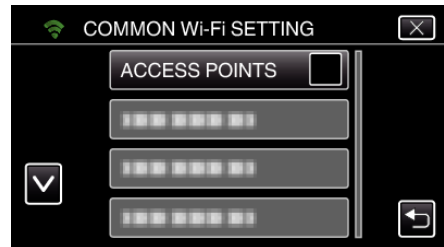
- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



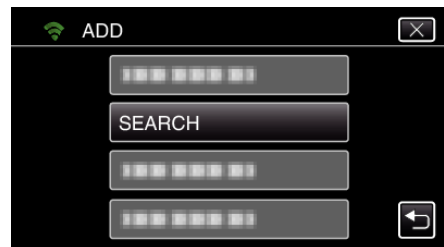
- 4 Tap "ACCESS POINTS".
(Operation on this camera)



- 5 Tap "ADD".
(Operation on this camera)

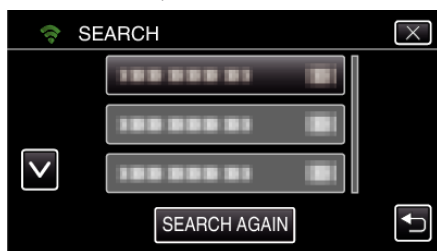


- 6 Tap "SEARCH".
(Operation on this camera)



- The search results appear on the camera's screen.

- 7 Tap the name (SSID) of the desired access point from the list of search results.
(Operation on this camera)



- 8 Register a password.
(Operation on this camera)



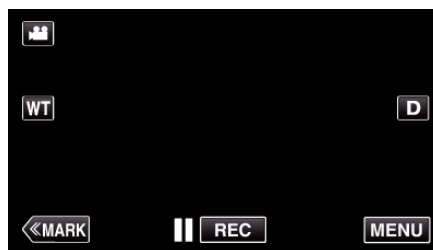
- Tap on the on-screen keyboard to enter characters. The character changes with every tap. "ABC", for example, enter "A" by tapping once, "B" by tapping twice, or "C" by tapping 3 times.
- Tap "DELETE" to delete a character.
- Tap "CANCEL" to exit.
- Tap "A/a/1" to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.
- The password is not required if the wireless LAN router is not security protected.

- 9 After registration is complete, tap "OK" on the camera's screen.
(Operation on this camera)



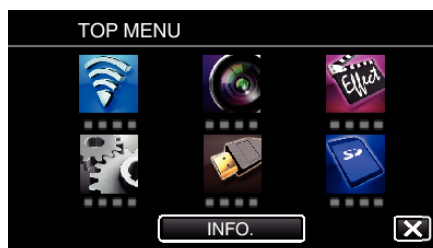
Manual Registration

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

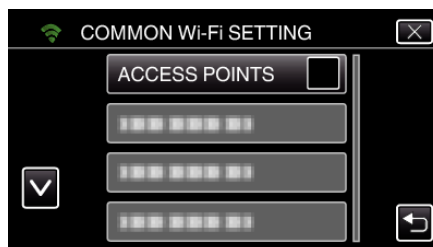
- 2 Tap the "Wi-Fi" icon.
(Operation on this camera)



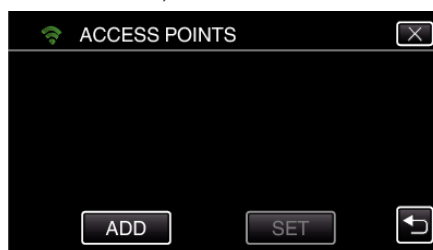
- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



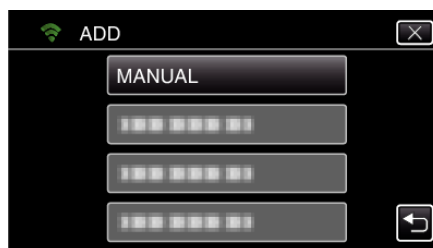
- 4 Tap "ACCESS POINTS".
(Operation on this camera)



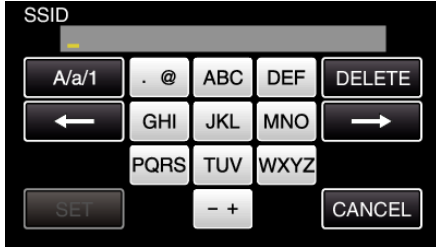
- 5 Tap "ADD".
(Operation on this camera)



- 6 Tap "MANUAL".
(Operation on this camera)

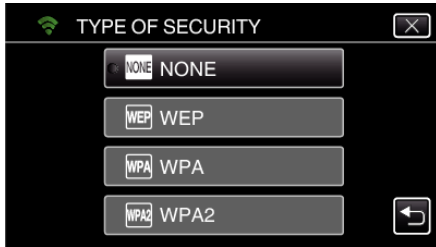


- Enter the name (SSID) of the access point (wireless LAN router) and tap "SET".
(Operation on this camera)



- Tap on the on-screen keyboard to enter characters. The character changes with every tap. "ABC", for example, enter "A" by tapping once, "B" by tapping twice, or "C" by tapping 3 times.
- Tap "DELETE" to delete a character.
- Tap "CANCEL" to exit.
- Tap "A/a/1" to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.

- Select the type of authentication method (security).
(Operation on this camera)



- Select according to the setting of your router.

- When authentication method is not set to "NONE", enter a password and tap "SET".
(Operation on this camera)



- Tap on the on-screen keyboard to enter characters. The character changes with every tap. "ABC", for example, enter "A" by tapping once, "B" by tapping twice, or "C" by tapping 3 times.
- Tap "DELETE" to delete a character.
- Tap "CANCEL" to exit.
- Tap "A/a/1" to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.

- After registration is complete, tap "OK" on the camera's screen.
(Operation on this camera)



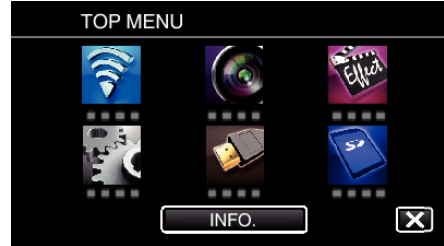
WPS PIN Registration

- Tap "MENU".
(Operation on this camera)

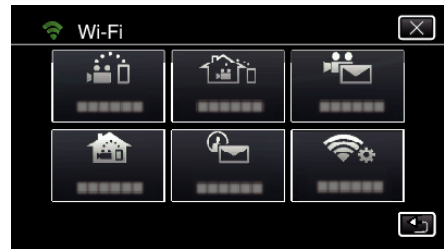


- The top menu appears.

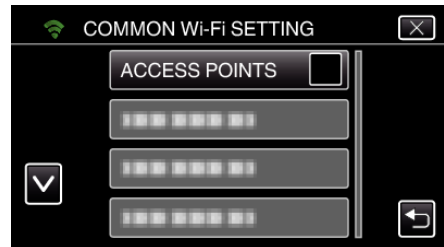
- Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



- Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



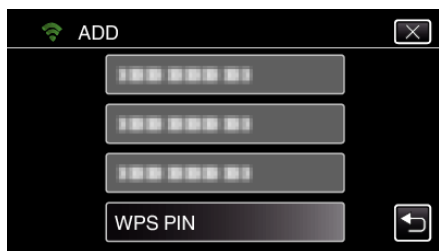
- Tap "ACCESS POINTS".
(Operation on this camera)



- Tap "ADD".
(Operation on this camera)



- 6 Tap "WPS PIN".
(Operation on this camera)



- The PIN code appears.
- 7 Enter the PIN code displayed on the camera to the access point (wireless LAN router).
 - For details on how to enter the PIN code, refer to the instruction manual of the device in use.
 - 8 Tap "START".
(Operation on this camera)



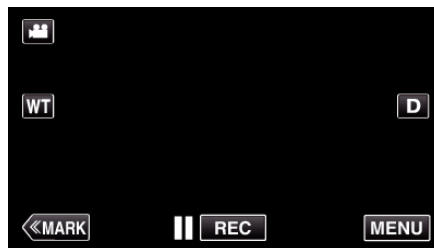
- Tap "START" after entering PIN code to the wireless LAN router. (Connection cannot be established if "START" is tapped before entering the code.)
- 9 After registration is complete, tap "OK" on the camera's screen.
(Operation on this camera)



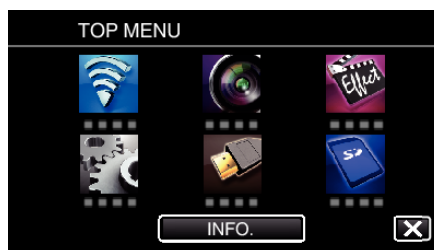
Editing LAN Settings of Access Points (Wireless LAN Router)

Change accordingly such as when you want to fix the IP address for the camera.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.
- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



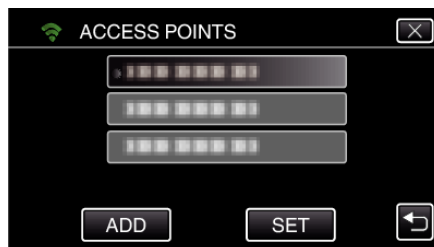
- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



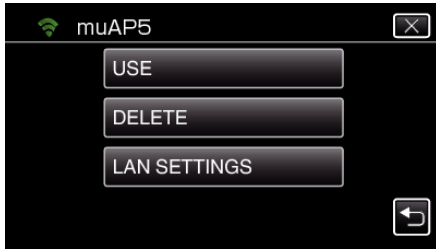
- 4 Tap "ACCESS POINTS".
(Operation on this camera)



- 5 Tap the access point for changing the settings.
(Operation on this camera)

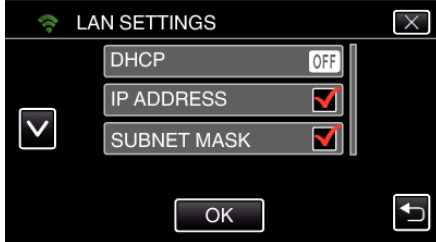


- 6 Tap "LAN SETTINGS".
(Operation on this camera)



- Tap "USE" to use the selected access point.
- Tap "DELETE" to delete the registered access point.

7 Perform the LAN settings. (when "DHCP" is set to "OFF")
(Operation on this camera)



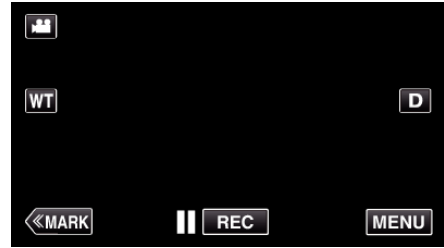
- After setting, tap "OK".
- LAN settings comprise of the following items.

DHCP	ON: Obtains IP address from the DHCP server automatically. OFF: Settings of "IP ADDRESS", "SUBNET MASK", "DEFAULT GATEWAY", "PRIMARY DNS", and "SECONDARY DNS" are required.
IP ADDRESS	Enter the IP address.
SUBNET MASK	Enter the subnet mask.
DEFAULT GATEWAY	Enter the default gateway.
PRIMARY DNS / SECONDARY DNS	Enter the IP addresses of the primary and secondary DNS servers.

Checking the MAC Address of this Camera

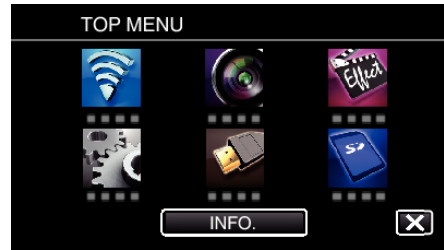
Displays the MAC address of the camera.

1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



4 Tap "MAC ADDRESS".
(Operation on this camera)

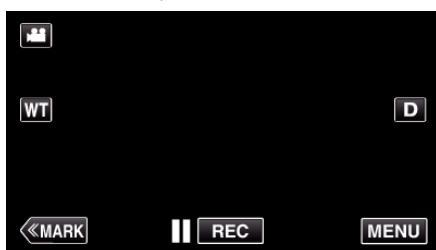


- The MAC address of the camera appears.
(The above shows the address during direct connection, while the below shows the MAC address when connected to an access point.)
- After checking, tap "OK".

Protecting the Network Settings with a Password

Sets a password to lock and protect the network settings.

- 1 Tap "MENU".
(Operation on this camera)

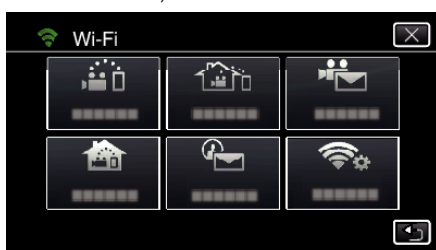


- The top menu appears.

- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



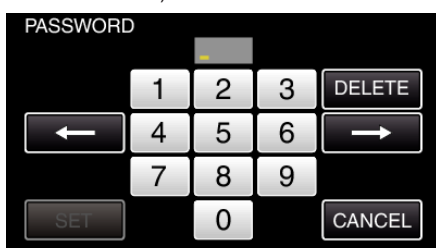
- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



- 4 Tap "LOCK SETTINGS".
(Operation on this camera)



- 5 Set a password (up to 4 characters).
(Operation on this camera)

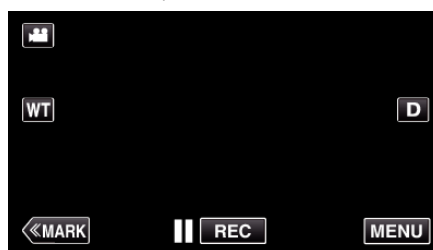


- Enter the 4-digit numbers.
- Tap "DELETE" to delete a character.
- Tap "CANCEL" to exit.
- Tap ← or → to move one space to the left or right.
- After setting, tap "SET".

Initializing the Wi-Fi Settings

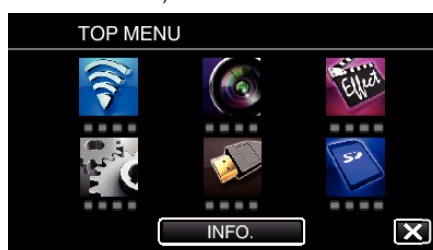
Returns the Wi-Fi settings to their default values.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

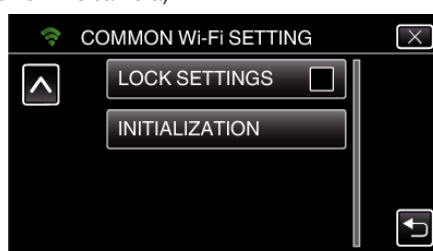
- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



- 4 Tap "INITIALIZATION".
(Operation on this camera)



- 5 Tap "YES".
(Operation on this camera)



- To cancel, tap "NO".
- When "YES" is tapped, the network settings return to their default values.

Using Smartphone Applications

- By installing the “Wireless sync.” smartphone software, images on the camera can be checked from a distance, and recording videos/still images and zooming operation can be performed.
- You can also send images recorded by the camera to the smartphone via Wi-Fi, to enjoy the recorded images on your smartphone or tablet.

Installing Smartphone Applications



Android Smartphone

- 1 Tap “PLAY STORE” on the application list.
- 2 Search for the “Wireless sync.” application.
- 3 Tap on the “Wireless sync.” application.
 - The detailed information of the application is displayed.
- 4 Tap “INSTALL”.
 - For applications that access data or functions of this unit, a screen that shows the data or functions that will be used is displayed.
- 5 Confirm the content and tap “DOWNLOAD”.
 - Downloading starts.

Deleting the Application

- 1 Tap “PLAY STORE” on the application list.
 - 2 Press the menu button and tap “My apps”.
- A list of previously downloaded applications is displayed.
- 3 Tap on the “Wireless sync.” application.
 - 4 Tap “Uninstall”, then tap “OK”.

Memo :

The specifications of Google Play are subject to changes without prior notice.

For operating details, refer to the help file of Google Play.

iPhone/iPad/iPod touch

- 1 Tap “App Store” on the home screen.
- 2 Search for the “Wireless sync.” application.
- 3 Tap on the “Wireless sync.” application.
 - The detailed information of the application is displayed.
- 4 Tap “FREE”→“INSTALL”.
 - Enter your password on the password entry screen.
 - Downloading starts.
 - The downloaded application will be added to the home screen automatically.

Deleting the Application

- 1 Press and hold the “Wireless sync.” application on the home screen.
- 2 Tap X to confirm the deletion.

Memo :

The specifications of App Store™ are subject to changes without prior notice.

For operating details, refer to the help file of App Store™.

Operating the Smartphone Applications

- Indications on the screen
- “Indications on the screen” (p. 122)
- Transferring videos

“Transferring Videos (AVCHD format)” (p. 130)

“Transferring Videos (MP4 format)” (p. 132)

- Transferring still images

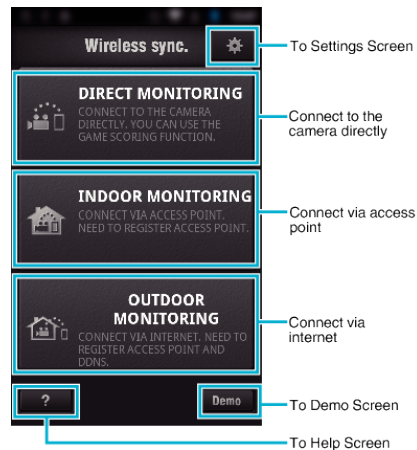
“Transferring Still Images” (p. 134)

- Changing the settings

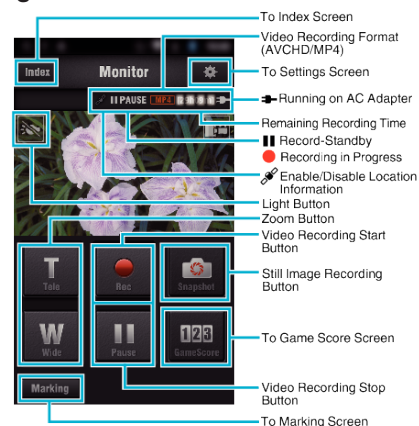
“Smartphone Application Settings” (p. 136)

Indications on the screen

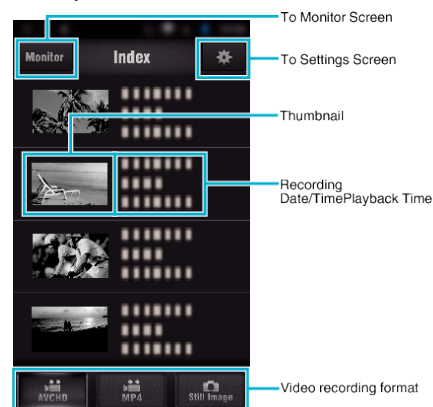
Initial Screen



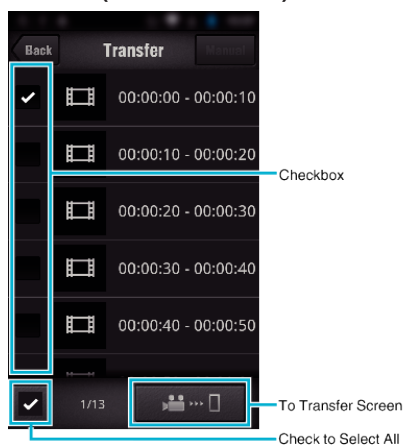
Recording Screen



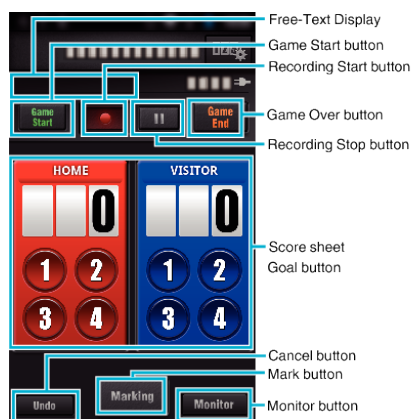
Index Screen (AVCHD Video/MP4 Video/Still image)



■ Transfer Screen (AVCHD Screen)



■ Game Score Screen



Caution :

- “Wireless sync.” for iPhone/iPad cannot be used when the iPhone/iPad is connected to the mobile phone network. To make use of this feature, connect to the camera or an access point via Wi-Fi.

Use of Marking

Enter the mark in the desired scene to make it easy to find the scene later.
* Establish a Wi-Fi connection by using the DIRECT MONITORING function.

■ Common for Android and iOS

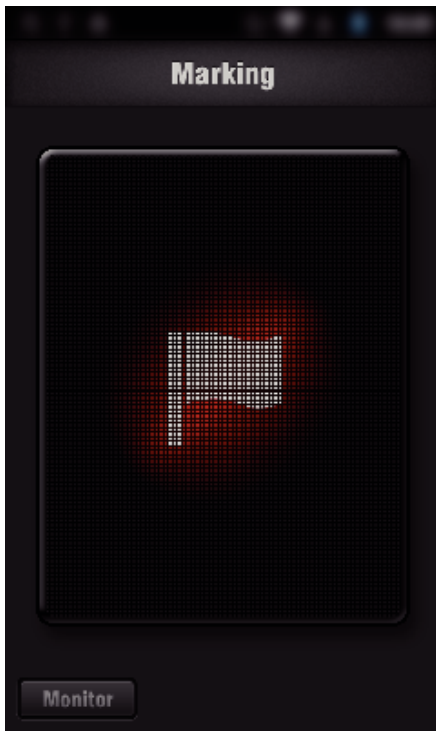
1 Tap ● to start recording the video.



2 Tap the “Marking” button at the scene you want to mark.



3 The marking screen appears.



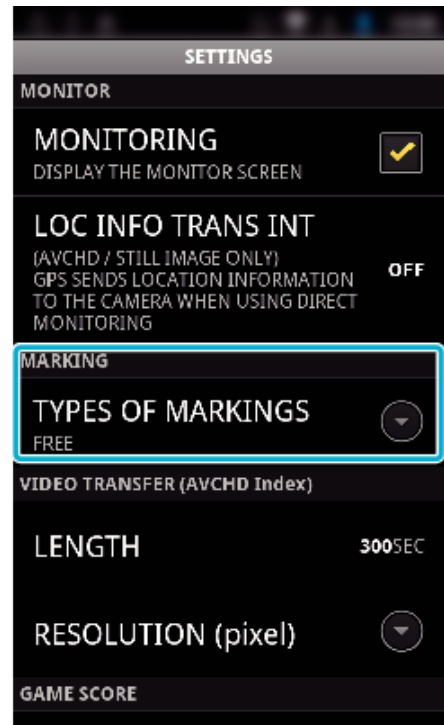
- Once a scene is marked, the next mark won't be made within 5 seconds.
- The type of marking can be changed in the setting menu.
- Tap "Monitor" to return to the monitor screen.

■ **Setting the type of marking**

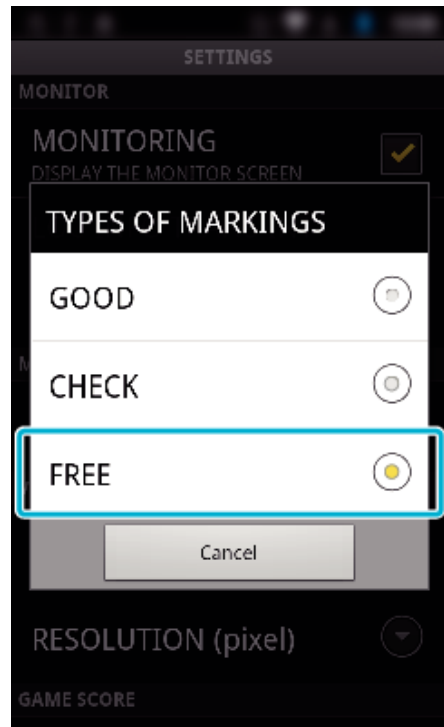
1 Tap .



2 Tap "TYPES OF MARKINGS".



3 Select a type of marking.



Using the Game Score

The scores of various sport games can be recorded with video images. Also, the recorded position can be marked to make it easy to find the scenes you want to view later.

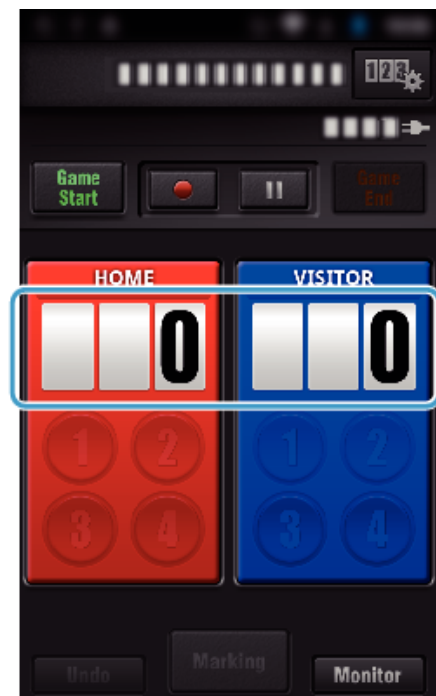
* Establish a Wi-Fi connection by using the DIRECT MONITORING function.

