SAMSUNG

User Manual

Digital Camcorder

www.samsung.com/register

HMX-M20SP
HMX-M20BP

before reading this user manual

SAFETY WARNINGS

What the icons and signs in this user manual mean;

WARNING	Means that there is a potential risk of death or serious injury.
CAUTION	Means that there is a potential risk of personal injury or damage to the product.
CAUTION	To reduce the risk of fire, explosion, electric shock, or personal injury when using your camcorder, follow these basic safety precautions.
	Means hints or referential pages that may be helpful when operating the camcorder.

These warning signs are here to prevent injury to you and others.
Please follow them explicitly. After reading this section, keep it in a safe place for future reference.

PRECAUTIONS

Warning!

- This camcorder should always be connected to an AC outlet with a protective grounding connection.
- Batteries shall not be exposed to excessive heat such as sunshine, fire or the like.

Caution

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

To disconnect the apparatus from the mains, the plug must be pulled out from the mains socket, therefore the mains plug shall be readily accessable.

IMPORTANT INFORMATION ON USE

Before using this camcorder

- **This camcorder records video in H.264 (MPEG4 part10/AVC) format and in High Definition Video (HD-VIDEO) or Standard Definition Video(SD-VIDEO).**
- **Please note that this camcorder is not compatible with other digital video formats.**
- **Before recording important video, make a trial recording.**
  Play back your trial recording to make sure the video and audio have been recorded properly.
- **The recorded contents cannot be compensated for:**
  - Samsung cannot compensate for any damage caused when a recording cannot be played back because of a defect in the camcorder or memory card. Samsung cannot be responsible for your recorded video and audio.
  - Recorded contents may be lost due to a mistake when handling this camcorder or memory card, etc. Samsung shall not be responsible for compensation for damages due to the loss of recorded contents.
- **Make a backup of important recorded data.**
  Protect your important recorded data by copying the files to a PC. We also recommend you to copy it from your PC to other recording media for storage. Refer to the software installation and USB connection guide.
- **Copyrights: Please note that this camcorder is intended for individual use only.**
  Data recorded on the storage media in this camcorder using other digital/analog media or devices is protected by the copyright act and cannot be used without permission of the owner of the copyright, except for personal enjoyment. Even if you record an event such as a show, performance or exhibition for personal enjoyment, it is strongly recommended that you obtain permission beforehand.

About this user manual

Thank you for purchasing this Samsung Camcorder. Please read this user manual carefully before you use the camcorder and keep it handy for future reference. Should your camcorder fail to operate correctly, refer to Troubleshooting.

This User Manual covers HMX-M20SP, HMX-M20BP models.

- The HMX-M20SP, HMX-M20BP do not have built-in flash memory and use memory cards. Although some features of HMX-M20SP, HMX-M20BP models are different, they operate in the same way.
- Illustrations of model HMX-M20SP are used in this user manual.
- The displays in this user manual may not be exactly the same as those you see on the LCD screen.
- Designs and specifications of the camcorder and other accessories are subject to change without any notice.

before reading this user manual

The following terms are used in this manual:

- 'Scene' refers to the point where you press Record Start/Stop button to start recording until you press again to pause the recording.
- The terms 'photo' and 'still image' are used interchangeably with the same meaning.
- For Open Source licences information, refer to the "Opensource_M20.pdf" in the provided CD-ROM.

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HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE

safety information

The safety precautions illustrated below are to prevent personal injury or material damages. Follow all instructions carefully.

WARNING
Means that there is a potential risk of serious personal injury.

CAUTION
Means that there is a potential risk of personal injury or damage to the product

Prohibited action.

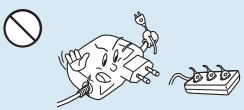
Do not disassemble the product.

Unplug from the power supply.

Do not touch the product.

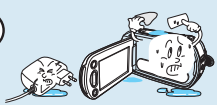
This precaution must be kept.

WARNING

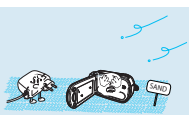


Do not overload outlets or extension cords as this may result in abnormal heat or fire.

Using the camcorder at temperatures over 60℃(140℉) may result in fire. Keeping the battery at a high temperature may cause an explosion.



Do not allow water or metal and inflammable matter to enter the camcorder or AC power adaptor. Doing so may pose a fire hazard.



No sand or dust! Fine sand or dust entering the camcorder or AC power adaptor could cause malfunctions or defects.

No oil! Oil entering the camcorder or AC power adaptor could cause electric shock, malfunctions or defects.

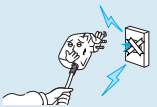
Do not aim the camcorder directly into the sun. Doing so could cause eye injuries, as well as lead to malfunctioning of internal parts of the product.

Do not bend the powercord or damage the AC power adaptor by pressing on it with a heavy object. There may be a risk of fire or electric shock.

Do not disconnect the AC adaptor by pulling on its power-cord, as this could damage the power-cord.

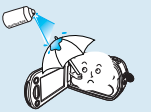
Do not use the AC adaptor if it has damaged, split or broken cords or wires. Doing so may cause fire or electric shock.

safety information



Do not connect the AC adaptor unless the plug can be fully inserted with no part of the blades exposed.

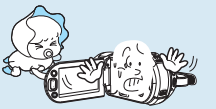
Do not dispose of battery pack in a fire as it may explode.



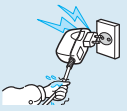
Never use cleaning fluid or similar chemicals. Do not spray cleaners directly on the camcorder.

Keep the camcorder away from water when used near the beach or pool or when it rains. There is a risk of malfunction or electric shock.

Keep the used lithium battery or memory card out of the reach of children. If the lithium battery or memory card is swallowed by children, consult physician immediately.



Do not fire the flash directly in front someone's eyes (especially infants). Doing so may cause impaired vision.



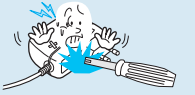
Do not plug or unplug the power cord with wet hands. There is a risk of electric shock.

Keep the power-cord unplugged when not in use or during lightning storms. There is a risk of fire.

When cleaning the AC adaptor, unplug the power-cord. There is a risk of malfunction or electric shock.

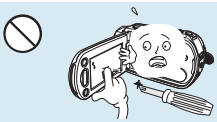
If the camcorder makes an abnormal sound, or smell or smokes, unplug the power-cord immediately and request service from a Samsung service centre. There is a risk of fire or personal injury.

If the camcorder malfunctions, immediately detach the AC adaptor or battery from the camcorder.
There is a risk of fire or injury.

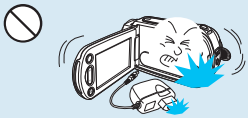


Do not attempt to disassemble, repair, or reform the camcorder or the AC adaptor to avoid a risk of fire or electric shock.

CAUTION

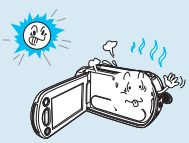


Do not press the surface of the LCD with force, or hit it with a sharp object. If you push the LCD surface, display unevenness may occur.

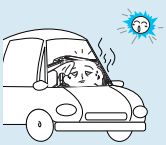


Do not drop or expose the camcorder, battery pack, AC adaptor or other accessories to severe vibrations or impact. This may cause a malfunction or injury.

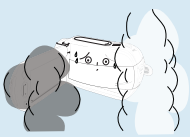
Do not use the camcorder on a tripod (not supplied) in a place where it is subject to severe vibrations or impact.



Do not use the camcorder near direct sunlight or heating equipment. This may cause a malfunction or injury.



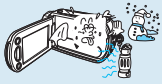
Do not leave the camcorder in a closed vehicle for a long time, where the temperature is very high.



Do not expose the camcorder to soot or steam. Thick soot or steam could damage the camcorder case or cause a malfunction.

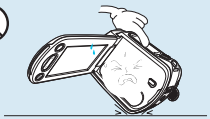
Do not use the camcorder near dense exhaust gas generated by gasoline or diesel engines, or corrosive gas such as hydrogen sulphide. Doing so may corrode the external or internal terminals, disabling normal operation.

Do not expose the camcorder to insecticide. Insecticide entering the camcorder could fail the product to operate normally. Turn the camcorder off and cover it with vinyl sheet, etc. before using insecticide.

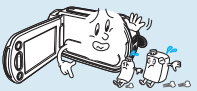


Do not expose the camcorder to sudden changes in temperature or a humid place. There is also a risk of defect or electric shock when using outdoors during lightning storms.

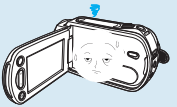
safety information



Do not place the camcorder with the open LCD screen down.

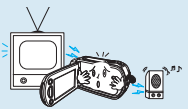


Do not wipe the camcorder body with benzene or thinner. The exterior coating could peel off or the case surface could deteriorate.

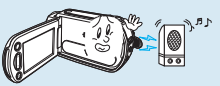


Do not leave the LCD screen open when not using the camcorder.

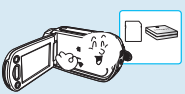
Do not hold the camcorder by the LCD monitor when lifting it. The LCD screen could detach and the camcorder may fall.



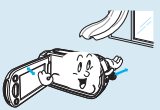
Do not use the camcorder near TV or radio: This could cause noise on the TV screen or to radio broadcasts.



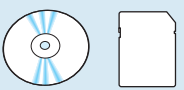
Do not use the camcorder near strong radio waves or magnetism such as speakers and a large motor. Noise could enter video or audio that are being recorded.



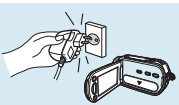
Use Samsung-approved accessories only. Using products from other manufacturers may cause overheating, fire, explosion, electric shock or personal injuries caused by abnormal operation.



Place the camcorder on a stable surface and a place with ventilation openings.



Keep important data separately. Samsung is not responsible for data loss.



Use the mains plug where it can be readily operable. If any problem occurs with the product, the mains plug must be removed to disconnect power completely. Turning off the power button on the product does not completely disconnect the power.

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quick start guide

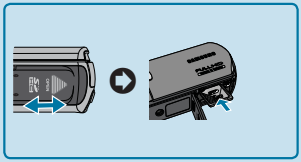
This quick start guide introduces the basic operation and features of your camcorder. See the reference pages for more information.

You can record videos in H.264 format!

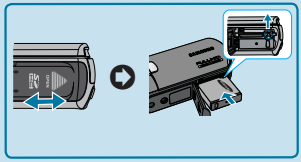
You can record videos in H.264 format that is convenient to email and share with your friends and family. You can also take photos with your camcorder.

STEP1: Get ready

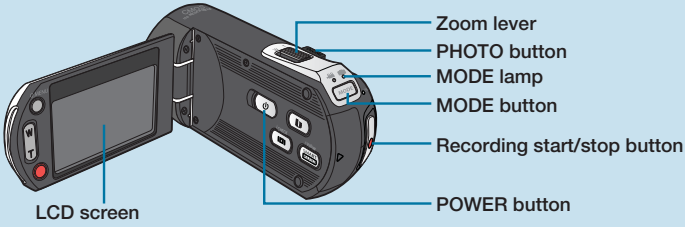
1. Insert a memory card. ➥page 35
   - You can use commercially available SDHC(SD High Capacity) or SD memory cards with this camcorder.



2. Insert the battery into the battery slot. ➥page 24



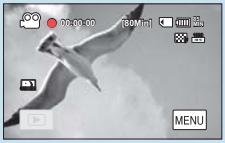
STEP2: Record with your camcorder



Recording videos with HD (high definition) image quality

Your camcorder is compatible with H.264 format “1080/50p” which provides highly-detailed, beautiful images. ➥page 61

1. Open the LCD screen to turn on the video (🎥) indicator.
   - Your camcorder turns on when you open the LCD screen.
2. Press the **Recording start/stop** button.
   - To stop recording, press the **Recording start/stop** button.



Recording photos

1. Open the LCD screen.
2. Press the **MODE** button until the (📷)(photo) indicator lights up.
3. Press **PHOTO** button lightly to adjust the focus, then press it fully (a shutter click sounds).

- **Using ‘Quick On STBY’ by opening/closing the LCD screen**. ➥ page 96
  : When you close the LCD screen during standby, your camcorder goes to Quick On STBY mode (power saving mode). You can start recording quickly when you open the LCD screen.

- Your camcorder is compatible with H.264 format “1080/50p” which provides highly-detailed, beautiful images. ➥page 61
- The default setting is “**1080/50i**”. You can also record with SD(standard definition) video quality.
- You can also take photos while recording/playing videos. ➥pages 43, 48

STEP3: Play back videos or photos

Viewing the LCD screen of your camcorder

You can find your desired recordings quickly by using the thumbnail index view.

1. Touch the Play ( ) tab on the screen in STBY mode.
2. Touch the thumbnail (HD / SD /) tab, then touch the desired image.

Viewing on a high definition TV

- You can enjoy HD (high definition) videos. ➥page 121

You can also play back videos on a SD (standard definition) image quality TV.
➥ pages 119~121

STEP4: Save recorded videos or photos

Simple and fun! Enjoy the various features of Intelli-studio on your Windows computer.

Using the Intelli-studio programme, built in your camcorder, you can import video/photos onto your computer, edit or share the videos/ photos with your friends. For details, see pages 125~128.

Viewing the videos/photos from your PC

1. Launch the Intelli-studio programme by connecting the camcorder to your PC via USB cable.
   - A new file saving screen appears with the Intelli-studio main window. Click "**Yes**," the uploading procedure will start.
2. The new files are saved to your PC and registered to **''Contents Manager"** on the Intelli-studio programme.
   - You can arrange the files by different options such as Face, Date, Location, etc.

3. You can double-click on the file you would like to start playback.

Sharing the videos/photos onto Youtube/Flickr/FaceBook

Share your contents with the world, by uploading photos and videos directly to web site with a single click.
Click on the **"Share" → "Upload"** tab on the browser. ➥page 128

The Intelli-studio runs automatically once the camcorder is connected to a Windows computer (when you specify "**PC Software: On**"). ➥page 97

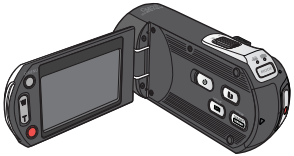
STEP5: Delete videos or photos

If the storage media is full, you cannot record new videos or photos. Delete videos or photos data that has been saved on a computer from the storage media. Then you can record new videos or photos on newly freed up space.

Touch the Play(◄) tab → Menu(MENU) tab → "Delete" on the LCD screen. ➥page 105

WHAT'S INCLUDED WITH YOUR CAMCORDER

Before using the camcorder, check if any of these items is missing from your box.
The contents or the shape of accessories may vary depending on the sales region.



Model name	Colour	Memory card slot	LCD screen	Lens
HMX-M20SP	Silver	O	Colour/ Touch panel	8x(Optical), 12x(Intelli)
HMX-M20BP	Black			

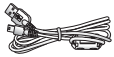
- The shape is the same for all models. Only the colour is different.

Checking your accessories

Battery pack (BP125A)

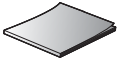
AC power adapter

Component/AV cable

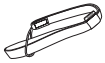


USB cable

User manual CD



Quick start guide



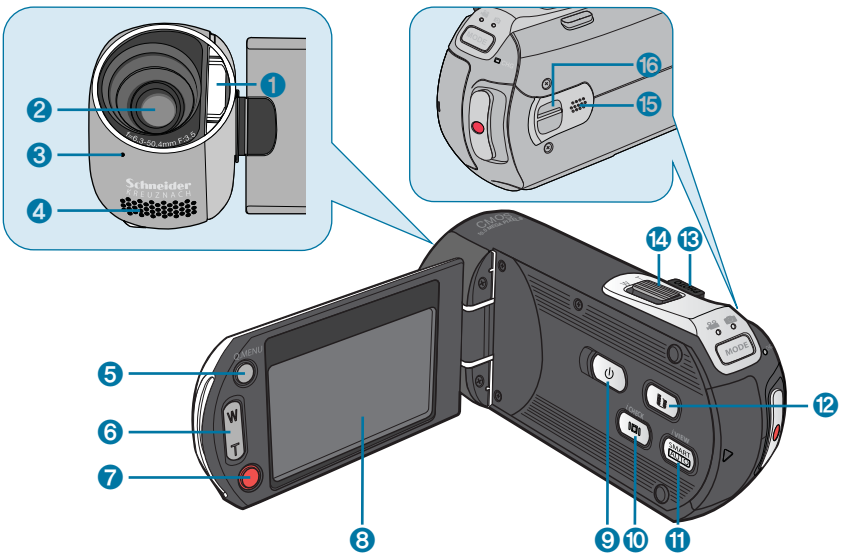
Hand strap

Mini HDMI cable
(Optional)

- The exact appearance of each item may vary by model.
- The contents may vary depending on the sales region.
- Parts and accessories can be purchased after consulting with your local Samsung dealer. SAMSUNG is not responsible for reduced battery life time or malfunctions caused by any unauthorised use of accessories such as AC adaptor or the batteries.
- Your camcorder includes the user manual CD and quick start guide (printed). For more detailed instructions, refer to the user manual (PDF) on the provided CD.
- Memory card is not provided. Buy a memory card that is compatible with this camcorder.

LOCATION OF CONTROLS

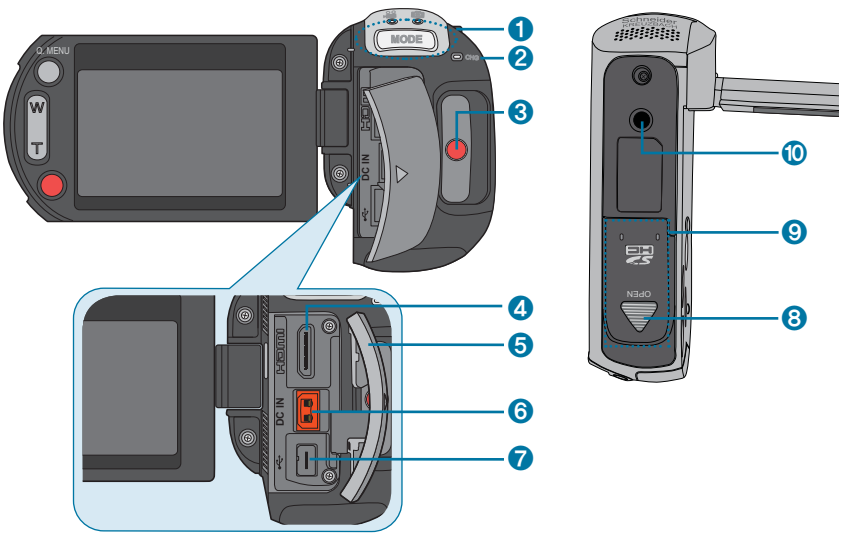
Front/Left/Right



1 Built-in flash
2 Lens
3 Recording indicator button
4 Internal microphone
5 Q.MENU button
6 Zoom (W/T) button
7 Recording start/stop button
8 LCD screen (Touch screen)
9 Power( ) button
10 Display (/*i*CHECK) button
11 Smart Auto/ *i*VIEW button
12 Share button
13 PHOTO button
14 Zoom(W/T) lever
15 Built-in speaker
16 Hand strap hook

During a recording, be careful not to block the internal microphone and lens.

Rear/Bottom



1 MODE button/Mode indicator (Video( )/Photo( ) mode)
2 Charging (CHG) lamp
3 Recording start/Stop button
4 HDMI jack
5 Jack cover
6 DC IN jack
7 (USB,Component/AV)jack
8 Battery/Memory card cover switch
9 Battery/Memory card cover
10 Tripod receptacle

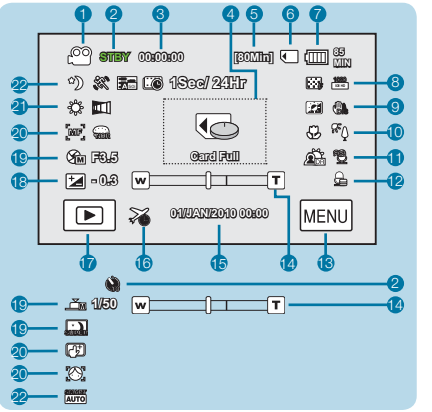
IDENTIFYING THE SCREEN DISPLAYS

The available functions vary depending on the selected operation mode, and different indicators appear depending on the setting values. The indicators below only appear in the video record mode.

PRECHECK!

- This On Screen display (OSD) is shown in Video record ( ) mode only.
- Select the Video ( ) mode by pressing the **MODE** button. ➥page 31

Video record mode



1 Video record mode
2 Operating status (STBY (standby)/● (recording))/ Self Timer *
3 Time counter(video recording time)
4 Warning indicators and messages
5 Remaining recordable time
6 Storage media (memory card)
7 Battery info.(remaining battery level/time)
8 Quality, Resolution
9 LCD Enhancer, Anti-Shake (HDIS)
10 Tele Macro*, Back Light
11 Dynamic Range*,Wind Cut
12 MIC Level
13 Menu (MENU)tab
14 Optical zoom/Digital zoom bar
15 Date/Time
16 Time Zone
17 Play ( ) tab
18 EV*
19 Manual aperture*/Manual shutter*/Super C.Nite
20 Manual Focus*/Touch Point*/Face Detection, Digital effect
21 White balance, Fader*
22 iSCENE /SMART AUTO, Analog TV Out (when component/AV cable is connected), Time Lapse REC*

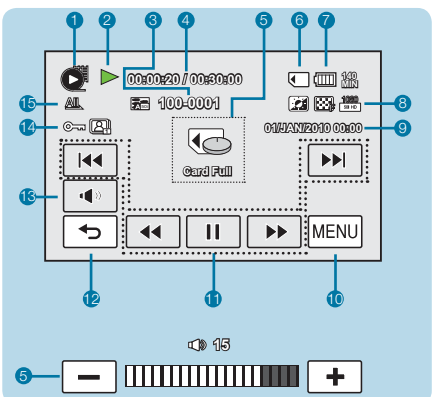
- Functions marked with * will not be retained when the camcorder is powered back on.
- The on-screen indicators are based on an 8GB SDHC memory card capacity.
- The above screen is illustrated for explanation purposes and may differ from the actual display.
- For warning indicators and messages, see pages 131~137
- The above illustrated items and their positions can be changed without notice for the purpose of better performance.
- The total number of recordable photos is counted based on available space on the storage media.

The available functions vary depending on the selected operation mode, and different indicators appear depending on the setting values. The indicators below only appear in the video play mode.

PRECHECK!

- This On Screen display (OSD) is shown in Video playback ([▶]) mode only.
- Select the Play ([▶]) tab on the LCD screen to select the playback mode ➥page 49

Video play mode



1 Video play mode
2 Operating status (Play/Pause)
3 File name (file number)
4 Playback time/Recorded time
5 Warning indicators and messages/Volume control
6 Storage media (memory card)
7 Battery info. (Remaining battery level/time)
8 LCD Enhancer, Quality, Resolution
9 Date/Time
10 Menu tab
11 Playback control tabs (Skip/Search/Play/Pause/ Slow Playback)
12 Return tab
13 Volume tab
14 Protect, Cont. Capture
15 Play Option, Analog TV Out (when component/ AV cable is connected)

- The playback control tabs disappear a few seconds after a video playback. Touch anywhere on the screen to display them again.
- For warning indicators and messages, see pages 131~137

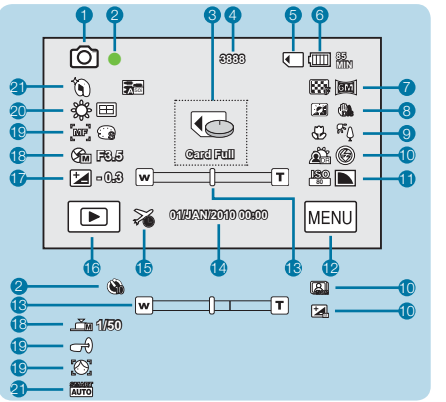
IDENTIFYING THE SCREEN DISPLAYS

The available functions vary depending on the selected operation mode, and different indicators appear depending on the setting values. The below indicators below only appear in the photo record mode.

PRECHECK!

- This On Screen display (OSD) is shown in Photo record ( ) mode only.
- Select the Photo ( ) mode by pressing the **MODE** button. ➥page 49

Photo record mode



1 Photo record mode
2 Focus indicator (half shutter) / Self Timer*
3 Warning indicators and messages
4 Image counter (total number of recordable photo images)
5 Storage media (memory card)
6 Battery info.(remaining battery level/time)
7 Quality, Resolution
8 LCD enhancer, Anti-Shake (HDIS)
9 Tele Macro*, Back Light
10 Dynamic Range*, Flash/Cont. Shot /Bracket Shot*
11 ISO, Sharpness
12 Menu (MENU)tab
13 Optical zoom/Digital zoom bar
14 Date/Time
15 Time Zone
16 Play ( )tab
17 EV*
18 Manual aperture*/Manual shutter*
19 Manual focus*,Metering/Magic Touch* /Face Detection
20 White Balance, Digital effect
21 *i*SCENE mode/SMART AUTO, Analog TV Out (when component/AV cable is connected)

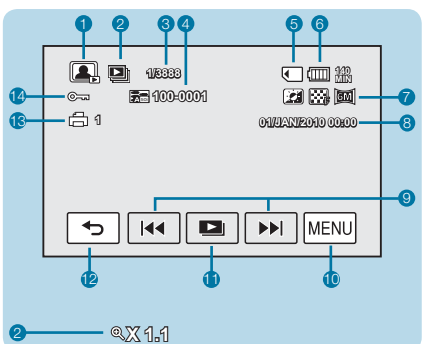
- Functions marked with * will not be retained when the camcorder is powered back on
- For warning indicators and messages, see pages 131~137
- The total number of recordable photos is counted based on available space on the storage media.
- Little change to the remaining memory space may not change the photo counter after recording.
- The maximum number of recordable photo images on the On Screen display (OSD) is “9,999.”

The available functions vary depending on the selected operation mode, and different indicators appear depending on the setting values. The below indicators below only appear in the photo play mode.

PRECHECK!