Common for Android and iOS

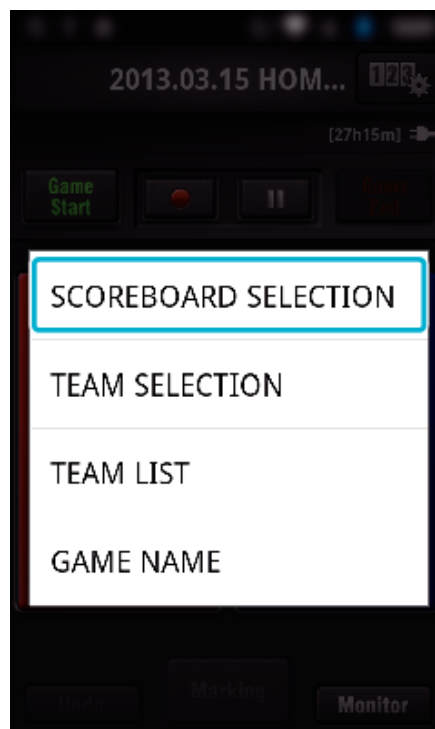
- 1 Tap "Game Score".



- 2 Tap the scorecard.



- 3 Tap "MODIFY SCOREBOARD".



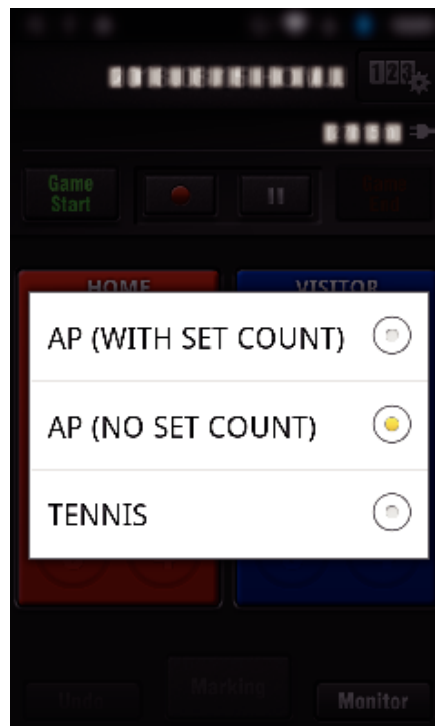
(for All-Purpose Scoreboard)

- Tap "TEAM SELECTION" to select the team.
- Tap "TEAM LIST" to add the team name, team color and players.
- Tap "Game Name" to set the name of the game.

(for Tennis Scoreboard)

- Tap "PLAYER SELECTION" to select player(s).
- Tap "PLAYER LIST" to add player(s).
- Tap "GAME RULES" to change the game rules.
- Tap "GAME NAME" to set the name of the game.

- 4 Tap the scoreboard to use.



- The following 3 types of scoreboard are available. Select a suitable scoreboard for the sport game you are recording.

Item	Details
AP (WITH SET COUNT)	Table tennis, volleyball, etc
AP (NO SET COUNT)	Football, baseball, basketball, etc

TENNIS	Tennis
--------	--------

5 Tap ● to start recording the video.



6 When the game is started, tap "Game Start".



7 Tap the number when the score is added.

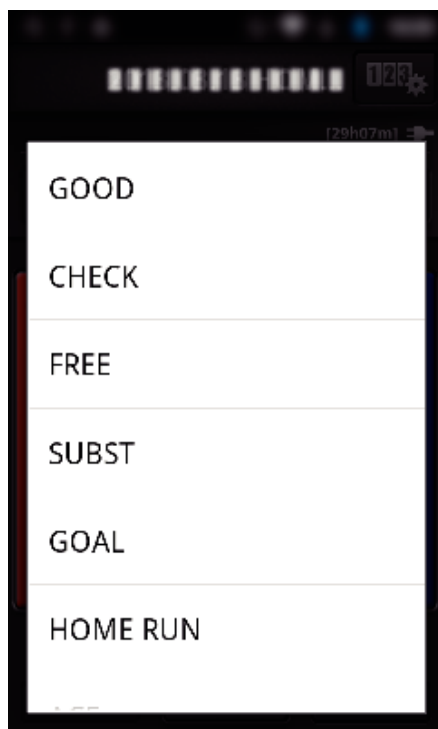


- To modify the score, tap the scorecard. ("ALL-PURPOSE SCOREBOARD" only)
"Modifying Game Score Directly" (p. 127)
- To enter characters, tap the scorecard.
"Entering Short Texts ("ALL-PURPOSE SCOREBOARD")" (p. 128)
"Entering Short Texts ("TENNIS SCOREBOARD")" (p. 129)
- Tap the "Undo" button to cancel the latest score entry.
- When the score is registered, next entry cannot be made for 5 seconds.

8 Mark the favorite scenes by tapping "Marking".



9 Tap a type of mark you want to enter.



- Once a scene is marked, the next mark won't be made within 5 seconds.

10 When the game is ended, tap "Game End".



- Tap "OK" if "DO YOU WANT TO EXIT?" appears.
- Check "STOP RECORDING" to stop video recording at the game end.
- Tap "Monitor" to return to the monitor screen in Step 1.

Memo :

- The score button can be selected for the "AP (NO SET COUNT)" scoreboard, depending on the type of the games.
- The next score won't be registered within 5 seconds after the marking operation. But the score can be registered right after the marking operation by changing the game score setting.

"Game Score Settings" (p. 137)

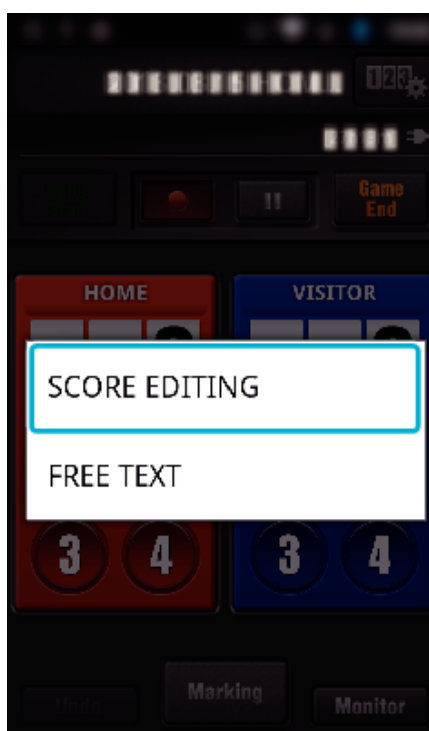
■ Modifying Game Score Directly

You can modify the game score directly. ("ALL-PURPOSE SCOREBOARD" only)

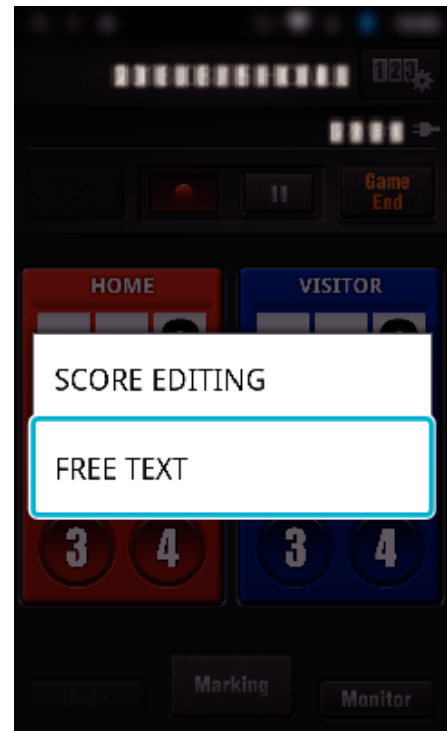
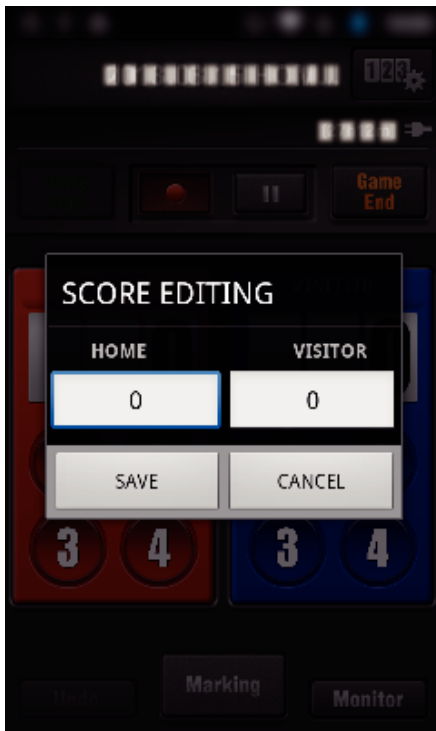
1 Tap the scorecard.



2 Tap "SCORE EDITING".



3 Enter the score, then tap "SAVE".



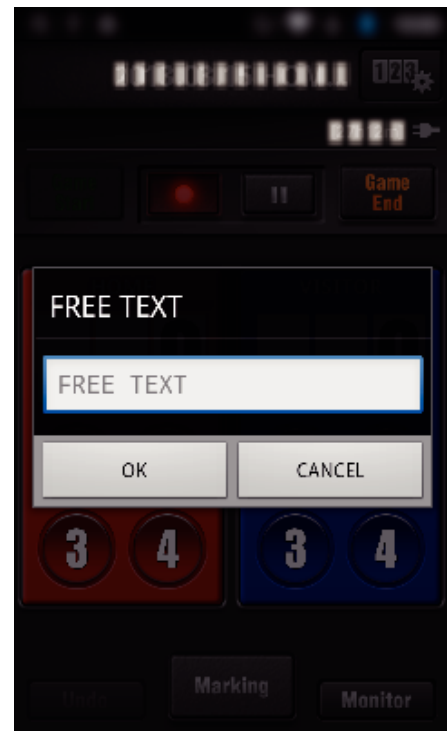
■ Entering Short Texts
("ALL-PURPOSE SCOREBOARD")

1 Tap the scorecard.



2 Tap "FREE TEXT".

3 Tap the "FREE TEXT" field to enter characters, and then tap "OK".



4 Entered characters appear on the top-left corner of the screen.

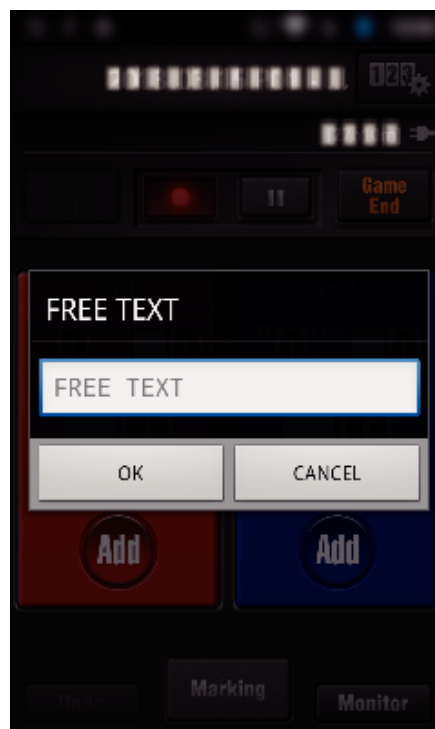


■ Entering Short Texts ("TENNIS SCOREBOARD")

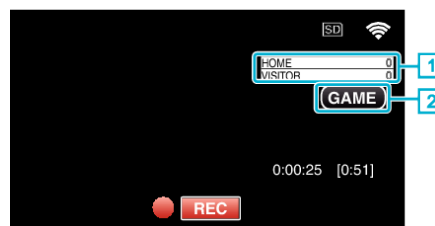
- 1 Tap the scorecard.



- 2 Tap "FREE TEXT".



■ Screen display of the camera while recording the game score



(ALL-PURPOSE SCOREBOARD)

- 1 Team name and score
Team name can be set prior to recording. (use alphabets and numbers)
"Game Score Settings" (p. 137)

- 2 Game score recording icon

(TENNIS SCOREBOARD)

- 1 Player name and score
Player name can be set prior to recording. (use alphabets and numbers)
- 2 Game score recording icon

Transferring Videos (AVCHD format)

Transfer videos recorded in AVCHD format to the smartphone.

- The video to be forwarded is converted to the following format.

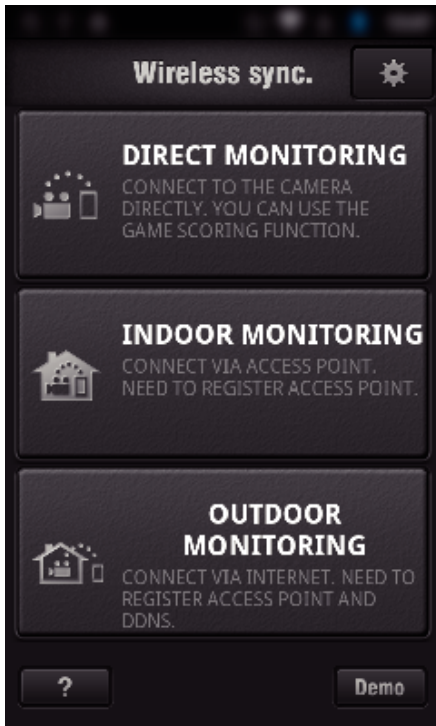
Item	Details	
System	MP4	
Video	Codec	H. 264/MPEG-4 AVC Baseline Profile
	Resolution * Bit rate is indicated in ()	1280X720 (3.6Mbps) 640X360 (1Mbps)
	Frame rate	25p
Audio	Coding system	AAC
	Sampling rate	48kHz
	Bit	16 bit
	Number of channels	2 ch

- 1 Start "Wireless sync." on the smartphone.



- Start the application after confirming that the smartphone is connected to this camera.

- 2 Select the connection type to the camera.

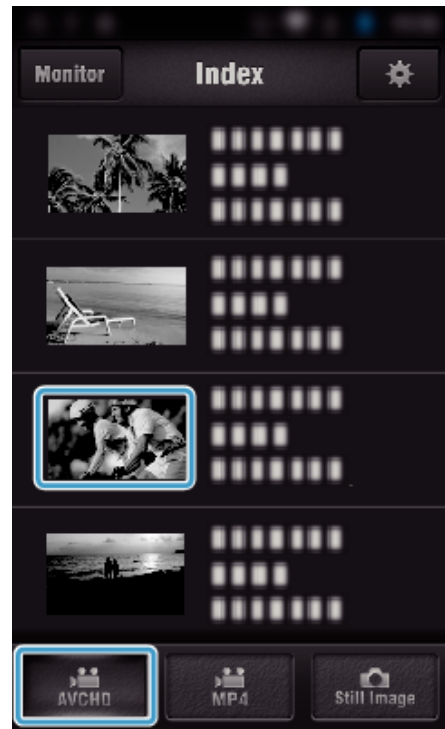


- Tap the current connection type.
- Recording screen appears.

- 3 Tap "Index".

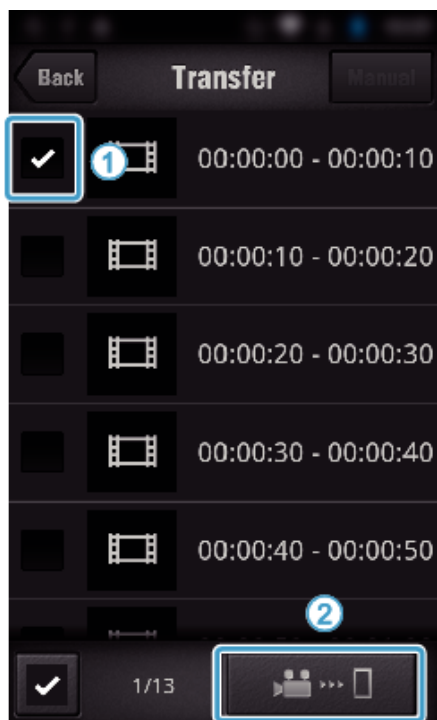


- 4 In the index screen, tap the desired images to transfer.



- Confirm that the "AVCHD" tab is indicated in the lower part of the screen.

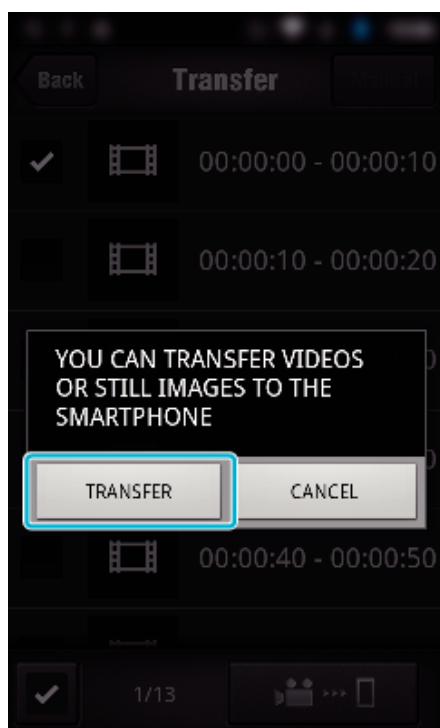
- 5 Files are displayed as a split files by certain lengths of time. Enter the check mark (①) to the files to transfer, and tap the transfer mark icon (②) on the lower right.



- Number of the selected image files is indicated next to the check mark in lower left.
- To set the length of video you are transferring, refer to the below instructions.

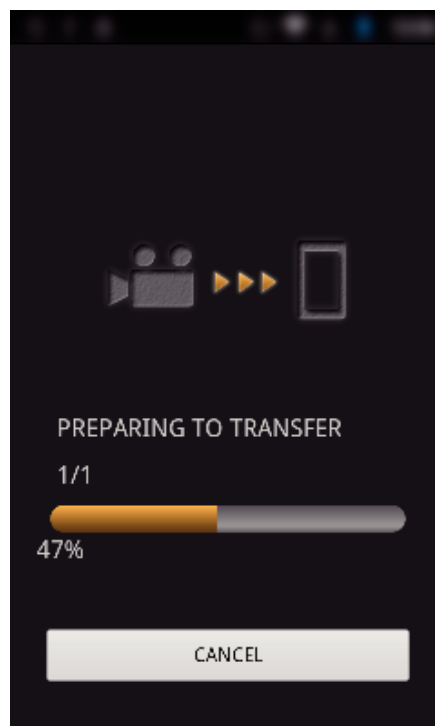
“Smartphone Application Settings” (p. 136)

6 Tap “TRANSFER”.



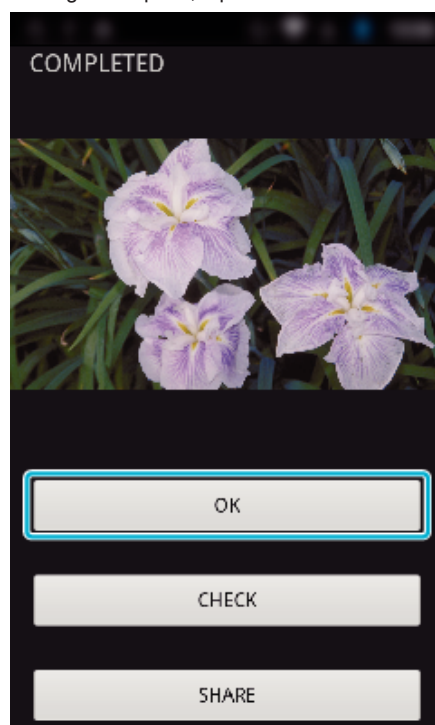
- Tap “CANCEL” to cancel the operation.

7 “TRANSFER” starts.



- Tap “CANCEL” to cancel the operation.

8 After transferring is complete, tap “OK”.

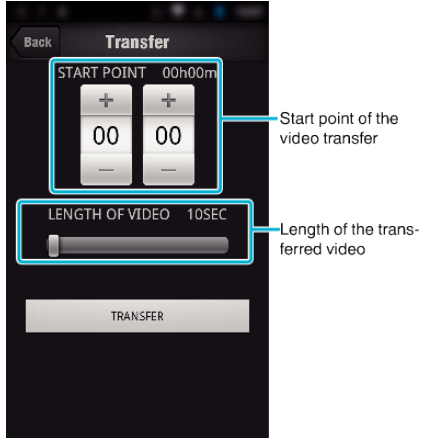


- To play back and check the video, tap “CHECK”. (Android only) (unavailable when multiple videos are transferred)
- To upload the video, tap “SHARE”. (Android only) (unavailable when multiple videos are transferred)
Tap the desired service, then proceed to the uploading process.
To make use of a service, it is necessary to perform registration beforehand.

Transferring manually

You can set the length of transferred video.

- 1 Tap "MANUAL" in step 5.
- 2 At the start point, enter the starting time of the video. Specify the lengths of the video by using the slider bar. (10 to 300 sec)
- 3 After confirming the setting, tap "TRANSFER", and then tap "TRANSFER" one more time.



- Length of the transferred video can be adjusted by using the slider bar.
- The longer the length of the transferred video is set, the longer it takes to transfer the video.

Transferring Videos (MP4 format)

Transfer videos recorded in MP4 format to the smartphone. (Depending on the smartphone in use, videos may not be played back.)

- Transferred videos are sent in the original file format.

- 1 Start "Wireless sync." on the smartphone.



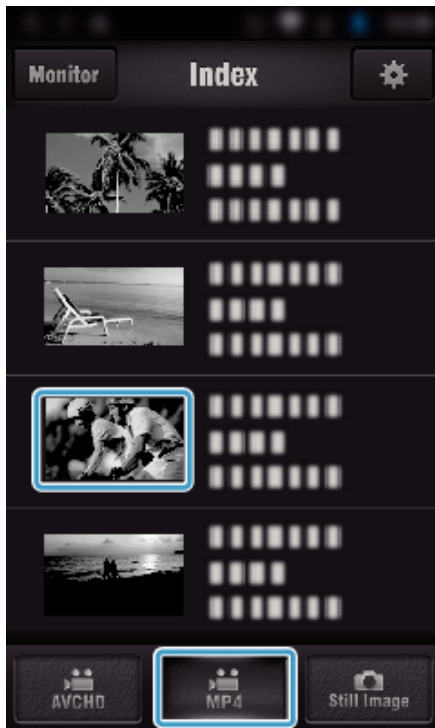
- Start the application after confirming that the smartphone is connected to this camera.
- 2 Select the connection type to the camera.




- Tap the current connection type.
 - Recording screen appears.
- 3 Tap "Index".

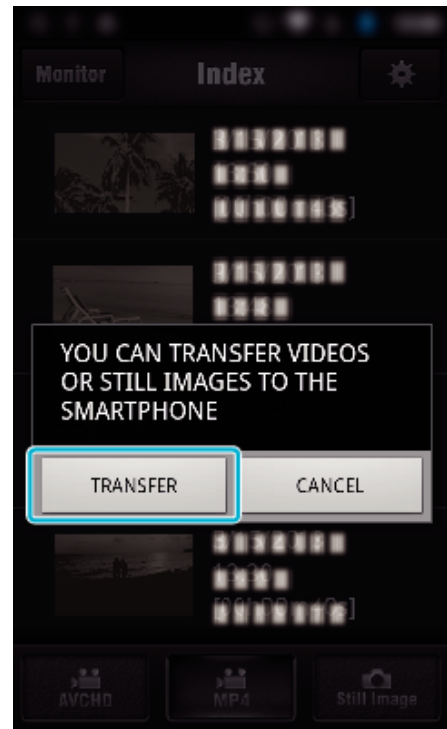


- 4 Select "MP4" from the tab at the bottom of the screen, and tap the video to transfer.



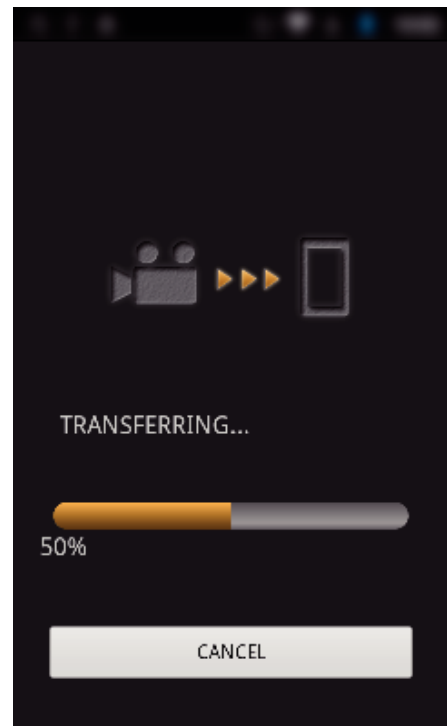
- Tap "Monitor" to return to the monitor screen.
- Tap  to move to the setting screen.

- 5 Tap "TRANSFER".



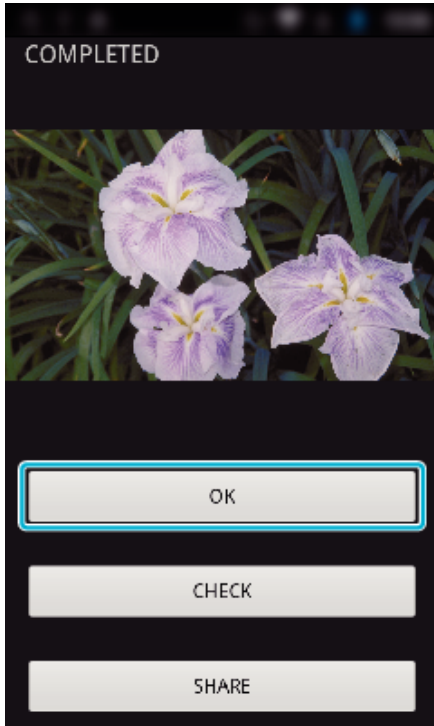
- Tap "CANCEL" to cancel the operation.

- 6 "TRANSFER" starts.



- Tap "CANCEL" to cancel the operation.

- 7 After transferring is complete, tap "OK".



- To play back and check the video, tap "CHECK". (Android only)
 - To upload the video, tap "SHARE". (Android only)
- Tap the desired service, then proceed to the uploading process. To make use of a service, it is necessary to perform registration beforehand.

Transferring Still Images

You can transfer recorded still images to your smartphone.

If the aspect ratio of the original still image is 4:3, the image is reduced by 1600X1200 when transferred.

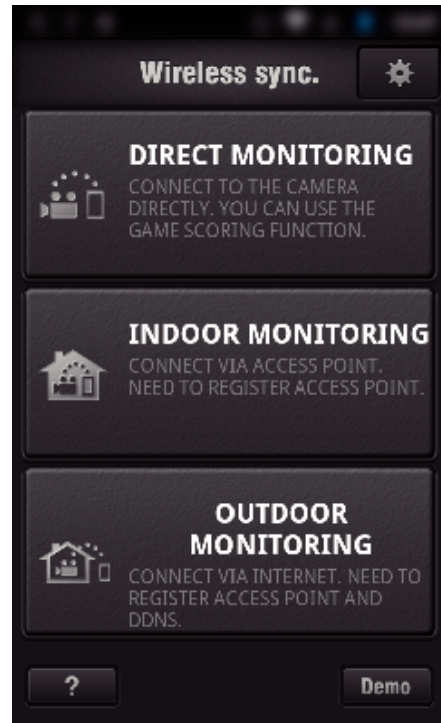
If the aspect ratio of the original still image is 16:9, the image is reduced by 1920X1080 when transferred.

- 1 Start "Wireless sync." on the smartphone.



- Start the application after confirming that the smartphone is connected to this camera.

- 2 Select the connection type to the camera.

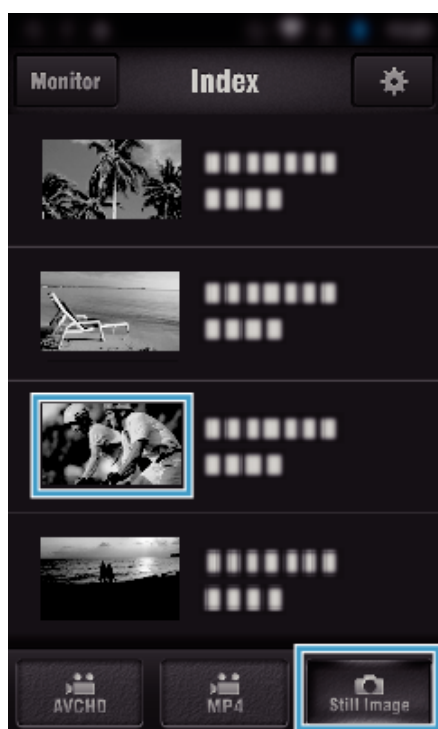



- Tap the current connection type.
- Recording screen appears.

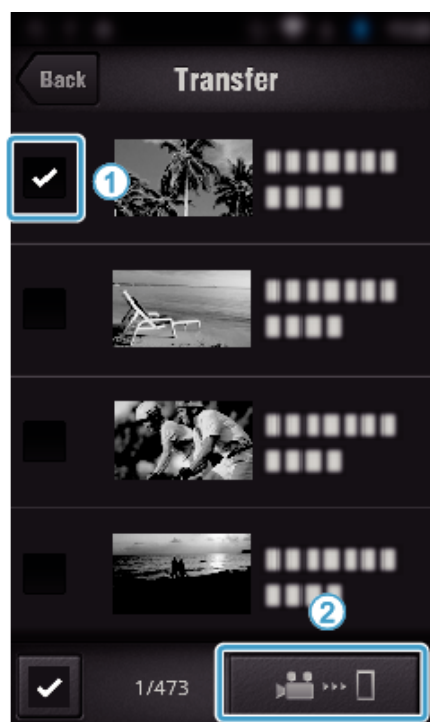
- 3 Tap "Index".



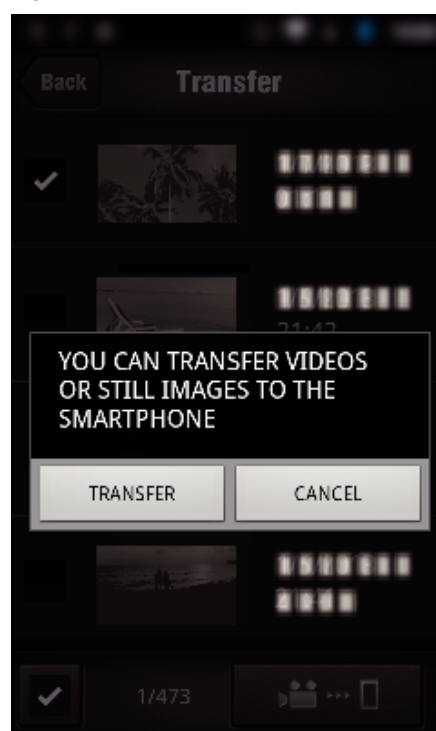
- 4 Select the "Still Image" tab in the lower part of the screen, and tap the index screen.



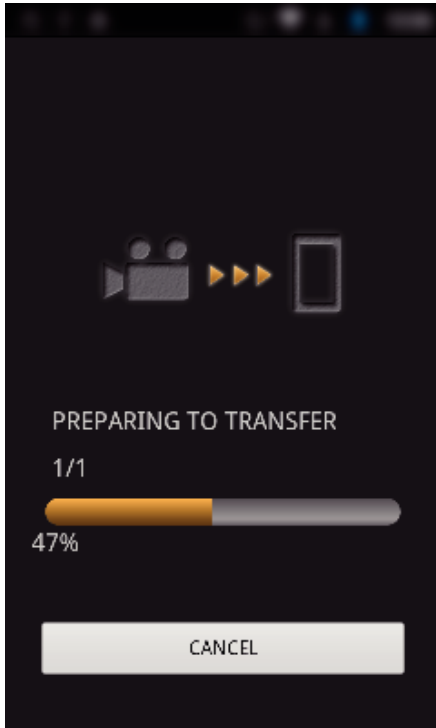
- Tap "Monitor" to return to the monitor screen.
 - Tap  to move to the setting screen.
- 5 Enter the check in the checkbox (1) to the still images to transfer, and tap the transfer mark icon (2) on the lower right.



- Tap "BACK" to return to the previous screen.
- 6 Tap "TRANSFER".

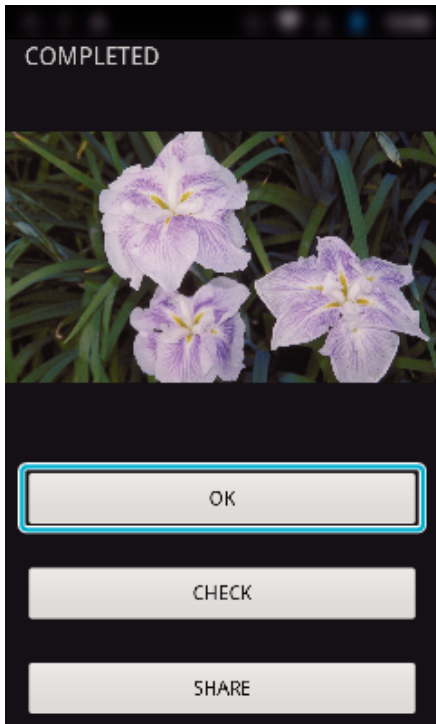


- Tap "CANCEL" to cancel the operation.
- 7 "TRANSFER" starts.



- Tap "CANCEL" to cancel the operation.

8 After transferring is complete, tap "OK".



- To play back and check the still image, tap "CHECK". (Android only) (unavailable when multiple still images are transferred)
- To upload the still image, tap "SHARE". (Android only) (unavailable when multiple still images are transferred)
Tap the desired service, then proceed to the uploading process.
To make use of a service, it is necessary to perform registration beforehand.

Smartphone Application Settings

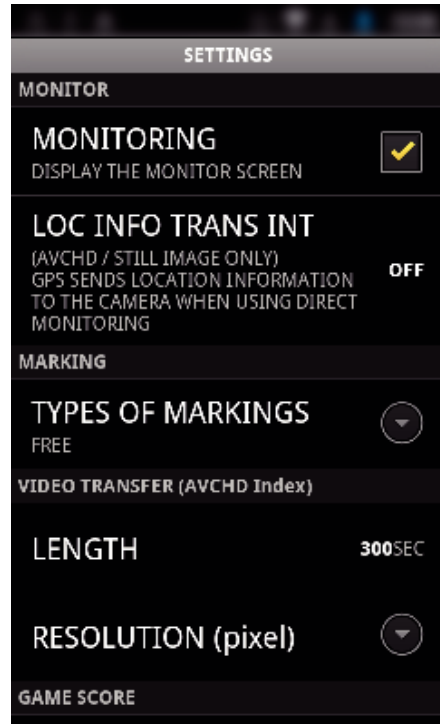
You can change the settings of the smartphone applications.

■ Common for Android and iOS

1 Tap .



2 Tap the desired setting.



Item	Details
MONITORING	Turns on/off the monitoring function of the screen. (Enter a check mark to set to "ON")
LOC INFO TRANS INT	Select the time interval for obtaining the GPS location information while the direct monitoring is in use. (Off - 15 SEC)
TYPES OF MARKINGS	Set the type of marking being used in the marking screen.
LENGTH	Set the length of video being transferred to the smartphone. (10 - 300SEC) Available for videos in AVCHD format only.
RESOLUTION (pixel)	Select the resolution of the video being transferred to the smartphone. ("1280×720" or "640×360") Available for videos in AVCHD format only.
GAME SCORE SETTING	Enter the recording methods of the game score, as well as the team information. "Game Score Settings" (p. 137)
URL	Enter the URL of the camera that is connected to the smartphone via wireless network.
HTTP AUTHORIZATION	Set the user name and the password for INDOOR MONITORING/OUTDOOR MONITORING. The default username is "jvccam" (fixed) and the password is "0000". (can be changed from camera)
NOT TO SLEEP MODE	Set to prevent the smartphone from entering into the sleep mode while the application is in use. (Enter a check mark to deactivate the sleep mode.)
HELP	Displays the help file.
LICENSE AGREEMENT	Displays the license agreement of the software. (Android only)

Memo :

- When connecting to INDOOR MONITORING/OUTDOOR MONITORING, you will be prompted to enter the URL or HTTP authorization if they are not entered or entered incorrectly.

Game Score Settings

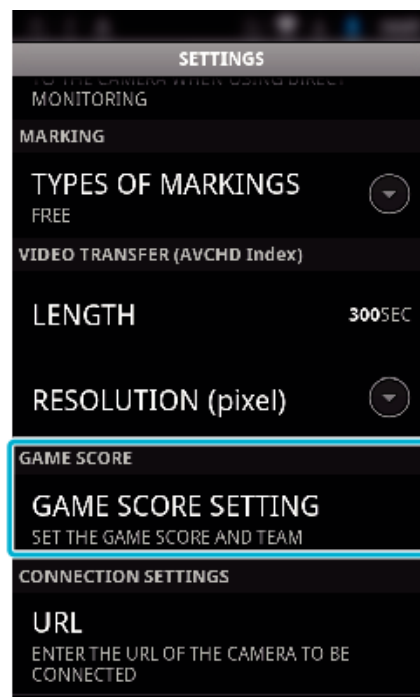
Enter the recording methods of the game score, as well as the team information.

■ **Common for Android and iOS**

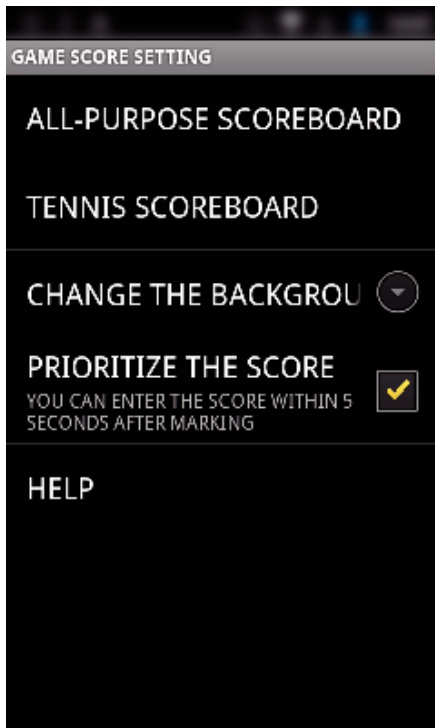
- 1 Tap .



- 2 Tap "GAME SCORE SETTING".



3 Tap the desired setting.



Item	Details
ALL-PURPOSE SCOREBOARD	<ul style="list-style-type: none"> Set "TEAM LIST" which uses "ALL-PURPOSE SCOREBOARD". Set "SCORE BUTTON SETTING" for "AP (NO SET COUNT)".
TENNIS SCOREBOARD	Set the game rule of tennis, such as "PLAYER LIST" and "NUMBER OF SETS".
CHANGE THE BACKGROUND	Set the background color of the game score screen.
PRIORITIZE THE SCORE	The score can be entered within 5 seconds after the mark operation by selecting the checkbox. However, the marked position is changed when the score is registered.
HELP	Displays the help file.

Memo :

- When the team name and player name are registered, the "↵" mark entered by the smartphone is displayed as "↵" (backslash) on this camera.

Using Tablet Applications

By installing a "JVC CAM Coach" tablet software, images recorded by the camera can be transferred to a tablet device via Wi-Fi. Functions such as playback of the recorded video, displaying 2 different playback images for comparison, self-checking and adding explanations on playback images are available.

Installing the Applications for a Tablet

Android Tablet

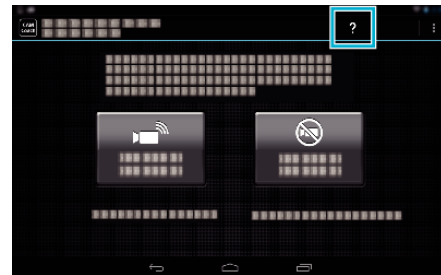
- 1 Tap "PLAY STORE" on the application list.
- 2 Search for the "JVC CAM Coach" application.
- 3 Tap on the "JVC CAM Coach" application.
 - Detailed information of the application is displayed.
- 4 Tap "INSTALL".
 - For applications that access data or functions of this unit, a screen that shows the data or functions that will be used is displayed.
- 5 Confirm the content and tap "DOWNLOAD".
 - Downloading starts.

iPad

- 1 Tap "App Store" on the home screen.
- 2 Search for the "JVC CAM Coach" application.
- 3 Tap on the "JVC CAM Coach" application.
 - Detailed information of the application is displayed.
- 4 Tap "FREE"→"INSTALL".
 - Enter your password on the password entry screen.
 - Downloading starts.
 - The downloaded application will be added to the home screen automatically.

Memo :

- For details on how to use the application, tap ? found in the application to open the help file.



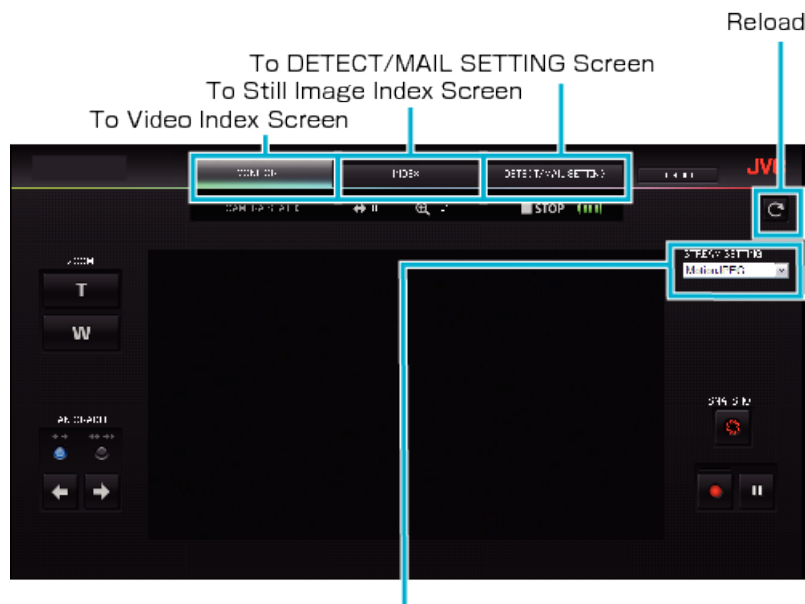
Using the Wi-Fi Function from a Web Browser

You can connect to the camera and make use of the Wi-Fi function from the web browser of a computer.

- Indications on the screen
- “Indications on the Screen” (p. 139)

Indications on the Screen

■ Recording Screen



Stream Format Selection (click “SET” to apply) Select the video format when monitoring from a browser.

MotionJPEG	Full HD: 1920x1080 / MPEG-2 TS format
Full HD	SD: 720x576 / MPEG-2 TS format
SD	MotionJPEG: 640x360 / MotionJPEG format

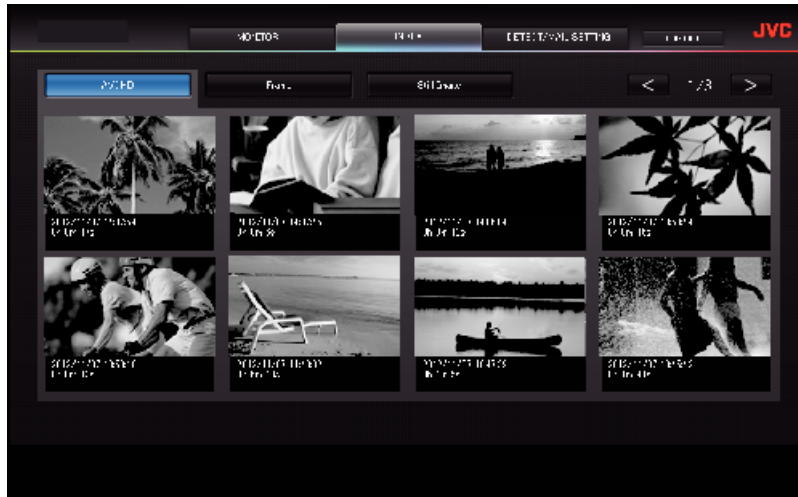
Memo :

- The full screen button is not displayed when the stream format is MotionJPEG.

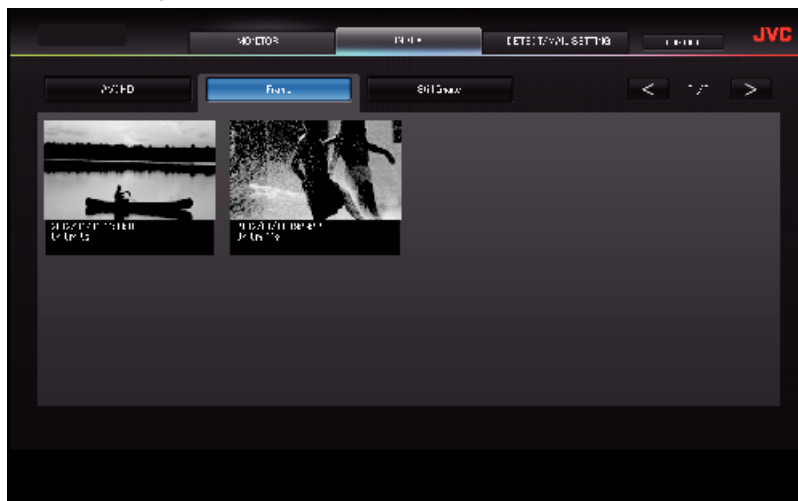
Caution :

- Features of the stream format are as follows:
 - Full HD/SD (MPEG-2 TS format)
 - Sound of the camera can be checked from the browser.
 - Recording operations cannot be performed from the browser.
 - MotionJPEG
 - Sound of the camera cannot be played back from the browser.
 - Recording and zoom operations can be performed from the browser.
- The monitor's image stops automatically after monitoring is performed continuously for 12 hours in Full HD or SD. (To resume, press the reload button)
- To use Full HD or SD, it is necessary to install Media Player 12 in advance.
- Lagging of the screen may be caused by the network speed or computer performance.
- If lagging is severe, reload the screen regularly. (It may take some time for the screen to be displayed after reloading.)
- For Full HD, make use of a computer with the following system requirements.
 - CPU Intel Core 2 Duo 2 GHz or higher
 - 2 GB memory or higher

■ Video Index Screen (Thumbnail Display) (AVCHD)

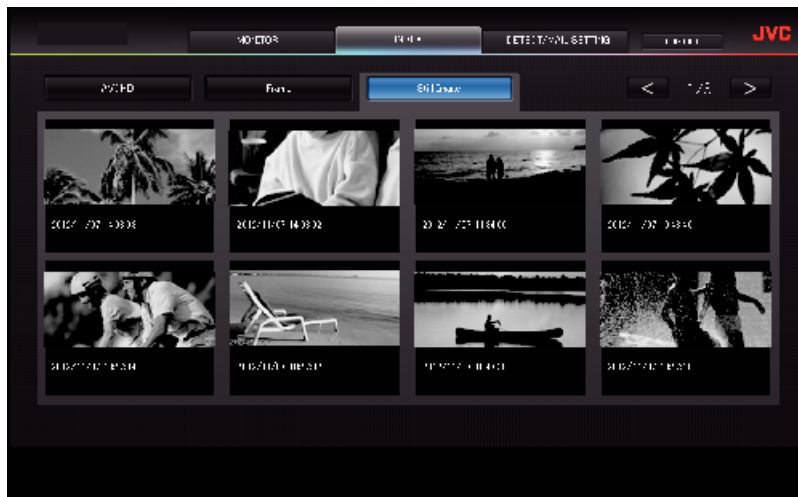


■ Video Index Screen (Thumbnail Display) (MP4/MOV)



- To download a video, click on the thumbnail.

■ Still Image Index Screen (Thumbnail Display)



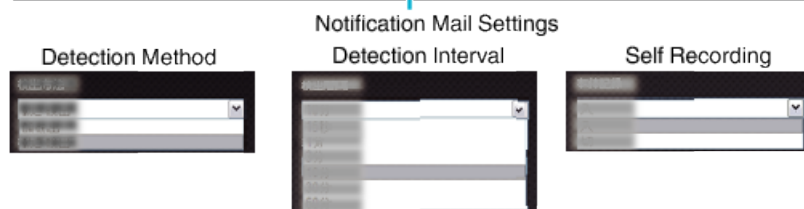
- To download a still image, click on the thumbnail.

■ DETECT/MAIL SETTING Screen

Notification mail settings such as detection method and recipient's e-mail address can be changed even when the camera is out of reach.

Registered e-mail addresses of recipients (Up to 8)

*A check mark appears on the selected address.



(click "REG." to apply)

Troubleshooting

Direct Monitoring

Trouble	Action
Unable to connect to camera. (URL required)	<ul style="list-style-type: none"> • Check whether the Wi-Fi connection is established successfully. • Check whether Wi-Fi is connected to "DIRECT_**JVCCAM". • Check whether the smartphone (or computer) is connected to the camera. • Try again after powering off and on the camera and the terminal (smartphone or computer).
Unable to browse internet on the computer when it is connected to the camera.	<ul style="list-style-type: none"> • The camera operates as an access point during direct monitoring. Most computers (or smartphones) cannot be connected to multiple access points at the same time. As such, internet browsing becomes temporarily unavailable if the computer (or smartphone) has been connected to the internet via wireless LAN. • Reconnect the computer to the wireless LAN router that is usually used for internet connection. If the computer is connected to the camera unintentionally, remove the camera connection from the computer. (The registered name is "DIRECT_**JVCCAM".) • Reconnect the computer to the wireless LAN router that is usually used for internet connection. If the computer is connected to the camera unintentionally, remove the camera connection from the computer. • Stop direct monitoring on the camera.
Video or audio is interrupted or delayed	<ul style="list-style-type: none"> • If the network speed is slow, videos and audio sound may be interrupted, or delay may become significant. • (For the web browser) Lagging may become significant due to the performance of the computer. If the stream format is set to "Full HD", change to "SD" or "Motion-JPEG" and try again. "Wi-Fi Specifications" (p. 146) • (For the web browser) If lagging is severe, reload the screen regularly. • (For a smartphone) Try to change the place and time to locate an environment with good signal strength.
The unit turns off automatically.	<ul style="list-style-type: none"> • To prevent the situation of forgetting to turn off the power, this unit will turn off automatically after 10 days of continuous usage.
Unable to set focus.	<ul style="list-style-type: none"> • When not monitoring from a smartphone (or computer), the focus of the camera is fixed. • Even when monitoring from a smartphone (or computer), focus of the camera will be fixed if not operated for more than 3 hours. (Focus works again when the camera is operated.)
Connection gets disconnected, or a "UNABLE TO CONNECT" message is displayed	<ul style="list-style-type: none"> • Establish a connection again at a place with good signal strength. Transmission speed may drop, or a connection may fail if the devices are placed too far away from each other, when there are objects in between, or when a microwave oven or other wireless devices are in use. • If a connection cannot be established again, restart the terminal (smartphone or computer). • If the camera is too far away from the smartphone (or computer), connection for direct monitoring may be difficult to be established depending on the environment. In this case, connect via an access point (wireless LAN router).