- This On Screen display (OSD) is shown in Video playback ([▶]) mode only.
- Select the Play ([▶]) tab on the LCD screen to select the playback mode ➥page 49

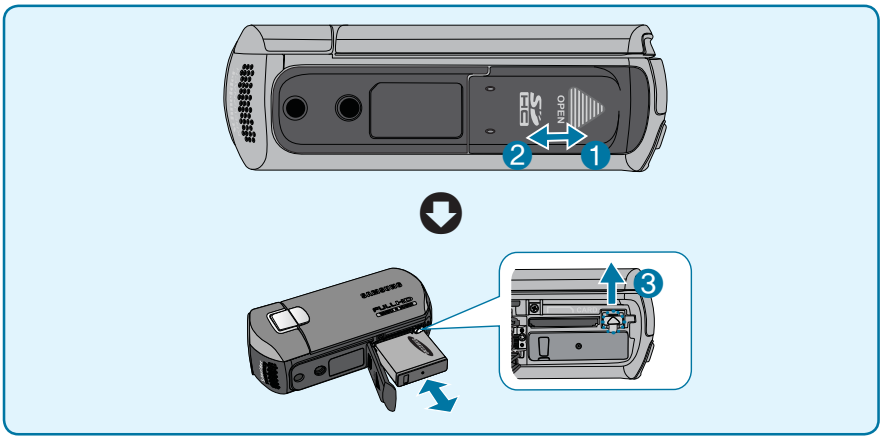
Photo play mode



1 Photo play mode
2 Slide show/zooming control
3 Image counter (current image/total number of recorded images)
4 File name (file number)
5 Storage media (memory card)
6 Battery info. (Remaining battery level/time)
7 LCD enhancer, Quality, Resolution
8 Date/time
9 Previous image, Next image tab
10 Menu([MENU]) tab
11 Slide show playback([▶]) tab
12 Return tab
13 Print mark
14 Protect, Analog TV Out (when component/AV cable is connected)

USING THE BATTERY PACK

Purchase extra battery packs to allow continuous use of your camcorder.



Inserting the battery pack

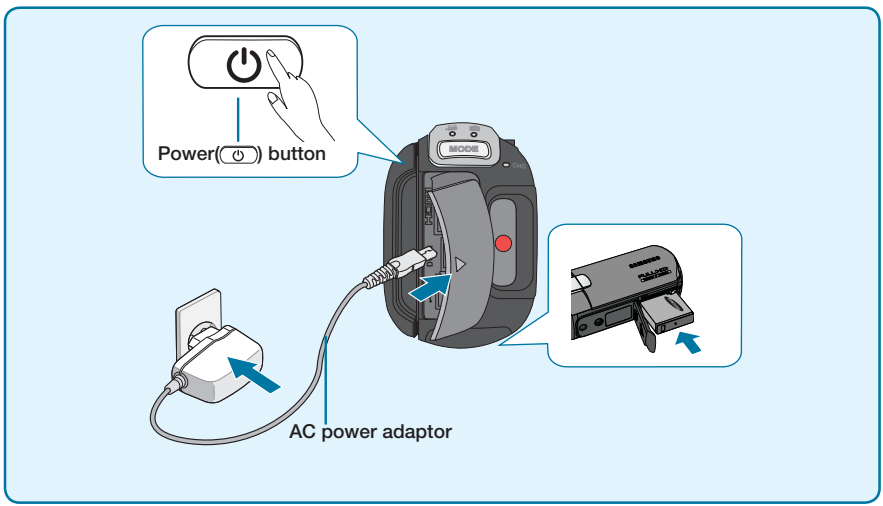
1. Open the battery/memory card cover by sliding the battery/memory card cover switch towards ①.
2. Insert the battery pack into the battery pack slot until it softly clicks.
   - Make sure that the SAMSUNG logo is facing up when the camcorder is placed as shown in the figure.
3. Close the battery/memory card cover by sliding the battery/memory card cover switch towards ②.

Ejecting the battery pack

1. Open the battery/memory card cover by sliding the battery/memory card cover switch towards ①.
2. Eject the battery pack by sliding the battery release switch towards ③.
3. Close the battery/memory card cover by sliding the battery/memory card cover switch towards ②.

- Use only Samsung-approved battery packs. Do not use batteries from other manufacturers. Otherwise, there is a danger of overheating, fire or explosion.
- Samsung is not responsible for problems occurring due to using unapproved batteries.

Charging the battery pack with the AC power adaptor



PRECHECK!

Before starting the following procedure, make sure that the battery pack is inserted in your camcorder.

1. Press the power( ) button to turn off the camcorder and then close the LCD screen. ➥page 29
2. Open the battery/memory card cover.
3. Insert the battery pack in the camcorder.
4. Connect the AC power adaptor to the DC IN jack on the camcorder and plug the AC power adaptor in the wall outlet.

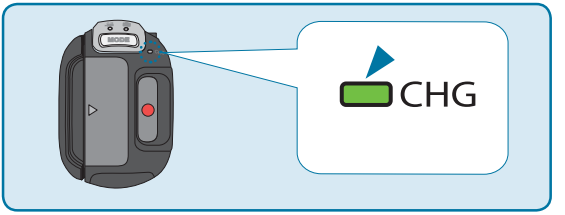
- The battery pack is not charged during the power saving mode, which may keep the mode indicator on or flashing. Start charging the battery after turning off the camcorder by pressing the power ( ) button.
- Even with the power is switched off, battery pack will still discharge if the battery pack is left inserted in the camcorder.
- It is recommended you to have one or more additional battery packs to allow continuous use of your camcorder.

CHECKING THE BATTERY STATE

You can check the charging state and remaining battery capacity.

To check the charging state

The colour of the CHG lamp indicates the power or charging state.



Charging (CHG) lamp

The colour of the charging indicator shows the charging state.

Charging state	Charge		
	Charging	Fully Charged	Error
LED colour	(Orange)	(Green)	(Red / Blink)

- Battery capacity decreases over time and through repeated use. Keep the camcorder turned off while not operating it.
- Store the battery pack separately when finished charging or when not using it for a long time. This will help extend the life of the prevent the battery.
- The Battery pack is charged over 95% after about 2 hour and 40 minutes, and the indicator colour changes to green.
  It takes about 3 hours for the battery pack to charge 100%.

Available running time for the battery pack

Battery Type	BP125A	
Charging time	Approx. 180min.	
Video Resolution	HD (1080/50i)	SD (576/50p)
Continuous recording time	Approx. 85min.	Approx. 90min.
Playback time	Approx. 140min.	Approx. 170min.

(Unit: minutes.)

- Charging time: Approximate time (min.) required when you fully charge a completely exhausted battery pack.
- Recording/Playback time: Approximate time (min.) available when you fully charged the battery pack. 'HD' stands for high definition image quality, and 'SD' stands for standard image quality.

About battery packs

- The battery pack should be recharged in an environment that is between 32°F (0°C) and 104°F (40°C). However, when it is exposed to cold temperatures (below 32°F (0°C)), its usage time reduces and it may cease to function. If this happens, place the battery pack in your pocket or other warm, protected place for a short time, then re-insert it.
- Do not put the battery pack near any heat source (i.e. fire or a heater).
- Do not disassemble, apply pressure to, or heat the battery pack.
- Do not allow battery pack terminals to be short-circuited. It may cause leakage, generate heat, or cause fire.

Maintaining the battery pack

- The recording time is affected by temperature and environmental conditions.
- We recommend only using the original battery pack that is available from your Samsung retailer. When the battery reaches the end of its life, please contact your local dealer. The batteries have to be dealt with as chemical waste.
- Make sure that the battery pack is fully charged before starting to record.
- To preserve battery power, keep your camcorder turned off when you are not operating it.
- Even when the power is switched off, the battery pack will still discharge if it is left inserted on the camcorder. It is recommended that you remove the battery pack from the camcorder.
- If the battery pack is not used for a long time, fully charge the battery pack and use it up on your camcorder once per 6 months to maintain proper function. To store the battery pack, remove it from your camcorder and put it in a dry, cool place.

About the battery life

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

About the running time

- Times measured when using the camcorder at 77°F (25°C). As the environmental temperature and conditions vary, the actual battery time may differ form the approximate times given in the table.
- The recording and playback time will be shorter depending on the conditions under which you use your camcorder. In actual recording, the battery pack may discharge 2-3 times faster than this reference, since the Record start/stop and Zoom are being operated, and playback is performed. Assume that the recordable time with a fully charged battery pack is between 1/2 and 1/3 of the time in the table, so have enough battery packs to allow for the time you are planning to record on the camcorder.
- The recording and playback time will be shorter when you use your camcorder in low temperatures.

On the battery pack

- The CHG (charging) lamp blinks during charging, or Battery Info will not be correctly displayed under the following conditions:
  - The battery pack is not inserted correctly.
  - The battery pack is damaged.
  - The battery pack is worn-out. (For the battery information only)

Using an AC power source

It is recommended that you use the AC power adaptor to power the camcorder from a household AC outlet when you perform settings on it, play back, or edit images, or use it indoors. Make the same connections as you do when charging the battery pack. ➥page 25

On the AC Adaptor

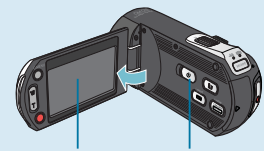
- Use a nearby wall outlet when using the AC Adaptor. Disconnect the AC Adaptor from the wall outlet immediately if any malfunction occurs while using your camcorder.
- Do not use the AC Adaptor placed in a narrow space, such as between a wall and furniture.
- Do not short-circuit the DC plug of the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

basic operation of the camcorder

TURNING YOUR CAMCORDER ON/OFF

This chapter introduces you to the basic operation procedures of this camcorder, such as turning the power on/off, switching modes, and setting on-screen indicators.

1. Open the LCD screen to turn on the camcorder.
   - Your camcorder turns on automatically when you open the LCD screen.
2. To turn off the camcorder, press the Power ( ) button for about one second.
   - Closing the LCD screen will not turn off the camcorder.
   - Set the date and time when using your camcorder for the first time. ➥page 33



- The camcorder operates the self-diagnosis function when powered on. If a warning message appears, refer to '**warning indicators and messages**' (➥pages 131~137) and take corrective action.
- If you close the LCD screen when the power is on, the power saving mode activates.

When using this camcorder for the first time

- When you use your camcorder for the first time or reset it, the time zone screen appears for the startup display. Select your geographical location and set the date and time. ➥page 33
  If you do not set the date and time, the time zone screen appears every time you turn on the camcorder.

SWITCHING TO THE POWER SAVING MODE

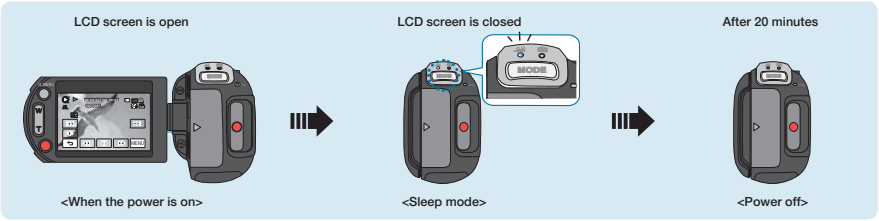
If you need to use camcorder for the extended time, the following functions enable you to prevent unnecessary energy consumption.

In STBY mode:

- The camcorder switches to "Quick On STBY" mode when the LCD screen is closed.
  ➥page 96

In Playback mode (Includes the thumbnail view mode):

- The camcorder switches to the sleep mode when the LCD screen is closed, and then if idle for more than 20 minutes the camcorder turns off.
  However, if "**Auto Power Off: 5 Min**" is set, the camcorder turns off in 5 minutes.
- If you open the LCD screen or connect a cable to the camcorder during sleep mode, the sleep mode ends and returns back to the last used operation mode.

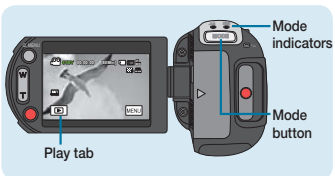


- The power saving mode does not work in the following situations:
  - When the camcorder has a cable connection. (USB, Component/AV, or HDMI)
  - While recording, playback, or the slideshow is being operated.
  - When the LCD screen is opened.
- The camcorder consumes the battery power in the power saving mode (about 50% of the power consumption in the standby mode) However, if you plan to use the camcorder for the maximum length of time period, it is recommended to turn off the camcorder by pressing the power( ) button when not using it.

SETTING THE OPERATION MODES

You can switch the operating mode in the following order each time you press the **MODE** button. Video mode (🎥) → Photo mode (📷) → Video mode (🎥).

- Each time the operation mode changes, the respective mode indicator lights on.
- Touching the Play (▶) tab in the video or photo record mode switches the operation mode into the video or photo playback mode.



Mode	Icon	Functions
Video mode	🎥	Records videos
Photo mode	📷	Records photos

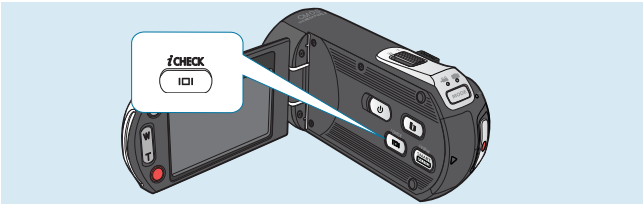
- When you turn on the camcorder for the first time, the video mode will start up as the default.
- Booting mode can be selected by setting "**Booting Mode**" to "**Photo Mode**" or "**Previous Mode**," and the changes will be in effect the next time the camcorder is tuned on. ➥page 95

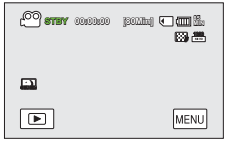
USING THE DISPLAY(▭/*i*CHECK) BUTTON

Switching the information DISPLAY mode

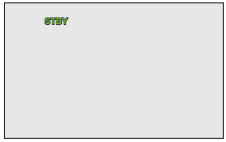
You can switch the on-screen information display mode.
Press the display(▭/*i*CHECK) button.

- The full and minimum display modes will alternate.





<Full display mode>

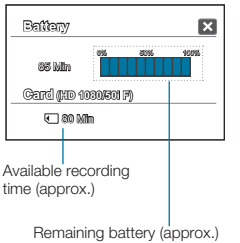


<Minimum display mode>

- Warning indicators and messages may appear depending on the recording conditions.
- **Display (▭/*i*CHECK) button** does not work in the menu or quick menu screen.

Checking the remaining battery and recording capacity

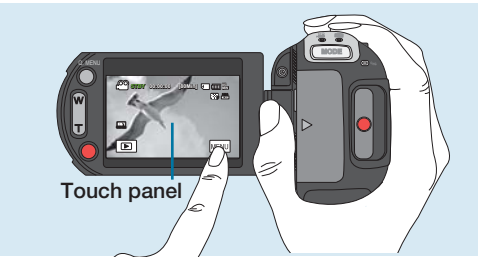
- When the power is off, press and hold the display (▭/*i*CHECK) button.
- When the power is on, press and hold the display (▭/*i*CHECK) button for about 3 second.
- The remaining battery time and the available recording time appear for about 10 seconds according to the storage and quality setting values.



- Battery information is available only when the battery pack is inserted in your camcorder.
- If the camcorder is connected by using the AC Power adaptor, and the battery is not inserted, the "**No Battery**" message appears.

USING THE TOUCH PANEL

The touch panel allows you to enjoy playback and recording with a simple touch of your finger. Place your hand on the rear side of the LCD screen to support it.
Then, touch the items displayed on the screen.

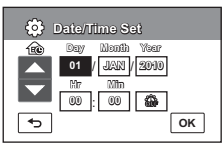


- Do not place a protective film on the LCD screen.
- If a film is applied for a long while, strong cohesion on the surface of the screen may cause a malfunction of the touch panel.

- Be careful not to accidentally press the buttons near the LCD panel while using the touch panel.
- The tabs and indicators that appear on the LCD screen depend on the current recording/playback status of your camcorder.

SETTING THE TIME ZONE AND DATE/TIME FOR THE FIRST TIME

Set the date and time of your local area when turning on this camcorder for the first time.



1. Open the LCD screen to turn on the camcorder.
   - Your camcorder turns on automatically when you open the LCD screen.
   - The Time Zone ("**Home**") screen appears based on Lisbon, London (Greenwich Mean Time).
   - You can also set your current time zone from the "**Settings**" menu. ➥page 93
2. Select your local area on the map by touching the left (◀) or right (▶) tab on the LCD screen, then press the (OK) tab.
   - The "**Date/Time Set**" screen appears.
3. Touch the date and time information, and change the setting values by using the up (▲) or down (▼) tabs.
4. Make sure the clock is correctly set, then touch the (OK) tab.
   - The message "**Date/Time Set**" appears.
   - If you finish the setting with (↩) tab without touching the (OK) tab, the date/time values are not applied and the <Time zone> screen appears again.

- The year can be set up to 2039, based on "**Home**" item.
- Set "**Date/Time Display**" to "**On**." ➥page 91
- Activating the (⏲) icon forwards the time by 1 hour.

Built-in rechargeable battery

- Your camcorder includes a built-in rechargeable battery that retains the date and time settings even after the power is turned off.
- Once the battery is depleted, the previous date/time values are all reset to defaults, and you need to recharge the built-in rechargeable battery. The date/time must be set again.
- Battery capacity decreases over time and through repeated use. If you find the decreased usage time between charges becomes significant, ask your local Samsung retailer.

Charging the built-in rechargeable battery

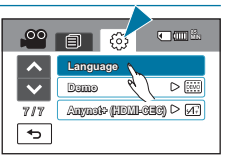
- The built-in battery is always recharged while your camcorder is connected to the AC power or while the battery pack is attached.
- If the camcorder is not in use for about 2 weeks without connecting to the AC power or attaching the battery pack, the built-in battery fully discharges. If this occurs, charge the built-in battery by connecting to the supplied AC adaptor for 24 hours.

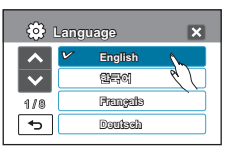
first time settings

SELECTING THE LANGUAGES

You can select the language to display the menu screen or messages. The language setting is retained when the camcorder is powered off.

1. Touch Menu (MENU)→Setting (⚙) tab.
2. Touch up (▲)/down (▼) tab until "**Language**" is displayed.
3. Touch "**Language,**" then touch the desired OSD language.
4. Touch the Exit (✕) or Return (↩) tab to complete the setting.
   - The menu screen and messages are displayed in the selected language.



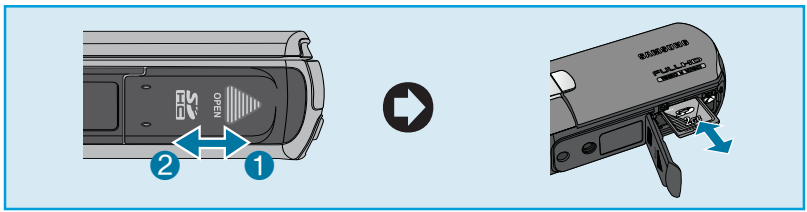


Submenu items

"English"	→	"한국어"	→	"Français"	→	"Deutsch"	→	"Italiano"	→
"Español"	→	"Português"	→	"Nederlands"	→	"Svenska"	→	"Suomi"	→
"Norsk"	→	"Dansk"	→	"Polski"	→	"Čeština"	→	"Slovensky"	→
"Magyar"	→	"Română"	→	"Български"	→	"Ελληνικά"	→	"Srpski"	→
"Hrvatski"	→	"Українська"	→	"Русский"	→	"中文"	→	"日本語"	→
"ไทย"	→	"Türkçe"	→	"ایرانی"	→	"العربية"	→	"עברית"	

- "**Language**" options may be changed without prior notice.
- Selected language is retained even without the battery pack or AC power adaptor.
- The date and time format may change depending on the selected language.

INSERTING AND REMOVING A MEMORY CARD (NOT SUPPLIED)



To insert a memory card

1. Open the battery/memory card cover by sliding the battery/memory card cover switch towards ①.
2. Insert the memory card into the card slot until it softly clicks.
   - Make sure that SD/SDHC Card logo is facing up and the camcorder is placed as shown in the figure.
3. Close the battery/memory card cover by sliding the battery/memory card cover switch in the direction of ②.

To eject a memory card

1. Open the battery/memory card cover by sliding the battery/memory card cover switch towards ①.
2. Gently push the memory card to eject it.
3. Close the battery/memory card cover by sliding the battery/memory card cover switch towards ②.

- To avoid the data loss, turn off the camcorder by pressing the power ( ) button for one second before inserting or ejecting the memory card.
- Do not format the memory card on a PC.
- Do not remove power supply (battery pack or AC adaptor) during operations such as recording, playback, formatting, deleting, and editing. Doing so may damage the storage media or data.
- Do not eject a memory card when it is in operation. Doing so may damage the memory card or data.
- Be careful not to push the memory card too hard. The memory card may suddenly pop out.

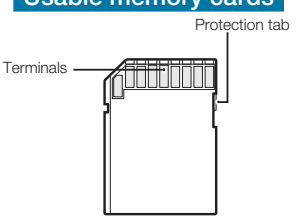
Your camcorder supports only SD(Secure Digital) and SDHC(Secure Digital High Capacity) cards. The compatibility with the camcorder may vary depending on manufacturers and types of the memory cards.

SELECTING A SUITABLE MEMORY CARD

Compatible memory cards

- This camcorder can be used with SD (Secure Digital) and SDHC (Secure Digital High Capacity) cards.
  It is recommended to use an SDHC (Secure Digital High Capacity) card.
  SD cards up to 2GB are supported with this camcorder. Normal operation is not guaranteed with SD cards bigger than 2GB.
- MMC (Multi Media Card) and MMC Plus are not supported.
- Compatible memory card capacity:
  SD 1 ~ 2GB, SDHC 4 ~ 32GB
- Use compatible memory card brands.
  - SDHC/SD cards: Panasonic, Sandisk, TOSHIBA
  - Others are not guaranteed to work. Check the compatibility when buying a memory card.
- To record videos, use a memory card supporting at least 6MB/s. (above SDHC Class 6 card)
- SD/SDHC memory cards have a mechanical write-protection switch. Setting the switch prevents accidental erasure of files recorded on the card. To enable writing, move the switch up in the direction of the terminals.To set write protection, move the switch down.

Usable memory cards



SDHC (Secure Digital High Capacity) cards

- SDHC (Secure Digital High Capacity) memory card
  - An SDHC card is a higher version (Ver.2.00) of SD card and supports capacity above 2GB.
  - Cannot be used with current SD enabled host devices.

Common cautions for memory cards

- Damaged data may not be recovered. It is recommended you make a back-up of important data separately on the hard disk of your PC.
- Turning the power off or removing a memory card during an operation such as formatting, deleting, recording, and playback may cause data loss.
- After you modify the name of a file or folder stored in the memory card using your PC, your camcorder may not recognise the modified file.

Handling a memory card

- It is recommended that you power off before inserting or removing the memory card to avoid data loss.
- It is not guaranteed that you can use a memory card formatted by other devices. Be sure to format your memory card using this camcorder.
- You have to format newly-purchased memory cards, memory cards with data that your camcorder cannot recognise or are saved by other devices. Note that formatting erases all data on the memory card.

- If you cannot use a memory card that has been used with another device, format it with your camcorder. Note that formatting erases all information on the memory card.
- A memory card has a certain life span. If you cannot record new data, you have to purchase a new memory card.
- A memory card is a precision electronic media. Do not bend it, drop it, or cause a strong impact.
- Do not bend, drop, or cause strong impact to the card.
- Do not place foreign substances on the memory card terminals. Use a soft dry cloth to clean the terminals if required.
- Do not paste anything other than label provided with the card on label pasting section.
- Be careful to keep the memory card out of the reach of children, who might swallow it.

Notes on use

- Samsung is not responsible for data loss due to misuse.
- We recommend using a memory card case to avoid losing data from moving and static electricity.
- After a period of use, the memory card may get warm. This is normal and is not a malfunction.

The camcorder supports SD and SDHC memory cards for data storage preference!

The data storage speed may differ, according to the manufacturer and production system.

- SLC (single level cell) system: faster write speed enabled.
- MLC (multi level cell) system: only lower write speed is supported.
  For best results, we recommend using a memory card that supports faster write speed.
  Using a lower write speed memory card for recording video may cause difficulties when storing.
  You may even lose your video data during the recording.
  In an attempt to preserve any bit of the recorded video, the camcorder forcibly stores the movie on the memory card and displays a warning:

  “Low speed card. Please record at lower resolution.”

  If you are unavoidably using a low speed memory card, resolution and quality of the recording may be lower than the set value. ➥pages 61~62
  The higher the resolution and quality, the more memory will be used.

Recordable time available for video

Video resolution	Quality	Storage media (Capacity)					
		1GB	2GB	4GB	8GB	16GB	32GB
1080/50p	Super Fine	5min	10min	20min	40min	80min	160min
	Fine	7min	14min	28min	56min	112min	224min
1080/50i	Super Fine	7min	14min	28min	56min	112min	224min
	Fine	10min	20min	40min	80min	160min	320min
1080/25p	Super Fine	7min	14min	28min	56min	112min	224min
	Fine	10min	20min	40min	80min	160min	320min
720+576/25p	Fine	12min	23min	45min	90min	180min	360min
720/50p	Super Fine	10min	20min	40min	80min	160min	320min
	Fine	13min	26min	52min	104min	208min	416min
720/25p	Super Fine	15min	29min	57min	114min	228min	456min
	Fine	19min	37min	73min	146min	292min	584min
576/50p	Super Fine	19min	37min	73min	146min	292min	584min
	Fine	24min	47min	93min	186min	372min	744min
Web & Mobile	Super Fine	26min	52min	103min	206min	412min	824min
	Fine	33min	65min	129min	258min	516min	1032min

(Unit: Approximate minutes of recording)

Recordable number of photos

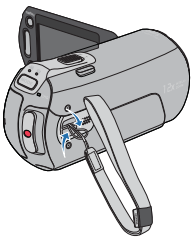
Photo resolution	Quality	Storage media (Capacity)					
		1GB	2GB	4GB	8GB	16GB	32GB
12M (4000x3000)	Super Fine	169	338	676	1352	2704	5408
	Fine	253	506	1012	2024	4048	8096
	Nomal	380	759	1518	3036	6072	9999
9M (3456x2592)	Super Fine	227	454	908	1816	3632	7264
	Fine	339	677	1353	2706	5412	9999
	Nomal	510	1020	2040	4080	8160	9999
6M (3328x1872)*	Super Fine	324	648	1296	2592	5184	9999
	Fine	486	972	1944	3888	7776	9999
	Nomal	724	1447	2894	5788	9999	9999
5M (2592x1944)	Super Fine	404	808	1616	3232	6464	9999
	Fine	599	1197	2393	4786	9572	9999
	Nomal	889	1778	3556	7112	9999	9999
2M (1920x1080)	Super Fine	973	1945	3889	7778	9999	9999
	Fine	1460	2920	5840	9999	9999	9999
	Nomal	2166	4332	8664	9999	9999	9999
VGA (640x480)	Super Fine	6281	9999	9999	9999	9999	9999
	Fine	8973	9999	9999	9999	9999	9999
	Nomal	9999	9999	9999	9999	9999	9999

(Unit: Approximate number of images)

- The figures in the table may differ depending on the actual recording conditions and subject.
- The higher the quality and resolution, the more memory is used.
- Lower resolution and quality increases the recording time, but the image quality may suffer.
- The bitrate automatically adjusts to the recording image. Accordingly, the recording time may vary.
- When a video file exceeds 3.8 GB, the next video file is created automatically.
- To check the remaining memory capacity, use **display(**▭**)/*i*CHECK** button. ➥page 31
- The maximum number of recordable photos and videos is 9,999.
- The above items marked with * will represents the default setting value.