Access Point (Wireless LAN Router)

Trouble	Action
Unable to find an access point (wireless LAN router).	<ul style="list-style-type: none"> • Check whether the distance from the access point (wireless LAN router) is too far, or whether there are shielding materials in between. • If the access point (wireless LAN router) in use goes into the SSID stealth mode, perform manual registration or disable the stealth mode temporarily before registering. • In an environment with multiple access points, you may not be able to find the desired access point through searching. In this case, add the access point manually.
Unable to connect to access point (wireless LAN router).	<ul style="list-style-type: none"> • Check that the password is correct. • For manual connection, check that the SSID or authentication method is correct.
Unsure of which access point (wireless LAN router) to use.	<ul style="list-style-type: none"> • If the settings of the access point (wireless LAN router) have never been changed from their default values, check the following. <ul style="list-style-type: none"> - Check whether an adhesive label indicating the initial settings is attached to the body of the access point (wireless LAN router). - Check for the default settings in the instruction manual of the access point (wireless LAN router).
Unsure of password for the access point (wireless LAN router).	Refer to the instruction manual of the access point (wireless LAN router) in use.
Unable to connect via Wi-Fi Protected Setup (WPS).	<ul style="list-style-type: none"> • Simple connection methods other than WPS are not supported. Conduct a search for the access point to connect.


- Turn off the power of the camera, then try again.

INDOOR MONITORING (connection at home)

Trouble	Action
Unable to connect to the camera. (URL required)	<ul style="list-style-type: none"> • Check whether the Wi-Fi connection is established successfully. • Check to ensure that the camera and the terminal (smartphone or computer) are connected to the same access point. • Try again after powering off and on the camera and the terminal (smartphone or computer).
Unsure of URL to access from a web browser.	<ul style="list-style-type: none"> • After INDOOR MONITORING is started, tap "CAMERA NETWORK INFO." shown on the camera's screen. Enter the address as shown in "URL(WAN):" into the web browser to access it.
No image and sound when accessing from a web browser.	<ul style="list-style-type: none"> • If you have installed third-party video players, images and sounds may not be played back properly. • If the stream format is set to "Motion-JPEG" when transferring to the web browser, no sound will be output from the browser. • If recording of the video is in progress, no sound will be output from the browser.
Unable to access the entered URL. (cannot be found)	<ul style="list-style-type: none"> • Check that the camera is properly connected to an access point (wireless LAN router). (Wi-Fi appears on the camera's screen.) • Check that the computer is properly connected to an access point (wireless LAN router). Connection should be possible if it is connected to the internet. • Check that the URL is correct.
Unable to access the entered URL. (password required)	<ul style="list-style-type: none"> • Enter your username and password. The username is "jvccam" (fixed) and default password is "0000" (can be changed).
Video or audio is interrupted or delayed	<ul style="list-style-type: none"> • If the network speed is slow, videos and audio sound may be interrupted, or delay may become significant. • (For the web browser) Lagging may become significant due to the performance of the computer. If the stream format is set to "Full HD", change to "SD" or "Motion-JPEG" and try again. "Wi-Fi Specifications" (p. 146) • (For the web browser) If lagging is severe, reload the screen regularly. • (For a smartphone) Try to change the place and time to locate an environment with good signal strength.
The unit turns off automatically.	<ul style="list-style-type: none"> • To prevent the situation of forgetting to turn off the power, this unit will turn off automatically after 10 days of continuous usage.
Unable to set focus.	<ul style="list-style-type: none"> • When not monitoring from a smartphone (or computer), the focus of the camera is fixed. • Even when monitoring from a smartphone (or computer), focus of the camera will be fixed if not operated for more than 3 hours. (Focus works again when the camera is operated.)
Connection gets disconnected, or a "UNABLE TO CONNECT" message is displayed	<ul style="list-style-type: none"> • Establish a connection again at a place with good signal strength. Transmission speed may drop, or a connection may fail if the devices are placed too far away from each other, when there are objects in between, or when a microwave oven or other wireless devices are in use. • If a connection cannot be established again, restart the terminal (smartphone or computer).
Screen does not refresh or remains black	<ul style="list-style-type: none"> • Check if the camera and the access point are properly connected. Images cannot be detected on the terminal (smartphone or computer) if the camera is disconnected from the access point halfway through.

OUTDOOR MONITORING (connection from the Internet)

Trouble	Action
Unsure of URL to access from a web browser.	<ul style="list-style-type: none"> After OUTDOOR MONITORING is started, tap "CAMERA NETWORK INFO." shown on the camera's screen. Enter the address as shown in "URL(WAN):" into the web browser to access it.
The URL (WAN) does not appear in the network information.	<ul style="list-style-type: none"> The URL (WAN) will not appear if dynamic DNS is not set on the camera. To set dynamic DNS, perform the following steps. <ol style="list-style-type: none"> Obtain an account with JVC dynamic DNS service using your computer. Log in to JVC DNS and obtain the dynamic DNS service. Set the obtained dynamic DNS username and password on the camera. *Only the JVC dynamic DNS service can be set on this camera. The URL (WAN) will not appear if dynamic DNS is not set on the camera. To set dynamic DNS, perform the following steps. <ol style="list-style-type: none"> Obtain an account with JVC dynamic DNS service using your computer. https://dd3.jvckenwood.com/user/ Log in to JVC DNS and obtain the dynamic DNS service. Set the obtained dynamic DNS username and password on the camera. *Only the JVC dynamic DNS service can be set on this camera.
Unable to access the entered URL. (cannot be found)	<ul style="list-style-type: none"> This function cannot be used in an environment with two or more routers. Check that the dynamic DNS username and password are correct. The router in use is not compatible with UPnP, or UPnP is turned off. Check the instruction manual of the router in use, and turn on UPnP. The "UPnP" of the camera is set to "OFF". (By default, it is set to "ON".) Set "UPnP" to "ON". Depending on the terms of service with your provider, it may not be possible to obtain a global IP address. "Confirming global IP address" (☞ p. 95) Check whether a terminal that uses port 80 (such as web servers) has been set in the network, or if a specific terminal has been set to use port 80 on the router. In such case, change the "HTTP Port" of the camera. "Changing the HTTP Port (DIRECT MONITORING/INDOOR MONITORING/OUTDOOR MONITORING)" (☞ p. 107) Try again after powering off and on the camera and the terminal (smartphone or computer).
Video or audio is interrupted or delayed	<ul style="list-style-type: none"> If the network speed is slow, videos and audio sound may be interrupted, or delay may become significant. (For the web browser) Lagging may become significant due to the performance of the computer. If the stream format is set to "Full HD", change to "SD" or "Motion-JPEG" and try again. "Wi-Fi Specifications" (☞ p. 146) (For the web browser) If lagging is severe, reload the screen regularly. (For a smartphone) Try to change the place and time to locate an environment with good signal strength.
The unit turns off automatically.	<ul style="list-style-type: none"> To prevent the situation of forgetting to turn off the power, this unit will turn off automatically after 10 days of continuous usage.
Unable to set focus.	<ul style="list-style-type: none"> When not monitoring from a smartphone (or computer), the focus of the camera is fixed. Even when monitoring from a smartphone (or computer), focus of the camera will be fixed if not operated for more than 3 hours. (Focus works again when the camera is operated.)
Connection gets disconnected, or a "UNABLE TO CONNECT" message is displayed	<ul style="list-style-type: none"> Establish a connection again at a place with good signal strength. Transmission speed may drop, or a connection may fail if the devices are placed too far away from each other, when there are objects in between, or when a microwave oven or other wireless devices are in use. If a connection cannot be established again, restart the terminal (smartphone or computer).
Screen does not refresh or remains black	<ul style="list-style-type: none"> Check if the camera and the access point are properly connected. Images cannot be detected on the terminal (smartphone or computer) if the camera is disconnected from the access point halfway through.
"XUPnP" is displayed.	<p>This appears when UPnP has failed.</p> <ul style="list-style-type: none"> Check whether the wireless LAN router in use is compatible with UPnP. (Refer to the instruction manual of the wireless LAN router in use, or consult the manufacturer of the router.) When the wireless LAN router in use is compatible with UPnP, turn on the UPnP function. If the icon does not disappear even when the UPnP function is enabled, turn off and on the power of the wireless LAN router in use as well as the camera, then try again.
Unable to connect although "XUPnP" is displayed.	<ul style="list-style-type: none"> When "UPnP" is set to "OFF", "XUPnP" will not appear. In such cases, set "UPnP" to "ON". When the port 80 has been used by other devices via UPnP, a connection cannot be established. Reconnect the camera.

- When the “HTTP Port” of the camera (set to “80” by default) is used by another device, a connection cannot be established. Change the “HTTP Port” of the camera.
- “Changing the HTTP Port (DIRECT MONITORING/INDOOR MONITORING/OUTDOOR MONITORING)”
( p. 107)

E-mail (Notification Mail, Video Mail)

Trouble	Action
Unable to send e-mails.	<ul style="list-style-type: none"> • Check that the settings of the e-mail server are correct. • Check that the settings of the sender's e-mail address are correct. • Check that the username and password are correct. • If you are using an e-mail service that is not from your provider, it may be necessary to change the SMTP settings. • Some free e-mail services from web browsers or e-mail softwares (SMTP) may have default SMTP settings that do not allow e-mails to be sent. Change the SMTP settings to allow sending of e-mails before use.
Sent e-mails are not received.	<ul style="list-style-type: none"> • Check whether notifications indicating errors have been sent to the sender's e-mail address. (Make use of a computer or similar devices as it is not possible to check from the camera.) - If no notifications are received: Refer to “Unable to send e-mails.” and adjust the settings accordingly. - If notifications are received: Check the content of the notification. <p>*Note: Do not continue sending e-mails with the same settings if you receive error notifications. Depending on the provider, you may be marked as a sender of spam (junk mail).</p>
Unable to attach images to e-mails.	<ul style="list-style-type: none"> • Depending on the provider, some attached files may be deleted. Make use of other free e-mail services.
The unit turns off automatically.	<ul style="list-style-type: none"> • To prevent the situation of forgetting to turn off the power, this unit will turn off automatically after 10 days of continuous usage.
Unable to set focus.	<p>(For DETECT/MAIL SETTING)</p> <ul style="list-style-type: none"> • While on standby for notification mails, the focus is fixed. Perform the camera settings first, then enable the notification mails. <p>Focus may not be set correctly if the notification mails start before camera settings are made. In this case, disable the notification mails temporarily, then enable it again.</p>

Vide/Still Image Transmission

Trouble	Action
Unable to transfer videos and still images to smartphone (or computer).	<ul style="list-style-type: none"> • Check the amount of remaining free space in the destination medium (smartphone or computer).

Wi-Fi Specifications

Wi-Fi Specifications

Item	Details
Wireless LAN Standard	IEEE802.11b/g/n (2.4GHz band)
Wi-Fi security	Encryption: WEP, WPA, WPA2 *WPA and WPA2 are supported only by the personal mode (PSK).

DIRECT MONITORING / INDOOR MONITORING / OUTDOOR MONITORING

■ When Using Wireless sync.

Item	Details
Supported Terminals	<p>iPhone/iPad/iPod touch: iOS 5.1 or later Android: Android 2.3 or later</p> <ul style="list-style-type: none"> There is no guarantee that the operations will work with all terminals. "Wireless sync." for iPhone/iPad cannot be used when the iPhone/iPad is connected to the mobile phone network. To make use of this feature, connect to the camera or an access point via Wi-Fi. A network environment with a minimum line speed of about 5.3 Mbps is recommended for both the camera sending the data and the smartphone terminal receiving the data. If the network speed is too low, video images may appear jumpy, or audio sound may be interrupted or delayed.
Monitor Screen	<p>Video: JPEG 640x360 max. 15 fps Audio: linear PCM 8kHz 16 bits 1ch</p>
Video Transmission	<p>Video: MP4-compliant H.264 Baseline Profile 640x360 or 1280x720 25p Audio: AAC 48kHz 16 bits 2ch</p>
Still Image Transmission	JPEG format

■ When Using Web Browser

Item	Details
Operating Environment	<p>Windows 7: Internet Explorer 9 or a later version, and Windows Media Player 12 or a later version are installed</p> <ul style="list-style-type: none"> For Full HD, make use of a computer with the following system requirements. <ul style="list-style-type: none"> CPU: Intel Core 2 Duo 2 GHz or higher Memory: 2 GB or higher A network environment with the following line speed is recommended for both the camera sending the data and the PC receiving the data. <ul style="list-style-type: none"> MotionJPEG: approx. 1.7 Mbps or higher Full HD: approx. 10 Mbps or higher SD: approx. 3 Mbps or higher <p>If the network speed is too low, video images may appear jumpy, or audio sound may be interrupted or delayed.</p>
Monitor Screen	<ul style="list-style-type: none"> MotionJPEG Video: JPEG 640x360 max. 5 fps Audio: nil Full HD Video: MPEG-2 TS compliant H.264 High Profile 1920x1080 50i Audio: AAC 48kHz 16 bits 2ch SD Video: MPEG-2 TS compliant H.264 Main Profile 720x576 50i Audio: AAC 48kHz 16 bits 2ch
Video Transmission	MPEG-2TS format (no conversion)
Still Image Transmission	JPEG format (no conversion)

VIDEO MAIL

Item	Details
Video	MP4-compliant H.264 Baseline Profile 640x360 25p

Audio	AAC 48kHz 16 bits 2ch
Time	Max. 15 seconds

DETECT/MAIL

Item	Details
Still Image Transmission	JPEG 640x360

DIRECT MONITORING

You can monitor images being captured by this unit to your smartphone or PC. While you are busy, you can monitor your baby who is sleeping in the room next door.

INDOOR MONITORING

Images being captured by this unit can be set to your PC or smartphone when your children return home, via the wireless LAN router.

OUTDOOR MONITORING

Images being captured by this unit can be sent to the grandparents' PC or smartphone, by the wireless LAN (Wi-Fi spot) via the Internet.

DETECT/MAIL

When your child returns home while you are away, a still image is sent to you by e-mail.

VIDEO MAIL

Let's send video messages (Good morning, Good night) to your father or husband who is on the business trip.

DIRECT MONITORING

- **Setting (Once setting is done, start from the “Regular Operation” below)**

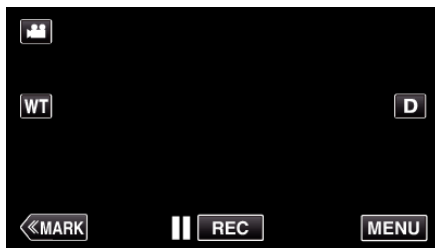
Create a QR code.

- **Enter values in the required items for direct monitoring.**

- Password: set a password to connect this camera to the device by direct monitoring. (8 to 63 characters (64 characters in case of hexadecimal))
- Enforced Group Owner: setting used to enable a connection with a device that does not support Wi-Fi Direct. Normally set to “ON”.
- HTTP Port: Normally set to “80”.
- SCORE RECORDING: Sets whether to record score displays in the video. (Recorded score display cannot be deleted later.)

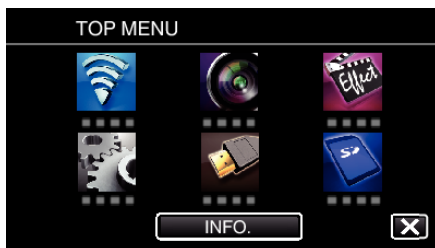
Display the screen for reading the QR code.

- 1 Tap “MENU”.
(Operation on this camera)

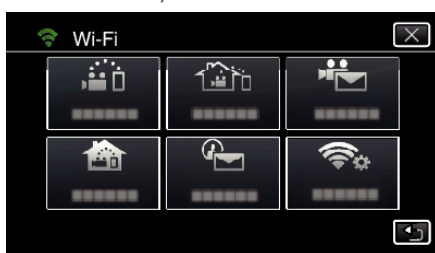


- The top menu appears.

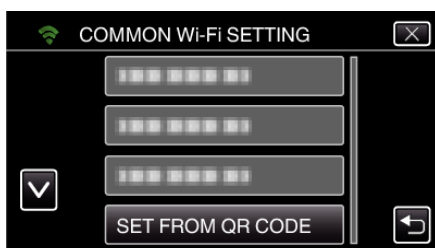
- 2 Tap the “Wi-Fi” (📶) icon.
(Operation on this camera)



- 3 Tap “COMMON Wi-Fi SETTING”.
(Operation on this camera)



- 4 Tap “SET FROM QR CODE”.

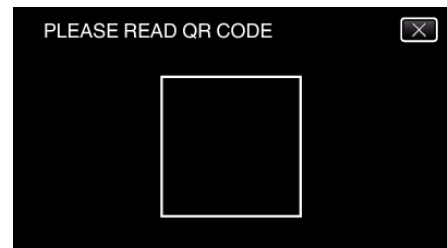


- 5 Tap “EXECUTE”.

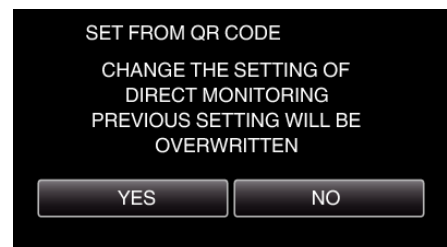


Read a QR code.

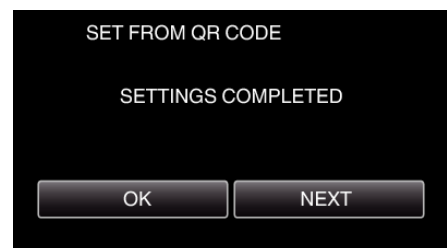
- 1 Read a QR code.
(Operation on this camera)



- 2 Tap “YES”.



- 3 Tap “OK”.



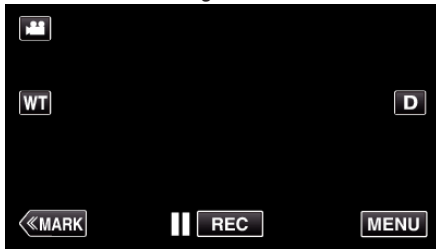
- Tap “NEXT” to return to the screen to read the QR code.
- Set contents are saved.

■ Regular Operation

Connecting the Smartphone to the Camera Wirelessly

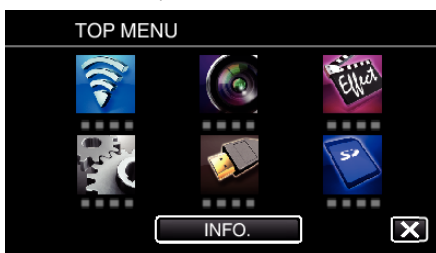
■ Connection by entering the Wi-Fi password

- 1 Tap "MENU".
(Operation on this camera)
Set the camera to the recording mode.



- The top menu appears.

- 2 Tap the "Wi-Fi" (📶) icon.
(Operation on this camera)



- 3 Tap the "DIRECT MONITORING" (📶) icon in the "Wi-Fi" menu.
(Operation on this camera)



- 4 Tap "START" (➡).
(Operation on this camera)



- 5 Check the SSID and the PASS being displayed on the screen of the camera.



- 6 Select the SSID in step 5 from the Wi-Fi network selection screen of your smartphone, and enter the PASS on the password screen.
(Operation on the smartphone (or computer))



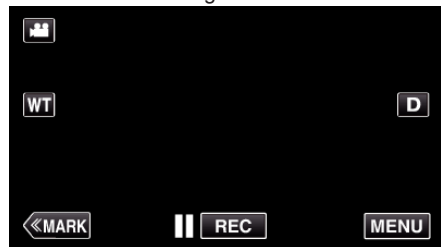
- For details on connecting your smartphone (or computer) to a Wi-Fi network, please refer to the instruction manual of the phone terminal in use.

- 7 A connection is established and 📶 appears on the camera's screen.



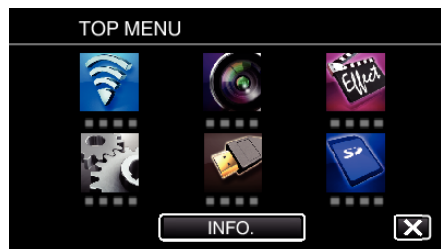
■ Connection by Wi-Fi Protected Setup (WPS)

- 1 Tap "MENU".
(Operation on this camera)
Set the camera to the recording mode.



- The top menu appears.

- 2 Tap the "Wi-Fi" (📶) icon.
(Operation on this camera)



- 3 Tap the "DIRECT MONITORING" (📶) icon in the "Wi-Fi" menu.
(Operation on this camera)



- 4 Tap "START" (➡).
(Operation on this camera)



- 5 Tap "WPS".
(Operation on this camera)



- 6 Activate WPS on the smartphone (or computer) within 2 minutes.
(Operation on the smartphone (or computer))



- To activate WPS, refer to the instruction manual of the device in use.

- 7 A connection is established and appears on the camera's screen.



Monitoring the Images from a Smartphone (or Computer)

■ Smartphone (Android / iPhone)

Memo :

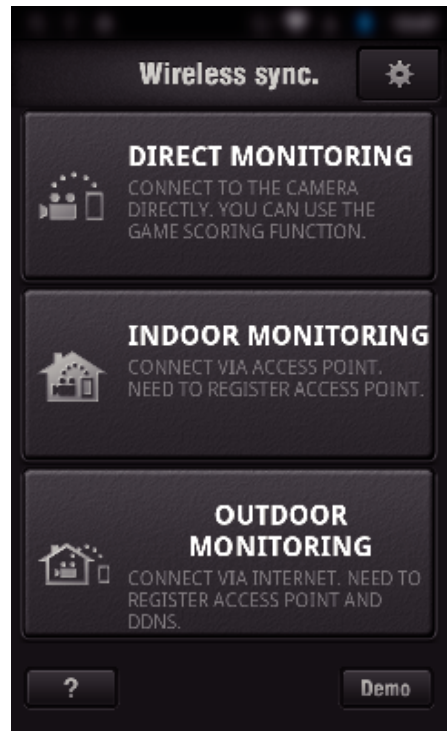
- Prior to use this function, a smartphone application needs to be installed on the smartphone.

"Installing Smartphone Applications" (p. 122)

- 1 Start "Wireless sync." on the smartphone after setting DIRECT MONITORING.



- 2 Tap "DIRECT MONITORING".



- 3 The recording screen is displayed.



- 4 Operate from a smartphone



- How to operate from a smartphone
"Using Smartphone Applications" (p. 122)

■ Computer (Windows 7)

- 1 Tap the URL button shown on the camera's screen.
(displayed when the computer and the camera are connected wirelessly.)



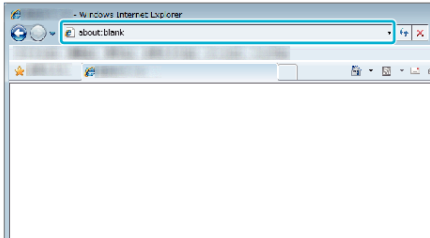
- The URL for the computer to connect to appears.

- 2 Check the URL displayed on the camera screen, which starts from "http://".



- After checking the URL, tap "QUIT" to return to the previous screen.

- 3 Start Internet Explorer (web browser) on the computer and enter the URL.



INDOOR MONITORING

- Setting (Once setting is done, start from the "Regular Operation" below)

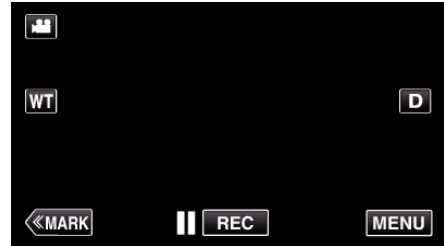
Create a QR code.

- Enter values in the required items for indoor monitoring.

- Password: set a password to connect this camera to the device via an access point. (Not more than 8 characters)
- HTTP Port: Normally set to "80".

Display the screen for reading the QR code.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



- 4 Tap "SET FROM QR CODE".

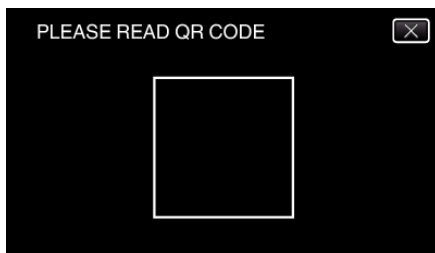


- 5 Tap "EXECUTE".

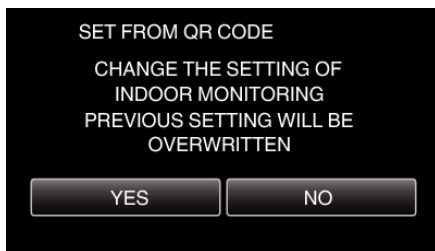


Read a QR code.