USING THE HAND STRAP

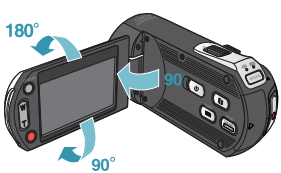
Attach the strap and place your hand through the loop to prevent the camcorder from damage by being dropped.



ADJUSTING THE LCD SCREEN

The wide LCD screen on your camcorder offers high quality image viewing.

1. Open the LCD screen with your finger.
   - The screen opens up to 90°.
2. Rotate the LCD screen towards the lens.
   - You can rotate it up to 180° towards the lens and up to 90° backward.
     To view recordings more conveniently, rotate the screen by 180° towards the lens, then fold it back to the body.



Excessive rotation may damage the connective hinge between the screen and the camcorder.

- Clean fingerprints or dust on the screen with a soft cloth.
- When the LCD screen is rotated by 180° toward the lens, the left and the right sides of the subject are shown in the opposite direction as if you are looking at the mirror. This is not a problem and does not affect the image being recorded.

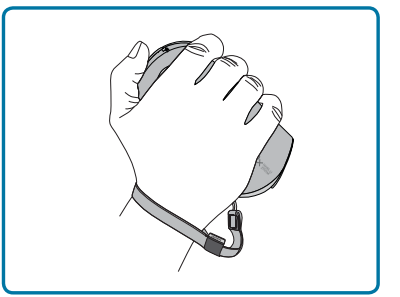
BASIC CAMCORDER POSITIONING

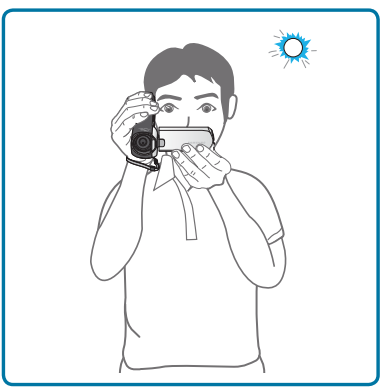
Use both hands while taking a video or picture to prevent the camcorder from shaking.
Try to avoid any slight movement while shooting.

Adjusting the shooting angle

Aim the camcorder as shown in the illustration.

1. Hold the camcorder with your both hands.
2. Hook up the hand strap to your hand.
3. Make sure your footing is stable and there is no danger of colliding with another person or object.
4. Aim and focus as shown in the illustration.





This camcorder lens angle is approx. 25˚ higher than the rest of the camcorder body. Make sure the camcorder lens is angled for proper shooting.

- It is recommended to keep the sun behind you while shooting.
- To avoid underexposing a backlit subject when taking a photo, please use the Flash.

RECORDING VIDEOS

This camcorder supports both High Definition(HD) and Standard Definition(SD) image resolutions.
Set your desired resolution before recording. ➥page 61

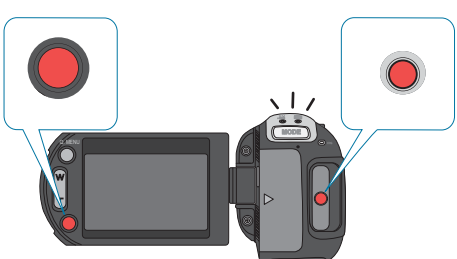
PRECHECK!

- Open the LCD screen to turn on the camcorder.
- Your camcorder turns on automatically when you open the LCD screen.
- Select the Video (🎥) mode by pressing the MODE button. ➥page 49

1. Select a subject to record.
   - Adjust the LCD panel to the best angle for recording.
   - Use the **Zoom** lever or **Zoom** button to adjust the size of the subject. ➥page 48
2. Press the **Recording start/stop** button.
   - The recording (●) indicator appears, and recording starts.
3. To stop recording, press the **Recording start/stop** button again.
4. The Quick View icon appears on the screen.
   Touch the Quick View (▶) icon to view the most recently recorded video.
   - After the Quick View is completed, your camcorder returns to the standby mode.

Two Recording start/stop buttons to suit your preference!

- This camcorder features two **Recording start/stop** buttons. One is on the rear side of the camcorder, the other is on the LCD screen. Select the one that works best for you.



basic recording

- If power is interrupted or an error occurs during recording, the video may not be recorded/edited.
- Samsung is not responsible for any damage occured by a failure of normal recording or playback operation because of memory card error.
- Note that damaged data cannot be recovered.

- Videos are compressed in the H.264 (MPEG-4.AVC) format.
- Eject the battery pack when you have finished recording to prevent unnecessary battery power consumption.
- For the on-screen information display, see pages 20~23.
- For approximate recording time, see page 38.
- Sound is recorded from the internal stereo microphone at the bottom of the lens. Make sure that the microphone is not blocked.
- Before recording an important video, make sure to test the recording function by checking if there is any problem with the audio and video recording.
- The brightness of the LCD screen can be adjusted in the menu options. Adjusting the LCD screen does not affect the image being recorded. ➥page 94.
- For various functions available during recording, see “Recording menu items” ➥pages 55~85
- Do not turn off the camcorder or remove the memory card while accessing the storage media. Doing so may damage the storage media or the data in the storage media.
- If the power cable/battery is disconnected or recording is disabled during recording, the system is switched to the data recovery mode. While data is being recovered, no other function is enabled. After data recovery, the system will be switched to the STBY mode. When the recording time is short, the data recovery might fail.
- The menu setting tabs shown on the LCD screen do not affect the image being recorded.
- In the Video/Photo Recording mode, you can set the **Quick View** menu option. The Quick View icon appears when you have set the **Quick View** menu option to On.
- If you record videos continuously with 1080/50p, data loss may occur for several seconds between the 1st recorded file and the 2nd recorded file.

CAPTURING PHOTOS IN VIDEO RECORD MODE (STILL SHOT)

Your camcorder can capture photos without interrupting video recording, even in STBY mode.

PRECHECK!

Select the Video (📹) mode by pressing the **MODE** button. ➥page 49

You can record photos while recording videos.

1. Press the **Recording start/stop** button.
   - The recording (●) indicator will display, and recording will start.
2. Press the **PHOTO** button at the scene you want while recording videos.
   - When the (▶▶▶) indicator disappears, the photo image is recorded without a shutter sound.
   - Video keeps recording, even while photos are taken.
   - To stop recording, press the **Recording start/stop** button again.

<Dual recording during video recording>

You can also record photos in STBY mode.

1. Press the **PHOTO** button in STBY mode.
   - The photo is recorded while the (▶▶▶) indicator appears and the shutter sound is heard.

<Dual recording in STBY mode>

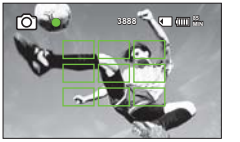
- You cannot capture photos in the following conditions:
  - Slow motion record mode.
  - When you record in 1080/50p, 720+576/25p
- You cannot use the flash during dual recording.
- Resolution of the captured photos differs according to the resolution of the recorded videos:
  - Movie images recorded in HD resolution (1080/50p, 1080/50i, 1080/25p): 1920x1080
  - Movie images recorded in HD resolution (720/50p, 720/25p, 720+576/25p): 1280x720
  - Movie images recorded in SD quality (576/50p): 896x504
  - Movie images recorded in the Web&Mobile: 640x480

RECORDING PHOTOS

You can take photos and store them in an SD/SDHC memory card. Set the desired resolution and quality before recording. ➥pages 61~62

PRECHECK!

- Open the LCD screen to turn on the camcorder.
- Your camcorder turns on automatically when you open the LCD screen.
- Select the Photo (📷) mode by pressing the MODE button. ➥page 49



1. Select a subject to record.
   - Adjust the LCD panel to the best angle for recording.
   - Use the **Zoom** lever or **Zoom** button to adjust the size of the subject. ➥page 48
2. Adjust the subject at the centre of the LCD screen, and half-press the **PHOTO** button.
   - Your camcorder adjusts to the ideal aperture and focus automatically (if "**Aperture**" and "**Focus**" are set to "**Auto**" ➥pages 65, 70)
   - When the subject is in focus, (●) indicator appears green. If it appears red, readjust the focus.
3. Fully press the **PHOTO** button.
   - The shutter sound is heard. (when "**Shutter Sound: On**" is set).
   - To continue recording, wait until the current photo is completely saved on the storage media.
   - If the Quick View function is set to the desired time, the recorded photo image is shown for the selected time as soon as you finish taking a photo. ➥page 85

- Recordable number of photos varies depending on the photo size and quality. ➥page 38
- Audio is not recorded when taking photos.
- If focusing is difficult, use the manual focus function. ➥page 70
- Do not turn off the camcorder or remove the memory card when taking photos as it may damage the storage media or data.
- For the on-screen display information, see pages 20~23.
- Adjust brightness and contrast of the LCD screen using menu items. Doing so does not affect the recorded image. ➥page 94
- Photo files conform to the DCF (Design rule for Camera File system) standard, established by JEITA (Japan Electronics and Information Technology Industries Association.)
- Use the built-in flash in low lighting conditions.

RECORDING WITH EASE FOR BEGINNERS (SMART AUTO MODE)

With the SMART AUTO function, most of the camcorder settings are automatically adjusted. This function frees you from making detailed adjustments.

PRECHECK!

Select the Video ( ) or Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Press the **SMART AUTO** button.
   - ( ) indicator is displayed. (when activating the SMART AUTO mode, Anti-shake ( ) indicator also appears.)
2. Adjust the subject on the LCD screen.
   - The camcorder detects the subject and automatically selects a type of scene.
   - According to the detected type of scene, the corresponding icon will appear.

<Video mode>

<Photo mode>

Menu	Functions	Movie	Photo
	Portrait shot	●	●
	Outdoor portrait shot at night	●	●
	Night landscape shot	●	●
	Backlight landscape shot without a man	●	●
	Portrait shot under backlight	●	●
	Outdoor landscape shot	●	●
	Close-up shot	●	●
	Sunset shot	●	●
	Under strong light shot such as theatrical performances	X	●
	Highly bright background shot	X	●
	Close-up character shot	X	●
	Close-up shot for the subject with various colours	X	●
	Character shot	X	●
	Dawn shot	X	●
	Taking pictures under the condition that the subject moves much	X	●
	After fixing to a fixture like tripod, proceed with the shot under the condition that the subject does not move for a while	X	●
	Nature shot such as forest and leaves	X	●
	Blue sky shot	X	●

3. Press the **Recording start/stop** button or **PHOTO** button. ➥pages 41, 44
   - To record videos, press the **Recording start/stop** button. To record photos, press the **PHOTO** button.
4. To cancel SMART AUTO mode, press the **SMART AUTO** button again.

Detecting scenes in the SMART AUTO mode

In the SMART AUTO mode, your camcorder detects the subject and selects an appropriate scene mode automatically.

- The following icons will appear according to a detected type of scene.
- When there is no detected scene, the (SMART AUTO) indicator appears.

- The SMART AUTO mode automatically sets the following record functions: **“*i*SCENE,” ”White Balance,” “Aperture,” “Shutter,” “EV,” “3D-NR,” “Super C.Nite,” “Back Light,” “Focus,” “Face Detection,” “Anti-Shake (HDIS),” “Digital Effect,” “Fader,” “Tele Macro,” “Digital Zoom,” “ISO,” “Dynamic Range,” “Flash,” “Magic Touch,” “Metering,” “Cont. Shot,” “Bracket Shot,”** etc. Cancel the SMART AUTO function if you want to add effects or settings to the images.
- **Unavailable buttons during SMART AUTO operation:**
  Menu (MENU) tab / **Q.MENU** button / etc. Most settings are automatically adjusted in SMART AUTO mode. To set or adjust functions on your own, release the SMART AUTO mode first.
- The camcorder may not detect the Portrait mode when recording a face, depending on a position of the face or brightness.

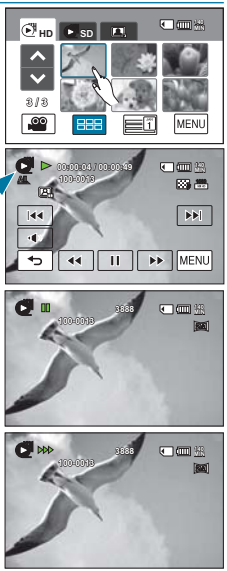
CAPTURING PHOTOS WHILE PLAYING BACK VIDEOS

You can capture photos during video playback.

PRECHECK!

Touch the Play ( ) tab on the LCD screen to select the playback mode. ➥page 49

1. Recorded videos appear in a thumbnail index view.
   - Touch the up ( )/down ( ) tab to move to the previous/next page.
2. Touch the video clip you want.
   - The selected video is played.
3. Press the **PHOTO** button halfway at the scene you want to capture.
   - The playback screen is paused.
4. Press the **PHOTO** button fully down.
   - The captured still image is recorded in JPEG format.
5. When the photo is recorded on the storage media, touch the Return ( ) tab to view the thumbnail index. Touch the Photo ( ) tab to view the recorded photo images. ➥page 49



- Resolution of the captured photos differs according to the resolution of the recorded videos:
  - Movie images recorded in HD resolution (1080/50p, 1080/50i, 1080/25p): 1920x1080
  - Movie images recorded in HD resolution (720/50p, 720/25p): 1280x720
  - Movie images recorded in SD quality (576/50p): 896x504
  - Movie images recorded in the Web&Mobile: 640x480

Capturing photos continually while playing back videos

You can capture photos continually during video playback.

1. Select the desired options including the maximum number of images that can be recorded by using the "**Cont. Capture**" menu. ➥page 90
2. Touch the desired video clip.
3. Still images are continually captured by pressing the **PHOTO** button.
   - The number of captured images varies depending on how long the **PHOTO** button is pressed.
     - Photos are continuously captured up to the storage capacity.
   - The interval of the continuous image capture varies according to the continuous capture option. ➥page 90

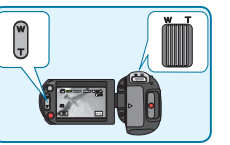
ZOOMING

This camcorder features 12x intelli - zoom in the Video (🎥) mode and 8x optical zoom in the Photo (📷) mode to bring distant subjects closer.

To zoom in

Press the **T** (zoom) button on the LCD panel or slide the zoom lever towards **T** (telephoto).

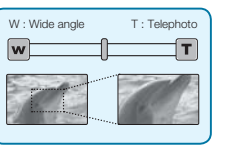
- The distant subject is gradually magnified and can be recorded.



To zoom out

Press the **W** (zoom) button on the LCD panel or slide the zoom lever towards **W** (wide-angle).

- The subject moves further away.



Tip

The zoom speed of this camcorder is not variable. Use the zoom lever for high speed zoom and zoom button on the LCD panel for low speed zoom.

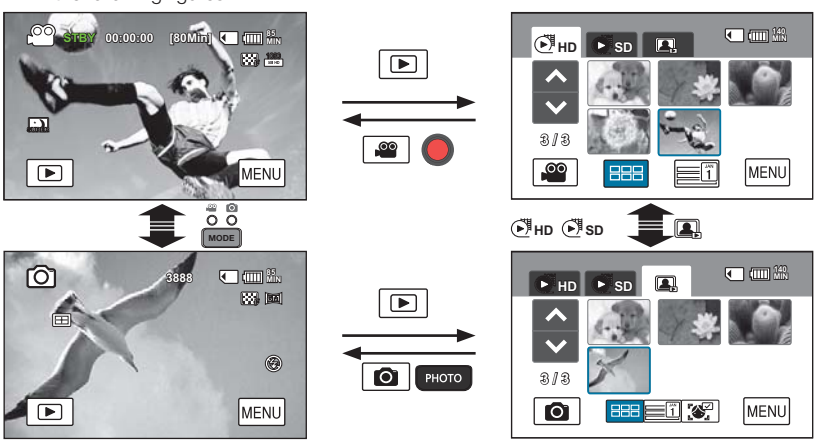
- Using the optical zoom does not degrade the image quality and clarity.
- Use the digital zoom when you want to zoom more than the optical or intelli zoom range. ➥page 80
- Focusing may become unstable when recording with a fast zoom or zooming into a subject standing too far away. In this case, use the manual focus function. ➥page 69
- The minimum possible distance between camcorder and subject while maintaining sharp focus is about 10cm (about 3.9 inches) for wide angle and about 1m (about 39.37 inches) for telephoto. If you want to shoot the object close to the lens at a wide angle, use the **Tele Macro** function. ➥page 79
- When using the zoom function while holding the camcorder with your hand, use "**Anti-Shake (HDIS)**" for stable recording. ➥page 76
- Frequent use of the zoom function consumes more power.

CHANGING THE PLAYBACK MODE

- You can switch the operation mode directly into the playback thumbnail display by touching the Play ( ) tab on the LCD screen. You will find the most recently created file is highlighted in the thumbnail view.
- The thumbnail display options are selected depending on the standby mode that was used for the last time, however, you can choose the video (HD or SD) or photo thumbnail view display options by touching the HD (HD), SD (SD), or photo ( ) tab on the LCD screen.
- To switch back into the record mode from the thumbnail display mode, you can touch the video ( )/photo ( ) tab on the LCD screen.
- In the video or photo thumbnail display mode, you can directly enter the video or photo record mode by pressing the **Recording start/stop** or **PHOTO** button.

Understanding how to change the operation modes

You can simply change the operation modes by touching the LCD screen or using the buttons as shown in the following figures:



Tip

- You can choose the thumbnail display options from 3x2 ( ), and Date ( ).
- You can switch the thumbnail display options between 3x2 and 4x3 by moving the Zoom (W/T) lever.

PLAYING BACK VIDEOS

You can preview recorded videos in a thumbnail index view. Find your desired video quickly, and playback directly.

PRECHECK!

Touch the Play ( ) tab on the LCD screen to select the playback mode. ➥page 50

1. Touch "**HD**" or "**SD.**"
   - Video thumbnails corresponding to the selected video quality appear on the screen.
   - To change the current thumbnail view, select the ( ), or ( ) tab on the screen.
   - If you select the thumbnail display by date ( ), you can sort videos by specific date. ➥page 49
   - To change the current thumbnail page, touch the up( ) or down( ) tab.
2. Touch the desired video clip.
   - The selected video is played and playback control tabs appear briefly. They reappear when touching anywhere on the screen.
   - You can set playback settings using the "**Play Option**" menu. ➥page 86
   - To stop playback and return to the thumbnails, touch the Return ( ) tab.

Tip

Drag your finger from left to right to select the previous video on the LCD screen, reverse to select the next video.

- It may take some time to start playback, depending on the size and quality of the selected video.
- When the LCD screen is closed during playback, the built-in speaker automatically turns off.
- The camcorder may not play the following video files:
  - A video recorded on other devices
  - A video whose file format is not supported on the camcorder
- You can use various play options during the video playback. ➥page 86
- The recorded videos can be played on a TV or PC. ➥pages 121, 127
- If you touch the Menu ( ) tab or Q.MENU button during a playback, play is paused and the menu screen appears.

Various playback operations

Playback / Pause / Stop

- Playback and Pause alternates when touching the Playback ( ) / Pause ( ) tab during playback.
- Touch the Return ( ) tab to stop playback.

Search playback

During playback, each touch of the Reverse search ( ) / Forward search ( ) tab increases the play speed:

- RPS (Reverse Playback Search) rate: x2 ➞ x4 ➞ x8 ➞ x16 ➞ x32 ➞ x2
- FPS (Forward Playback Search) rate: x2 ➞ x4 ➞ x8 ➞ x16 ➞ x32 ➞ x2

Skip playback

Touch the Reverse skip ( ) / Forward skip ( ) tab during playback.

- Touching the Forward skip( ) tab plays the next video.
- Touching the Reverse skip( ) plays the beginning of the scene. If reverse skip ( ) is touched within 3 seconds from the start of the file, the previous video is played.

Slow playback

During a pause, touching the Forward slow ( ) tab reduces the playback speed:

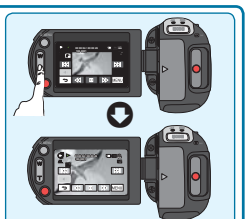
- Forward playback slow: x1/2 ➞ x1/4 ➞ x1/8 ➞ x1/16

Frame by frame playback

- Frame-by-frame playback: When the file is paused, press the frame-by-frame (/) button to play the scene forward/backward by each frame.

Magnifying the image size while playing back the videos:

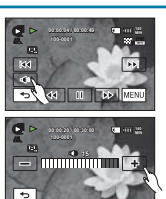
When you playback videos recorded at "**Slow Motion**" or "**Resolution: Web & Mobile,**" the image's viewing size can be adjusted by using the zoom button or the zoom lever.
Operating the zoom button or the zoom lever toward the direction of T, 'telephoto' magnifies the image's viewing size.



To adjust the volume

You can hear the recorded sound from the built-in speaker.
The sound level is adjusted between "**0~19**." When the level is at "**0,**" you cannot hear sound.

1. Touch the Volume ( ) tab on the LCD screen.
2. Touch ( )/( ) tab to increase or decrease audio volume.
   - If you touch ( )/( ) tab for a long time, the sound level will be adjusted continuously.



You can also control the volume levels by dragging your finger up or downward on the LCD screen.

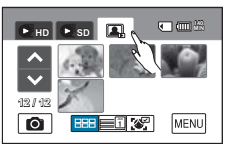
VIEWING PHOTOS

You can view recorded photos by using various playback functions.

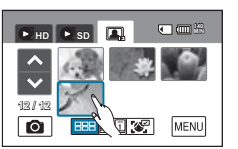
PRECHECK!

Touch the Play ( ) tab on the LCD screen to select the playback mode. ➥page 49

1. Touch the Photo ( ) tab.
   - The thumbnail view appears.
   - To change the current thumbnail view, select ( ), or ( ) tab on the screen.
   - If you select the thumbnail display by date ( ), you can sort videos by specific date. ➥page 49
   - To change the current thumbnail page, touch up ( ) or down ( ) tab.
   - You can sort the recorded files by face by registering the faces to the Smart Recognition ( ) list.



2. Touch your desired photo to play back.
   - The selected photo is displayed in full screen and playback control tabs appear briefly. They reappear when touching anywhere on the screen.
   - Touch previous image ( )/ next image ( ) tab to view the previous and next photo.
   - Place and hold your finger on the previous image ( )/next image ( ) tab to search a desired photo number quickly. When you lift off your finger, the selected photo is displayed.



3. To return to the thumbnails, touch the Return ( ) tab.

Tip

Using the touch panel by dragging:

You can also select the previous photo or the next photo by dragging your finger on the LCD screen.
- Dragging to the right: Shows the previous photo image.
- Dragging to the left: Shows the next photo image.

- Do not power off or eject the memory card during photo playback. Doing so may damage the recorded data.
- Your camcorder may not playback the following photo files normally;
  - A photo recorded on other devices.
  - A photo with a file format not supported on this camcorder (does not conform to DCF standards)

Loading time may vary depending on the size and quality of the selected photo.

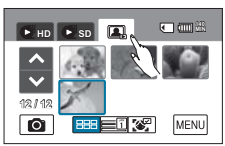
VIEWING A SLIDE SHOW

You can view a photo slide show.

PRECHECK!

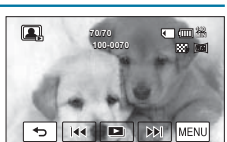
- This function works in Photo ( ) mode only.
- Touch the Play ( ) tab on the LCD screen to select the playback mode. ➥page 49

1. Touch the Photo ( ) tab.
   - The thumbnail view appears.
   - To change the current thumbnail page, touch up ( ) or down ( ) tab.
2. Touch the Menu (MENU) tab ➜ **“Slide Show Start”**
   - The ( ) indicator is displayed. The slide show starts from the current selected photo.
   - All photos are play back continuously in the set slide show option (“**Music,**” “**Interval,**” “**Effect,**” “**Play Option.**”)
   - You can adjust the background music’s volume level using the Volume ( ) tab while playing back the slide show with music.
   - To stop the slide show, touch the Return ( ) tab.
   - Every time you touch the LCD screen, the play related tabs appear on the LCD screen.



Tip

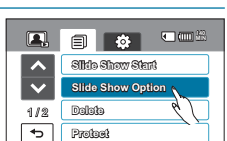
To start the slide show during a playback of a single photo, touch the slide show ( )tab on the LCD screen, or you can touch the Menu (MENU) tab ➜ “**Slide Show Start.**”



Using the Slide Show Option

While playing back the slide show, you can use the “**Slide Show Option**” menus as follows:

- **Music** : (built-in music will play) “Off,” “Random,” “1.Mist,” “2.Muse,” “3.Fall,” “4.Dawn,” “5.Party,” “6.Drops,” “7.Trip.”
- **Interval**: “1 Sec,” “3 Sec.”
- **Effect**: “Off,” “Random,” “Effect 1,” “Effect 2,” “Effect 3,” “Effect 4.”
- **Play Option**: “Play All,” “Repeat All,” “Random.”



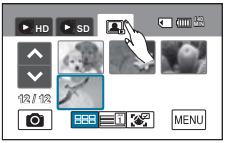
ZOOMING DURING PLAYBACK

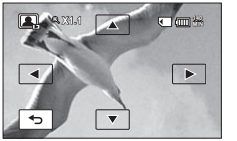
You can magnify a playback image. Touch up (▲)/down (▼)/left (◀)/right (▶) to select a desired area to magnify.