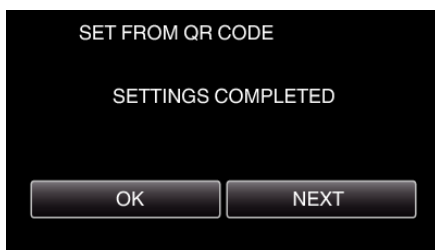
- 1 Read a QR code.
(Operation on this camera)



- 2 Tap "YES".



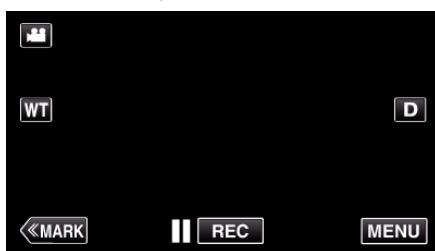
- 3 Tap "OK".



- Tap "NEXT" to return to the screen to read the QR code.
- Set contents are saved.

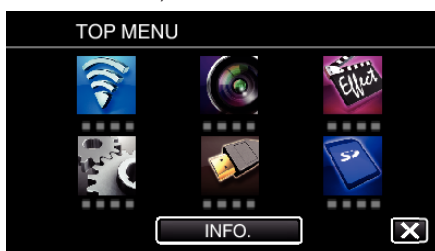
Registering the access points (wireless LAN router) to this unit**■ Wi-Fi Protected Setup (WPS) Registration**

- 1 Tap "MENU".
(Operation on this camera)

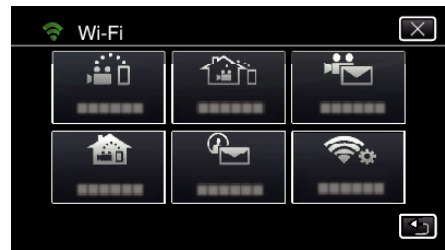


- The top menu appears.

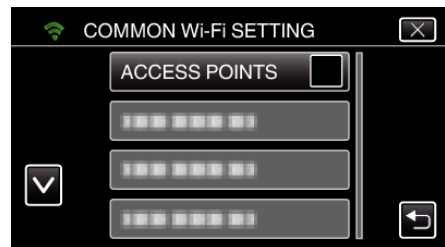
- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



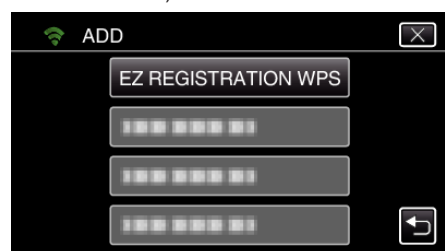
- 4 Tap "ACCESS POINTS".
(Operation on this camera)



- 5 Tap "ADD".
(Operation on this camera)



- 6 Tap "EZ REGISTRATION WPS".
(Operation on this camera)



- 7 Activate WPS of the access point (wireless LAN router) within 2 minutes.
 - To activate WPS, refer to the instruction manual of the device in use.
- 8 After registration is complete, tap "OK" on the camera's screen.
(Operation on this camera)

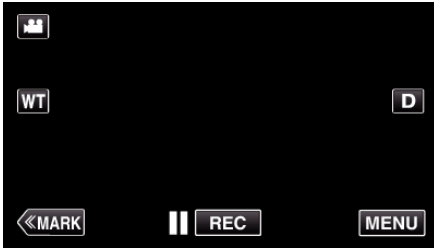


Using Wi-Fi by Creating a QR Code

■ Search the access point, and select from the list.

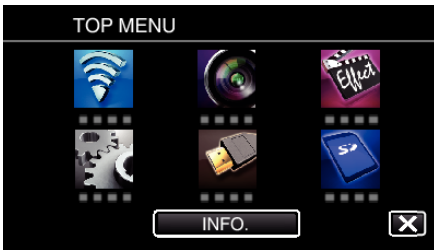
Set the name (SSID) of the access point (wireless LAN router) and the password beforehand.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

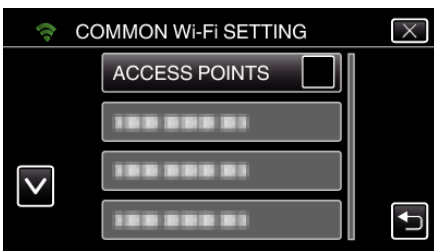
- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



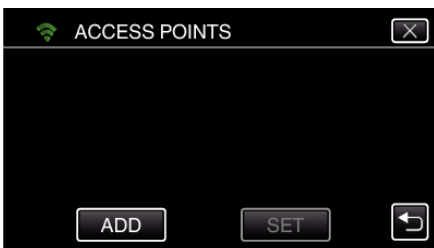
- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



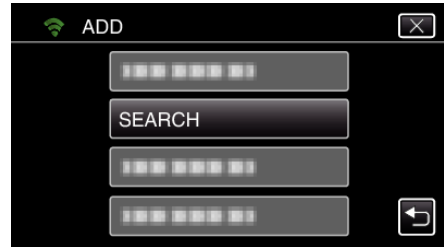
- 4 Tap "ACCESS POINTS".
(Operation on this camera)



- 5 Tap "ADD".
(Operation on this camera)

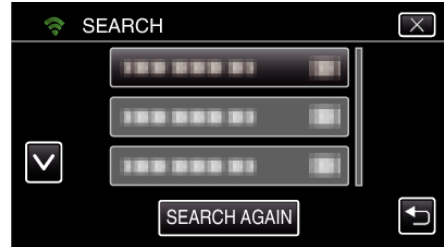


- 6 Tap "SEARCH".
(Operation on this camera)



- The search results appear on the camera's screen.

- 7 Tap the name (SSID) of the desired access point from the list of search results.
(Operation on this camera)



- 8 Register a password.
(Operation on this camera)



- Tap on the on-screen keyboard to enter characters. The character changes with every tap. "ABC", for example, enter "A" by tapping once, "B" by tapping twice, or "C" by tapping 3 times.
- Tap "DELETE" to delete a character.
- Tap "CANCEL" to exit.
- Tap "A/a/1" to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.
- The password is not required if the wireless LAN router is not security protected.

- 9 After registration is complete, tap "OK" on the camera's screen.
(Operation on this camera)



- Other methods, such as "Manual Registration" and "WPS PIN Registration" are also available. Refer to the following link for details. "Registering the Access Points of the Camera to Connect (ACCESS POINTS)" (p. 115)

Connecting the smartphone (or computer) to the access point (wireless LAN router)

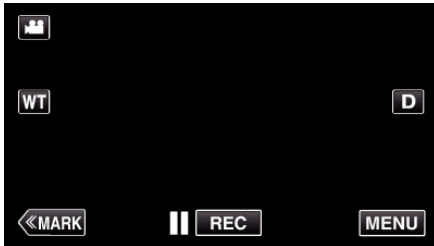
- Connect the smartphone (or computer) to the access point (wireless LAN router) at home.
- This setting is unnecessary if the smartphone (or computer) has already been connected to the access point (wireless LAN router) at home.

■ **Regular Operation**

Monitoring the images by connecting the smartphone and the camera

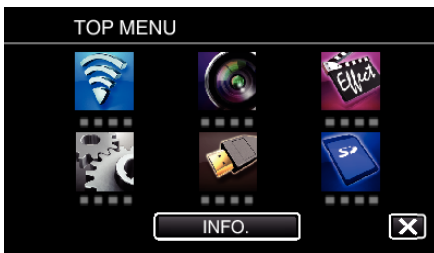
■ **Operation on this camera**

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



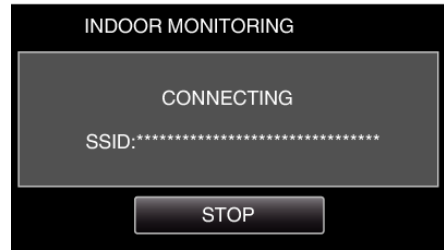
- 3 Tap "INDOOR MONITORING" (house icon).
(Operation on this camera)



- 4 Tap "START" (right arrow icon).
(Operation on this camera)



- 5 Start making a connection.
(Operation on this camera)



- Name (SSID) of the access point (wireless LAN router) in connection is displayed.
- 6 The following is displayed when the camera is connected to the access point.



- Tap "URL" to display the URL required for connecting the camera from browser.

■ **Operation on the smartphone**

Memo : _____

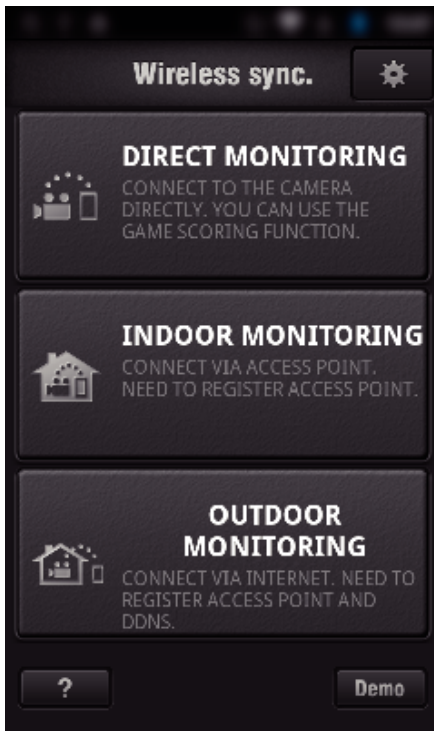
- Prior to use this function, a smartphone application needs to be installed on the smartphone.

"Installing Smartphone Applications" (p. 122)

- 1 Start "Wireless sync." on the smartphone after setting "INDOOR MONITORING".



- Tap "START" in INDOOR MONITORING on the camera to start.
- 2 Tap "INDOOR MONITORING".



- 3 The recording screen is displayed.



- How to operate from a smartphone
"Using Smartphone Applications" (☞ p. 122)

■ Monitoring from the computer (Windows7)

- 1 Tap the URL button shown on the camera's screen.
(displayed when the computer and the camera are connected wirelessly.)

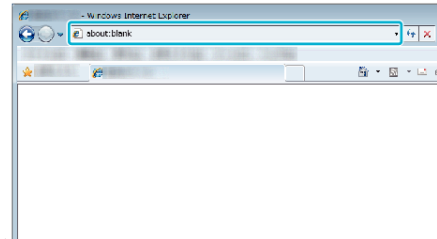


- The URL for the computer to connect to appears.

- 2 Check the URL displayed on the camera screen, which starts from "http://".



- After checking the URL, tap "QUIT" to return to the previous screen.
- 3 Start Internet Explorer (web browser) on the computer and enter the URL.



- 4 Log in with your username and password.
- The username is "jvccam" and the default password is "0000".
"Changing the Settings" (☞ p. 104)
 - Operations from the Web browser
"Using the Wi-Fi Function from a Web Browser" (☞ p. 139)

OUTDOOR MONITORING

■ Setting (Once setting is done, start from the “Regular Operation” below)

Obtaining a Dynamic DNS Account

By obtaining a dynamic DNS account, this unit may be used on the web as usual even if the IP address changes when making an access to this unit via internet.

- Only the JVC dynamic DNS service can be set on this camera.

To obtain (register) an account, perform the following steps.

- 1 Access the following URL from a browser and register for an account.
(Operation on a computer or smartphone)

<https://dd3.jvckenwood.com/user/>

Set your e-mail address as the username.

- 2 Check that you have received a confirmation e-mail to the address used in registration, and access the URL stated in the e-mail.
(Operation on a computer or smartphone)

- 3 Set the username and password used in registration on the camera.
(Operation on this camera)
“Setting Dynamic DNS on this Camera (OUTDOOR MONITORING)”
(p. 109)

- 4 Execute OUTDOOR MONITORING.
(Operation on this camera)

If “OUTDOOR MONITORING” is executed while dynamic DNS settings are enabled, the camera will access the dynamic DNS server.

- 5 Tap “CAMERA NETWORK INFO.” to check that the URL (WAN) is displayed.
(Registration complete)
“Image Monitoring via the Internet (OUTDOOR MONITORING)”
(p. 95)

Caution :

- Registration will be canceled if you do not access the dynamic DNS server from the camera within 3 days.
Perform the registration again in this case.
- Registration will not be complete if the username and password set on this camera are incorrect. Be sure to check that they are correct.
- Successful registration will be canceled too if you do not access the dynamic DNS server for 1 year.

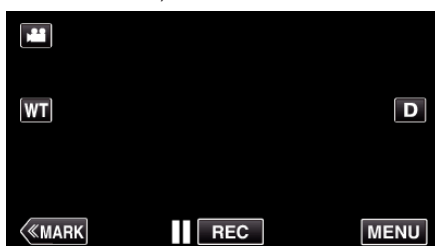
Create a QR code.

■ Enter values in the required items for outdoor monitoring.

- Password: set a password to connect this camera to the device via an access point. (Not more than 8 characters)
- DDNS: Set the connection environment to the internet. Normally set to “ON”.
- User name (DDNS): set an user name for the obtained DDNS account.
- Password (DDNS): set a password for the obtained DDNS account.
- UPnP: Set to “ON” if the UPnP protocol may be used to connect the device to the network.
- HTTP Port: Set the port number for connecting to the internet. Normally set to “80”.

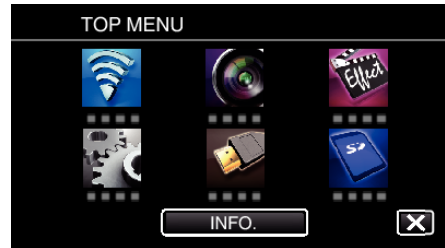
Display the screen for reading the QR code.

- 1 Tap “MENU”.
(Operation on this camera)



- The top menu appears.

- 2 Tap the “Wi-Fi” (Wi-Fi icon).
(Operation on this camera)



- 3 Tap “COMMON Wi-Fi SETTING”.
(Operation on this camera)



- 4 Tap “SET FROM QR CODE”.

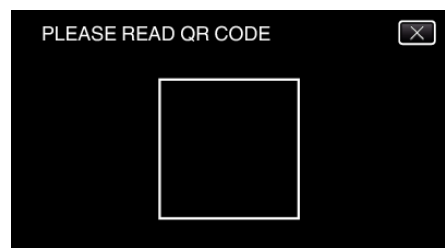


- 5 Tap “EXECUTE”.



Read a QR code.

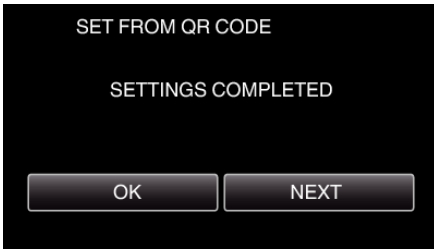
- 1 Read a QR code.
(Operation on this camera)



- 2 Tap “YES”.



3 Tap "OK".

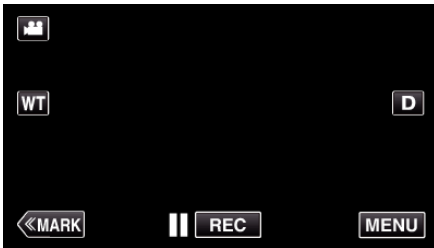


- Tap "NEXT" to return to the screen to read the QR code.
- Set contents are saved.

Registering the access points (wireless LAN router) to this unit

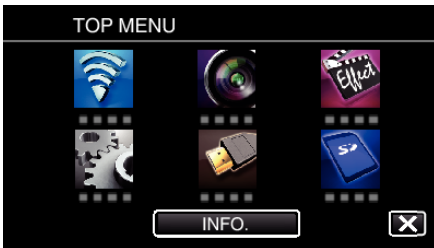
■ Wi-Fi Protected Setup (WPS) Registration

1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

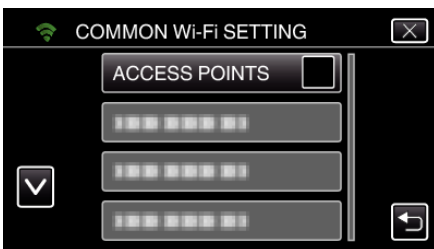
2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



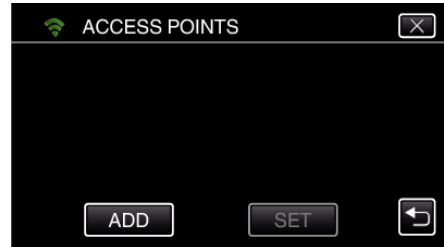
3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



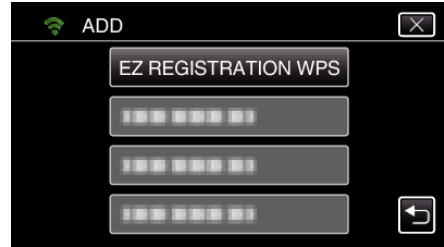
4 Tap "ACCESS POINTS".
(Operation on this camera)



5 Tap "ADD".
(Operation on this camera)



6 Tap "EZ REGISTRATION WPS".
(Operation on this camera)



7 Activate WPS of the access point (wireless LAN router) within 2 minutes.
• To activate WPS, refer to the instruction manual of the device in use.

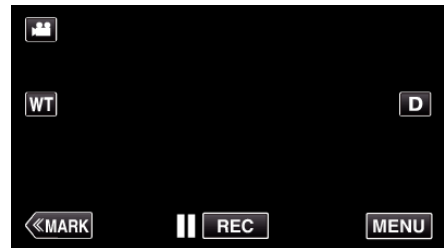
8 After registration is complete, tap "OK" on the camera's screen.
(Operation on this camera)



■ Search the access point, and select from the list.

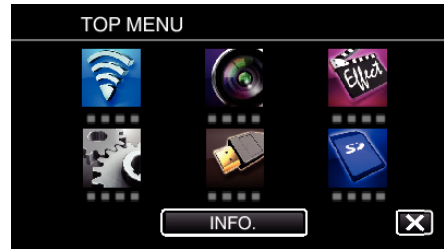
Set the name (SSID) of the access point (wireless LAN router) and the password beforehand.

1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



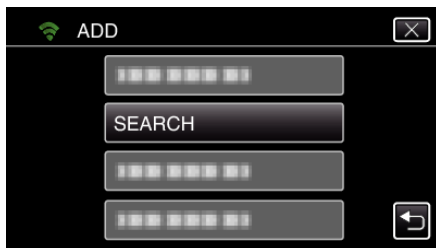
- 4 Tap "ACCESS POINTS".
(Operation on this camera)



- 5 Tap "ADD".
(Operation on this camera)

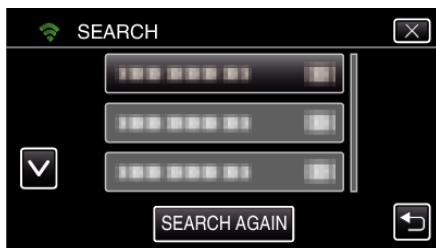


- 6 Tap "SEARCH".
(Operation on this camera)



- The search results appear on the camera's screen.

- 7 Tap the name (SSID) of the desired access point from the list of search results.
(Operation on this camera)



- 8 Register a password.
(Operation on this camera)



- Tap on the on-screen keyboard to enter characters. The character changes with every tap.

"ABC", for example, enter "A" by tapping once, "B" by tapping twice, or "C" by tapping 3 times.

- Tap "DELETE" to delete a character.
 - Tap "CANCEL" to exit.
 - Tap "A/a/1" to select character input type from upper case letter, lower case letter, and number.
 - Tap ← or → to move one space to the left or right.
 - The password is not required if the wireless LAN router is not security protected.
- 9 After registration is complete, tap "OK" on the camera's screen.
(Operation on this camera)

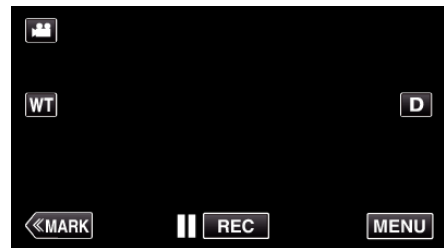


- Other methods, such as "Manual Registration" and "WPS PIN Registration" are also available. Refer to the following link for details. "Registering the Access Points of the Camera to Connect (ACCESS POINTS)" (p. 115)

Regular Operation

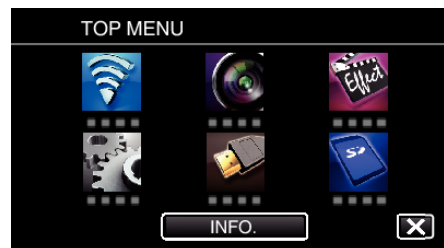
Connect this camera to a smartphone (or computer).

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

- 2 Tap the "Wi-Fi" icon.
(Operation on this camera)



- 3 Tap "OUTDOOR MONITORING" (🏠).
(Operation on this camera)



- 4 Tap "START" (→).
(Operation on this camera)



- 5 Start making a connection.
(Operation on this camera)



- Name (SSID) of the access point (wireless LAN router) in connection is displayed.

- 6 The following is displayed when the camera is connected to the access point.



- The URL (WAN) for the smartphone to connect to appears. (Does not appear if DDNS is not set or set incorrectly.)
- "XUPnP" is displayed when UPnP cannot be used.

- 7 Check the URL (WAN).



- After checking the URL, tap "QUIT" to return to the previous screen.
- "XUPnP" is displayed when UPnP cannot be used.

Operation on the smartphone

Memo : _____
 • Prior to use this function, a smartphone application needs to be installed on the smartphone.
 "Installing Smartphone Applications" (p. 122)

- 1 Start "Wireless sync." on the smartphone after setting OUTDOOR MONITORING.

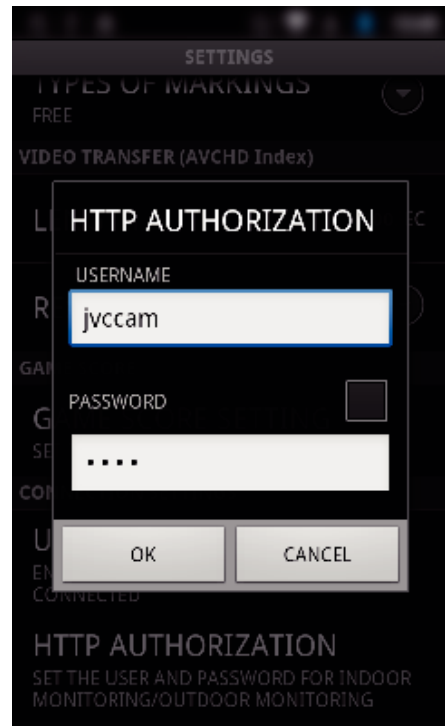


- Tap "START" in OUTDOOR MONITORING on the camera to start.

- 2 Tap "OUTDOOR MONITORING".



- 3 Log in with your username and password.
(if authentication cannot be achieved)



- The username is "jvccam" and the default password is "0000".
 "Changing the Settings" (p. 104)

- 4 The recording screen is displayed.



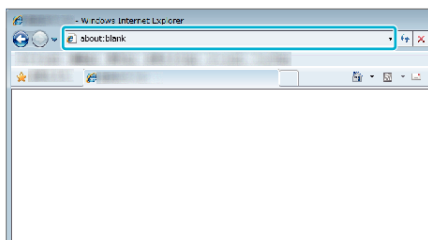
5 Operate from a smartphone



- How to operate from a smartphone
“Using Smartphone Applications” (p. 122)

■ Monitoring from the computer (Windows7)

- 1 On the Internet Explorer (web browser), enter the URL (WAN) that is checked by “Operation on this camera”.



- 2 Log in with your username and password.

- The username is “jvccam” and the default password is “0000”.
“Changing the Settings” (p. 104)
- Operations from the Web browser

DETECT/MAIL

- Setting (Once setting is done, start from the “Regular Operation” below)

Create a QR code.

Memo : _____

- Perform operations in step 2 and 3 after creating a QR code, and read the QR code one by one by the camera.

■ Enter values in the required items for setting the recipient's e-mail address.

- E-mail address: set the recipient's e-mail address.
- E-mail function: set the function of the e-mail that is transmitted to the recipient's e-mail address.
- Up to 8 e-mail addresses can be set.
- Start reading from (1) if multiple e-mail addresses are set. Click the number or “<”, “>”.

■ Enter values in the required items for setting the sender's e-mail address.

- E-mail address: set the sender's e-mail address.

■ Enter values in the required items for setting the e-mail server (SMTP server).

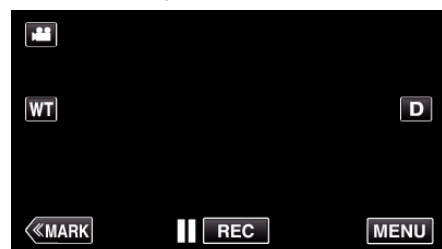
- SMTP server: set the name of the e-mail server (SMTP server) from which an e-mail account is obtained.
- SMTP port number: set according to the condition when the e-mail account is obtained. Normally set to “25”.
- SMTP authentication method: set according to the condition when the e-mail account is obtained.
- User name: set if the SMTP authentication method is set to other than “None”. (same as the registered user name (account name) when the e-mail account is obtained)
- Password: set if the SMTP authentication method is set to other than “None”. (same as the registered password when the e-mail account is obtained)

■ Enter values in the required items for setting notification mails.

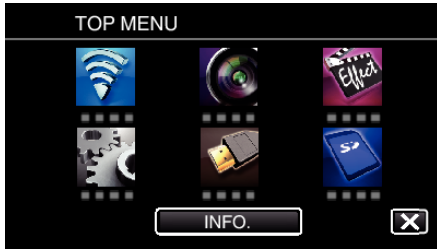
- Detection method: set the detection method of when to start recording video for notification e-mails.
- Detecting interval: select the time period to enable detection again after the previous one.
- Self recording: specify whether to save the detected video on the camera (ON) or not (OFF).

Display the screen for reading the QR code.

- 1 Tap “MENU”.
(Operation on this camera)



- The top menu appears.
- 2 Tap the “Wi-Fi” (Wi-Fi icon) icon.
(Operation on this camera)



- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



- 4 Tap "SET FROM QR CODE".

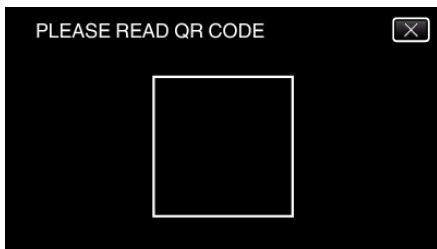


- 5 Tap "EXECUTE".

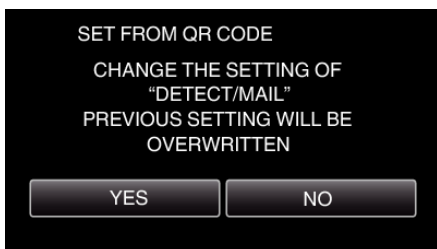


Read a QR code.

- 1 Read a QR code.
(Operation on this camera)

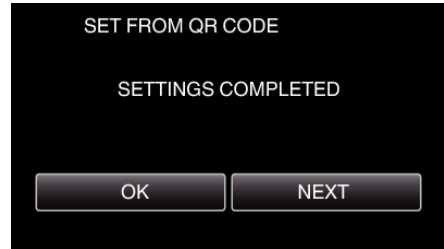


- 2 Tap "YES".



- Contents of the screen vary depending on the QR code that is read by this unit.

- 3 Tap "OK".

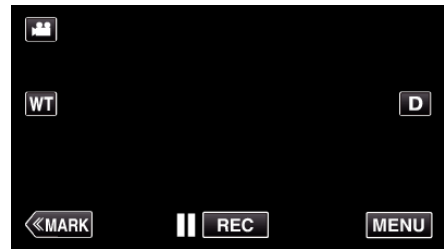


- Tap "NEXT" to return to the screen to read the QR code.
- Set contents are saved.

Registering the access points (wireless LAN router) to this unit

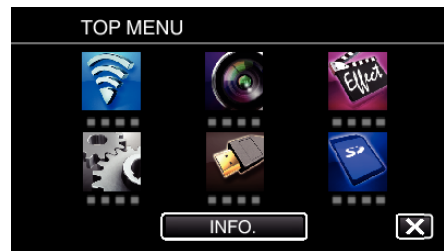
■ Wi-Fi Protected Setup (WPS) Registration

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

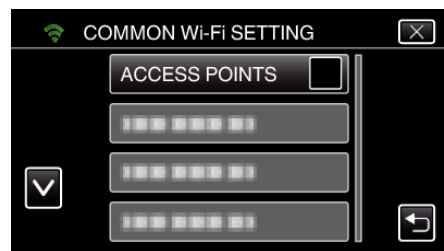
- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



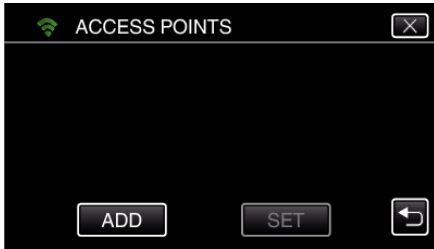
- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



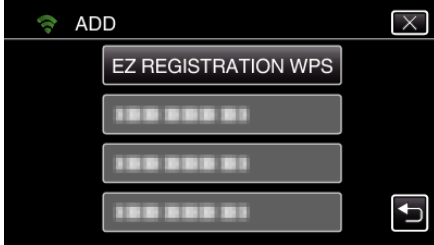
- 4 Tap "ACCESS POINTS".
(Operation on this camera)



- 5 Tap "ADD".
(Operation on this camera)



- 6 Tap "EZ REGISTRATION WPS".
(Operation on this camera)



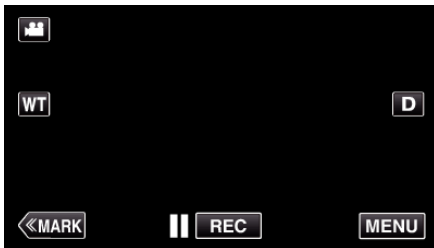
- 7 Activate WPS of the access point (wireless LAN router) within 2 minutes.
• To activate WPS, refer to the instruction manual of the device in use.
- 8 After registration is complete, tap "OK" on the camera's screen.
(Operation on this camera)



■ Search the access point, and select from the list.

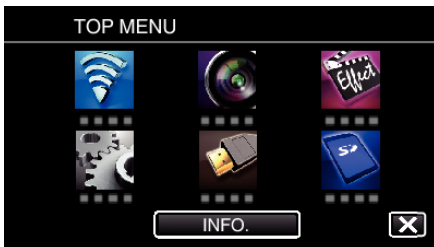
Set the name (SSID) of the access point (wireless LAN router) and the password beforehand.

- 1 Tap "MENU".
(Operation on this camera)

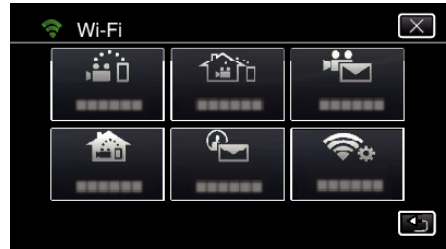


- The top menu appears.

- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



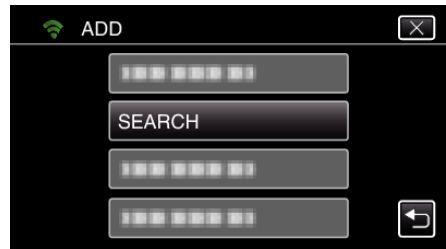
- 4 Tap "ACCESS POINTS".
(Operation on this camera)



- 5 Tap "ADD".
(Operation on this camera)

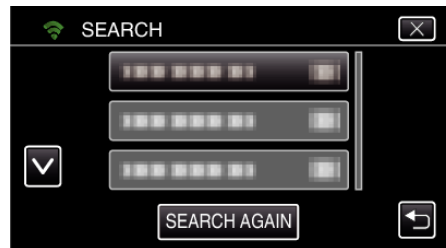


- 6 Tap "SEARCH".
(Operation on this camera)

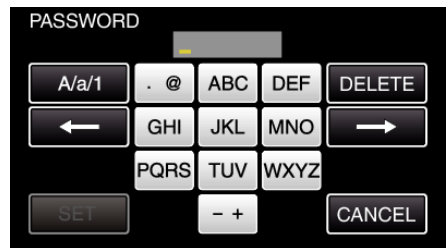


- The search results appear on the camera's screen.

- 7 Tap the name (SSID) of the desired access point from the list of search results.
(Operation on this camera)



- 8 Register a password.
(Operation on this camera)



- Tap on the on-screen keyboard to enter characters. The character changes with every tap.

“ABC”, for example, enter “A” by tapping once, “B” by tapping twice, or “C” by tapping 3 times.

- Tap “DELETE” to delete a character.
- Tap “CANCEL” to exit.
- Tap “A/a/1” to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.
- The password is not required if the wireless LAN router is not security protected.

- After registration is complete, tap “OK” on the camera’s screen.
(Operation on this camera)

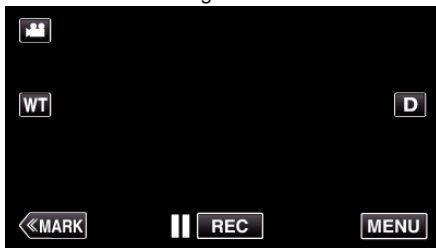


- Other methods, such as “Manual Registration” and “WPS PIN Registration” are also available. Refer to the following link for details. “Registering the Access Points of the Camera to Connect (ACCESS POINTS)” (p. 115)

Regular Operation

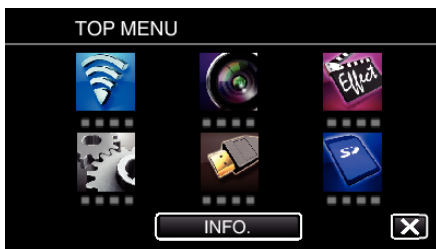
Sending a Notification Mail.

- Tap “MENU”.
Set the camera to the recording mode.



- The top menu appears.

- Tap the “Wi-Fi” (Wi-Fi icon) icon.



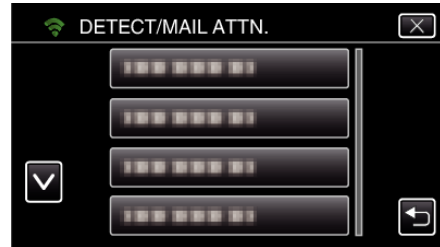
- Tap “DETECT/MAIL” (DETECT/MAIL icon).



- Tap “DETECT/MAIL ATTN.”.



- Select “DETECT/MAIL ATTN.”, then tap ↶.

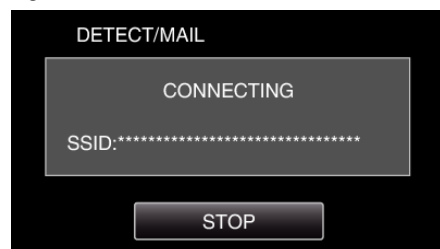


- To display the 📧 icon, tap the e-mail address.
- To cancel the e-mail address, press the icon one more time.
- Up to 8 e-mail addresses can be selected.

- Tap “START” (→).



- Start making a connection.

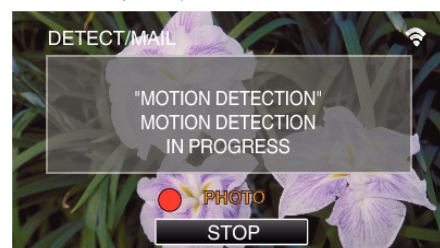


- DETECT/MAIL detection standby



- Detection is suspended for the first 5 seconds.

- DETECT/MAIL detection in progress (an e-mail is automatically sent out after detection is completed)



- The “PHOTO” icon appears on the screen for about 2 seconds upon detection.

- Images are captured automatically when moving subjects or human faces appear on the camera's screen. (The PHOTO icon appears on the screen upon detection.)
- The captured still images will be sent via e-mail to the selected recipients.

10 Detection suspended



- Until the next detection is made, detection is suspended for the pre-set length of time.
- "DETECTION INTERVAL" can be selected from 15 seconds, 1 minute, 3 minutes, 10 minutes, 30 minutes and 60 minutes.

"Setting the Detection Interval of this Camera (DETECT/MAIL SETTING)" (p. 114)

Check the incoming e-mail.

VIDEO MAIL

■ Setting (Once setting is done, start from the "Regular Operation" below)

Create a QR code.

Memo :

- Perform operations in step 2 and 3 after creating a QR code, and read the QR code one by one by the camera.

■ Enter values in the required items for setting the recipient's e-mail address.

- E-mail address: set the recipient's e-mail address.
- E-mail function: set the function of the e-mail that is transmitted to the recipient's e-mail address.
- Up to 8 e-mail addresses can be set.
- Start reading from (1) if multiple e-mail addresses are set. Click the number or "<", ">".

■ Enter values in the required items for setting the sender's e-mail address.

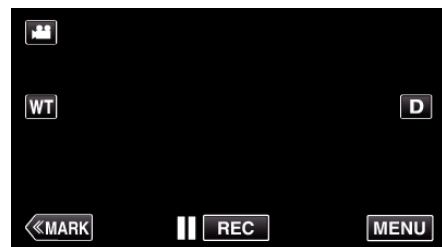
- E-mail address: set the sender's e-mail address.

■ Enter values in the required items for setting the e-mail server (SMTP server).

- SMTP server: set the name of the e-mail server (SMTP server) from which an e-mail account is obtained.
- SMTP port number: set according to the condition when the e-mail account is obtained. Normally set to "25".
- SMTP authentication method: set according to the condition when the e-mail account is obtained.
- User name: set if the SMTP authentication method is set to other than "None". (same as the registered user name (account name) when the e-mail account is obtained)
- Password: set if the SMTP authentication method is set to other than "None". (same as the registered password when the e-mail account is obtained)

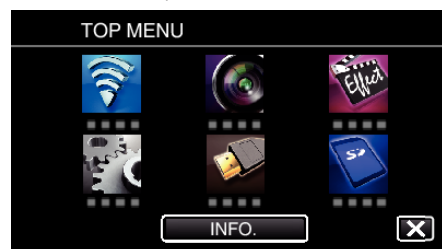
Display the screen for reading the QR code.

- 1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

- 2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



- 3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



4 Tap "SET FROM QR CODE".

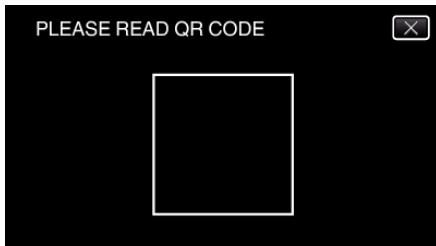


5 Tap "EXECUTE".

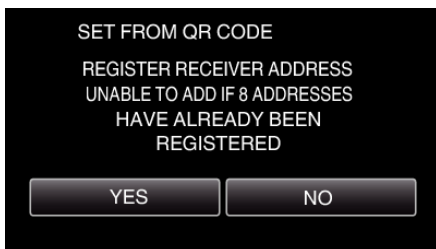


Read a QR code.

1 Read a QR code.
(Operation on this camera)

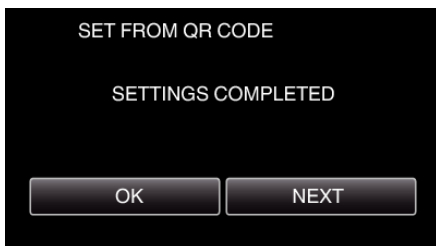


2 Tap "YES".



- Contents of the screen vary depending on the QR code that is read by this unit.

3 Tap "OK".

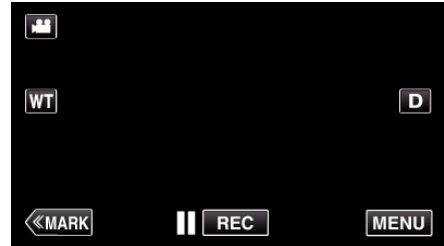


- Tap "NEXT" to return to the screen to read the QR code.
- Set contents are saved.

Registering the access points (wireless LAN router) to this unit

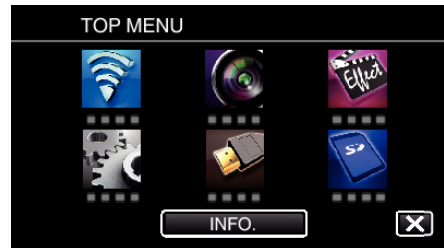
■ Wi-Fi Protected Setup (WPS) Registration

1 Tap "MENU".
(Operation on this camera)



- The top menu appears.

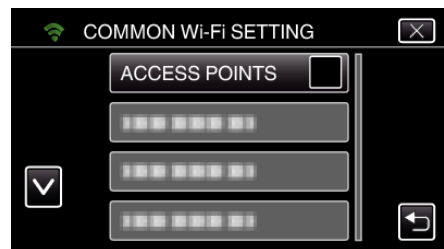
2 Tap the "Wi-Fi" (Wi-Fi icon).
(Operation on this camera)



3 Tap "COMMON Wi-Fi SETTING".
(Operation on this camera)



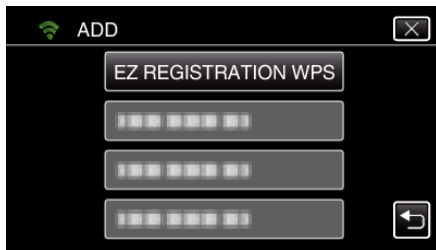
4 Tap "ACCESS POINTS".
(Operation on this camera)



5 Tap "ADD".
(Operation on this camera)



6 Tap "EZ REGISTRATION WPS".
(Operation on this camera)



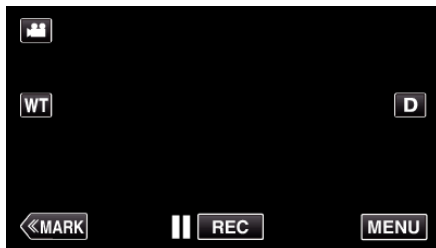
- 7 Activate WPS of the access point (wireless LAN router) within 2 minutes.
 - To activate WPS, refer to the instruction manual of the device in use.
- 8 After registration is complete, tap "OK" on the camera's screen. (Operation on this camera)



■ Search the access point, and select from the list.

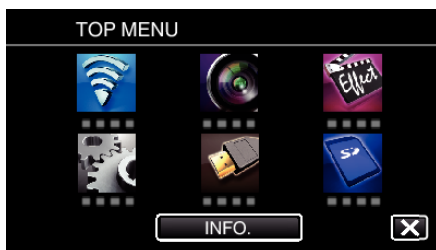
Set the name (SSID) of the access point (wireless LAN router) and the password beforehand.

- 1 Tap "MENU". (Operation on this camera)



- The top menu appears.

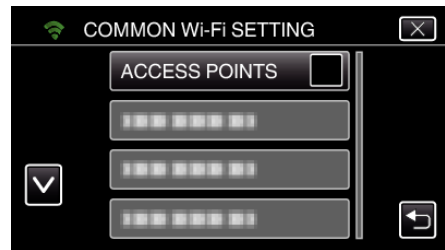
- 2 Tap the "Wi-Fi" (Wi-Fi icon). (Operation on this camera)



- 3 Tap "COMMON Wi-Fi SETTING". (Operation on this camera)



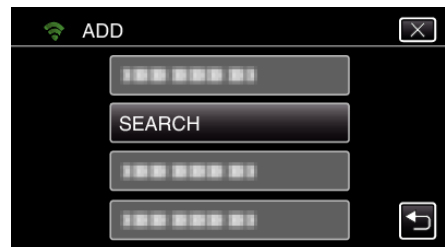
- 4 Tap "ACCESS POINTS". (Operation on this camera)



- 5 Tap "ADD". (Operation on this camera)

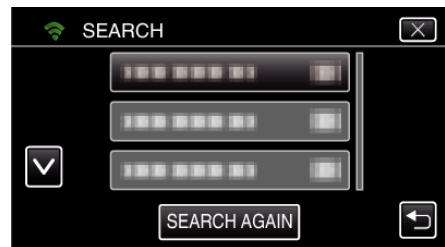


- 6 Tap "SEARCH". (Operation on this camera)



- The search results appear on the camera's screen.

- 7 Tap the name (SSID) of the desired access point from the list of search results. (Operation on this camera)



- 8 Register a password. (Operation on this camera)



- Tap on the on-screen keyboard to enter characters. The character changes with every tap. "ABC", for example, enter "A" by tapping once, "B" by tapping twice, or "C" by tapping 3 times.
- Tap "DELETE" to delete a character.
- Tap "CANCEL" to exit.
- Tap "A/a/1" to select character input type from upper case letter, lower case letter, and number.
- Tap ← or → to move one space to the left or right.
- The password is not required if the wireless LAN router is not security protected.

- 9 After registration is complete, tap "OK" on the camera's screen. (Operation on this camera)

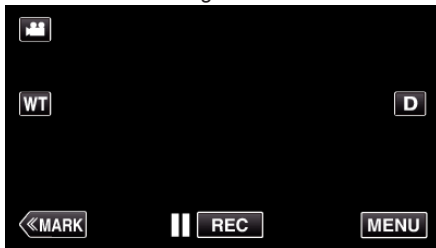


- Other methods, such as “Manual Registration” and “WPS PIN Registration” are also available. Refer to the following link for details. “Registering the Access Points of the Camera to Connect (ACCESS POINTS)” (p. 115)

■ Regular Operation

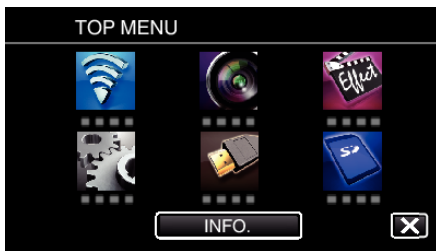
Record videos to send a video mail.

- 1 Tap “MENU”.
Set the camera to the recording mode.



- The top menu appears.

- 2 Tap the “Wi-Fi” (Wi-Fi icon) icon.



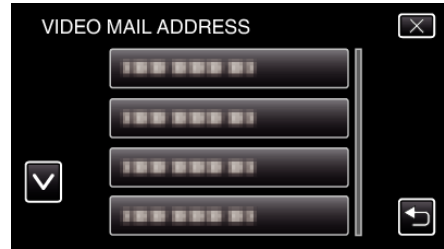
- 3 Tap “VIDEO MAIL” (video mail icon).



- 4 Tap “VIDEO MAIL ADDRESS”.



- 5 Select “VIDEO MAIL ADDRESS”, then tap ↵.

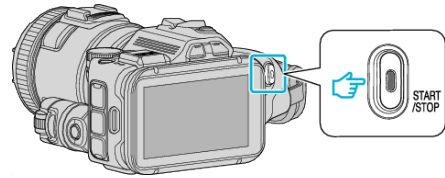


- To display the ✉ icon, tap the e-mail address.
- To cancel the e-mail address, press the icon one more time.
- Up to 8 e-mail addresses can be selected.

- 6 Tap “START” (→).

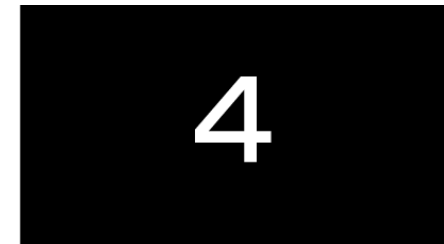


- 7 Press the START/STOP button to start recording.



- Or, tap the REC on screen.

- 8 Recording starts after the 5-second countdown.



- You can allow the recording to be performed for 15 seconds or press the START/STOP button to stop.

- 9 Tap “SEND”.



- Sending of the video mail starts.
- To check the file, tap “PLAY TO CHECK”.
- When it is complete, tap “OK”.

Check the incoming e-mail.

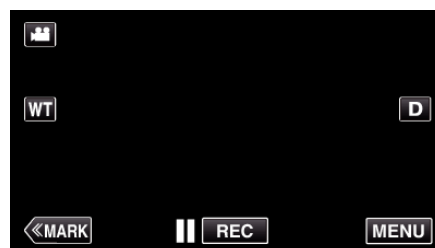
Operating the Menu

- TOP MENU: Menu that contains all the items specific to the video recording, still image recording, video playback, and still image playback modes respectively.

Operating the Top Menu

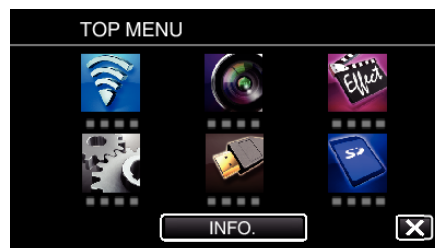
You can configure various settings using the menu.

- 1 Tap "MENU".



- The top menu appears.
- The menu differs according to the mode in use.

- 2 Tap the desired menu.



- 3 Tap the desired setting.



Memo :

- To display the previous/next menu
Tap < or >.
- To exit the screen
Tap X (quit).

Checking the Remaining Recording Time (INFO.)

You can check the remaining recording time on the SD card.

RECORD SETTING Menu (video)



* () indicates the position of the shooting dial

Focus Assist (P, A, S, M, U and SCN only)

To adjust focus easily, the contour of focused parts are highlighted in color.
 “Adjusting Focus by Using Focus Assist” (☞ p. 38)

Assist Color (P, A, S, M, U and SCN only)

Sets the color of contour line which is displayed in the “Focus Assist” function.

Setting	Details
RED	Sets the color of contour line to red.
GREEN	Sets the color of contour line to green.
BLUE	Sets the color of contour line to blue.

WHITE BALANCE (P, A, S and M only)

Adjusts the color according to the light source.
 “Setting White Balance” (☞ p. 39)

TELE MACRO (P, A, S, M and U only)

Enables close-up shots when using the telephoto (T) end of the zoom.
 “Taking Close-up Shots” (☞ p. 40)

ZEBRA (P, A, S, M and U only)

Diagonal lines (zebra pattern) are displayed only at areas with the specified luminance levels.
 “Checking for Overexposed Areas (ZEBRA)” (☞ p. 41)

TOUCH PRIORITY AE/AF (☑ only)

Automatically adjusts focus and brightness based on the subjects’ faces or selected area.
 “Capturing Subjects by Tracking Automatically (TOUCH PRIORITY AE/AF)” (☞ p. 34)

LIGHT

Turns on/off the light.