PRECHECK!

- This function works only in the photo play mode.
- Touch the Play (▶) tab on the LCD screen to select the playback mode. ➥page 49

1. Touch the Photo (📷) tab.
   - The thumbnail view appears.
   - To change the current thumbnail page, touch up (▲) or down (▼) tab.
2. Touch a desired photo to magnify.
   - The selected photo is displayed on the full screen.
3. Adjust the magnification with the **Zoom**(W/T) button or **Zoom**(W/T) lever.
   - Magnification starts from the the centre of the photo.
   - While the playback zoom is in use, other images cannot be selected.
4. Touch the up (▲)/down (▼)/left (◀)/right (▶) tab to view the area you want on the magnified photo.
5. To Cancel, touch the Return (↩) tab.



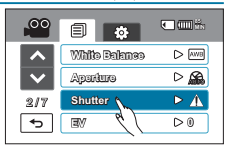


HANDLING MENUS AND Q.MENUS

Follow the instructions below to use each of the menu items listed in this manual.
This chapter uses "**Shutter,**" and "**Focus**" functions of the video record mode as an example.

Using the MENU (MENU) tab

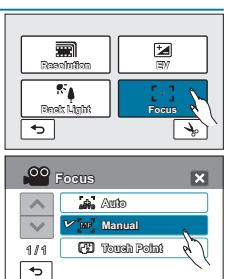
1. Open the LCD screen to turn on the camcorder.
   - If you find the LCD screen is already open when the power is turned off, press the power ( ) button to turn on the camcorder.
2. Select the Video ( ) or Photo ( ) mode by pressing the **MODE** button.
3. Touch the Menu (MENU) tab on the touch panel.
   - The menu screen appears.
   - To change the current page, touch up ( )/down ( ) tab.
4. Touch "**Shutter.**"
   - Some functions cannot be used at the same time. In this case, a message appears and asks if you accept that the related function is disabled. Touch "**Yes,**" to disable the related function setting and then continue the menu setting as you desired.
5. Touch the desired option. Adjust the setting values accordingly.
   - To exit the menu, touch the Exit ( ) or Return ( ) tab.



<This illustration is based on the default setting value>

Using the Q.MENU button

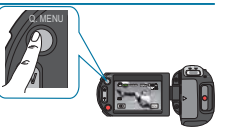
1. Open the LCD screen to turn on the camcorder.
   - If you find the LCD screen is already open when the power is turned off, press the power ( ) button to turn on the camcorder.
2. Select the Video ( ) or Photo ( ) mode by pressing the **MODE** button.
3. Press the **Q.MENU** button on your camcorder to see the available menu options. The quick menu screen appears.
4. Touch "**Focus.**"
5. Touch the desired option.
   - Adjust the setting values accordingly.
   - To exit the menu, touch the Exit ( ) or Return ( ) tab.



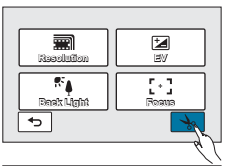
- When using the menu or Q.MENU items, some menu items can not be used at the same time, or may be grayed out.
- For more information, see the Troubleshooting pages, "134~137."
- For the purpose of easy understanding, all the menu setting examples from this page are explained based on the simplest methods.
  The menu setting methods can be different depending on the user's chosen menu options.

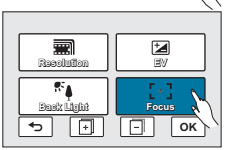
Customizing the Q.MENU items

You can choose what items appear when you press the **Q.MENU** button on the LCD screen.



1. Press the **Q.MENU** button. The quick menu screen appears.
2. Touch the Edit ( ) tab.
3. Touch the Q.MENU item you want to delete or replace with a new one.
4. Touch the replace/add ( ) or delete ( ) tab to make changes.
   - Press the ( ) tab to save changes.
   - Q.MENU screen has been changed according to your changes.





- The **Q.MENU** button can not be used in the SMART AUTO mode. To use the **Q.MENU** function, disable the SMART AUTO function.
- This function is not available while recording videos or photos.

MENU ITEMS

- Accessible items in menu vary depending on the operating mode.
- For operation details, see the corresponding page.

Recording menu items

● : available, X : not available

Operation mode	Video ( )	Photo ( )	Default value	Page
*i*SCENE	●	●	Auto	60
Resolution	●	●	1080/50i, 6M(3328 x 1872)	61
Quality	●	●	Fine	62
Slow Motion	●	X	Off	62
Sharpness	X	●	Normal	63
White Balance	●	●	Auto	64
ISO	X	●	Auto	65
Aperture	●	●	Auto	65
Shutter	●	●	Auto	66
EV	●	●	0	66
3D-NR	●	X	On	67
Super C.Nite	●	X	On	67
Back Light	●	●	Off	68
Dynamic Range	●	●	Off	68
Flash	X	●	Off	69

Operation mode	Video (🎥)	Photo (📷)	Default value	Page
Focus	●	●	Auto	70
Face Detection	●	●	Off	71
Magic Touch	X	●	Off	75
Metering	X	●	Multi	76
Anti-Shake (HDIS)	●	●	Off	76
Digital Effect	●	●	Normal	77
Fader	●	X	Off	78
Tele Macro	●	●	Off	79
Wind Cut	●	X	Off	79
MIC Level	●	X	Medium	80
Digital Zoom	●	●	Off	80
Cont. Shot	X	●	Off	81
Bracket Shot	X	●	Off	82
Self Timer	●	●	Off	82
Time Lapse REC	●	X	Off	83
Quick View	●	●	On (Video)/1 Sec(Photo)	85
Guideline	●	●	Off	86

● : available, X : not available

Playback menu items

Operation mode		Video(Thumbnail)	Video(Single)	Photo(Thumbnail/ Single)	Default value	Page
Play Option		●	●	X	Play All	86
Highlight		●	●	X	-	89
Playlist		●	X	X	-	108
Delete		●	●	●	-	105
Protect		●	●	●	Off (Single)	112
Story-Board Print		●	●	X	-	87
Edit	Partial Delete	●	●	X	-	105
	Divide	●	●	X	-	106
	Combine	●	X	X	-	107
Share Mark		●	●	X	Off (Single)	89
Cont. Capture		●	●	X	1Cut	90
File Info		●	●	●	-	90
Slide Show Start		X	X	●	-	53
Slide Show Option	Music	X	X	●	Random	53
	Interval	X	X	●	1Sec	53
	Effect	X	X	●	Random	53
	Play Option	X	X	●	Play All	53
Print Mark(DPOF)		X	X	●	-	114

● : available, X : not available

Setting menu items

Operation mode	Default value	Page
Storage Info	-	97
Format	-	98
File No.	Series	92
Time Zone	Home	93
Date/Time Set	-	91
Date Type	01/JAN/2010	91
Time Type	24 Hr	92
Date/Time Display	Off	91
LCD Control	Brightness 18, Colour 18	94
LCD Enhancer	Off	94
Auto LCD Off	On	95
Beep Sound	On	99
Shutter Sound	On	99
Booting Mode	Video Mode	95
Auto Power Off	5 Min	100
Quick On STBY	5 Min	96
PC Software	On	97
USB Connect	Mass Storage	101
TV Type	16:9	102
Analog TV Out	Component 1080i	103
TV Connect Guide	-	101
TV Display	On	103
REC Lamp	On	100
Default Set	-	103
Language	-	34
Demo	On	104
Anynet+(HDMI-CEC)	On	104

Q.MENU ITEMS

Your camcorder provides quick menus consisting of the functions you may frequently use. Pressing the Q.MENU button will let you start making settings directly.

Recording menu items (default)

	Video (🎥)	Photo (📷)	Default value	Page
Resolution	●	●	1080/50i, 6M(3328x1872)	61
EV	●	●	0	66
Back Light	●	X	Off	68
Flash	X	●	Off	69
Focus	●	●	Auto	70

● : available, X : not available

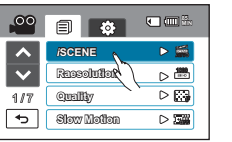
Playback menu items (default)

		Video(Thumbnail)	Video(Single)	Photo(Thumbnail/ Single)	Default value	Page
Highlight		●	●	X	-	89
Playlist		●	X	X	-	108
Slide Show Start		X	X	●	-	53
Delete		●	●	●	-	105, 113
Protect		X	●	●	Off	112
Edit	Partial Delete	●	●	X	-	105
	Divide	●	●	X	-	106
	Combine	●	X	X	-	107
Print Mark		X	X	●	-	114

● : available, X : not available

*i*SCENE

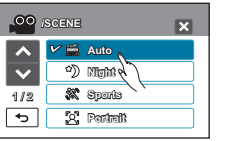
This camcorder automatically sets the shutter speed and aperture according to the subject and brightness for optimum recording.



PRECHECK!

Select the Video ( ) or Photo ( ) mode by pressing the **MODE** button.
➥page 49

1. Touch the Menu (MENU) tab ➜ ***i*SCENE.**"
2. Touch a desired submenu item.
   - To change the current page, touch up ( )/down ( ) tab.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.



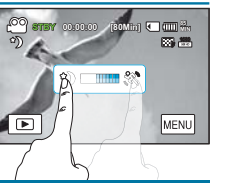
Submenu items

Menu	Functions	Movie	Photo
Auto( )	Use this setting for the regular recording conditions. The shutter speed and the aperture values are automatically adjusted for optimum recording.	●	●
Night( )	Allows user to record in a dark place even with decreased lighting. However, an afterimage may appear with a moving subject. If you have difficulty with automatic focusing, adjust the focus manually.	●	●
Sports( )	When recording rapidly moving subjects such as sports games.	●	●
Portrait( )	When recording a portrait image, use this setting to express the natural skin tone.	●	●
Spotlight( )	When recording subjects under strong light. For example, stage spotlights in theaters.	●	●
Beach/Show ( )	When recording in a place with intense light reflection, such as the beach or ski resort.	●	●
Food( )	When recording the food images in high saturation.	●	●
Candle Light( )	When recording subjects under low light conditions, such as candles at night time.	●	●
Beauty Shot ( )	This function improves the subject's skin tone (for example, by removing facial dark spots) and gives a brighter colour tone to the subject's face.	X	●
Children ( )	Use this setting to record moving subjects such as active children. The optimal recording conditions are automatically set.	X	●
Landscape( )	Use this function when recording landscape outdoors.	X	●
Close-up ( )	Use this function when recording a close-up scene.	X	●
Text ( )	Use this function when recording close-up of texts.	X	●
Sunset( )	Use this function when recording sunset with the optimal recording settings the camcorder automatically selected.	X	●
Dawn ( )	Use this function when recording at dawn.	X	●
Fireworks ( )	Allows to record fireworks with the optimal recording conditions automatically selected.	X	●

Tip

Setting the *i*SCENE mode by dragging on the touch panel:

- Touch and drag to the left or right side on the LCD screen. You can switch the setting values for the *i*SCENE mode by a simple touch on the LCD screen.



Resolution

You can select the resolution to be recorded on a memory card.

PRECHECK!

Select Video ( ) or Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➜"**Resolution.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.

Resolution submenu in the Video Record mode

- **1080/50p ( )**: Records in the HD (1920x1080/50p) format.
- **1080/50i ( )**: Records in the HD (1920x1080/50i) format.
- **1080/25p ( )**: Records in the HD (1920x1080/25p) format.
- **720+576/25p ( )**: Records both in the HD (1280x720/25p) and SD (720x576/25p) formats.
- **720/50p ( )**: Records in the HD (1280x720/50p) format.
- **720/25p ( )**: Records in the HD (1280x720/25p) format.
- **576/50p ( )**: Records in the SD (720x576/50p) format.
- **Web & Mobile ( )**: Videos recorded in the VGA (640x480/30p) resolution at normal image quality. This setting may make a video easily to upload to a web site without down-sizing via an editing programme. Also, this may be the best option for viewing on mobile devices.

Resolution submenu in the Photo Record mode

12M (4000x3000)( )/9M (3456x2592)( )/6M (3328x1872)( )/5M (2592x1944)( )/
2M (1920x1080)( )/VGA (640x480)( )

- "50p" indicates the camcorder will record in progressive scan mode at 50 frames per second.
- "50i" indicates the camcorder will record in interlaced scan mode at 50 fields per second.
- "25p" indicates the camcorder will record in progressive scan mode at 25 frames per second.
- Recorded files are encoded with Variable BitRate (VBR). VBR is an encoding system that automatically adjusts the bitrate according to the recording image.
- The available video recording time differs according to the selected video resolution.
- The camcorder takes photos at 10 mega pixels. When you set the resolution to 12M, the camcorder up-scales the photos you take to 12 mega pixels.

Quality

Select the desired quality before recording.

PRECHECK!

Select Video ( ) or Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙ "**Quality.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.

Quality submenu in the Video Record mode

- **Super Fine ( ):** Records video at the super fine image quality.
- **Fine ( ):** Records video at the fine image quality.

Quality submenu in the Photo Record mode

- **Super Fine ( ):** Records photos at the super fine image quality.
- **Fine ( ):** Records photos at the fine image quality.
- **Normal ( ):** Records photos at the normal image quality.

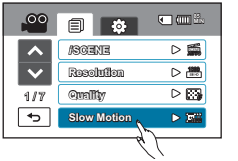
Slow Motion

You can record videos as a slow motion. "Slow Motion" is great for analyzing a golf swing or a viewing a bird in flight.

PRECHECK!

Select the Video ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙"**Slow Motion.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.



Submenu items

- **Off:** Disables the function.
- **[SD]200frame/sec ( ) :** Records 200 frames per second in "432 x 324" resolution.
- **[SD]400frame/sec ( ) :** Records 400 frames per second in "400 x 224" resolution.
- **[SD]600frame/sec ( ) :** Records 600 frames per second in "208 x 116" resolution.

Understanding Slow Motion

ex) The number of frames used for video recording:

When the Slow Motion is set to Off: 50 frames per second

When the Slow Motion function is set to [SD] 200frame/sec: 200 frame per second

- When recording in slow motion, the recording stops after 10 seconds but when you playback the same recording it play back for the following time.
  - 200 Frame/Sec: 40 seconds
  - 400 Frame/Sec: 80 seconds
  - 600 Frame/Sec: 120 seconds
- Recording does not stop for 10 seconds even if the Recording start/stop button is pressed to stop.
- Also, audio is not recorded while recording in slow motion.
- While recording in slow motion, if you have the camcorder connected to a TV, the recording image is not displayed on the TV screen.
- You cannot capture photos in slow motion.
- Q.MENU function is not available while recording the slow motion videos.
- The image quality of "**Slow Motion**" is not as good as that of normal recording.

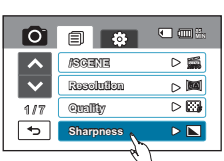
Sharpness

This function allows the user to obtain sharper photo images by processing the image after recording photos.

PRECHECK!

Select the Photo (📷) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙"**Sharpness.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

- **Soft (◣):** Smooths the edges of photo images.
- **Normal (◣):** The photo images appear with sharp edges and are suitable for printing.
- **Sharp (◣):** Enhances to sharpen the edges of photo images.

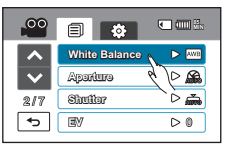
White Balance

This camcorder automatically adjusts the colour of the subject. You can record in natural colours depending on the subject and lighting conditions.

PRECHECK!

Select Video ( ) or Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➜"**White Balance.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.

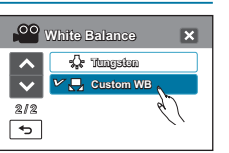


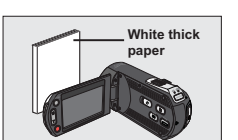
Submenu items

- **Auto:** Controls the white balance automatically depending on the recording conditions.
- **Daylight ( ):** Controls the white balance according to the outdoor lighting.
- **Cloudy ( ):** When recording in the shade or cloudy weather.
- **Fluorescent ( ):** When recording under white fluorescent lights.
- **Tungsten ( ):** When recording under halogen lamps and incandescent lights.
- **Custom WB ( ):** You can manually adjust the white balance to match the light source or situation.

To set the white balance manually

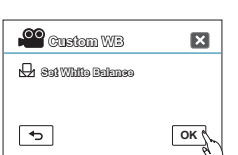
1. Touch the Menu (MENU) tab ➜"**White Balance**" ➜"**Custom WB.**"
   - The "( ) **Set White Balance**" indicator is displayed.
2. Fill the screen with a white object, and touch OK (OK) tab.
   - The white balance setting is stored.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.
   - The stored white balance setting will be applied the next time you record.





Understanding White Balance:

White balance (WB) is the process of removing unrealistic colour casts, so that objects which appear white are rendered white in your photo. Proper white balance has to take into account the "colour temperature" of a light source, which refers to the relative warmth or coolness of white light.



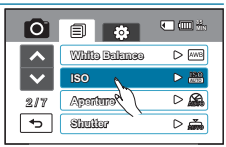
- When setting the white balance manually, the subject must be white, otherwise, your camcorder may not detect an appropriate setting value.
- The adjusted setting remains until you set the white balance again.
- During normal outdoor recording, setting to "**Auto**" may provide better results.
- Cancel the digital zoom function for clear and precise setting.
- Reset the white balance if light conditions change.

ISO

ISO sensitivity is a measure of how rapidly the camcorder reacts to a light source. The higher the sensitivity, the brighter the image is under the same aperture condition.

PRECHECK!

- This function works in Photo ( ) mode only.
- Select the Photo ( ) mode by pressing the **MODE** button. ➥page 49



1. Touch the Menu (MENU) tab ➙"**ISO.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.

Submenu items

- **Auto:** Automatically sets the ISO to compensate for various lighting conditions (up to 3200).
- **80 ( ):** This mode is recommended for bright lighting conditions.
- **100 ( ):** This mode is recommended for most situations except when lighting is poor or when higher shutter speeds are required.
- **200 ( ):** This mode is recommended for taking photos of moving subjects. The recorded image might be noisy at the minimum level.
- **400 ( )/800 ( )/1600 ( )/3200 ( ):** The image may be grainy. These settings will help brighten a subject in a dark surroundings.

Higher ISO sensitivity might produce a grainy (noisy) effect on the photo images.

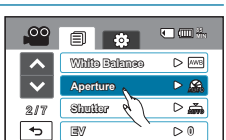
Aperture

The camcorder adjusts the aperture automatically depending on the subject and recording conditions. You can also manually adjust the Aperture to your preference.

PRECHECK!

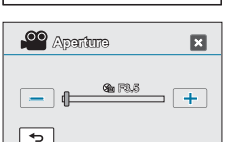
Select the Video ( ) or Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙"**Aperture**" ➙"**Manual.**"
2. Touch the decrease ( ) or increase ( ) tab to adjust the aperture as you want.
   - Aperture value can be set between "**3.5**" and "**16**"
3. To exit the menu, touch Exit ( ) or Return ( ) tab.



Submenu items

- **Auto:** Sets the aperture value automatically.
- **Manual (FX):** Sets the aperture value manually.



Understanding Aperture

The aperture value can be adjusted to control the amount of light reaching the image sensor.
The aperture value needs to be adjusted in the following cases:

- When shooting against the light or when the background is too bright.
- When shooting on a reflective natural background such as at the beach or when skiing.
- When the background is overly dark (for example, night scenery).

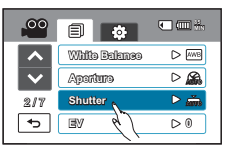
Shutter

The camcorder automatically sets the shutter speed depending on the scene's brightness. You can also manually adjust the shutter speed according to the scene conditions.

PRECHECK!

Select the Video (🎥) or Photo (📷) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙"**Shutter.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

- **Auto:** The camcorder automatically sets the appropriate shutter speed value.
- **Manual (M 1/XX):** Touch decrease (−) or increase (+) tab to adjust the setting values as you want.
  The setting values are as follows:
  - Video Record mode: 1/50, 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, or 1 /10000.
  - Photo Record mode: 1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500, or 1/1000.

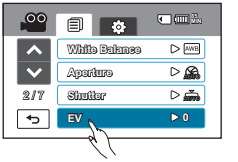
EV

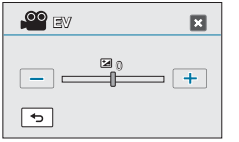
Using the EV function, you can manually adjust the video and photo image brightness.

PRECHECK!

Select Video (🎥) or Photo (📷) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙"**EV.**"
2. Touch the decrease (−) or increase (+) tab to adjust the setting values as you want.
   - EV values (±): -2.0EV, -1.6EV, -1.3EV, -1.0EV, -0.6EV, -0.3EV, 0EV, +0.3EV, +0.6EV, +1.0EV, +1.3EV, +1.6EV, +2.0EV
3. To exit the menu, touch Exit (✖) or Return (↩) tab.





Understanding EV(Exposure Value)

Exposure value is the total amount of light allowed to fall on the photographic medium (Image sensor) during the process of taking photos or videos as well.

3D-NR

3D-NR (3-Dimension Noise Reduction) function reduces video noise and improves the quality.
This is especially effective during low light shooting.

PRECHECK!

Select the Video (📹) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➞"**3D-NR.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.

Submenu items

- **Off :** Disables the function.
- **On :** Enables the 3D-NR function.

If resolution is set to 1080/50p, 3D-NR function is not available.

<Conventional image result when recorded with low light shooting.>

<When the 3D-NR function is applied in the same recording conditions.>

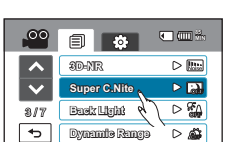
Super C.Nite

You can adjust the shutter speed when recording a slow moving object, or record a brighter image in dark places without a compromise in colours.

PRECHECK!

Select the Video (📹) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➞"**Super C.Nite.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

- **Off:** Disables the function.
- **On (🌙):** Sets a shutter speed automatically to record an image brighter in low illumination.

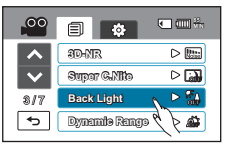
Back Light

When a subject is lit from behind, this function will compensate for lighting so that the subject is not too dark.

PRECHECK!

Select the Video ( ) or Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➜ "**Back Light.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.



Submenu items

- **Off :** Disables the function
- **On ( ):** Backlight compensation brightens the subject quickly.

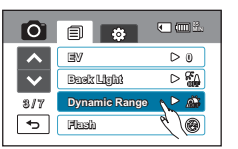
Dynamic Range

The Dynamic range function enables you to record a brighter subject in dark conditions, as well as more detailed images.

PRECHECK!

Select the Video ( ) or Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➜"**Dynamic Range.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.



Submenu items

- **Off :** Disables the function.
- **On ( ):** Expresses more shadow and highlight details for recorded images.

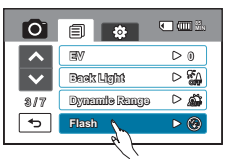
Flash

Using the Flash function, you can set the built-in flash to fire under low light conditions.

PRECHECK!

Select the Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➔"**Flash.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.



Submenu items

- **Off ( ):** Using the auto discharge function, the flash does not fire.
- **Auto ( ):** Using the auto discharge function, the flash fires under low light conditions in Auto mode.
- **Red-Eye ( ):** "Red-eye" is the phenomenon where eyes look reddish in photographs taken in dark environments with a flash. The Red-eye flash option can be used to reduce this phenomenon.
- **Fill-In ( ):** Using the Fill-In flash mode, the flash fires regardless the environmental light conditions. You can effectively use this flash mode when photographing against the light.
- **Slow Sync ( ):** When you take a picture in low light conditions, you may find a difference in the aperture between the subject and the background.
  This allows you to have the same brightness for the background and subject when using a slow shutter speed and firing the flash.

- Do not fire the flash with the flash bulb covered with your hand.
- Do not fire the flash close to people's eyes as the subjects could suffer a temporary loss of eyesight.

- The recommended distance to the subject when using the built-in flash is approximately 7 to 10 feet.
- The battery power will be consumed faster with repeated use of the flash.
- The flash function is not available with the following functions:
  - When the "**Cont. Shot**" is enabled
  - Recording videos
  - Capturing still images during video recording (Dual Recording).
- The red-eye reduction may not produce the desired effect due to individual differences and other conditions.

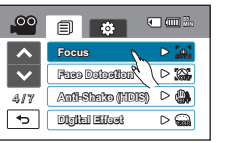
Focus

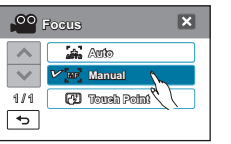
The camcorder usually focuses on a subject automatically (auto focus). When the camcorder is turned on, auto-focus will always be set. You can also manually focus a subject depending on the recording conditions.

PRECHECK!

Select the Video ( ) or Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➜ "**Focus.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.





<Manual focus>

<Touch Point>

Submenu items

- **Auto:** In most situations, it is better to use the automatic focus feature, as it enables you to concentrate on the creative side of your recording.
- **Manual ( ):** Manual focusing may be necessary under certain conditions that make automatic focusing difficult or unreliable. Touch ( ) or ( ) tab to adjust the setting values you want.
- **Touch Point ( ):** You can simply touch the subject shown on the LCD screen you would like to focus. (Video Record mode only)

Understanding the Touch Point

Using the Touch Point function, you can focus on a small section of the picture.
Touch Point function is only available in video recording mode. However, you can also adjust the focus in the photo recording mode, see "**Magic Touch,**" ➥page 75.

Tip

To activate the Touch Point with a long touch
You can use the Touch Point function by pressing the section for about 2 seconds on the LCD screen.
(excluding when "**Tele Macro,**" "**Face Detection,**" "**Digital Zoom,**" or "**Slow Motion**" is set.)

- The Auto Focus(AF) setting is useful when you operate the zoom function because you might not be able to keep accurate focus after the zoom ratio has been changed.
- In the manual focus setting menu screen, auto focus is available by using the AF ( ) tab on the screen. you can return to manual focus by touching the manual focusing tabs.
- When the Touch Point function is enabled, you can touch the AF ( ) tab on the LCD screen to set the "**Focus**" to "**Auto.**"
- To disable the Touch Point function, set "**Focus**" to "**Auto.**"

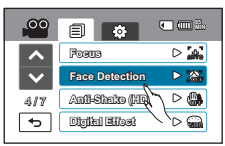
Face Detection

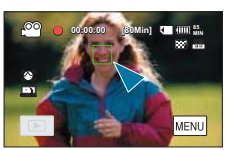
Your camcorder detects a subject's face and automatically adjusts the brightness and image quality to the optimized conditions. Record faces more vividly.

PRECHECK!

Select the Video ( ) or Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➜"**Face Detection.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.





Face Detection submenu in the Video Record mode

- **Off:** Disables the function.
- **On ( ):** Records under the optimal condition by detecting faces automatically.

Face Detection submenu in the Photo Record mode

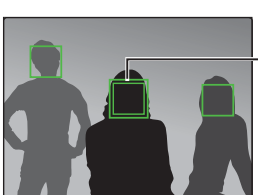
- Off, Normal, Smile Shot, Smart Recognition, Face List, My Star

- The **Face Detection** feature will not work when framing the side of a person's face or operating while lack of illumination. You must be facing them "head-on" or occupying enough illumination.
- If a memory card is not inserted, some menu items may appear dimmed.

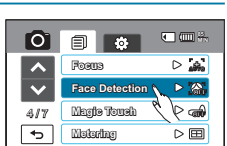
Taking photos with Normal face detection

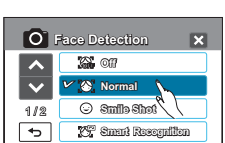
When the subject is placed on the LCD screen, the camcorder detects up to 12 faces and sets focus and exposure automatically.

1. In the submenu items, touch "**Normal.**"



The double frame icons appear on a face centred on the LCD screen. On other faces not centred, the single frame icon appears.



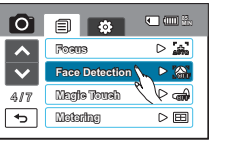


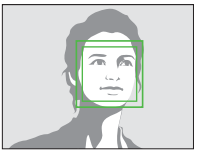
- The closer is the subject, the quicker the face is detected.
- To focus on a face in a single frame, touch on the face recognised with the single frame.

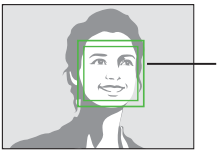
Taking photos with Smile Shot

When the subject is adjusted on the LCD screen, the camcorder detects a smiling subject and record it automatically.

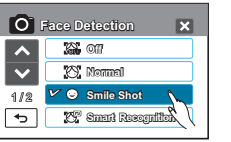
1. In the submenu items, touch "**Smile Shot.**"
2. Adjust the smiling face on the LCD screen.
   - When the camcorder detects the smiling face, thee face is automatically recorded.







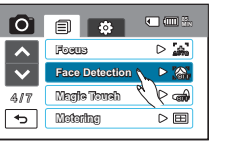
The face with a big smile is detected well.

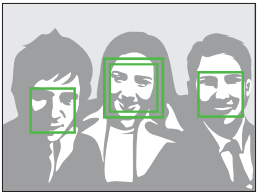


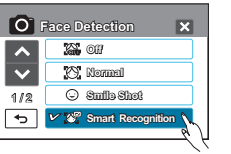
Smart Recognition

Using the smart face detection enables the camcorder to focus on people automatically registered to the camcorder and My Stars first and adjust exposure. To use this function, insert a memory card.

1. In the submenu items, touch "**Smart Recognition.**"







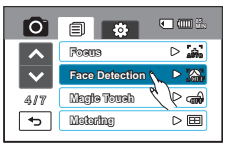
The double frame icons appear on a face centred on the LCD screen. On other faces not centred, the single frame icon appears.

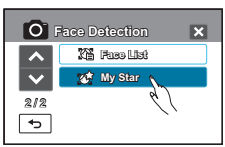
- (□) : A face registered to My Star.
  (To register to My Star, refer to page 73)
- (□) : A face automatically registered by camcorder.

- The camcorder may detect the same face differently depending on various situations such as glasses, brightness, different postures, etc.
- The camcorder registers up to 20 faces that are most frequently detected. When registering a new face in this case, the 20th face with lowest priority is replaced with a new face. However, the camcorder is able to register up to 12 faces if maximum 8 faces are registered as My Star.
- The camcorder detects up to 8 faces for each scene.

Registering My Star in Photo Record mode.

By registering faces that are frequently recorded, you can adjust focus and exposure before recording. To use this function, insert a memory card.





1. In the submenu items, touch "**My Star**"
2. Focus on the desired face to register, then press the **PHOTO** button.
   - For better detection performance, it is recommended to record up to 5 photos of the left, right and front of a face.
   - Record only one face at a time and register.
3. To save the recorded face, touch the (OK) tab.
   - When you take 5 photos of a face, the face is automatically registered to My Star without the need of touching the (OK) tab.
4. In the Play mode, touch the Play (▶) tab → (★) tab.
   - The face registered to My Star is displayed with ★ in the face list.

- You can register up to 8 people to My Star.
- The flash does not turn on when recording the My Star.
- To register the same face to the My Star again, delete the previously registered face.

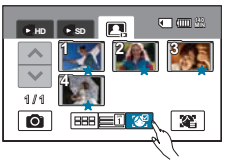
To check the registered or detected face

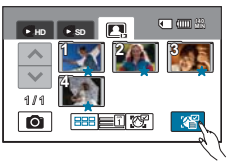
1. Touch the Menu (MENU) tab → "**Face Detection.**"
2. In the submenu items, touch "**Face List(★).**"
   - To change the priority order of my stars, touch (★).

Changing priority of registered faces in Photo Record mode

You can only change or delete the importance order of faces that are registered to My Star. To use this function, insert a memory card.

1. In the Play mode, touch the Play ([▶]) tab → ([★]) tab.
   - To cancel the My Star, touch ([▦]).
   - To display only My Star, touch ([★]).
2. Touch the ([★]) tab.
3. Touch ([✦]), then select the desired face to change.
4. Touch the ([◄])/([►]) tabs to arrange the importance order again, then touch the ([OK]) tab.





If there is no registered face, the **Face List(★)** is dimmed.

Magic Touch

Simply touch the area on the LCD screen that you want to focus on when taking a photo.

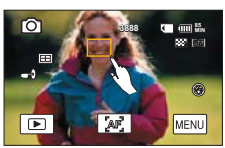
PRECHECK!

Select the Photo (📷) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➔"**Magic touch.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.

Submenu items

- **Off:** Disable the function.
- **On(☞):** You can simply touch the subject shown on the LCD screen that you would like to focus on. The brightness will also be adjusted for the optimized value.



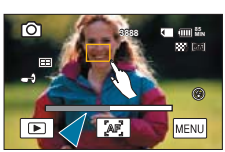
Tip

Using the Magic Touch

Using the Magic Touch function, you can focus on a small section of the picture.

You can also activate Magic Touch by pressing the same point for about 2 seconds on the LCD screen.
To take a picture when the Magic Touch function is enabled, press the **PHOTO** button or simply touch the subject shown on the LCD screen that you would like to focus on, then hold for about 2 seconds.

When the Magic Touch function is enabled, you can touch the AF ([AF]) tab on the LCD screen to set the "**Focus**" to "**Auto.**"



- The following settings cannot be used with the "**Magic Touch**" function: "**Back Light**", "**Face Detection**", "**Focus: Manual**", "**Digital Zoom**" or "**Metering.**"
- Even if the "**Cont.Shot**" is enabled, continuous shooting is not available by touching the LCD screen.

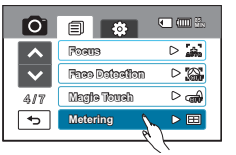
Metering

You can choose the metering standard for the brightness of your subject.

PRECHECK!

Select the Photo (📷) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙"**Metering.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

- **Multi (▦):** Meters the multiple portions of the screen and determines the appropriate aperture.
- **Centre ([▣]):** Measures the entire screen with an emphasis on the centre and determines the aperture.
- **Spot ([·]):** Measures only the centre of the screen and determines aperture.

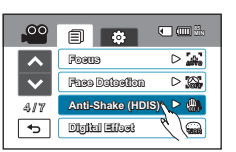
Anti-Shake(HDIS)

Use the Anti-Shake (HDIS: Hyper Digital Image Stabilizer) function to compensate for unstable images caused by shaking movements when holding the camcorder.

PRECHECK!

Select the Video (🎥) or Photo (📷) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙"**Anti-Shake (HDIS).**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

- **Off :** Disable the function.
- **On ( ):** The Anti-Shake (HDIS) function is enabled to compensate for shaking movements.

Tip **Use the Anti-Shake function in the following cases:**

- When recording while walking or when recording in a moving car.
- When recording with the zoom function.
- When recording subjects of a small size.

- Gross camcorder shake may not be entirely corrected even if "**Anti-Shake: On**" is set. Firmly hold the camcorder with both hands.
- When this function is set to "**On,**" the actual movement of the subject and the movement displayed on the screen may be slightly different.
- When recording in dark lighting at high magnification while this function is set to "**On,**" after-images may stand out. In this case, we recommend using a tripod (not supplied) and turning the "**Anti-Shake**" to "**Off.**"

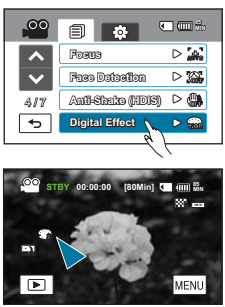
Digital Effect

Using the digital effect function gives your recording a creative look.

PRECHECK!

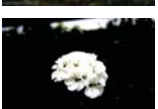
Select the Video (🎥) or Photo (📷) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➜"**Digital Effect.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Examples of 7 digital effect options

Normal
Without any digital effect, a normal, natural image is displayed during recording or playback.



Vivid (🎨)
This mode gives an intense feeling to an image.

Classic(🎨)
This mode gives classic feeling to an image.

Cosmetic (🎨)
This mode helps adjust for facial imperfections.

Soft (🎨)
This mode applies the soft tone to an image.

Retro (🎨)
This mode applies the brown colour to an image.

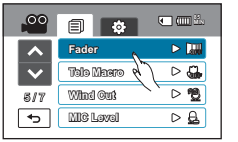
Negative (🎨)
This mode reverses the colours, creating a negative image.

Fader

You can give your recording a professional look by using special effects such as fade in at the beginning of a sequence or fade out at the end of a sequence.

PRECHECK!

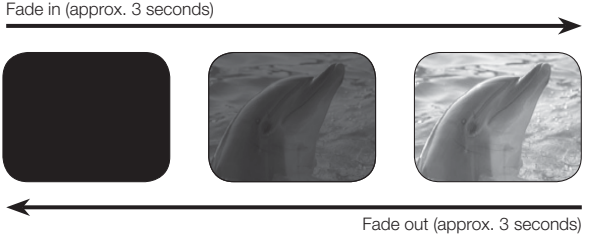
Select the Video (📹) mode by pressing the **MODE** button. ➥page 49



1. Touch the Menu (MENU) tab ➞"**Fader.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.

Submenu items

- **Off:** Disables the function
- **In (▣):** As soon as you start recording, it will fade in.
- **Out (▣):** When the recording is done, it will fade out.
- **In-Out (▣):** When you start or stop recording, the fader will be function accordingly.



This function is disabled after being used one time.

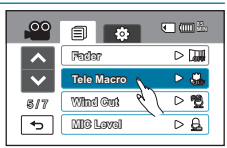
Tele Macro

Using the **Tele Macro** function, you can get close up images which were created by focusing on a small portion of a large object at a wide angle. The effective focal distance in the **Tele Macro** mode is between 80 to 100 cm. (31.49 to 39.37 inches)

PRECHECK!

Select the Video ( ) or Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙"**Tele Macro.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.



Submenu items

- **Off:** Disable the function.
- **On ( ):** You can focus on a small portion of a large object at a wide angle.

- When using the Tele Macro function, focusing may be difficult and can take some time.
- Avoid shadows when recording at a close distance.
- As the distance to the subject becomes closer, the focusing area narrows.
- If focusing is difficult because the distance to a subject is too close, record a little further using the Zoom(W/T) lever or Zoom(W/T) button.
- When recording with the Tele Macro function, it is recommended to use a tripod(optional) to prevent hand-shaking.

Wind Cut

Using the Wind Cut function, you can reduce wind noise when recording sound from the built-in microphone.

PRECHECK!

Select the Video ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙"**Wind Cut.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.

Submenu items

- **Off:** Disables the function.
- **On ( ):** Reduces wind noise when recording sound from the built-in microphone.

Using the Wind Cut function also removes some low-frequency sound with the wind noise.

MIC Level

Using the MIC Level function, which will pick up sounds more clearly and accurately, you can adjust the audio volume levels.

PRECHECK!

Select the Video (🎥) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙"**MIC Level.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (⊠) or Return (↩) tab.

Submenu items

- **High (🎙)**: Adjust the MIC volume at the highest level.
- **Medium**: Adjust the MIC volume at the medium level.
- **Low (🎙)**: Adjust the MIC volume at the lowest level.

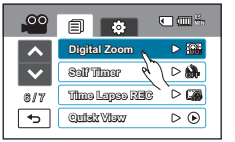
Digital Zoom

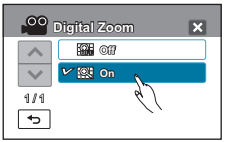
The digital zoom enables higher zoom magnification than the intelli or optical zoom ratio.
The digital zoom function can archive the maximum 120 times bigger enlargement in video record mode (about 80 times bigger enlargement in photo record mode) by having the electronic zoom magnification.

PRECHECK!

Select the Video (🎥) or Photo (📷) mode by pressing the **MODE** button. ➥page 49

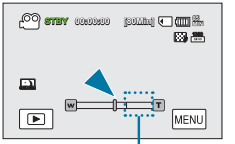
1. Touch the Menu (MENU) tab ➙"**Digital Zoom.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (⊠) or Return (↩) tab.





Submenu items

- **Off :** Disables the function.
- **On :** Enables higher zoom magnification.



The right side of the bar shows the digital zooming zone. The zooming zone appears when you move the zoom lever.

With the digital zoom, the image is digitally processed more than the intelli or optical zoom modes. As a result, the image resolution may deteriorate.

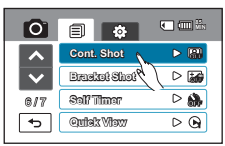
Cont. Shot

This function allows you to capture photos in succession to give you more photo-taking opportunities when recording moving subjects.

PRECHECK!

Select the Photo (📷) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➜"**Cont. Shot.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

- **Off:** Records only one photo image.
- **Normal Speed (📷):** When you press and hold the **PHOTO** button, you can record photos continuously.
- **High Speed (📷):** When pressing the **PHOTO** button, you can take up to 7 images per 3 seconds.

- When an error occurs (memory full, etc) during continuous shot, the recording stops and an error message is displayed.
- When the "**Cont. Shot**" is set to "**Normal Speed,**" the maximum number of continuous photo shot varies depending on the selected resolution, quality, or the recording condition.

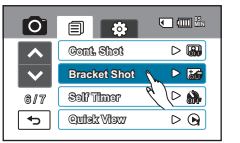
Bracket Shot

Using the Bracket Shot function, you can take continuous pictures with different brightness setting values.

PRECHECK!

Select the Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙"**Bracket Shot.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.



Submenu items

- **Off:** Disables the function.
- **On ( ):** Record five pictures with different brightness setting values such as +0.3EV, -0.3EV, Back Light Compensation, Dynamic Range and original.

Bracket shot may take a long time. Don't move the camcorder from the subject when operating this function.

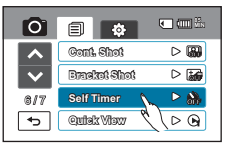
Self Timer

When the self-timer is enabled, there is a time delay after you actually press the **Record Start/Stop** or **PHOTO** button. You can use this function when you want to take a shot of many people including yourself.

PRECHECK!

Select the Video ( ) or Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➙"**Self Timer.**"
2. Touch a desired submenu item.
3. To exit the menu,touch the Exit ( ) or Return ( ) tab.



Submenu items

- **Off:** Disables the function
- **2 Sec (Photo mode only)( ):** There is a time delay for 2 seconds when you press the **PHOTO** button.
- **10 Sec ( ):** There is a time delay for 10 seconds when you press the **Record Start/Stop** or **PHOTO** button.

- This function is disabled after used for one time.

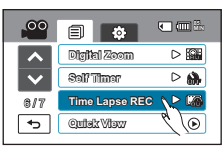
Time Lapse REC

You can record still images by selected time interval and play the recorded images in succession.
For instance, a camcorder on a tripod (not supplied) in time lapse mode could be set up to shoot frames of a flower opening or a bird building a nest.

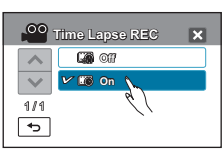
PRECHECK!

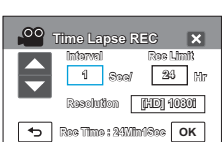
Select the Video (📹) mode by pressing the **MODE** button. ➥page 49

To record in the Time Lapse REC mode, you need to set the recording interval and the total recording time from start to finish using the menu.



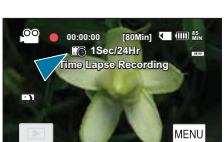
1. Touch the Meun (MENU) tab. ➜ **“Time Lapse REC”➜ “On.”**
   - The menu screen appears.
2. Touch the desired items (Interval, Rec Limit, Resolution) and then touch up (▲) or down (▼) tab to set the values.
3. Touch (OK) tab to finish the setting.
4. To exit the menu, touch the Exit (✖) or Return (↩) tab.
   - If you do not touch **OK** tab and finish settings by using the Exit (✖) or Return (↩) tab, the Time Lapse REC function will operate at its default setting. The changed setting value you have made will not be applied.
5. After setting the Time Lapse REC mode, press the **Recording start/stop** button. Then the Time Lapse recording starts.



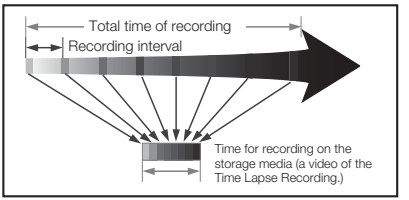


Submenu items

- **Off:** Disables the function.
- **On (📹):**
- Interval (**“Sec”**): Image of the subject is captured by set interval. Images are automatically shot a frame at a time at the specified interval and stored in the storage media.
  1 ➜ 3 ➜ 5 ➜ 10 ➜ 15 ➜30 (Seconds)
- REC Limit (**“Hr”**): Total time from start to finish of recording.
  24 ➜ 48 ➜ 72 ➜ ∞ (Hours)
- Resolution: you can choose the resolution in the following settings: [HD] 1080p (50fps) ➜ [SD] 576p (50fps)



Example of Time Lapse Recording



The Time Lapse Recording function records image frames at the predefined interval over the total recording time to produce a time-lapse video.
For example, the Time Lapse Recording is useful for filming in the following situations:

- Blooming flowers
- A bird building a nest
- Clouds rolling by in the sky

- Time Lapse Recording mode is released once recording has been finished. To start another Time Lapse Recording, repeat steps 1-5.
- 60 captured images compose a video of 1 second length. Since the minimum length of a video to be saved by your camcorder is one second, the interval defines how long the Time Lapse Recording should be taken. For example, if you set the interval to “30 Sec,” Time Lapse Recording should be taken for at least 30 minutes to record a minimum video length of 1 second (60 images).
- Once the Time Lapse Recording finishes recording for its total recording time, it switches to the standby mode.
- Press the **Recording start/stop** button if you want to stop the Time Lapse Recording.
- Audio is not recorded during Time Lapse Recording.
- When a video recording fills up 3.8GB of storage memory, a new recording file is automatically started at that point.
- When the battery charge was exhausted during the Time Lapse recording, it saves recording up to that point and switches to standby mode. After a while, it displays a warning message, then turns off automatically.
- When the memory space of the storage media is insufficient during the Time Lapse Recording, it switches to the standby mode after saving the recording up to its maximum.
- We recommend using the AC power adaptor for a Time Lapse Recording.

Quick View

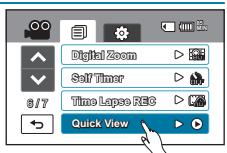
Using the Quick View function, you can view the most recently recorded video and photo images as soon as the recording is finished.

PRECHECK!

Select the Video (📹) or Photo (📷) mode by pressing the **MODE** button. ➥page 49

Quick View function in the video record mode

1. Touch the Menu (MENU) tab ➙"**Quick View.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (⊠) or Return (↩) tab.



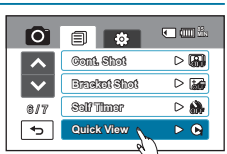
Submenu items

- **Off:** Quick View icon does not appear on the screen after you finish the recording.
- **On(▶):** Quick View icon appears on the screen as soon as you finish the recording. Touch the Quick View icon to view the most recent video you have recorded. After the Quick Playback is completed, your camcorder switches back to the standby mode.

If you touch the delete (🗑) tab during Quick Playback, the file is deleted.

Quick View function in the photo record mode

1. Touch the Menu (MENU) tab ➙"**Quick View.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (⊠) or Return (↩) tab.



Submenu items

- **Off:** Disables the function.
- **1sec:** The most recently taken photo image is shown for 1 second.
- **3sec:** The most recently taken photo image is shown for 3 seconds.
- **Hold:** The most recently taken photo image appears and does not disappear until you press the PHOTO button.

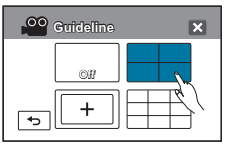
Guideline

This camcorder provides 3 types of guidelines to help you to set a balanced image composition on the screen.

PRECHECK!

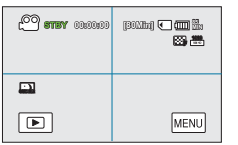
Select the Video ( ) or Photo ( ) mode by pressing the **MODE** button. ➥page 49

1. Touch the Menu (MENU) tab ➞"**Guideline.**"
2. Touch a desired guideline according to the subject.
   - The selected guideline appears on the screen.
     If you do not want to use this function, touch "**Off.**"
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.



Submenu items

- **Off**: Disables the function.
- **Cross( ):** Placing the subject at the centre cross point puts the subject in the middle of the frame.
- **Safety Zone( ):** Positioning subjects within the Safety Zone rectangle ensures they will be recorded.
- **Grid( ):** For recording multiple subjects. Putting subjects at or near the grid cross points creates a balanced composition.



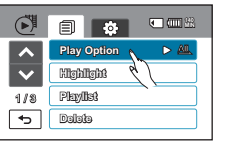
- Positioning a subject at the cross point of a guideline provides a balanced composition.
- Guidelines are not recorded.

Play Option

You can set a specific playback style according to your preference.

PRECHECK!

Touch the Play( )➞ HD(HD) or SD(SD) tab on the LCD screen. ➥page 49



1. Touch the Menu (MENU) tab ➞"**Play Option.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit ( ) or Return ( ) tab.

Submenu items

- **Play All ( ):** Plays video clips in succession starting from the selected video to the last one, then returns to the thumbnail index view.
- **Play One ( ):** Plays the selected video only and returns to the thumbnail view.
- **Repeat All ( ):**Repeats playing all the video clips until the Return ( ) tabis touched.
- **Repeat One ( ):** Repeats playing the selected video only until the Return ( ) tab is touched.

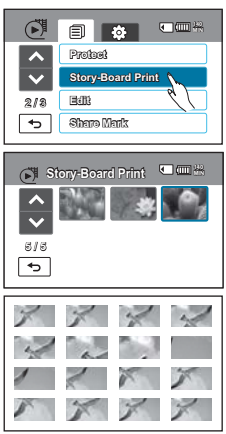
Story-Board Print

This function captures 16 still images arbitrarily from the selected video and saves them into the storage media.
It presents a quick overview of your video, helping you to understand the overall topic.

PRECHECK!

"Story-Board Printing" is available in the Video Play mode only.
Touch the Play(▶) tab on the LCD screen to select the playback mode ➥page 49

1. Touch "**HD**" or "**SD.**"
   - Video thumbnails corresponding to the selected video quality appear on the screen.
   - To change the current thumbnail view, select the (▦), or (▤) tab on the screen.
   - If you select the thumbnail display by date (▤), you can sort videos by specific date. ➥page 49
   - To change the current thumbnail page, touch the up(▲) or down (▼) tab.
2. Touch the Menu (MENU) tab ➜ **"Story-Board Print."**
3. Touch the desired video clip.
4. A message appears asking for your confirmation.
   - The printed storyboard image files appear on the LCD screen for about 3 seconds.
   - Images to be captured are selected arbitrarily, and compose a storyboard of 16 images.



- **Using the *i*VIEW button, you can preview storyboard images to be printed.** ➥page 88
- The storyboard printing may not show all 16 i-Frame thumbnails in following case:
  - Recorded video is too short (To extract 16 i-Frame thumbnails from a video, its recorded time should be longer than 8 seconds.)
- This function also can be set in a full view mode. Menu setting method is all same in the thumbnail index view and full view mode, but submenu options can be different.
- If there is no enough space or it is not available to execute **"Story-Board Print"** then the **Story-Board Print** is dimmed.

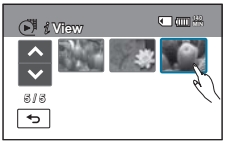
Using The *i*VIEW

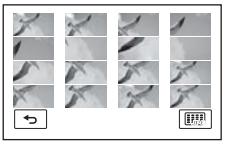
This function provides the preview of storyboard to be printed, which gives you digest of the recorded video without viewing the whole sequence of it.

PRECHECK!

***i*VIEW** is available in the Video Play mode only.
Touch the Play(▶) tab on the LCD screen to select the playback mode ➥page 49

1. Touch "**HD**" or "**SD.**"
   - Video thumbnails corresponding to the selected video quality appear on the screen.
   - To change the current thumbnail view, select the (▦), or (▤) tab on the screen.
   - If you select the thumbnail display by date (▤), you can sort videos by specific date. ➥page 49
   - To change the current thumbnail page, touch the up(▲) or down (▼) tab.