Setting	Details
OFF	Does not light up.
AUTO	Lights up automatically when the surrounding is dark.
ON	Lights up at all times.

DIS

Camera shake during video recording can be effectively reduced.
 “Reducing Camera Shake” (☞ p. 41)

GAIN UP (P, A, S and M only)

Makes the subject appear bright automatically when recording in dark places.

Setting	Details
OFF	Does not adjust the brightness.
+6dB	Adjusts the brightness to the low level in dark places. (+6 dB)
+12dB	Adjusts the brightness automatically in dark places. (+12 dB)
+18dB	Adjusts the brightness to the high level in dark places. (+18 dB)

AGC	Adjusts the brightness at the shutter speed of up to 1/50.
AUTO	Decreases the shutter speed (to 1/25), and adjust the brightness.

Memo :

- Although "AUTO" brightens the scene more than "AGC", movements of the subject may become unnatural.
- "GAIN UP" can be set by using the USER dial.

"U: Saves the setting values of frequently-used functions (User Settings)" (p. 36)

WIND CUT

Reduces the noise caused by wind.

Setting	Details
OFF	Deactivates the function.
ON	Activates the function.

Grid

Displays grid lines to identify tilt and composition of the subject.

Setting	Details
OFF	Does not display grids.
ON	Displays grids.

SMILE SHOT (☺ only)

Automatically captures a still image upon detection of a smile.

Setting	Details
OFF	Does not detect smiles.
ON	Automatically captures a still image upon detection of a smile.

Memo :

- The camera is able to detect up to 16 faces. Smile levels will be displayed for up to 3 of the largest faces displayed on the screen.
- This function may not work properly depending on the shooting conditions (distance, angle, brightness, etc.) and the subject (direction of face, smile level, etc.). It is also difficult to detect a smile in backlight.
- After a smile is detected and captured, it takes time before the next recording may be performed.
- "SMILE SHOT" does not work in the following cases:
 - when menu is being displayed
 - when remaining recording time is being displayed
 - when any functions in "SPECIAL RECORDING" is set

SMILE% (☺ only)

Displays the smile level of people in percentage.

Setting	Details
OFF	Displays only the frames when faces are detected.
ON	Displays the frames and smile levels (%) when faces are detected.

Memo :

- The camera is able to detect up to 16 faces. Smile levels will be displayed for up to 3 of the largest faces displayed on the screen.
- Some faces may not be detected depending on the shooting environment.

VIDEO REC FORMAT

Sets the recording format to either "AVCHD" or "MP4/MOV".

Setting	Details
AVCHD	Selects the video quality from XP or EP.
MP4/MOV	Selects the video quality from MOV 1080p LPCM, MP4 1080p, MP4 720p and iFrame 720p.

Settings Menu

SYSTEM SELECT

Sets the frame rate for recording.

Available when "VIDEO REC FORMAT" is set to "AVCHD".

Setting	Details
50p	Records in progressive format.
50i	Does not record in progressive format.

Memo :

- Video quality cannot be set in 50p mode.
- Videos recorded in 50p are playable only on AVCHD Progressive compatible devices.
- Blu-ray discs containing videos that are recorded in 50p mode are playable only on AVCHD Progressive compatible devices.

VIDEO QUALITY

Sets the video quality.

- When "VIDEO REC FORMAT" is set to "AVCHD", and "SYSTEM SELECT" is set to "50i"

Setting	Details
XP	Enables recording in high picture quality.
EP	Enables long recordings.

- When "VIDEO REC FORMAT" is set to "MP4/MOV":

Setting	Details
MOV 1080p LPCM	Records linear PCM in high sound quality.
MP4 1080p	Recorded in 1920x1080 high resolution, which is suitable for editing and processing by a computer.
MP4 720p	Recorded in 1280x720 resolution, which is suitable for editing and processing by a computer.
iFrame 720p	Records videos that are suitable for editing in 1280x720 resolution.

Memo :

- You can change to the desired "VIDEO QUALITY" by tapping on it from the remaining recording time display.
- When a video is recorded continuously for a long period of time, recorded file is split into 30-minute in length automatically (videos in MP4 format (MOV, MP4, iFrame) only), or two or more files if the size exceeds 4 GB.

ZOOM

Sets the maximum zoom ratio.

Setting	Details
10x OPTICAL	Enables recording with 1 - 10x optical zoom. Set this when digital zoom is not desired.
16(14)x DYNAMIC	Enables recording with maximum of 16x dynamic zoom, when the video quality is 1080p and the image stabilizer is set to off. Enables recording with maximum of 14x dynamic zoom, when the video quality is 1080p and the image stabilizer is set to other than off.
64x DIGITAL	Enables recording with 1 - 10x optical zoom and 11 - 64x digital zoom.

Memo :

- When digital zoom is used, the image becomes grainy as it is digitally enlarged.
- The angle of view changes when the image stabilizer is turned on or off.

x.v.Color

Captures the true colors.

(Use an x.v.Color compatible TV for playback.)

Available when "VIDEO REC FORMAT" is set to "AVCHD".

Setting	Details
OFF	Captures colors with the same standard as TV broadcasting.
ON	Captures the true colors. (for TVs that supports x.v.Color)

USER DIAL

Settings for shutter speed, aperture, white balance and GAIN UP can be saved. By moving the shooting dial to “U” position, you can start shooting in the same settings as these being saved.

“U: Saves the setting values of frequently-used functions (User Settings)” (p. 36)

ZOOM MIC

Sets the zoom microphone.

Setting	Details
OFF	Deactivates the zoom microphone.
ON	Records audio sounds in the same direction as the zoom operation.

MIC LEVEL

Make the adjustments such that “MIC LEVEL” does not turn red.

Setting	Details
OFF	Hides display of microphone input level.
ON	Shows display of microphone input level.

MIC LEVEL SETTING

Sets the microphone level.

Make the adjustments such that “MIC LEVEL” does not turn red.

Setting	Details
+2	Increases the microphone input level.
+1	Increases the microphone input level slightly.
0	The microphone input level is not changed.
-1	Decreases the microphone input level slightly.
-2	Decreases the microphone input level.

HEADPHONE VOL. ADJ.

Sets the volume level of the connected headphones.

- To turn up the volume, tap + on the touch screen.
- To turn down the volume, tap - on the touch screen.

Adjusting the Volume Level of Headphones During Playback: _____

- To turn up the volume, set the zoom lever to the T end.
- To turn down the volume, set the zoom lever to the W end.

K2 TECHNOLOGY

Reduces the degradation of sound quality caused by digital signal processing, and records a sound quality close to the original.

Setting	Details
OFF	Deactivates K2 TECHNOLOGY.
ON	Activates K2 TECHNOLOGY.

Memo : _____

- Unavailable when “VIDEO QUALITY” is set to “MOV 1080p LPCM”.

SPECIAL RECORDING Menu (video)



AUTO REC

Starts recording automatically by sensing the changes in subject's movement (brightness) within the red frame displayed on the LCD monitor.

"Recording Automatically by Sensing Movements (AUTO REC)" (☞ p. 46)

DATE/TIME RECORDING

You can record videos together with the date and time.

Set this when you want to save the file with date and time display.

(The date and time cannot be deleted after recording.)

"Recording Videos with Date and Time" (☞ p. 49)

RECORD SETTING Menu (still image)



* () indicates the position of the shooting dial

Focus Assist (P, A, S, M, U and SCN only)

To adjust focus easily, the contour of focused parts are highlighted in color.

Setting	Details
OFF	Deactivates the Focus Assist function.
ON	Activates the Focus Assist function.

Assist Color (P, A, S, M, U and SCN only)

Sets the color of contour line which is displayed in the "Focus Assist" function.

Setting	Details
RED	Sets the color of contour line to red.
GREEN	Sets the color of contour line to green.
BLUE	Sets the color of contour line to blue.

WHITE BALANCE (P, A, S and M only)

Adjusts the color according to the light source.

"Setting White Balance" (p. 39)

TELE MACRO (P, A, S, M and U only)

Enables close-up shots when using the telephoto (T) end of the zoom.

"Taking Close-up Shots" (p. 40)

TOUCH PRIORITY AE/AF (☑ only)

Automatically adjusts focus and brightness based on the subjects' faces or selected area.

"Capturing Subjects by Tracking Automatically (TOUCH PRIORITY AE/AF)" (p. 34)

FLASH

For setting the flash.

Setting	Details
OFF	Flash does not fire.
AUTO	Flash fires automatically when the surrounding is dark.
AUTO RED-EYE	Fires a pre-flash to reduce red-eye effects.
ON	Fires flash at all times.
SLOW SYNCHRO	Fires flash at all times, and slows down the shutter speed to capture both the subject and background brightly.

Memo :

- When the shooting dial is set to A or M, and when the exposure is set to a low value, an adequate brightness may not be achieved even if the flash is fired.

Warning

- Do not point the AF assist beam of the flash at the eyes within a close range (several cm).
- Do not look into the flash light directly.
- Incorrect usage of the flash may cause vision problems.
- Keep a distance of at least 1 m when shooting young children.
- Using the flash at drivers may cause temporary blindness and result in accidents.

Caution :

- Do not fire the AF assist beam of the flash at the subjects within a close range (several cm).
- Do not touch it directly with your hand.

Settings Menu

- If foreign particles, such as dust, are attached, do not use it.
 - Also, do not cover it with tape, etc.
 - Incorrect usage may result in burns.
 - Heat from the flash may result in emission of smoke.
 - Do not touch the flash immediately after it is used.
-

SELF-TIMER

Use this when taking a group photo.

“Taking Group Shots (Self-timer)” (☞ p. 47)

Setting	Details
OFF	Deactivates the Self-Timer function.
2SEC	Shutter is released after 2 seconds. This function prevents camera shake caused by pressing the shutter button.
10SEC	Shutter is released after 10 seconds. This function prevents camera shake caused by pressing the shutter button.
FACE DETECTION	Shutter is released when the subject enters into the image.

Memo :

- The Self-Timer lamp blinks while the Self-Timer function is operating.
-

GAIN (P, A, S, M and U only)

Sets the ISO level according to the brightness of the subject.

Setting	Details
AUTO	Sets the gain automatically.
ISO50	Sets to ISO50.
ISO100	Sets to ISO100.
ISO200	Sets to ISO200.
ISO400	Sets to ISO400.
ISO800	Sets to ISO800.
ISO1600	Sets to ISO1600.
ISO3200	Sets to ISO3200.
ISO6400	Sets to ISO6400.

Memo :

- “GAIN UP” can be set by using the USER dial.

“U: Saves the setting values of frequently-used functions (User Settings)” (☞ p. 36)

DIS

Camera shake during still image recording can be effectively reduced.

“Reducing Camera Shake” (☞ p. 41)

SMILE SHOT (☺ only)

Automatically captures a still image upon detection of a smile.

Setting	Details
OFF	Does not detect smiles.
ON	Automatically captures a still image upon detection of a smile.

Memo :

- The camera is able to detect up to 16 faces. Smile levels will be displayed for up to 3 of the largest faces displayed on the screen.
- This function may not work properly depending on the shooting conditions (distance, angle, brightness, etc.) and the subject (direction of face, smile level, etc.). It is also difficult to detect a smile in backlight.
- After a smile is detected and captured, it takes time before the next recording may be performed.
- “SMILE SHOT” does not work in the following cases:
 - when menu is being displayed
 - when remaining recording time is being displayed

- when any functions in "SPECIAL RECORDING" is set

SMILE% (☺ only)

Displays the smile level of people in percentage.

Setting	Details
OFF	Displays only the frames when faces are detected.
ON	Displays the frames and smile levels (%) when faces are detected.

Memo :

- The camera is able to detect up to 16 faces. Smile levels will be displayed for up to 3 of the largest faces displayed on the screen.
- Some faces may not be detected depending on the shooting environment.

IMAGE SIZE

Sets the image size (number of pixels) for still images.

Setting	Details
1920X1080(2M)	Takes still images with aspect ratio 16:9. <ul style="list-style-type: none"> • The sides of still images recorded in 16:9 aspect ratio may be cut off when printed.
4000X3000(12M) 2816X2112(5.9M) 2048X1536(3.1M) 640X480(0.3M)	Takes still images with aspect ratio 4:3.

Grid

Displays grid lines to identify tilt and composition of the subject.

USER DIAL

Settings for shutter speed, aperture, white balance and gain can be saved. By moving the shooting dial to "U" position, you can start shooting in the same settings as these being saved.

"U: Saves the setting values of frequently-used functions (User Settings)" (☰ p. 36)

SPECIAL RECORDING Menu (still image)



AUTO REC

Starts recording automatically by sensing the changes in subject's movement (changes in brightness) within the red frame displayed on the LCD monitor.
"Recording Automatically by Sensing Movements (AUTO REC)" (☞ p. 46)

PLAYBACK SETTING Menu (video)



SEARCH DATE

Narrows down the video index screen according to recording dates.
 “Searching for a Specific Video/Still Image by Date” (p. 64)

DIGEST PLAYBACK (AVCHD mode only)

Plays back a digest of the recorded videos.
 “DIGEST PLAYBACK” (p. 61)

PLAYBACK OTHER FILE (AVCHD mode only)

Plays videos with defective management information.
 “PLAYBACK OTHER FILE” (p. 62)

Capture Image Type

Selects the types of method to capture still images from a recorded video.

Item	Details
1 SHOT	Captures 1 frame of still image.
9 CONTINUOUS SHOTS	Shoots 9 frames of still images continuously.
9 MULTI	Shoots 9 frames of still images continuously. These images are displayed in one screen, and considered as one still image.

Capture Interval

Sets the interval to capture still images from recorded video.

Item	Details
2 FRAMES	Captures in an interval of 2 frames.
4 FRAMES	Captures in an interval of 4 frames.
8 FRAMES	Captures in an interval of 8 frames.
15 FRAMES	Captures in an interval of 15 frames.
30 FRAMES	Captures in an interval of 30 frames.

DISPLAY DATE/TIME

Sets whether to display the recording date and time during video playback.

Setting	Details
OFF	Does not display the date and time during playback.
ON	Displays the date and time during playback.

EDIT Menu (video)



PROTECT/CANCEL

Protects files from being deleted accidentally.

“Protecting/Releasing Protection of the Currently Displayed File” (☞ p. 70)

“Protecting/Releasing Protection of Selected Files” (☞ p. 70)

TRIMMING

Select the required part of a video and save it as a new video file.

The original video remains in its existing location.

“Capturing a Required Part in the Video (TRIMMING)” (☞ p. 72)

PLAYBACK SETTING Menu (still image)

SEARCH DATE

Narrows down the still image index screen according to recording dates.
“Searching for a Specific Video/Still Image by Date” (p. 64)

EDIT Menu (still image)



PROTECT/CANCEL

Protects files from being deleted accidentally.

“Protecting/Releasing Protection of the Currently Displayed File” (F3 p. 70)

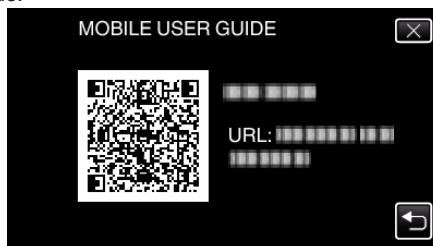
“Protecting/Releasing Protection of Selected Files” (F3 p. 70)

SETUP (video/still image)



Mobile User Guide

Displays the QR code to access the Mobile User Guide.



- The portal site appears when the QR code has been read correctly.
Select the model name of your camera to display its Mobile User Guide.

Memo :

- To read the QR code, a relevant application is required. Enter the URL in the internet browser manually if the QR code cannot be read.
- The Mobile User Guide is supported by Android devices and iPhone. You can view it on standard browsers such as Google Chrome (Android) and Mobile Safari (iPhone).
- QR Code is a registered trademark of Denso Wave Incorporated.

CLOCK ADJUST

Resets the current time or sets to the local time when using this unit overseas.

“Clock Setting” (☞ p. 19)

“Setting the Clock to Local Time when Traveling” (☞ p. 23)

“Setting Daylight Saving Time” (☞ p. 24)

DATE DISPLAY STYLE

Sets the order of year, month, day and the time display format (24H/12H).

Sorting Order	Time Display
month.day.year	12h
year.month.day	24h
day.month.year	-

LANGUAGE

The language on the display can be changed.

“Changing the Display Language” (☞ p. 21)

MONITOR BRIGHTNESS

Sets the brightness of the LCD monitor.

Setting	Details
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 to save battery life when selected.

OPERATION SOUND

Turns on or off the operation sound.

Setting	Details
---------	---------

Settings Menu

OFF	Turns off the operation sound.
ON	Turns on the operation sound.

AUTO POWER OFF

Prevents the situation of forgetting to turn off the power when this is set.

Setting	Details
OFF	Power is not turned off even if this unit is not operated for 5 minutes.
ON	Turns off the power automatically if this unit is not operated for 5 minutes.

QUICK RESTART

Launches this unit immediately by turning on the power within 5 minutes after the power is turned off.

Setting	Details
OFF	Deactivates the function.
ON	Launches this unit immediately by turning on the power within 5 minutes after the power is turned off.

TOUCH SCREEN ADJUST

Adjusts the response position of the buttons on the touch screen.
“Adjusting the Touch Panel” (p. 16)

FACTORY PRESET

Returns all the settings to their default values.

FIRMWARE UPDATE

Updates the functions of this unit to the latest version.

For details, refer to the JVC homepage.

(When no program to update the software of this unit is available, nothing will be provided on the homepage.)

<http://www3.jvckenwood.com/english/support/index.html>

OPEN SOURCE LICENSES (recording only)

Displays the open source software licenses that are used in this unit.

CONNECTION SETTINGS (video/still image)



DISPLAY ON TV

Displays icons and date/time on a TV screen.

Setting	Details
OFF	Does not display icons and date/time on TV.
ON	Displays icons and date/time on TV.

VIDEO OUTPUT

Sets the aspect ratio (16:9 or 4:3) according to the connecting TV.

Setting	Details
4:3	Select this when connecting to a conventional TV (4:3).
16:9	Select this when connecting to a widescreen TV (16:9).

HDMI OUTPUT

Sets the output from the HDMI connector of this unit when it is connected to a TV.

Setting	Details
AUTO	It is recommended to select "AUTO" usually.
576p	Select this when the video is not output in "AUTO" correctly.

HDMI CONTROL

Sets whether to link operations with an HDMI-CEC compliant TV.

Setting	Details
OFF	Turns off linked operations.
ON	Turns on linked operations.

MEDIA SETTINGS (video/still image)



FORMAT SD CARD

Deletes all files on the SD card.

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".

Caution :

- 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.
-

USB CONNECTION MENU

Appears when this unit is connected to a computer by using a USB cable.

PLAYBACK ON PC

- Displays videos recorded by this unit by using the MediaBrowser.
“Installing the Provided Software” (☞ p. 77)
 - Saves videos recorded by this unit on your computer without using the provided software.
“Backing Up Files Without Using Provided Software” (☞ p. 82)
“Copying to Mac Computer” (☞ p. 84)
-

CREATE DISC

Save videos recorded by this unit on a disc by using the BD/DVD drive on your computer and the MediaBrowser.

DIRECT DISC

Save videos recorded by this unit on a disc by using the BD/DVD drive on your computer.

UPLOAD

Upload videos recorded by this unit to website for sharing files by using the MediaBrowser.

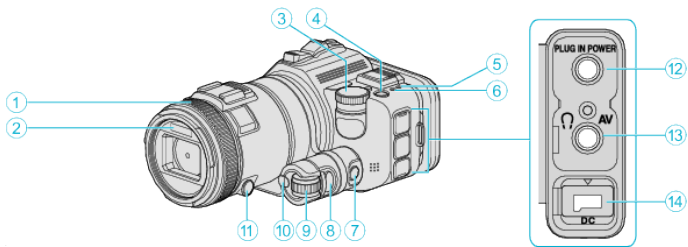
BACK UP

Backup videos recorded by this unit to your computer using the MediaBrowser.
“Backing Up All Files” (☞ p. 78)

Memo :

- Before making backup, load the SD card in which the videos are stored on this unit.
 - After backing up your files using the provided software, they cannot be restored to this unit.
 - Delete unwanted videos before making backup.
It takes time to back up many videos.
- “Deleting Unwanted Files” (☞ p. 69)
-

Front



1 Focus Ring

- Adjusts focus manually.

“Adjusting Focus Manually” (☞ p. 37)

2 Light/Flash

- Turn on the light when shooting in dark places.

“LIGHT” (☞ p. 170)

- Set the flash as necessary when capturing still images.

“FLASH” (☞ p. 175)

3 Shooting Dial

“Shooting by Changing the Settings” (☞ p. 32)

4 (Power) Button

5 ACCESS (Access) Lamp

- Lights up/blinks during recording or playback.
Do not remove the battery pack, AC adapter, or SD card.

6 POWER/CHARGE (Power/Charge) Lamp

- Lights up: Power “ON”
- Blinks: Charging in progress
- Goes out: Charging finished

7 Time Control Button

8 Exposure Button

9 Adjustment Dial

10 SET Button

11 Focus Button

12 Microphone Connector

- Connects to the microphone (sold separately).

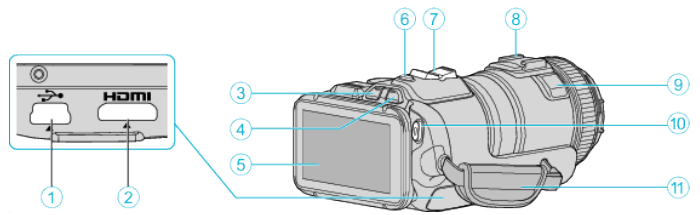
13 AV Connector/Headphone Connector

- Connects to the AV connector of a TV, etc.
- Connects to the headphone (sold separately).

14 DC Connector

- Connects to an AC adapter to charge the battery.

Rear



1 USB Connector

- Connects to computer using a USB cable.

2 HDMI Mini Connector

- Connects to a TV using an HDMI mini cable.

3 Playback/Recording Button

4 (Video/Still Image) Button

5 LCD Monitor

6 SNAPSHOT (Still Image Recording) Button

- Takes a still image.

7 Zoom/Volume Lever

- During shooting: Adjusts the shooting range.
- During playback (index screen): Moves to the next or previous page.
- During video playback: Adjusts the volume.

8 Shoe (for connecting an external microphone which is sold separately)

9 Stereo Microphone

- Do not cover the microphone with your fingers during video recording.

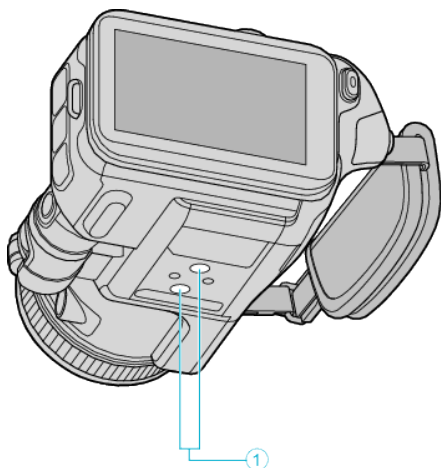
10 START/STOP (Video Recording) Button

- Starts/stops video recording.

11 Grip Belt

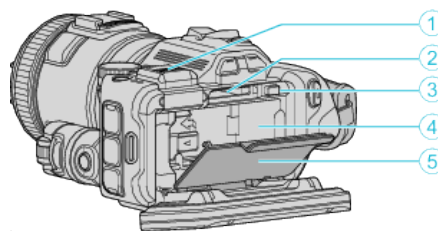
- Pass your hand through the grip belt to hold this unit firmly.

Bottom



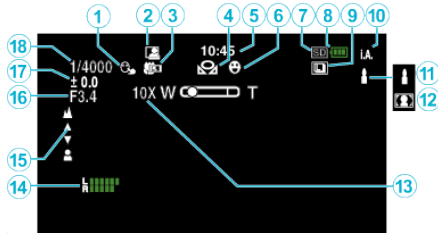
- ① Tripod Mounting Hole**
 “Tripod Mounting” (☞ p. 21)

Interior



- ① Viewfinder Terminal Cover**
 • Remove the cover when attaching a viewfinder.
 “Attaching the Viewfinder” (☞ p. 11)
- ② SD Card Slot**
 • Insert an optional SD card.
- ③ Battery Lock Lever**
 “Detaching the Battery Pack” (☞ p. 13)
- ④ Battery Insert**
 “Charging the Battery Pack” (☞ p. 12)
- ⑤ Battery Cover**
 “Charging the Battery Pack” (☞ p. 12)

Common Recording Indications



1 TOUCH PRIORITY AE/AF

“Capturing Subjects by Tracking Automatically (TOUCH PRIORITY AE/AF)” (☞ p. 34)

2 Auto REC

“Recording Automatically by Sensing Movements (AUTO REC)” (☞ p. 46)

3 Tele Macro

“Taking Close-up Shots” (☞ p. 40)

4 WHITE BALANCE

“Setting White Balance” (☞ p. 39)

5 Time

“Clock Setting” (☞ p. 19)

6 SMILE SHOT

“SMILE SHOT (☺ only)” (☞ p. 171)

7 Recording media

8 Battery Indicator

9 CONTINUOUS SHOOTING

“Continuous Shooting” (☞ p. 32)

10 Recording Mode

“Taking Videos in Auto Mode” (☞ p. 25)

11 Setting Scenes of Intelligent Auto

- Displays scenes detected automatically in the Intelligent Auto function. Multiple scenes may be detected.