2. Select the desired video file, then press the ***i*View** button.
   - The images from the selected video are selected arbitrarily, and compose the preview of storyboard to be printed.
   - If you want to save the storyboard image on the storage media, press the **PHOTO** button. Then you can find the saved storyboard image in the photo play mode. ➥page 52

- **If the recorded video is less than 8 seconds long, all 16 i-Frame thumbnails will not be extracted.**
- This function is available only in the video thumbnail index view screen.
  Pressing the (I▢I/*i*CHECK) button in STBY mode or full image display mode, it functions the same to the **display** (I▢I/*i*CHECK) button. ➥page 31

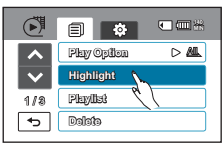
Highlight

This camcorder shows a section of the recorded video(s) at random.

PRECHECK!

Touch the Play(▶)→ HD(HD) or SD(SD) tab on the LCD screen. ➥page 49

1. Touch the Menu (MENU) tab. →"**Highlight.**"
2. Touch a desired submenu item.
   - When the highlight view is finished, the video thumbnail view appears.
   - In the highlight play mode, you can adjust the volume by touching the screen and can also Cancel the playback.
3. To exit the menu, touch the Exit (✕) or Return (↩) tab.



Submenu items

- **Recent (🕘)**: Shows a section of the videos that were created within the last 24 hours.
- **All (A)**: Shows a section of all video files.

If you execute the Highlight function in the date thumbnail display, all the files in the selected date set appears on the LCD screen.

Share Mark

You can set the Share mark on the desired video to upload directly to the YouTube site.

PRECHECK!

Touch the Play(▶)→ HD(HD) or SD(SD) tab on the LCD screen. ➥page 49

1. Touch the Menu (MENU) tab. →"**Share Mark.**"
   - The thumbnail index view appears to set the Share mark.
2. Touch the desired video files to upload.
   - The (⇪) indicator is displayed on the selected video. Touching the video toggles the image between being selected (⇪) and not selected.

Share marking procedure for a video longer than 10 minutes

When uploading a video file to a website such as YouTube, the one-time upload capacity is a maximum of 100MB or 10 minutes. To upload a video over 10 minutes long, follow the procedure below to automatically divide it into 10 minute segments with a share mark added:

1. Touch the desired video files to upload.
2. A message appears asking for your confirmation.
   - Touch **"Yes"** to divide the selected video by 10 minutes, then the screen switches to the thumbnail index view.
   - The share mark (⇪) appears on each divided video file.
   - Dividing may take some time according to the size of the selected video file.

- By using the software Intelli-studio embedded in the camcorder, you can easily upload videos marked with share marks. ➥page 89
- The Share Mark is not available in the following conditions:
  - Videos longer than 10 minutes

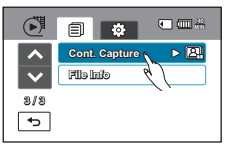
Cont. Capture

You can take photos (JPEG format) in succession **while playing a video**.

PRECHECK!

Touch the Play(▶)→ HD(HD) or SD(SD) tab on the LCD screen. ➥page 49

1. Touch the Menu (MENU) tab →"**Cont. Capture.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✕) or Return (↩) tab.
   - The Cont. Capture (📷) indicator appears on the screen during video playback. When you press the **PHOTO** button at a desired scene, still images are captured in succession in the selected intervals.
   - For details on the continuous photo capture, refer to page 47.



Submenu items

- **1Cut:** Captures only one still image.
- **2Cut/1Sec (📷):** Captures up to 2 still images per second by pressing the **PHOTO** button.
- **5Cut/1Sec (📷):** Captures up to 5 still images per second by pressing the **PHOTO** button.

- When an error occurs (memory full, etc) during a continuous recording, the recording stops and an error message is displayed.
- While pressing down the **PHOTO** button, the video playback will pause each time an image is captured. This will make the image capture seem longer than 1 second, however, 2 or 5 images are being captured for each second of video playback.

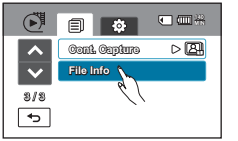
File Info

This camcorder shows you information on the recorded images.

PRECHECK!

Touch the Play (▶) tab on the LCD screen to select the playback mode. ➥page 49

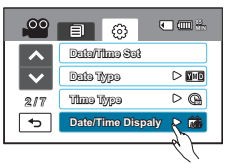
1. Touch the Menu (MENU) tab → **"File Info."**
   - The file information of the selected file appears.
2. Select the desired file to view the file information.
   - The information of the selected file appears.
3. To exit the menu, touch the Exit (✕) or Return (↩) tab.



Date/Time Display

You can set the date and time to be displayed on the LCD screen according to the selected option.

1. Touch the Menu (MENU) ➞ Setting (⚙) tab ➞ "**Date/Time Display.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.
   - The date/time is displayed on the LCD screen according to the selected option.



Submenu items

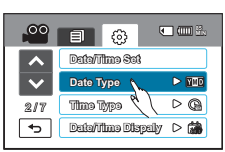
- **Off :** Current date/time information is not displayed.
- **Date :** Displays the current date.
- **Time :** Displays the current time.
- **Date & Time :** Displays the current date and time.

The date/time will be read "**01/JAN/2010 00:00**" in the following cases;
- When video or photo recording was made before setting the date/time in the camcorder.
- When the built-in rechargeable battery is depleted.

Date Type

You can set the display type for the date set according to the selected option.

1. Touch the Menu (MENU) ➞ Setting (⚙) tab ➞ "**Date Type.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



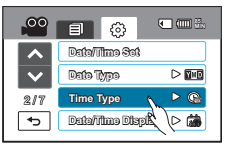
Submenu items

- **2010/01/01 :** The date is displayed in the year/month (two-digit)/date.
- **JAN/01/2010 :** The date is displayed in the order of month/date/year.
- **01/JAN/2010 :** The date is displayed in the order of date/month/year.
- **01/01/2010 :** The date is displayed in the date/month (two-digit)/year.

Time Type

You can set the display type for the time set according to the selected option.

1. Touch the Menu (MENU) ➔ Setting (⚙) tab ➔ "**Time Type.**"
2. Touch the desired display option.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



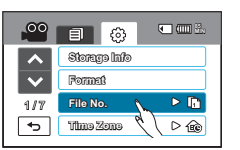
Submenu items

- **12Hr :** Displays the time information in 12 hour units.
- **24Hr :** Displays the time information in 24 hour units.

File No.

File names (numbers) are assigned to recorded images according to the selected numbering option.

1. Touch the Menu (MENU) ➔ Setting (⚙) tab ➔"**File No.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

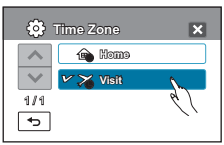
- **Series :** Assigns file numbers in sequence even after you replace or format the memory card or delete all files. Each file is given with a unique file number that allows convenient image management on a PC.
- **Reset :** Resets the file number to 0001 after formatting or deleting all files or inserting a new memory card.

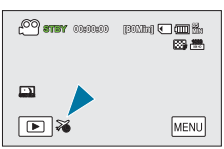
When you set "**File No.**" to "**Series.**" each file is assigned with a different number so as to avoid duplicating file names. It is convenient when you want to manage your files on a computer.

Time Zone

You can easily set the clock to the local time when using your camcorder while traveling.

1. Touch the Menu (MENU) tab ➞ Setting (⚙) tab ➞"**Time Zone**" ➞ "**Visit.**"
2. Touch the left (◀) or the right (▶) tab to select the visited area.
3. Touch (OK) tab when the time zone setting is completed.
   - The time zone set value is not applied if you finish the setting with (✖) or (⮌) tab without touching the (OK) tab.





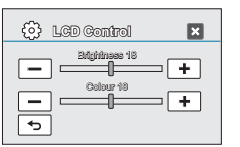
Submenu items

- **Home :** The clock will be used according to your setting on the Date/Time Set menu. Select it when using this camcorder for the first time or when returning the clock to your hometown date/time setting.
- **Visit (✈):** When you visit a different time zone, it allows you to use the local time without changing your hometown time setting. The clock will be adjusted in accordance with the time difference between the two locations.

LCD Control

You can adjust the brightness and saturation of the LCD screen.

1. Touch the Menu (MENU) ➔ Setting (⚙) tab ➔ "**LCD Control.**"
2. Touch the decrease (−) or increase (+) tab to adjust the value of a desired item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

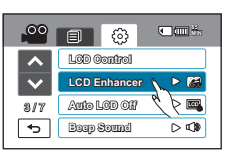
- **Brightness :** Adjusts the brightness of the LCD screen.
- **Colour :** Adjusts the saturation of the LCD screen.

- If the surrounding is too bright, adjust the brightness of the LCD screen.
- Adjusting the LCD screen does not affect the image being recorded.
- Brighter LCD screen consumes more power.

LCD Enhancer

Contrast is enhanced for a clear and bright image. This effect also works outdoors in bright daylight.

1. Touch the Menu (MENU) ➔ Setting (⚙) tab ➔ **"LCD Enhancer"**
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

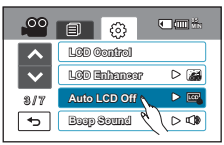
- **Off :** Disable the function.
- **On(🖼):** The LCD contrast is enhanced.

LCD enhancer function does not affect the quality of the image being recorded.

Auto LCD Off

To reduce power consumption, the brightness of the LCD screen is automatically dimmed if the camcorder is idle for more than 2 minutes.

1. Touch the Menu (MENU) ➜ Setting (⚙) tab ➜ "**Auto LCD Off.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

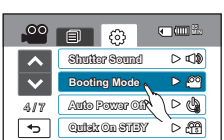
- **Off :** Disable the function.
- **On :** When the camcorder is idle for more than 2 minutes in Video or Photo STBY mode, or for more than 5 minutes when recording a video, the power saving mode starts by dimming the LCD screen.

When this "**Auto LCD Off**" function is enabled, you can press any button on the camcorder to return LCD brightness to normal.

Booting Mode

You can choose the booting mode that starts up when you turn on the camcorder.

1. Touch the Menu (MENU) ➜ Setting (⚙) tab ➜ "**Booting Mode.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



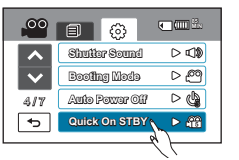
Submenu items

- **Video Mode :** When the power is on, the camcorder will turn on in the video standby mode.
- **Photo Mode :** When the power is on, the camcorder will turn on in the photo standby mode.
- **Previous Mode :** The camcorder will keep turning on in the last mode used.

Quick On STBY

When you are going to record frequently for an extended time, use the Quick On STBY function. In standby mode, closing the LCD screen will commence the Quick On STBY mode to reduce energy consumption. Once you are ready to record again, this function enables to the camcorder to come on quickly from the power saving mode.

1. Touch the Menu (MENU) ➞ Setting (⚙) tab ➞ "**Quick On STBY.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab
   - In the standby mode, closing the LCD screen will soon execute the Quick On STBY mode, and then the camcorder turns off after the selected time setting.



Submenu items

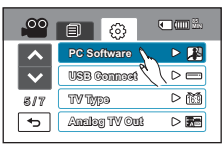
- **Off :** In the standby mode, closing the LCD screen turns off the camcorder.
- **5 Min :** In the standby mode, closing the LCD screen will soon execute the Quick On STBY mode, and then the camcorder turns off after 5 minutes.
- **10 Min :** In the standby mode, closing the LCD screen will soon execute the Quick On STBY mode, and then the camcorder turns off after 10 minutes.
- **20 Min :** In the standby mode, closing the LCD screen will soon execute the Quick On STBY mode, and then the camcorder turns off after 20 minutes.

- Turning off the camcorder after use is always recommended to reduce the energy consumption, however, you can effectively use the Quick On STBY function for the frequent shooting conditions in the specified time schedule.
- In the Quick On STBY mode, "**Auto Power Off: 5 Min**" setting is disabled.
- The mode indicator keeps blinking in the Quick On STBY mode.
- The Quick On STBY mode is not available in the following conditions:
  - When the LCD screen is open.
  - When a video cable (HDMI, Component/AV) or the USB cable is connected to the camcorder.
  - When operating the buttons on the camcorder.

PC Software

If you set PC Software to On, you can simply use the PC software by connecting the USB cable between the camcorder and your PC. You can download the stored video and photo images on the camcorder to your PC's hard disk. Editing video/photo files is also available using the PC software.

1. Touch the Menu (MENU) ➜ Setting (⚙) tab ➜ "**PC Software.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

- **Off :** Disables the function.
- **On :** The built-in editing software launches when the camcorder is connected to the PC.

- The PC Software function is not available if "**USB Connect**" is set to "**PictBridge.**"
- To Enable the PC Software function, set "**USB Connect**" to "**Mass Storage**", in the system setting menu option.
- The PC Software is compatible with the Windows OS only.

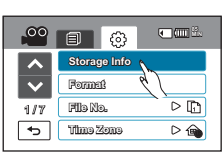
Storage Info

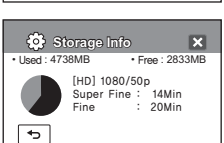
This function shows you the storage information of the selected storage media (memory card), such as used and available memory space, etc.

PRECHECK!

Insert the memory card in the camcorder before viewing the storage information.

1. Touch the Menu (MENU) ➜ Setting (⚙) tab ➜ "**Storage Info.**"
2. Used memory space, available memory space for use, and the recordable time depending on the selected video resolution appears.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.





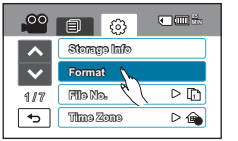
Format

Use this function if you want to delete all files completely or to correct problems on the storage media.

PRECHECK!

You can completely delete all files and options on the storage media, including protected files.
This enables stable speeds and operation when accessing the recording medium.
Be aware that all files and data including protected files will be erased.

1. Touch the Menu (MENU) ➞ Setting (⚙) tab ➞ "**Format.**"
   - A message appears asking about formatting the memory card.
2. Touch "**Yes.**"
   - The format is executed with a message.



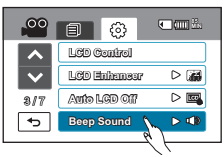
- Do not remove the recording medium or perform any other operation (such as turning off the power) during formatting. Also, be sure to use the provided AC adapter, as the recording medium may be corrupted if the battery becomes exhausted during formatting.
- If the recording medium becomes corrupted,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

- **Do not format the storage media on a PC or other device.**
  Make sure to format the storage media on this camcorder.
- Format the memory card in the following cases:
  - Before using a new memory card
  - A memory card formatted/recorded on other devices
  - When this camcorder cannot read the memory card
- A memory card with the protection tab set to lock will not be formatted. ➥page 113
- If there is no storage media inserted, it can not be selected. Then it will be dimmed on the menu.

Beep Sound

This setting allows operations such as touching tabs and buttons on the screen to be signaled by a beep.

1. Touch the Menu (MENU) ➜ Setting (⚙) tab ➜ "**Beep Sound.**"
2. Touch a desired submenu item.
3. To exit, touch the Exit (✖) or Return (↩) tab until the menu disappears.



Submenu items

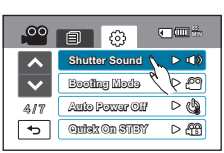
- **Off :** Disables the function.
- **On :** You will hear a beep sound when operating buttons or tabs such as the power button or recording start/stop button.

The beep sound is off when recording a video.

Shutter Sound

You can turn the shutter sound on or off when pressing the **PHOTO** button.

1. Touch the Menu (MENU) ➜ Setting (⚙) tab ➜ "**Shutter Sound.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

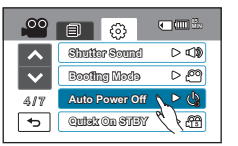
- **Off :** Disable the function.
- **On :** You will hear the shutter sound when operating the **PHOTO** button.

- The shutter sound is not heard in the following conditions:
  - In case of using the **PHOTO** button during video recording.

Auto Power Off

You can set your camcorder to automatically turn off if it is idle for 5 minutes without an operation. This function will prevent unnecessary power consumption.

1. Touch the Menu (MENU) ➞ Setting (⚙) tab ➞ "**Auto Power Off.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

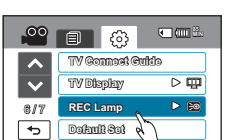
- **Off :** Disable the function.
- **5 Min :** The camcorder turns off if idle for 5 minutes without an operation.

- Auto Power Off does not work in the following situations:
  - If the cable (HDMI, Component/AV, etc) is connected while recording or the playback.
  - While the Quick On STBY function is in operation.
  - While the Demo function is in operation.
  - While in recording, playing (except pause), Photo slide show.
- To operate the camcorder again, press the Power (⏻) button.

Rec Lamp

You can turn the recording indicator on or off that lights during video or photo recording.

1. Touch the Menu (MENU) ➞ Setting (⚙) tab ➞ "**REC Lamp.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.
   - If you set "**REC Lamp**" to "**On**," you can easily distinguish whether the recording is in progress by looking at the recording indicator on your camcorder.



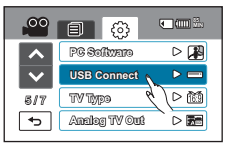
Submenu items

- **Off :** Disables the function.
- **On :** The recording indicator turns on while the recording is in progress.

USB Connect

You can transfer data to a PC or print photos directly by establishing the USB connection.

1. Touch the Menu (MENU) ➞ Setting (⚙) tab ➞ "**USB Connect.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

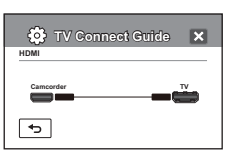
- **Mass Storage :** Connect to a PC to transfer videos or photos. ➥page 129
- **PictBridge :** Connect to a PictBridge printer to print photos directly (when using the PictBridge function). ➥page 115

Before connecting a USB cable, check whether the current USB mode is appropriate for the function to be used.

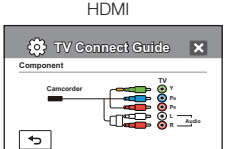
TV Connect Guide

You can view the TV Connect Guide before you connect the camcorder to your TV set.

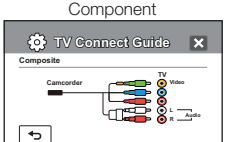
1. Touch the Menu (MENU) tab ➞ "**TV Connect Guide.**"
2. Touch a desired submenu item.
   - TV Connect Guide appears depending on the selected submenu items.
   - Refer to the TV Connect Guide when connect your camcorder with other external devices.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



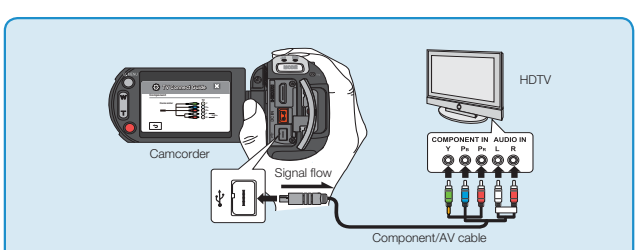
HDMI



Component



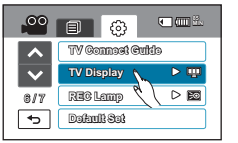
Composite



TV Display

You can enable or disable the On Screen Display (OSD) that appears on the TV screen when connecting your camcorder to a TV.

1. Touch the Menu (MENU) ➞ Setting (⚙) tab ➞ "**TV Display.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

- **Off :** The OSD (On Screen Display) menus are only shown on the LCD screen.
- **On :** The OSD menus are shown on the LCD screen and the TV screen as well.

The thumbnail display, demo, and the *i*CHECK (|□|/*i*CHECK) screens are shown on the TV even if you set "**TV Display**" to "**Off.**"

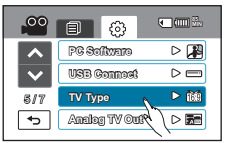
TV Type

You need to convert the aspect ratio of the camcorder to match your TV.

PRECHECK!

Using the Component/AV Cable provided with your camcorder, connect the camcorder to your TV. ➥pages 118~120

1. Touch the Menu (MENU) ➞ Setting (⚙) tab ➞ "**TV Type.**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

- **16:9 :** Select this to view images on a 16:9 (wide) TV.
- **4:3 :** Select this to view images on a 4:3 (standard) TV.

- This function works only when the camcorder is connected to a TV.
- This function is not available if "**Analog TV Out: Component Auto**" is set.
- TV type is automatically selected when connecting with an HDMI cable. So you don't need to use this setting when using an HDMI cable.

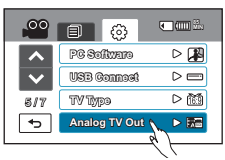
Analog TV Out

You can set the component or composite video output to match the TV you have connected.

PRECHECK!

- Using the Component/AV Cable provided with your camcorder, connect the camcorder to your TV. ➥pages 118~120
- This HD camcorder provides the two-in-one component/AV cable that fits the purpose of the component and the AV cable. Therefore, when using the component/AV cable, you must check the right method for the TV output by setting the “Analog TV Out” menu.

1. Touch the Menu (MENU) ➞ Setting (⚙) tab ➞ “**Analog TV Out.**”
2. Touch a desired submenu item.
   - Check the TV type, connection jack, and the resolution of the recorded video before you choose the desired submenu item.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.



Submenu items

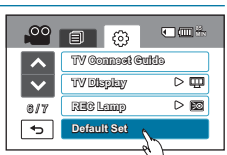
- **Component 1080p(1080p):** The recorded file is output in the recorded video resolution.
- **Component 1080i(1080i):** The recorded file is output in the recorded video resolution. However, a video file recorded in 1080/50p is output in 1080/50i.
- **Component 576p(576p):** The recorded file is output in the 720x576p resolution. Use this setting only when connecting to a regular TV which supports the progressive scan at the SD(Standard Definition) level by using the component(Y/Pb/Pr, AUDIO) jacks.
- **Component 576i(576i):** The recorded file is output in the 720x576i resolution. Use this setting only when connecting to a regular TV which only supports the SD(Standard Definition) resolution without the progressive scan by using the component(Y/Pb/Pr, AUDIO) jacks.
- **Composite(📼):** The composite video signals are output via the Component/AV cable (green). Use this setting only when connecting to a regular TV that has no component video jacks.

- The Analog TV Out indicator is displayed only when the camcorder is connected to a TV.
- For details on TV specification, refer to the user manual of the connected TV.
- Although the “**Analog TV Out**” is set to “**Component 576p,**” the component video signal is output as interlaced format if the resolution is set to 1080/50i.
- When the resolution is set to 1080/50p, the camcorder cannot output with the connected TV simultaneously.

Default Set

You can restore all menu settings to the default conditions.

1. Touch the Menu (MENU) ➞ Setting (⚙) tab ➞ **“Default Set.”**
   - A message appears asking for your confirmation.
2. Touch "**Yes**" if you want all the settings return to the default.
   - The Time Zone screen appears after all settings return to the default.
3. Set the date and time again. ➥page 33

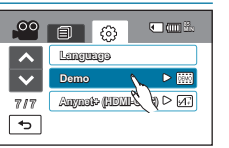


- Do not turn off the power while using this function.
- Initializing the HD camcorder settings to factory defaults does not affect recorded images.

Demo

Demo mode automatically shows you the major functions that are included with your camcorder so that you may use them more easily.

1. Touch the Menu (MENU) ➔ Setting (⚙) tab ➔ "**Demo**" ➔ "**On.**"
   - If you don't want this function, touch "**Off.**"
2. To exit the menu, touch the Exit (⊠) or Return (↩) tab.
   - The Demo function starts on the LCD screen.



Submenu items

- **Off :** Disable the function.
- **On:** Enables the Demo function.

Using the Demo function

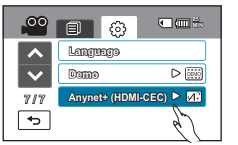
- The Demo mode is Canceled in the following cases:
  - If the LCD screen is touched.
  - If any button is operated (Recording start/stop, Q.MENU, display (I▭I)/*i*CHECK, SMART AUTO, MODE, PHOTO, etc.) However, the camcorder will enter the Demo mode automatically after 5 minutes in STBY mode if it is idle for 5 minutes without an operation. If you don't want the Demo function starts, set "**Demo**" to "**Off.**"

- The Demo function does not operate in the following cases:
  - If "**Auto Power Off**" is set to "**5 Min**"(uses the battery as main power), the Auto Power Off function will operate prior to Demo.

Anynet+ (HDMI-CEC)

This camcorder supports Anynet+. Anynet+ is an AV network system that enables you to control all connected Samsung AV devices with an Anynet+ supported Samsung TV remote control.

1. Touch the Menu (MENU) ➔ Setting (⚙) tab ➔ "**Anynet+ (HDMI-CEC).**"
2. Touch a desired submenu item.
3. To exit the menu, touch the Exit (⊠) or Return (↩) tab.
   - When the camcorder is connected to the Anynet+ supported TV, you can operate some functions of the camcorder using the TV's remote control.



Submenu items

- **Off**: Disable the function.
- **On**: The Anynet+ function is enabled.

- When you turn on the camcorder that is connected to an Anynet+ supporting TV with an HDMI cable, the TV (Anynet+ supported) is automatically turned on. If you do not want to use this Anynet+ function, set the "**Anynet+ (HDMI-CEC)**" to "**Off.**"
- For details on the Anynet+ (HDMI-CEC) function, refer to the user manual of Samsung's Anynet+ supported TV.

editing video clips

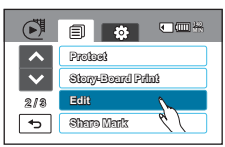
DELETING A SECTION OF A VIDEO

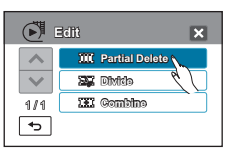
You can delete a scene partially. As this function edits the original file, make sure to back up important recordings separately.

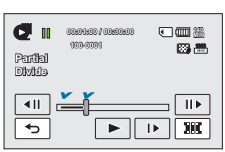
PRECHECK!

- This function works in Video play mode only.
- Touch the Play( ) ➞ HD(HD) or SD(SD) tab on the LCD screen. ➥page 49

1. Touch the Menu (MENU) tab ➞ **"Edit"** ➞ "**Partial Delete.**"
2. Touch a desired video to edit.
   - The selected video is displayed in pause mode.
3. Search the start point of deletion by using playback control tabs, and touch the Selection ( ) tab at the starting point.
   - Playback control tabs: ▶/❚❚/◀◀/▶▶/◀❚/❚▶/▶
   - "√" mark appears at the start point.
4. Touch playback control tabs to search the end point of deletion, and touch the Selection ( ) tab at the end point.
   - "√" mark appears at the end point.
5. Touch Partial Deleting ( ) tab.
   - A message appears asking for your confirmation.
6. Touch "**Yes.**"
   - The selected part of the video is deleted.







- The deleted part of the original file cannot be recovered.
- Do not eject a memory card or power off while editing a video recorded on the memory card. Doing so may damage the storage media or data.

- You can not delete files that are protected. Cancel the protect function to delete the file. ➥page 112
- If you want to Cancel the partial delete or to edit from the beginning, touch the Return ( ) tab.
- The Partial Delete function is not available in the following conditions:
  - If the duration of the section to delete is less than 3 seconds.
  - If the duration of the remaining section (after deleting the section) ends up being less than 3 seconds.
  - If the video file is recorded in the Time Lapse REC mode.
  - If the remaining section of the memory space is less than 4MB.
- When the partial delete is performed, the same video in playlist is also partially deleted.

editing video clips

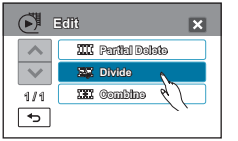
DIVIDING A VIDEO

You can divide a video into two, and easily delete a section you no longer need. As this function edits the original file, make sure to back up important recordings separately.

PRECHECK!

- This function works in Video play mode only.
- Touch the Play(▶)→ HD(HD) or SD(SD) tab on the LCD screen. ➥page 49

1. Touch the Menu (MENU) tab → **“Edit”** → “**Divide.**”
2. Touch a desired video to edit.
   - The selected video is displayed as paused.
3. Search the point of division by touching playback control tabs.
   - Playback control tabs: ▶/❚❚/◀◀/▶▶/◀❚/❚▶/▶
4. Touch “**Yes.**”
   - The selected video is divided into two video clips.
   - The second clip of the divided video is displayed as the last thumbnail.
   - After the division, you can partially delete a unnecessary section or combine with other videos.



Do not eject a memory card or power off while editing a video recorded on the memory card. Doing so may damage the storage media or data.

- You can not delete files that are protected (🔑) indicator is written on. Cancel the protect function first. ➥page 112
- The divided video may drift before or after the division point by approx. 0.5 seconds.
- The Divide function is not available in the following conditions:
  - If the total recorded time of the video is less than 6 seconds.
  - If you trying to divide sections without leaving 3 seconds at the beginning and the end.
  - If the video file is recorded in the Time Lapse REC mode.
  - If the remaining section of the memory space is less than 8MB.
- The division function does not work if available space on the storage is insufficient. Delete unnecessary videos.
- When the video is divided into two, only the first video clip is stored in the playlist again.
- Photos cannot be divided.

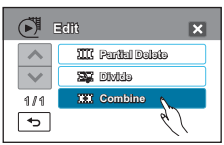
COMBINING VIDEOS

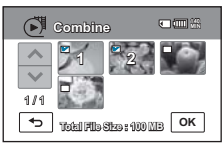
You can combine up to 5 different videos into one. As this function edits the original file, make sure to back up important recordings separately.

PRECHECK!

- This function works in Video play mode only.
- Touch the Play( ) ➙ HD(HD) or SD(SD) tab on the LCD screen. ➥ page 49

1. Touch the Menu (MENU) tab ➙ **"Edit"** ➙ "**Combine.**"
2. Touch video thumbnails to be combined.
   - The (√) indicator and the order number are displayed on the selected videos. Touching the video thumbnail toggles the image between being selected (√) or not selected.
   - The (√) indicator does not appear if there is a different resolution between selected videos files.
3. Touch **OK** (OK) tab.
   - A message appears asking for your confirmation.
4. Touch "**Yes.**"
   - The selected video files are combined in the chosen order and stored as one video.
   - The thumbnail of the first movie image will appear in the combined movie image.





Do not eject a memory card or power off while editing a video recorded on the memory card. Doing so may damage the storage media or data.

- You can not delete files with the protect ( ) indicator is written on. Cancel the protect function first. ➥page 112
- The original video will not be preserved.
- Photos cannot be combined.
- **The combine function is not available in the following conditions:**
  - Videos in different resolution formats (For example, Videos recorded at "**Resolution:1080/50i**" and "**Resolution:720/50p**") cannot be combined.
  - The file size of the combined videos cannot exceed 3.8 GB.
  - The video file recorded in the Time Lapse REC mode cannot be edited.
  - If the remaining section of the memory space is less than 4MB, the files cannot be combined.

editing the playlist

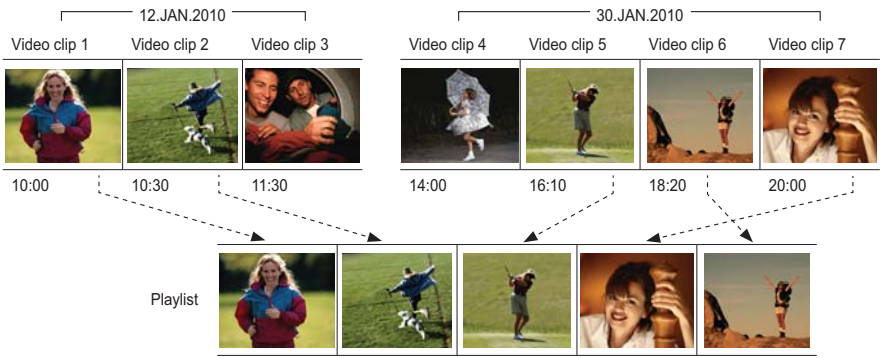
PLAYLIST

What's a "**Playlist?**"

- You can create a playlist on the same memory card by gathering your favorite scenes from the recorded videos. Adding or deleting videos from a playlist does not affect the original video images.

  Example: You have recorded a few scenes on a memory card. You want to save the original recording, but you also want to create a digest by putting your favorite scenes together. In this case, you can create a playlist by selecting your favorite scenes, leaving the original recording as it is.

Recorded Videos



- The maximum number of playlists on the storage media: One playlist can be created per each resolution set, "HD (High definition" and "SD (Standard Definition)."
- The maximum number of videos on the playlist: 99 videos
- If original videos are deleted, scenes on the playlist created with these videos are also deleted.

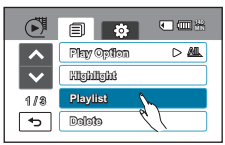
CREATING THE PLAYLIST

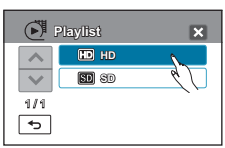
You can create a playlist by gathering your desired videos from the recorded video.

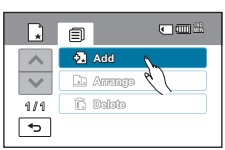
PRECHECK!

- This function works in Video play mode only.
- Touch the Play ([▶]) tab on the LCD screen to select the playback mode. ➥page 49

1. Touch the Menu ([MENU]) tab ➜ **“Playlist.”**
   - The menu window appears for selecting the video resolution.
2. Touch “**HD**” or “**SD.**”
   - The thumbnail display appears according to the selected resolution.
3. Touch the Menu ([MENU]) tab, then touch “**Add.**”
   - Video thumbnails corresponding to the selected video quality appear on the screen.
4. Touch the desired video to be added to the playlist.
   - The (√) indicator is displayed on the selected video. Touching the video toggles the image between being selected (√) and not selected.
5. Touch **OK** ([OK]) tab.
   - A message appears asking for your confirmation.
6. Touch “**Yes.**”
   - The playlist is created.
   - You can play the playlist in the same manner as you play a video.







While editing the playlist, do not eject the memory card or power off the camcorder. Doing so may damage the storage media or data.

If available space on the storage is insufficient, you can not create or add a playlist. Delete unnecessary videos.

editing the playlist

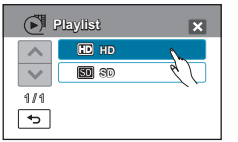
ARRANGING VIDEOS IN THE PLAYLIST

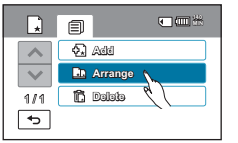
You can change the order of videos on the playlist.

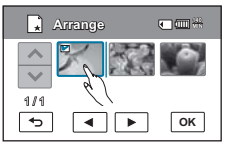
PRECHECK!

- This function works in Video play mode only.
- Touch the Play ([▶]) tab on the LCD screen to select the playback mode. ➥page 49

1. Touch the Menu ([MENU]) tab ➜ "**Playlist.**"
2. Touch "**HD**" or "**SD.**"
   - Video thumbnails corresponding to the selected video quality appear on the screen.
3. Touch the Menu ([MENU]) tab, then touch "**Arrange.**"
   - The playlist appears.
4. Touch the video you want to move.
   - The (√) indicator and the selection bar appear on the selected video. Touching the video toggles the image between being selected (√) and not selected.
5. Touch the previous ([◀])/ next ([▶]) tab to move the bar to the position you want, then touch **OK** ([OK]) tab.
   - A message appears asking for your confirmation.
6. Touch "**Yes.**"
   - The video moves to the selected position.







While editing the playlist, do not eject the memory card or power off the camcorder. Doing so may damage the storage media or data.

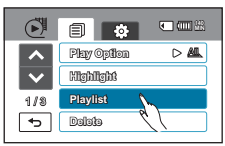
DELETING VIDEOS FROM THE PLAYLIST

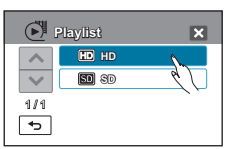
You can delete undesired videos from the plalylist.

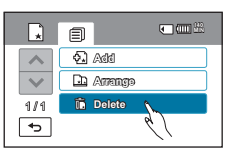
PRECHECK!

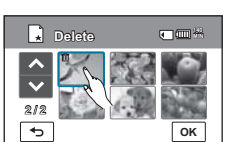
- This function works in Video play mode only.
- Touch the Play ([▶]) tab on the LCD screen to select the playback mode. ➥page 49

1. Touch the Menu ([MENU]) tab ➜ "**Playlist.**"
2. Touch "**HD**" or "**SD.**"
   - Video thumbnails corresponding to the selected video quality appear on the screen.
3. Touch the Menu ([MENU]) tab, then touch "**Delete.**"
   - The playlist appears.
4. Touch the video you want to delete.
   - The ([🗑]) icon and the selection bar appear on the selected video. Touching the video toggles the image between being selected ([🗑]) and not selected.
5. Touch **OK** ([OK]) tab.
   - A message appears asking for your confirmation.
6. Touch "**Yes.**"
   - The selected videos are deleted from the playlist.









While editing the playlist, do not eject the memory card or power off the camcorder. Doing so may damage the storage media or data.

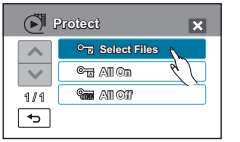
PROTECTION FROM ACCIDENTAL ERASURE

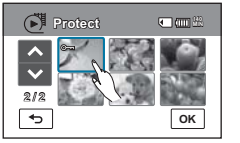
You can protect important recordings from accidental erasure. The protected videos and photos are not deleted unless they are formatted or the protection is canceled.

PRECHECK!

Touch the Play (▶) tab on the LCD screen to select the playback mode. ➥page 49

1. Touch the Play(▶) ➜ HD(▶HD), SD(▶SD) or Photo (📷) tab.
   - Videos or photos appear as thumbnails.
2. Touch the Menu (MENU) tab ➜ "**Protect**."
3. Touch a desired submenu item.
4. The corresponding message to the selected option appears. Touch "**Yes.**"
   - The protection is set to on or off.
   - The (🔑) indicator appears on the protected file.





Submenu items

- "**Select Files**": Protects individual images. Touch images to protect from erasure. The (🔑) indicator is displayed on the selected images. Touching the thumbnail image toggles the image between being selected (🔑) or not selected. Touch **OK** (OK) tab.
- "**All On**": Protects all images.
- "**All Off**": Releases the protected images all at once.

- You can also operate this function in the full and single image display mode.
- If the write protection tab on the memory card is set to lock, you cannot set this function. ➥page 36

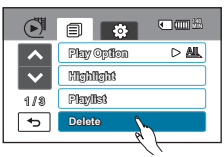
DELETING FILES

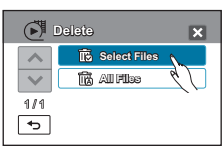
You can erase your recordings one by one, or at once.

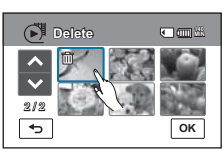
PRECHECK!

Touch the Play(▶) tab on the LCD screen to select the playback mode. ➥page 49

1. Touch the Play(▶) ➜ HD(HD), SD(SD) or Photo (📷) tab.
   - Videos or photos appear as thumbnails.
2. Touch the Menu (MENU) tab ➜ "**Delete.**"
3. Touch a desired submenu item.
4. The corresponding message to the selected option appears. Touch "**Yes.**"
   - The selected image is deleted.







Submenu items

- "**Select Files**": Deletes individual images.
  Touch images you want to delete.
  The (🗑) indicator is displayed on the selected images.
  Touching the thumbnail image toggles the image between being selected (🗑) or not selected. Touch **OK** (OK) tab.
- "**All Files**": Deletes all images.

- Deleted images cannot be recovered.
- Do not eject a memory card or power off while deleting videos recorded on the memory card. Doing so may damage the storage media or data.

- To protect important images from accidental erasure, activate the image protection function in advance. ➥page 112
- You can not delete protected files. Cancel the protect function first.
- If the write protection tab on the memory card is set to lock, you cannot delete the images. ➥page 36
- You can also format the storage media to delete all images at once.
- You can also operate this function in the full and single image display mode.
- The delete function does not work if battery charge is insufficient. It is recommended to use AC power to continue power supply during the deletion. ➥page 25

printing photos

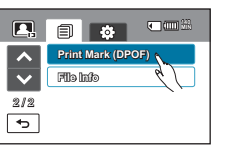
DPOF PRINTING SETTING

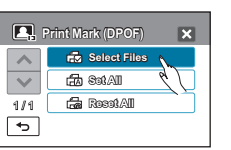
On your memory card, you can write the print-out information including the number of copies to print. The saved information is used when you connect your camcorder with a DPOF-compatible printer.

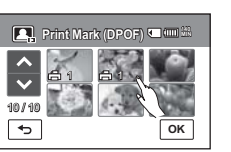
PRECHECK!

- Insert the memory card in your camcorder.
- This function works in Photo play mode only.
- Touch the Play ([▶]) tab on the LCD screen to select the playback mode. ➥page 49

1. Touch the Photo ([📷]) tab.
   - The photo thumbnails are displayed.
2. Touch the Menu ([MENU]) tab ➜ "**Print Mark (DPOF).**"
3. You can choose the following submenu options:
   - **Select Files**: Print-marks individual images. The print marks indicator is displayed on the selected images. Touching the thumbnail image toggles the image between being selected or not selected.
     Touch the ([↩]) tab.
   - **Set All**: Print-marks all images.
   - **Reset All**: Removes all the print-marks.
4. The corresponding message appears to the selected option. Touch "**Yes.**"
   - The print mark is selected or removed.
   - The ([🖨] **1**) indicator appears on the print-marked photos.







Understanding DPOF

DPOF (Digital Print Order Format) allows you to set which still images on the memory card are to be printed, together with information on the number of copies to be printed.

Tip

In single display mode, you can set the number of prints by using the decrease ([−]) or increase ([+]) tab.

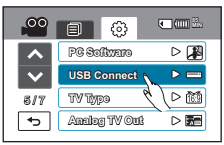
- Touch the Menu ([MENU]) tab ➜ "**Print Mark(DPOF)**" ➜ decrease ([−]) or increase ([+]) tab.
- Up to 99 copies can be set to print of each image.

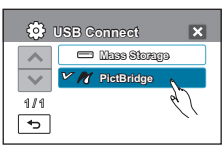
- When you select the "**Set All**" option, the number of copies to be printed is set to 1.
- Selecting the "**Set All**" or "**Reset All**" options may take a long time depending on the number of the selected copies.

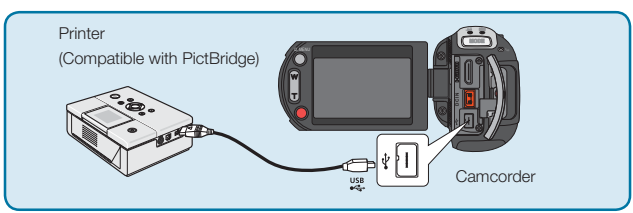
DIRECT PRINTING WITH A PICTBRIDGE PRINTER

You can print photos directly by connecting this camcorder to a PictBridge printer (sold separately) and a USB cable.

1. Touch the Menu (MENU) ➔ Setting (⚙) tab ➔ "**USB Connect**" ➔ "**PictBridge.**"
2. Use a USB cable to connect your camcorder to the printer.
3. Turn your printer power on.
   - The photo thumbnails appear.
4. Touch the photos to print, then touch the Print (🖨) tab.
   - The selected photo will be printed.







To set the number of prints

Touch the decrease (➖)/increase (➕) tab to set the number of copies to print.

- The number of copies is set.

To Cancel the print setting

Touch the Return (↩) tab on the LCD screen.

To stop printing after printing starts

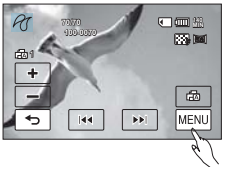
Touch "**Cancel**" on the screen.

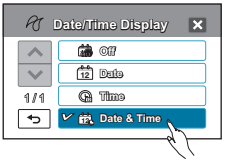
- If the camcorder is connected to a printer while "**USB Connect**" is set to "**Mass Storage,**" the message "**Fail USB Connecting Change USB Connect**" appears. Set the "**USB Connect**" to the "**PictBridge**" then connect the USB cable again.
- **Use the supplied USB cable.**

printing photos

To set the date/time imprint

1. In the printer mode, touch the Menu (MENU) tab.
   - The print options appear on the screen.
2. Touch the "**Date/Time.**"
3. Touch a desired submenu item.
   - The selected date and time display option is set.
4. To exit the menu, touch the Exit (⊠) or Return (⮌) tab.
   - The selected date and time will be printed on the photos.





- The date/time imprint option may not be supported by all printers. Check with your printer manufacturer. The "**Date/Time**" menu cannot be setup if the printer does not support this option.
- PictBridge™ is a registered trademark of CIPA (Camera & Imaging Products Association), an image transfer standard developed by Canon, Fuji, HP, Olympus, Seiko Epson, and Sony.
- Use the AC power adaptor for your camcorder during PictBridge direct printing. Turning the camcorder off during printing might damage data on the storage media.
- Video images cannot be printed.
- Photos recorded on other devices cannot be printed.
- Various printing options are available depending on the printer. Refer to the printer's user manual for details.

CONNECTING TO A HIGH DEFINITION TV

You can enjoy High Definition (HD) quality videos, recorded in "1920x1080" or "1280x720" resolution using an HDTV. The connection methods and quality of the image viewed on the TV screen differ depending on what type of TV is connected , and the connectors used. To playback the high quality videos from your camcorder, check if your TV set supports the "1920x1080" resolution.
This HD camcorder supports both HDMI and component output to deliver high-definition video transfer.

PRECHECK!

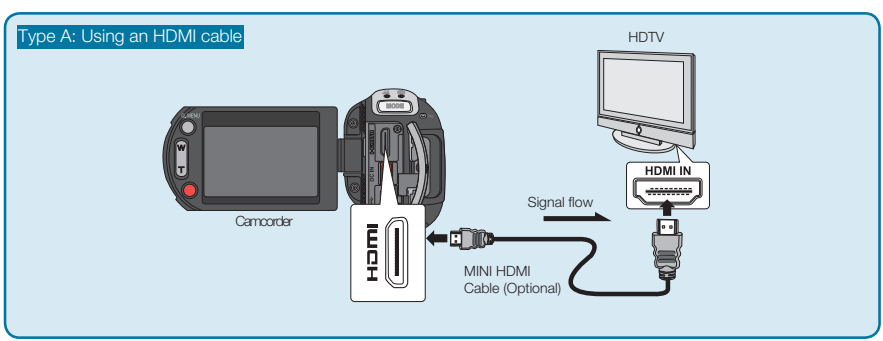
- Select the HDMI or the component jack on your TV. For more information about the connectors and the connection methods, refer to the TV user manual.
- This HD camcorder provides a two-in-one component/AV cable that functions as an component and AV cable. Therefore, when using the component/AV cable, you must check the right method for the TV output by setting the "**Analog TV Out**" menu. ➥page 103

Understanding the HDMI cable:

HDMI (High Definition Multimedia Interface) is a compact audio/video interface for transmitting uncompressed digital data.

What is Anynet+ function?

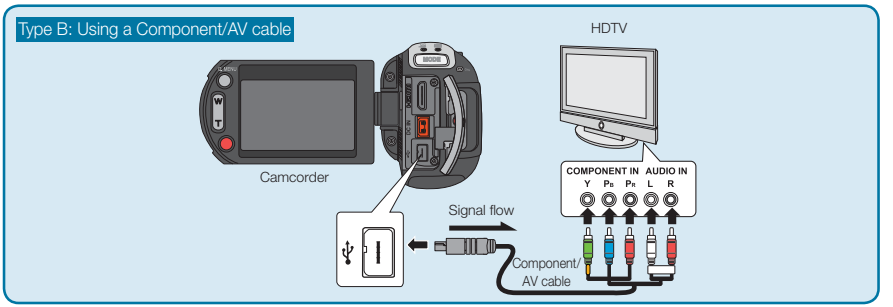
You can use the same remote control for devices that support the Anynet + function.
You can use the Anynet + function if the camcorder is connected with an HDMI cable to an Anynet+ supported TV. For more information, refer to the Anynet+ support TV's user manual.



Type A: Using a MINI HDMI cable

1. Turn on the camcorder and connect a Mini HDMI cable with the HDMI jack on TV.
   - When connecting via HDMI, the connected device may not be recognised if the camcorder is turned off.
2. Turn on the TV and set the input selector to the Input connection your camcorder is connected to. Refer to the TV instruction manual for how to switch the TV output.

connecting to a TV



Type B: Using a Component/AV cable

1. Connect the provided component/AV cable to the Component jack, "**Y-PB-PR** (Video) and **L-R** (Audio)" on your TV.
   - After the connection is complete, set "**Analog TV Out**" to "**Component.**" ➥page 103
2. Turn on the TV and set the input selector to the Input connection your camcorder is connected to. Refer to the TV instruction manual for how to switch the TV output.

If the **PB, PR,** or **Y** jack is not connected correctly, the TV screen may appears red or blue.

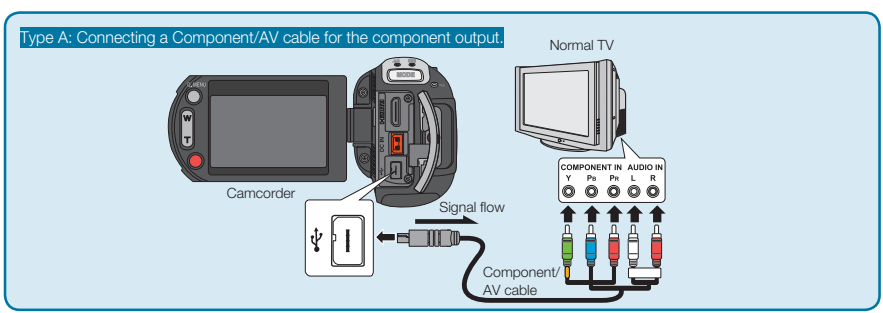
- When connecting to TV using the component/AV cable, match the colours between the cables and the corresponding jacks.
- Videos recorded using the HD camcorder will playback on an HDTV in the original resolution you set in the camcorder. Videos recorded in SD quality cannot playback on HDTV in the HD quality. For example, videos recorded in HD quality (resolution of "**1080/50p,**" "**1080/50i,**" "**1080/25p**" or "**720/50p**") playback in HD quality while the videos recorded in SD quality (resolution of "**576/50p**" or "**Web & Mobile**") playback in the SD quality.
- This camcorder is provided with the "**TV Connect Guide**" menu function. If you try to connect the camcorder to a TV (without using the user manual), use the "**TV Connect Guide**" menu function. ➥page 101
- You must use the provided component/AV cable. Do not use cables from other manufacturers.
- This camcorder supports the Mini HDMI cable (C to A) only.
- The HDMI jack on the camcorder is provided for the output usage only.
- If the Anynet+ supported TV is connected with the camcorder, turning on the camcorder may turn the TV's TV power on. (Anynet+ function) If you don't want this function, set "**Anynet+ (HDMI-CEC)**" to "**Off.**" ➥page 104
- Use only the HDMI 1.3 cable when connecting to the HDMI jack of this camcorder. If the camcorder is connected with other HDMI cables, the screen display may not work.
- When the resolution is set to 1080/50p, the camcorder cannot output with the connected TV simultaneously.

CONNECTING TO A REGULAR TV

You can enjoy images recorded with your HD camcorder on a regular TV that supports standard definition. **Images recorded with SD (standard definition) image quality (i.e. resolution of "1080/50p," "1080/50i," "1080/25p,"or "720/50p") are played back with SD (standard defintion) image quality.**
The connection methods and quality of the image viewed on the TV screen differ depending on what type of TV is connected , and the connectors used. This HD camcorder supports both component and composite output for standarddefinition video transfer.

PRECHECK!

- Check your TV connection jack and select the connection method depending on the component or the composite jack. For more information about the connection jack and the method, refer to the TV user manual.
- **This HD camcorder provides the two-in-one component/AV cable that fits the purpose of the component and the AV cable. Therefore, when using the component/AV cable, you must check the right method for the TV output by setting the "Analog TV Out" menu**. ➥page 103

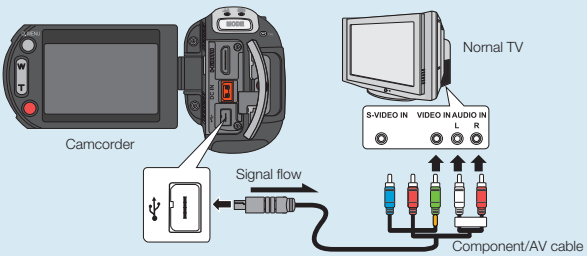


Type A: Connecting a Component/AV cable for the component output

1. Connect the provided component/AV cable to the component jack, "**Y-P_B-P_R** (Video) and **L-R** (Audio)" on your TV.
   - After the connection is complete, set "**Analog TV Out**" to "**Component.**" ➥page 103
2. Turn on the TV and set the input selector to the Input connection your camcorder is connected to. Refer to the TV instruction manual for how to switch the TV output.

connecting to a TV

Type B: Connecting a Component/AV cable for the composite output.