“Scenes of Intelligent Auto” (☞ p. 26)

12 Scene Select

“Shooting According to Scene (Subject)” (☞ p. 33)

13 Zoom

“ZOOM” (☞ p. 172)

14 MIC LEVEL

“MIC LEVEL” (☞ p. 173)

15 Focus

“Adjusting Focus Manually” (☞ p. 37)

16 APERTURE PRIORITY

“Manual Adjustment for Shooting” (☞ p. 35)

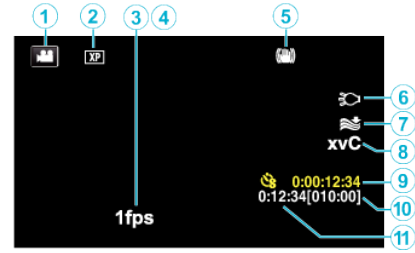
17 Brightness

“Manual Adjustment for Shooting” (☞ p. 35)

18 Shutter Speed

“Manual Adjustment for Shooting” (☞ p. 35)

Video Recording



1 Video Mode

- Switches between video and still image modes.

2 Video Quality

“VIDEO QUALITY” (☞ p. 172)

3 TIME-LAPSE RECORDING

“Recording at Intervals (TIME-LAPSE RECORDING)” (☞ p. 45)

4 HIGH SPEED RECORDING

“Slow-motion (High-speed) Recording” (☞ p. 44)

5 Image Stabilizer

“Reducing Camera Shake” (☞ p. 41)

6 Light

“LIGHT” (☞ p. 170)

7 Wind Cut

“WIND CUT” (☞ p. 171)

8 x.v.Color

“x.v.Color” (☞ p. 172)

9 Time-Lapse Recording Counter

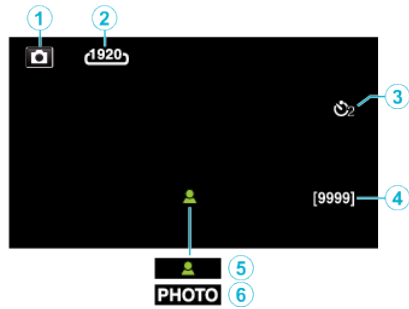
“Recording at Intervals (TIME-LAPSE RECORDING)” (☞ p. 45)

10 Remaining Recording Time

“Checking the Remaining Recording Time” (☞ p. 50)

11 Scene Counter

Still Image Recording



1 Still Image Mode

- Switches between video and still image modes.

2 Image Size

“IMAGE SIZE” (p. 177)

3 Self-Timer

“Taking Group Shots (Self-timer)” (p. 47)

4 Remaining Number of Shots

“Checking the Remaining Recording Time” (p. 51)

5 Focus

6 Recording in Progress

Video Playback



1 Video Mode

- Switches between video and still image modes.

2 Video Quality

“VIDEO QUALITY” (p. 172)

3 Operation Indicator

“Operation Buttons for Video Playback” (p. 54)

4 Date/Time

- Displays the recording date and time.

5 Recording media

6 Battery Indicator

7 Playback Time

8 Time-Lapse Playback

“Time-Lapse Setting” (p. 45)

9 x.v.Color

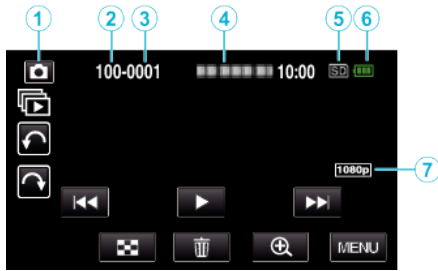
“x.v.Color” (p. 172)

10 1080p Output

“HDMI OUTPUT” (p. 185)

11 Scene Counter

Still Image Playback



1 Still Image Mode

- Switches between video and still image modes.

2 Folder Number

3 File Number

4 Date/Time

- Displays the recording date and time.

5 Recording media

6 Battery Indicator

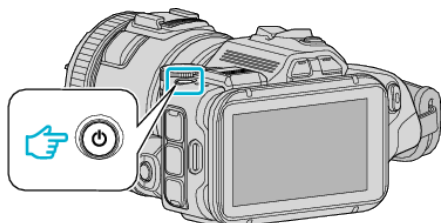
7 1080p Output

“HDMI OUTPUT” (📄 p. 185)

When the unit is not working properly

Turning Off the Power

- 1 Turn off the power by pressing the power button.



- 2 Remove the power source (battery and AC adapter), connect these again, and then press the power button (reset completed).

Battery Pack

Unable to turn on the power when using the battery pack.

Recharge the battery pack.

“Charging the Battery Pack” (☞ p. 12)

Check whether the terminals are dirty.

If the terminal of this unit or the battery pack is dirty, wipe it with a cotton swab or something similar.

If you use any other battery packs besides JVC battery packs, safety and performance cannot be guaranteed. Be sure to use JVC battery packs.

Short usage time even after charging.

Battery deterioration occurs when a battery pack is charged repeatedly.

Replace the battery pack with a new one.

“Optional Accessories” (☞ p. 24)

Unable to charge the battery pack.

When the battery pack is fully charged, the lamp does not flash.

Check whether the terminals are dirty.

If the terminal of this unit or the battery pack is dirty, wipe it with a cotton swab or something similar.

Using a non-original AC adapter may result in damage to this unit. Be sure to use an original AC adapter.

The remaining battery display is not correct.

Remaining battery power is not displayed when the AC adapter is connected.

If this unit is used for long periods of time in high or low temperatures, or if the battery pack is repeatedly charged, the amount of remaining battery may not be displayed correctly.

Recording

Recording cannot be performed.

When there are multiple light sources and depending on the shooting conditions, exposure and focus may not be adjusted correctly in the Intelligent Auto mode. In this case, adjust the settings manually.

“Adjusting Focus Manually” (☞ p. 37)

Recording stops automatically.

Recording stops automatically as it cannot be performed for 12 or more consecutive hours according to specifications. (It may take some time to resume recording.)

Turn off this unit, wait for a while, and turn it on again. (This unit stops automatically to protect the circuit when the temperature rises.)

The continuous shooting speed of still images is slow.

The continuous shooting speed will drop if this function is used repeatedly. Continuous shooting speed may drop depending on the SD card or under certain recording conditions.

The focus is not adjusted automatically.

If you are recording in a dark place or a subject that has no contrast between dark and light, adjust the focus manually.

“Adjusting Focus Manually” (☞ p. 37)

Wipe the lens with a lens cleaning cloth.

Zoom does not work.

Digital zoom is not available in the still image recording mode.

Zoom operation is not available in time-lapse recording. (Simultaneous still image recording and image stabilizer are also not available.)

To use digital zoom, set “ZOOM” in the menu accordingly.

“ZOOM” (☞ p. 172)

SD Card

Cannot insert the SD card.

Make sure not to insert the SD card in the wrong direction.
 “Inserting an SD Card” (☞ p. 14)

Unable to copy to SD card.

To use SD cards that have been used on other devices, it is necessary to format (initialize) the SD card using “FORMAT SD CARD” from media settings.
 “FORMAT SD CARD” (☞ p. 186)

Playback

Sound or video is interrupted.

Sometimes playback is interrupted at the connecting section between two scenes. This is not a malfunction.

There is no sound.

Set “OPERATION SOUND” in the common menu to “ON”.
 “OPERATION SOUND” (☞ p. 183)

The same image is displayed for a long time.

Use a high speed SD card (Class 4 or higher).
 “Types of Usable SD Card” (☞ p. 14)
 Clean the terminals of the SD card with a dry cotton swab or something similar.
 Execute “FORMAT SD CARD” in the “MEDIA SETTINGS” menu. (All data will be deleted.)
 “FORMAT SD CARD” (☞ p. 186)

The motion is choppy.

Use a high speed SD card (Class 4 or higher).
 “Types of Usable SD Card” (☞ p. 14)
 Clean the terminals of the SD card with a dry cotton swab or something similar.
 Execute “FORMAT SD CARD” in the MEDIA SETTINGS menu. (All data will be deleted.)
 “FORMAT SD CARD” (☞ p. 186)
 Verify the system requirements of your computer when using MediaBrowser to play back.
 “Verifying System Requirements (Guideline)” (☞ p. 76)

Cannot find a recorded file.

Cancel the date search function.
 “Searching for a Specific Video/Still Image by Date” (☞ p. 64)
 Select “PLAYBACK OTHER FILE” in the menu. (Video files that have damaged management information can be played back.)
 “PLAYBACK OTHER FILE” (☞ p. 62)

Images do not appear on the TV properly.

Disconnect the cable and connect again.
 “Connecting via the HDMI Mini Connector” (☞ p. 66)
 Turn off and on this unit again.

Images are projected vertically on the TV.

Set “VIDEO OUTPUT” in the “MEDIA SETTINGS” menu to “4:3”.
 “VIDEO OUTPUT” (☞ p. 185)
 Adjust the TV’s screen accordingly.

The image displayed on TV is too small.

Set “VIDEO OUTPUT” in the “MEDIA SETTINGS” menu to “16:9”.
 “VIDEO OUTPUT” (☞ p. 185)

When connected to the TV via the HDMI mini cable, proper images and sounds are not output.

Images and sounds may not be output properly depending on the TV connected. In such cases, perform the following operations.
 ① Disconnect the HDMI mini cable and connect it again.
 ② Turn off and on this unit again.
 “Connecting via the HDMI Mini Connector” (☞ p. 66)

Editing/Copying

Unable to delete file.

Files (videos/still images) that are protected cannot be deleted. Release protection before deleting the file.
“Protecting Files” (☞ p. 70)

Unable to copy/move files to SD card.

Set the write protect switch of the SD card to off.

BACK-UP menu does not disappear.

While the USB cable is connected, the “BACK UP” menu is displayed.

Computer

Unable to copy files to the computer's HDD.

If the provided software MediaBrowser is not installed, some functions may not work properly.

“Installing the Provided Software” (☞ p. 77)

Before making backup, make sure that enough free space is left in the computer's hard disk (HDD).

Unable to copy files to DVD or Blu-ray disc with a PC.

To record to discs, a recordable DVD or Blu-ray drive is required for the computer in use.

Cannot upload the file to YouTube.

Check if you have created an account with YouTube. (You need a YouTube account to upload files to YouTube.)

Changing videos to the file format for uploading cannot be performed on this unit.

Refer to the help file of the provided software MediaBrowser

I am using a Mac computer.

Copy the files to a Mac computer using the following method.

“Copying to Mac Computer” (☞ p. 84)

The computer cannot recognize the SDXC card.

Confirm and update the OS of your computer.

“When your computer cannot recognize the SDXC card” (☞ p. 15)

Screen/Image

The LCD monitor is difficult to see.

The LCD monitor may be difficult to see if used in bright areas such as under direct sunlight.

A band or a ball of bright light appears on the LCD monitor.

Change the direction of this unit to prevent the light source from coming into view. (A band or a ball of bright light may appear when there is a bright light source near this unit, but this is not a malfunction.)

The recorded subject is too dark.

Use backlight compensation when the background is bright and the subject is dark.

“Advanced Operation with Backlight Compensation” (☞ p. 10)

Use “LIGHT” in the menu.

Use “NIGHTALIVE” in SCENE SELECT.

“Shooting According to Scene (Subject)” (☞ p. 33)

Use “GAIN UP” in the menu.

“Manual Adjustment for Shooting” (☞ p. 35)

Set “BRIGHTNESS ADJUST” in the recording menu to the “+” side.

“Manual Adjustment for Shooting” (☞ p. 35)

Decrease the shutter speed. (Subject may be blurred if the shutter speed is too slow.)

Set to a smaller aperture value.

The recorded subject is too bright.

Deactivate the backlight compensation if it is being used.

“Advanced Operation with Backlight Compensation” (☞ p. 10)

Set “BRIGHTNESS ADJUST” in the recording menu to the “-” side.

“Manual Adjustment for Shooting” (☞ p. 35)

Increase the shutter speed.

Set to a larger aperture value.

There are bright or dark spots on the screen.

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.

Other Problems

The buttons on the touch screen do not work.

Tap the buttons on the touch screen with your fingers.

The buttons may not respond if you touch them with your fingernails or with gloves on.

Save the recorded data before requesting service.

① Connect to computer using a USB cable.

The “SELECT DEVICE” menu appears.

② Press and hold the START/STOP button for more than 2 seconds.

The “PLAYBACK ON PC” appears.

Operations are to be performed on the computer after the screen switches.

The image is grainy.

When digital zoom is used, the image becomes grainy as it is digitally enlarged.

This unit heats up.

This is not a malfunction. (This unit may become warm when used for a long time.) Stop using the unit if it gets too warm.

The language on the display changed.

It may occur when you connect this unit to a TV with different language setting using an HDMI mini cable.

“Operating in Conjunction with TV via HDMI” (☞ p. 67)

When connected to the TV via the HDMI mini cable, proper images and sounds are not output.

Images and sounds may not be output properly depending on the TV connected. In such cases, perform the following operations.

① Disconnect the HDMI mini cable and connect it again.

② Turn off and on this unit again.

“Connecting via the HDMI Mini Connector” (☞ p. 66)

HDMI-CEC functions do not work properly, and the TV does not work in conjunction with this unit.

TVs may operate differently depending on the specifications, even if they are HDMI-CEC compliant. Therefore, the HDMI-CEC functions of this unit cannot be guaranteed to operate in combination with all the TVs. In such cases, set “HDMI CONTROL” to “OFF”.

“HDMI CONTROL” (☞ p. 185)

The unit operates slowly when switching between video mode and still image mode, or when switching the power on or off.

It is recommended that you copy all videos and still images onto your computer, and erase the files from this unit. (If there are many recorded files on this unit, it takes time for the unit to respond.)

This unit does not function properly and error messages appear.

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.

Operation disabled since the POWER/CHARGE lamp and the ACCESS lamp are blinking

After turning off the power, remove the power source (battery and AC adapter), connect these again, and then press the power button. If these operations won't solve the problem, contact your JVC dealer or the JVC service center.

Disclaimer

- We shall not be held responsible for loss of recorded contents when recording videos/audio or playback cannot be operated due to malfunctions in this unit, provided parts, or SD card.

- Once deleted, recorded contents (data), including data loss due to malfunctions in this unit, cannot be restored. Please be forewarned.

- JVC will not be responsible for any lost data. Please be forewarned.
- In order for quality improvement, defective recording medium is subject to be analyzed. Therefore, it may not be returned.

Error Message?

SET DATE/TIME!

Connect the AC adapter, charge the battery for more than 24 hours and set the clock. (If the message still appears, the clock battery is exhausted. Consult your nearest JVC dealer.)
“Clock Setting” (☞ p. 19)

COMMUNICATION ERROR

Reconnect the USB cable.
Turn off this unit and the devices connected to it, and turn them on again.
Reattach the battery pack.

MEMORY CARD ERROR!

Check that the card is supported by this unit.
“Types of Usable SD Card” (☞ p. 14)
Turn off and on this unit again.
Remove the AC adapter and battery pack, then 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 “COMMON” menu. (All data will be deleted.)
“FORMAT SD CARD” (☞ p. 186)

NOT FORMATTED

Select “OK”, then select “YES” on the “DO YOU WANT TO FORMAT?” screen.

RECORDING FAILURE

Turn off and on this unit again.

CANNOT TAKE MORE STILL IMAGES AT THIS TIME

Stop video recording before taking still images. (If the SD card is removed and inserted during video recording, still images cannot be recorded.)

PLAYBACK FAILED

Remove and re-insert the SD card.
“Inserting an SD Card” (☞ p. 14)
Remove any dirt from the SD card terminals.
Insert the SD card before turning on the power.
Do not subject this unit to any strong impact or vibration.

VIDEO MANAGEMENT FILE IS DAMAGED, RECOVERY IS REQUIRED TO RECORD/PLAYBACK, RECOVER?

Select “OK” to restore. (Videos that cannot be restored will not be displayed on the index screen, but you may be able to play them back using “PLAYBACK OTHER FILE” in the menu.)
“PLAYBACK OTHER FILE” (☞ p. 62)

UNSUPPORTED SCENE!

Use files recorded with this unit. (Files recorded with other devices may not be playable.)

UNSUPPORTED FILE!

Use files recorded with this unit. (Files recorded with other devices may not be playable.)

THIS FILE IS PROTECTED

Switch off the “PROTECT/CANCEL” function in the “EDIT” menu.
“Protecting Files” (☞ p. 70)

CHECK CARD'S WRITE PROTECTION SWITCH

Set the write protect switch of the SD card to off.

INSUFFICIENT AVAILABLE SPACE

Delete files, or move files to a computer or other devices.
 Replace the SD card with a new one.

RECORDABLE MANAGEMENT CAPACITY LEVEL HAS BEEN REACHED

- ① Move the files or folders to a computer or other device. (Back up your files.)
- ② Select “FILE + MANAGEMENT NO” in “FORMAT SD CARD” of the media settings menu. (All data on the SD card will be deleted.)
 “FORMAT SD CARD” (☞ p. 186)

SCENE QUANTITY EXCEEDED LIMIT

- ① Move the files or folders to a computer or other device. (Back up your files.)
- ② Select “FILE + MANAGEMENT NO” in “FORMAT SD CARD” of the media settings menu. (All data on the SD card will be deleted.)
 “FORMAT SD CARD” (☞ p. 186)

NUMBER OF FOLDERS OVERFLOW

- ① Move the files or folders to a computer or other device. (Back up your files.)
- ② Select “FILE + MANAGEMENT NO” in “FORMAT SD CARD” of the media settings menu. (All data on the SD card will be deleted.)
 “FORMAT SD CARD” (☞ p. 186)

FILE QUANTITY LIMIT EXCEEDED

- ① Move the files or folders to a computer or other device. (Back up your files.)
- ② Select “FILE + MANAGEMENT NO” in “FORMAT SD CARD” of the media settings menu. (All data on the SD card will be deleted.)
 “FORMAT SD CARD” (☞ p. 186)

PROCESSING CANCELLED DUE TO LIMITED SPACE FOR OPERATION

RECORDING CANCELLED

Turn off and on this unit again.
 Protect the unit from vibration and shock.

CAMERA TEMPERATURE IS HIGH PLEASE TURN CAMERA OFF TO ALLOW IT TO COOL DOWN PLEASE WAIT

Turn off the power of this unit, let and it cool down before turning on the power again.

Maintenance

Perform regular maintenance of this unit to enable it to be used for a long time.

Caution :

- Be sure to detach the battery pack, AC adapter, and power plug before performing any maintenance.

Camcorder

- Wipe this unit with a dry, soft cloth to remove any dirt.
- 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.

Caution :

- Do not use solvents such as benzene, thinner, or alcohol. Doing so may cause damage to the unit.
- When using a chemical cloth or cleaner, be sure to observe the warning labels and instructions of the product.
- Do not leave the device in contact with rubber or plastic products for a long time.

Lens/LCD Monitor

- Use a lens blower (commercially available) to remove any dust, and a cleaning cloth (commercially available) to wipe off any dirt.
Mold may form if the lens is left dirty.
- You can use a commercially available anti-reflection or protective film on the screen.
However, depending on the thickness of the film, operations on the touch screen may not be performed smoothly or the screen may darken slightly.

Camera

Item	Details
Power supply	Using AC adapter (AP-V20): DC 11 V Using AC adapter (UIA324-1220): DC 12 V Using battery pack: DC 7.2 V
Power consumption	4.4 W (MONITOR BRIGHTNESS: 3 (standard)) 4.8 W (MONITOR BRIGHTNESS: 4 (brighter)) Rated Current Consumption Using AC adapter(AP-V20): 1A Using AC adapter(UIA324-1220): 2A
Dimensions (mm)	110 x 76 x 183 (W x H x D: excluding grip belt, viewfinder and protrusion)
Mass	Approx. 500 g (camera only), Approx. 585 g (including supplied battery pack)
Operating environment	Allowable operating temperature: 0°C to 40°C Allowable storage temperature: -20°C to 50°C Allowable relative humidity: 35 % to 80 %
Image pickup device	1/2.3" 12,760,000 pixels (CMOS, back-illuminated)
Recording area (Video)	MOV 1080p LPCM/MP4 1080p/AVCHD mode 2,070,000 to 5,400,000 pixels (image stabilizer: OFF, dynamic zoom: ON) MP4 720p/iFrame 720p mode 920,000 to 3,570,000 pixels (dynamic zoom: ON)
Recording area (Still image)	4,430,000 to 5,940,000 pixels (4:3) (image stabilizer: OFF) 2,070,000 to 5,410,000 pixels (16:9) (image stabilizer: OFF)
Lens	F1.2 - 2.8, f = 3.76 mm to 37.6 mm Video (MOV 1080p LPCM/MP4 1080p/AVCHD mode) 35 mm conversion: 29.5 mm to 476 mm (dynamic zoom: ON, image stabilizer: OFF) 35 mm conversion: 29.5 mm to 342 mm (dynamic zoom: OFF, image stabilizer: OFF) Video (MP4 720p/iFrame 720p mode) 35 mm conversion: 36.3 mm to 715 mm (dynamic zoom: ON, image stabilizer: OFF) 35 mm conversion: 36.3 mm to 406 mm (dynamic zoom: OFF, image stabilizer: OFF) Still Image 35 mm conversion: 29.8 mm to 298 mm (4:3) (image stabilizer: OFF) 35 mm conversion: 34.4 mm to 344 mm (16:9) (image stabilizer: OFF)
Lowest illumination	10 lux (GAIN UP: ON) 1 lux (GAIN UP: AUTO SLOW-SHUTTER) 1 lux (SCENE SELECT: NIGHTALIVE)
Zoom (during video recording)	Optical zoom: Up to 10x Dynamic zoom: Up to 16x (image stabilizer: OFF) Digital zoom: Up to 64x
Zoom (during still image recording)	Optical zoom: Up to 10x
LCD monitor	3", 460,000 pixels, color LCD
Recording media	SD/SDHC/SDXC card (commercially available) "Types of Usable SD Card" (p. 14)
Clock battery	Rechargeable battery

Connectors

Item	Details
HDMI output connector	HDMI Mini Connector (x.v.Color compatible)
AV output connector	Video output: 1.0 V (p-p), 75 Ω Audio output: 300 mV (rms), 220 Ω
USB connector	Mini USB, AB type

Video (AVCHD)

Item	Details
Recording/ Playback format	AVCHD standard Video: MPEG-4 AVC/H.264 Audio: AC3 (2ch) Dolby Digital
Extension	.MTS
Signal system	PAL standard
Image quality (Video)	50p 1920 x 1080 pixels Max 28 Mbps, average 27 Mbps XP 1920 x 1080 pixels Average Approximate 17 Mbps EP 1920 x 1080 pixels Average Approximate 4.8 Mbps
Sound quality (Audio)	48 kHz, 256 kbps

Video (MOV/MP4)

Item	Details
Recording/ Playback format	Video: MPEG-4 AVC/H.264(MP4) Audio: AAC (2ch) (MP4)/LPCM (2ch) (MOV)
Extension	.MOV/.MP4
Signal system	PAL standard
Image quality (Video)	MOV 1080p LPCM 1920 x 1080 pixels Max 36 Mbps, average approx. 35 Mbps MP4 1080p 1920 x 1080 pixels Max 36 Mbps, average approx. 35 Mbps MP4 720p 1280 x 720 pixels Max 16 Mbps, average approx. 12 Mbps iFrame 720p 1280 x 720 pixels Max 36 Mbps, average approx. 34 Mbps WIFI REC 640 x 360 pixels Max 1 Mbps, average approx. 0.9 Mbps
Sound quality (Audio)	MOV 1080p LPCM 96 kHz, 4608 kbps MP4 1080p/MP4 720p/iFrame 720p/WIFI REC 48 kHz, average 128 kbps

Specifications

Still Image

Item	Details
Recording format	JPEG standard
Extension	.JPG
Image size	"Approximate Number of Still Images (Unit: Number of Shots)" (p. 51)

AC Adapter (AP-V20)

Item	Details
Power supply	AC 110 V to 240 V, 50 Hz/60 Hz
Output	DC 11 V, 1 A
Allowable operating temperature	0°C to 40°C (10°C to 35°C during charging)

AC Adapter (UIA324-1220)

Item	Details
Power supply	AC 110 V to 240 V, 50 Hz/60 Hz
Output	DC 12 V, 2 A
Allowable operating temperature	0°C to 40°C (10°C to 35°C during charging)

Battery Pack (BN-VF815U)

Item	Details
Power voltage	7.2 V
Capacity	1410 mAh
Dimensions (mm)	30.5 x 33 x 52 (W x H x D)
Mass	Approx. 85 g

Memo :

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

JVC