Type B: Connecting a Component/AV cable for the composite output

1. Connect the provided component/AV cable to the Composite jack, "**Video** and **L-R** (Audio)" on TV. Use the Green plug with the yellow label to connect to the Video input on your TV.
   - After the connection is complete, check the desired TV out method by setting "**Analog TV Out**" to "**Composite.**" ➥page 103
2. Turn on the TV and set the input selector to the Input connection your camcorder is connected to.
   - This is often referred to as "line."
   - Refer to the TV instruction manual for how to switch the TV input.

If the **P_B, P_R**, or **Y** jack receives the wrong direction from the connected cable, the TV screen appears in red or turn out to be blue screen.

- Check the connection status between the HD camcorder and TV, the TV screen may not deliver the right video information if connected in a wrong way.
- When the camcorder is connected to TV with more than one cable, the output signal is followed in the order of priority:
  HDMI → Component/AV output.
- Do not use excessive force when connecting the cables.
- For more information about the TV connection jack and the connecting method, refer to the TV user manual.
- Following method **Type B** above, the Green plug may not match the Video input on your TV due to the VIDEO input being labeled differently. Sometimes the TV set has a "**Y**" input jack instead of "**VIDEO.**"
- When the resolution is set to 1080/50p, the camcorder cannot output with the connected TV simultaneously.

VIEWING ON A TV SCREEN

You can enjoy the enjoy widescreen videos on a HDTV (or the normal TV) after recording videos using the HD camcorder.

1. You will find the video, being playback on TV if the connection status is set correct. ➥pages 117~120
   - The TV jacks are connected with the right cables?
   - If the component/AV cable is used, “Analog TV Out” is set correctly?
   - Input source list is correctly set to view the playback from the camcorder?
2. Select the playback mode on your camcorder and start playback videos.
   - Use the same methods for the operation modes including the playback.
   - This HD camcorder supports the Anynet+ function, therefore, you can use the same remote control for both devices if connected with HDMI cable to the Anynet+ support TV. ➥page 104

- Adjust the volume at the moderate level. If the volume is too high, the video information may include the noise.
- If the “**TV Display**” is set “**Off,**” TV screen does not include the OSD (On Screen Display) menus. ➥page 102
- This camcorder does not support the audio output signal when the camcorder is connected with TV in the video or photo record mode. The audio output signal is supported as long as the camcorder is connected in the video playback mode. This is not an error.
- When the resolution is set to 1080/50p, the camcorder cannot output with the connected TV simultaneously.

Playback on a TV

- Images recorded on this camcorder are variously viewed depending on the aspect ratio of the connected TV and TV type setting on this camcorder. Set the appropriate screen ratio according to your TV.

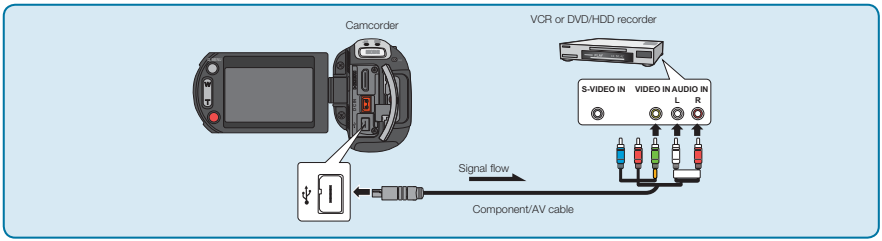
Recording ratio	TV Type setting	Wide (16:9) TV	4:3 TV
Images recorded in a 16:9 ratio • Video Image • Photo capture images • Photo Image	16:9		
	4:3		
Images recorded in 4:3 ratio • Video Image • Photo images • Photo capture images	16:9		
	4:3		
Images in the Slow Motion mode	16:9		
	4:3		

- Refer to page 102 for “**TV Type**” setting.

DUBBING TO VCR OR DVD/HDD RECORDERS

You can dub images played back on you camcorder to other recording devices, such as VCRs or DVD/HDD recorders. This is a convenient way of distributing the dubbed media. Connect the device as the following way. Connect your camcorder to the wall outlet using the supplied AC power adaptor for this operation. Refer to the instruction manuals supplied with the devices to be connected. **PRECHECK!**

Since dubbing is performed via analog data transfer (composite connection), use the supplied component/AV cable.



1. Turn on your camcorder, and touch the play(▣) tab.
   - Set "**TV Type**" according to the display device ➥ page 102
   - **Touch the Menu(MENU) ➝ Setting (⚙)tab ➝ "Analog TV Out" ➝ "Composite."** ➥page 103
2. Insert the recording media in the recording device.
   - If your recording device has an input selector, set it to the input mode.
3. Connect your camcorder to the recording device (VCR or DVD/HDD recorder) with the supplied component/AV cable (composite connection).
   - Connect your camcorder to the input jacks of the recording device.
4. Start the playback on your camcorder, and record it on the recording device.
   - Refer to the instruction manuals supplied with your recording device for details.
5. When dubbing is finished, stop the recording device, and then your camcorder.
   - Refer to the instruction manuals supplied with your recording device for details.

- **Videos recorded on this camcorder can be dubbed by connecting with the supplied component/AV cable. All the recorded videos will be dubbed with SD (standard definition) image quality, regardless of the recording resolution (HD/SD).**
- You cannot dub to recorder with an HDMI cable.
- To copy a video recorded with HD (high definition) image quality, use the built-in software of your camcorder, and copy the images in the computer.
- Since dubbing is performed via analog data transfer, the image quality may deteriorate.
- To hide the screen indicators (such as a counter, etc.) on the screen of the monitor device connected, set "TV Display: Off." ➥page 102
- To record the date/time, display it on the screen. ➥page 102
- When you are connecting your camcorder to a monaural device, connect the green plug of the component/AV cable to the video input jack, and the red (right channel) or the white (left channel) plug to the audio input jack on the device.

using with a Windows computer

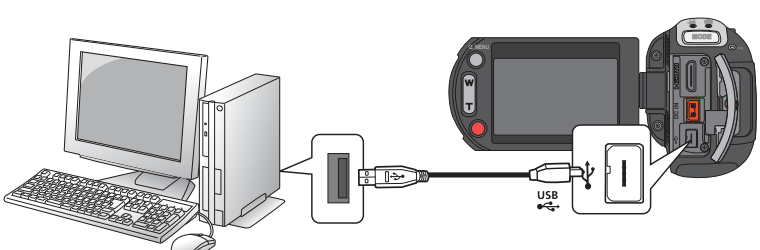
CHECKING YOUR COMPUTER TYPE

This chapter explains how to connect the camcorder to a computer using the USB cable.
Read this chapter carefully and be free from your burden of handling two devices at the same time.

Check your computer type before using!!!

To view your recordings on a computer, you need to check your computer type first. And then, take the steps below according to your computer type.

Using with Windows		Using with Macintosh
Connect your camcorder to the computer using the USB cable. • The built-in editing software, Intelli-studio runs on the PC automatically once the camcorder is connected to Windows computer. (When you specify "**PC Software: On**"). ➥page 97		• The built-in software on your camcorder, 'Intelli-studio' is not Macintosh compliant.
Play back or edit your recordings on the computer using the built-in studio, Intelli-studio application. ➥page 127		
You can also upload your recordings to YouTube or other web site using the Intelli-studio. ➥page 128		



WHAT YOU CAN DO WITH A WINDOWS COMPUTER

You can enjoy the following operations by connecting your camcorder to your Windows computer by using a USB cable.

Main Functions

- By using the built-in editing software, 'Intelli-studio' on your camcorder, you can enjoy the following operations.
  - Playing back recorded videos or photos. ➥page 127
  - Editing recorded videos or photos. ➥page 127
  - Uploading the recorded videos and photos to YouTube or Flickr, FaceBook, etc. ➥page 128
- You can transfer or copy the files (videos and photos) saved on the storage media into your computer. (the mass storage function) ➥page 129

System Requirements

The following requirements must be satisfied to use built-in editing software (Intelli-studio):

Items	Requirement
OS	Microsoft Windows XP SP2, Vista or Windows7
CPU	Intel® Core 2 Duo® 2.0 GHz or higher is recommended AMD Phenom™ 2.4 GHz or higher is recommended (Notebook: Intel Core2 Duo 2.2GHz or AMD Dual-Core 2.6GHz above recommended)
RAM	1GB or higher is recommended
Video Card	nVIDIA Geforce 8500 or higher Ati 2600 series or higher
Display	1024 x 768, 16-bit colour or higher (1280 x 1024, 32-bit colour recommended)
USB	USB 2.0
Direct X	DirectX 9.0c or higher
Memory Requirement	An SDHC card of Class 6 or above

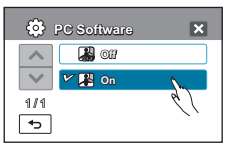
- System requirements mentioned above are recommendations. Even on a system that satisfies the requirements, operations may not be ensured depending on the system.
- On a slower computer than recommended, video playback may skip frames or operate unexpectedly.
- When the version of DirectX on your computer is lower than 9.0c, install the programme with the version of 9.0c or higher.
- It is recommended to transfer the recorded videos to a PC before playing back or editing the videos.
- Using with a laptop requires higher system requirements than those of desktop PC.

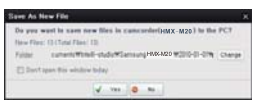
USING THE INTELLI-STUDIO Programme

Using the Intelli-studio programme built-in your camcorder, you can transfer video/photo files onto your PC and edit them on your computer. The Intelli-studio offers the most convenient way for you to manage the video/photo files by using the simple USB cable connection between the camcorder and your PC.

Step 1. Connecting the USB cable

1. Set the menu setting to "**PC Software: On.**"
   - You will find the default menu settings are set as the above.
2. Connect the camcorder and the PC with the USB cable.
   - A new file saving screen appears with the Intelli-studio main window.
   - According to your computer type, the corresponding removable disk window appears.
3. Click **"Yes,"** the uploading procedure will start. Click **"Yes"** to confirm.
   - If you do not want to save a new file, select "**No.**"





To disconnect the USB cable

After completing the data transfer, make sure to disconnect the cable in the following way:

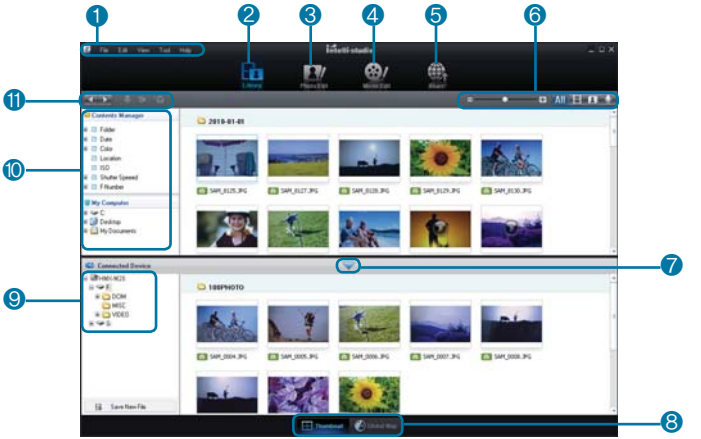
1. Click the **"Safely Remove Hardware icon"** icon on the taskbar.
2. Select **"USB Mass Storage Device,"** and then click **"Stop."**
3. If the "**Stop a Hardware device**" window appears, click "**OK.**"
4. Disconnect the USB cable from the camcorder and PC.

- Use the provided USB cable.
- Don't apply excessive force when inserting or extracting the USB cable into/from a USB jack.
- Insert a USB after checking the direction of its insertion is correct.
- We recommend using the AC power adaptor as the power supply instead of the battery pack.
- When the USB cable is connected, turning the camcorder on or off may cause the PC to malfunction
- If you disconnect the USB cable from the PC or the camcorder while transferring data, the data transmission will stop and the data may be damaged.
- If you connect the USB cable to a PC via a USB HUB or simultaneously connect the USB cable along with other USB devices, the camcorder may not work properly. If this occurs, remove all USB devices from the PC and reconnect the camcorder.
- According to your computer type, the Intelli-studio programme may not automatically run. In this case, open the desired CD-ROM drive that has the Intelli-studio programme in My Computer and run iStudio.exe.
- When a USB cable is connected, if you have EmoDio (Samsung's MP3 player software) installed on your computer, the EmoDio software may load first.

using with a Windows computer

Step 2. About the Intelli-studio main window

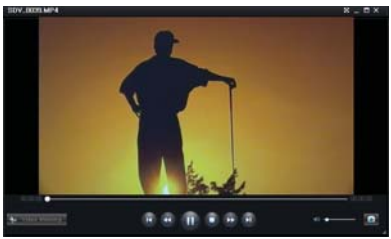
- When the Intelli-studio starts up, thumbnails of videos and photos are displayed in the main window. The window is divided into upper and lower sections. The upper section contains video/photo thumbnails currently stored on your computer. The lower section contains thumbnails stored on your camcorder (connected device).



1 Menu items
2 Switches to Library of the PC and connected camcorder.
3 Switches to Photo Edit mode.
4 Switches to Movie Edit mode.
5 Switches to Share mode.
6 Changes the size of thumbnails.
   - All Displays all files (videos and photos).
   - Displays video files only.
   - Displays photo files only.
   - Displays voice files only.
7 Minimizes the Connected Device screen.
8 Displays videos and photos in various ways.
   - Thumbnail: Displays video and photo thumbnails
   - Global Map: Displays the location of shooting place with a map.
9 Selects the Connected Device.
10 Shows directories of My Folder and My Computer
   - My Folder: You can classify and manage videos and photos on your computer.
   - My Computer: You can view videos and photos saved in the selected directory of your PC.
11 Shortcut icons
   - Navigates files (previous and next).
   - Prints selected photo(s).
   - Views location of selected photo(s) with GPS information.
   - Registers to My Folder.

Intelli-studio programme is built in both Samsung camcorders and Samsung digital cameras. Some functions on the programme may not work depending on the product.

Step 3. Playing back the videos (or photos)



- You can play back the recordings conveniently using the Intelli-studio application.

1. Run the Intelli-studio programme. ➥page 125
2. Click the desired folder to display your recordings.
   - Video (or photo) thumbnails appear on the screen, according the selected source.
3. Choose the video (or photo) that you want to play.
   - You can check the file information by moving the mouse on over the file.
   - Clicking on a video thumbnail once will show the video playback inside the thumbnail frame, allowing you to search for a desired video with ease.
4. Once you select the desired video (or photo), double-click to play back.
   - Playback starts and playback controls appear.

The following is the file format supportable in Intelli-studio:
- Video formats: MP4 (Video: H.264, Audio: AAC), WMV (WMV 7/8/9)
- Photo formats: JPG, GIF, BMP, PNG, TIFF

Step 4. Editing the videos (or photos)

With Intelli-studio, you can edit videos or photos in various ways. (Change Size, Fine-Tuning, Image Effect, Insert Frame, etc.)

- To edit a file using the Intelli-studio, ensure to use a copy of the desired file saved in My Computer before clicking on the “Edit” (/) icon.

Step 5. Sharing the video/photos online

Share your contents with the world, by uploading photos and videos directly to a web site with one click.

1. Select the desired videos or photos to share.
2. Click ( ) on the browser.
   - The selected file appears on the sharing window.
3. Click the website you would like to upload files.
   - You can choose **"YouTube," "Flickr,"** **"Facebook"**or the specified website you want to set for your uploading management.
4. Click **"Upload"** to start uploading.
   - A pop up window appears asking your ID and the password.
5. Enter your ID and the password to access.
   - Access to the web site contents can be limited depending on your web access environment.

For more information about Intelli-studio use, see the Help Guide by clicking the **"Help" → "Help."**

Installing Intelli-studio application on the Windows computer

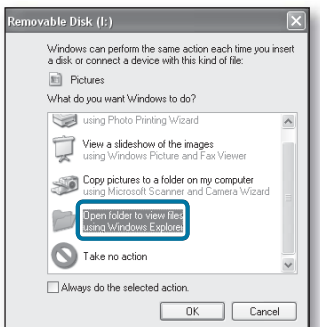
- When the Intelli-studio application is installed on a Windows computer, it will run faster after connecting the camcorder to your computer. Moreover, the application can be updated automatically and run directly in the Windows computer.
- The Intelli-studio application can be installed on a Windows computer as follows:
  Click on **"Tools" → "Install Intelli-studio on PC."** in the Intelli-studio screen.

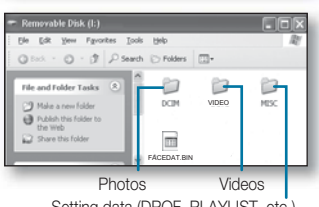
USING AS A REMOVABLE STORAGE DEVICE

You can transfer recorded data to a Windows computer by connecting the USB cable to the camcorder.

Step 1. Viewing the contents of storage media

1. Check out the "**USB Connect: Mass Storage**" setting. ➥page 129
2. Check out the "**PC Software: Off**" setting. ➥page 97
3. Check out the storage media.
   (If you want to record on a memory card, insert the memory card.)
4. Connect the camcorder to the PC with the USB cable. ➥page 125
   - The "Removable Disk" or "Samsung" window appears on the PC's screen after a moment.
   - The removable disk appears when connecting a USB.
   - Select "Open folders to view files using Windows Explorer" and click "OK."
5. The folders in the storage media appear.
   - Different file types are stored in different folders.
6. Save the desired files from the storage media to your PC.





- If the "Removable Disk" window does not appear, confirm the connection (➥page 125) or perform steps 1 and 2 again.
- When the removable disk does not appear automatically, open the removable disk folder of My Computer.
- If the connected camcorder's disk drive does not open or the context menu that appears when right clicking your Mouse (open or browse) appears broken, your computer is suspected to be infected by Autorun virus. It is recommended to update the anti-virus software for its latest version.

Structure of folders and files on the storage media

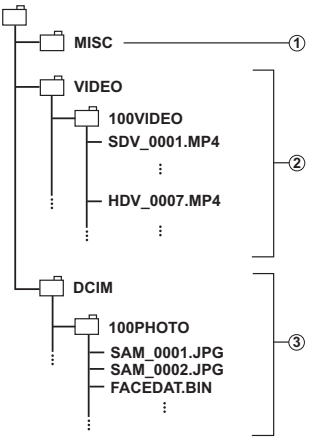
- The folder and file structure for storage media is as follows:
- The file naming follows DCF (Design rule for Camera File System).

Video file (H.264)

- The HD-quality videos have HDV_####.MP4 format.
- The SD-quality videos have SDV_####.MP4 format.
- The file number automatically increases when a new video file is created.
- Up to 999 files are created in one folder, and new folder is created when the files exceed more than '999.'

Photo file

- As in video files, the file number automatically increases when a new photo file is created.
- A new folder stores files from SAM_0001.JPG.
- The folder name increases in the order of 100PHOTO → 101PHOTO, etc.
- Up to 999 files are created in one folder, and new folder is created when the files exceed more than '999.'



File format

Video files

- Video files are compressed in H.264 format. The file extension is ".MP4."
- Refer to page 61 for the video resolution.

Photo files

- Photo images are compressed in JPEG (Joint Photographic Experts Group) format. The file extension is ".JPG."
- Refer to page 62 for the photo resolution.

- When the 999th file is created in the 999th folder (i.e. HDV_999.MP4 is created in the 999 VIDEO folder), a new folder cannot be created anymore. Set "File No." to "Reset" at this time.
- The name of a movie file recorded by the camcorder should not be modified, since proper playback by the camcorder requires original folder and file naming convention.

WARNING INDICATORS AND MESSAGES

Problems may occur because of the following reasons. Check the information and take corrective action.

Battery pack

Message	Icon	Informs that...	Action
Low Battery	-	The battery pack is almost discharged.	• Replace with a charged battery or connect the AC power adaptor.
Low Battery Connect AC adaptor and try again	-	A function is inoperable due to the exhausted battery.	• Replace with a charged battery or connect the AC power adaptor.
Check the authenticity of this battery	-	The battery pack can not pass authenticity check.	• Check whether the battery is authentic and change to new one. • It is recommended that only genuine Samsung batteries are used in this camcorder.

Storage media

Message	Icon	Informs that ...	Action
Insert card		There is no memory card inserted in the memory card slot.	• Insert a memory card.
Card Full!		There is not enough space to record on memory card.	• Delete unnecessary files on the memory card. • Back-up files to PC or another storage media and delete files. • Change memory card to another one has enough free space.
Card Locked		The write protection tab on an SD or SDHC card has been set to lock.	• Release write protection tab.
Unknown		The memory card cannot be recognised in cases of Card Error, Not Formatted or Not Supported Card.	• Insert the proper memory card that has a supported file format.
Card Error		The memory card has some problem and can not be recognised.	• Change memory card with another one.
Not Formatted		The memory card is not formatted.	• Format the memory card using the menu.
Not Supported Format		The memory card may have been formatted by another device and may still have existing images on it.	• The image format is not supported. Check the supported file format. • Format the memory card using menu item.
Not Supported Card		The memory card is not supported in this camcorder.	• Change the memory card with the one recommended.
Low Speed Card. Please record a lower resolution	-	The memory card does not have enough performance to record.	• Record video at a lower quality. • Change memory card with a one.

WARNING INDICATORS AND MESSAGES

Recording

Message	Icon	Informs that ...	Action
Write Error To recover file, please restart.	-	Some problem occured while writing data to storage media.	• Turn the camcorder's power off and on for data recovery. • If a file is not recovered, format storage media using menus after back-up important files to PC or another storage media.
Release the SMART AUTO	-	You can not operate some functions manually when SMART AUTO is activated.	• Release SMART AUTO function.
Recovering Data… Don't power off and keep card inside.	-	The file was not created normally.	• Wait until data recovery is finished. • Never turn off the power or eject memory card during recording.
The limit of video files is reached. Cannot record video.	-	The number of video files that can be stored is 9,999.	• Delete unnecessary files on the memory card. • Back up files to your PC or another storage media and delete files. • Change with another card which has enough free space.
The limit of photo files is reached. Cannot take a photo.	-	The number of photo files that can be stored is 9,999.	• Delete unnecessary files on the memory card. • Back up files to your PC or another storage media and delete files. • Change with another card which has enough free space.
File Limit is reached. Cannot record video. Set File No. Reset and format the Card.	-	Folder and file number have reached maximum number and you can not record	• Set "**File No.**" to "**Reset.**" and format the card.
File Limit is reached. Cannot take a photo. Set File No. Reset and format the Card.	-	Folder and file number have reached maximum number and you can not record.	• Set "**File No.**" to "**Reset.**" and format the card.

Playback

Message	Icon	Informs that ...	Action
Total file size is over 3.8GB.	-	Total file size that can be combined is limited to 3.8GB.	• Combined files must be less than 3.8GB.
Select 5 files for combine.		You can not combine more than 5 different videos into one.	• It is possible to combine up to 5 different videos into one.
Different format	-	The files you want to combine have different resolutions.	• It is not possible to combine the files that have different resolutions.
Read Error	-	Some problems occured when reading data from thestorage media.	• Format the storage media using menus after backing up important files to a PC or another storage device.
Corrupted file	-	This file can not be read.	• Format the storage media using menus after back up important files to a PC or another storage device.
Not enough free space in Card	-	File editing functions can not be performed because there is not enough free space in the memory card.	• Delete unnecessary files on the storage media. • Back up files to a PC or another storage media and delete files.
Cannot edit the time lapse recorded file.	-	The file that is recorded as the Time Lapse REC can not be edited.	• It is impossible to edit the file being recorded as the Time Lapse REC.

WARNING INDICATORS AND MESSAGES

USB

Message	Icon	Informs that...	Action
Fail Printer Connecting Change 'USB Connect'	-	A problem occured when connecting the camcorder via USB to a printer.	• Check the USB cable. • Try the connection procedure again. • Switch "**USB connect**" function to "**PictBridge.**"
Fail USB Connecting Change 'USB Connect'	-	A problem occured when connecting the camcorder via USB to a PC.	• Check the USB cable. • Try the connection procedure again. • Switch "**USB connect**" function to "**Mass Storage.**"
Ink Error	-	There is a problem with the ink cartridge.	• Check the ink cartridge. • Put a new ink cartridge in the printer.
Paper Error	-	There is a problem with the paper.	• Check the paper in the printer. If there is no paper, insert the paper.
File Error	-	There is a problem with the file.	• Your camcorder does not support this file format. • Try another file recorded on your camcorder.
Printer Error	-	There is a problem with the printer.	• Turn the printer's power off and on. • Contact the printer manufacturer's service centre.
Print Error	-	A problem occured during printing.	• Do not remove power source or eject memory card during printing.

When there is dew condensation, put the camcorder aside for a while before using

- What is dew condensation?
  Dew condensation happens when a camcorder is moved to a place where there is a significant temperature difference from the previous place. The Dew condenses on the external or internal parts of the camcorder, and on the reflection lens. When this happens, it may cause a malfunction or damage to the camcorder when using the device with the power on while there is dew condensation.
- What can I do?
  Turn the power off and detach the battery pack, and leave it in a dry area for 1~2 hours before using it.
- When does the dew condensation occur?
  When the device is relocated to a place with a higher temperature than the previous location, or when using it in a hot area suddenly, it will cause condensation.
  - When recording outside in cold weather during the winter and then using it in indoors.
  - When recording outside in hot weather after being indoors or inside a car where the A/C was running.

TROUBLESHOOTING

Before contacting a Samsung authorized service centre, perform the following simple checks. They may save your time and expense of an unnecessary call.

Power

Symptom	Explanation/Solution
The camcorder does not turn on.	• The battery pack may not be installed on your camcorder. Insert a battery pack to the camcorder. • The inserted battery pack may be discharged. Charge the battery pack or replace it with a charged one. • If you use the AC power adaptor, make sure it is properly connected to a wall outlet.
The power turns off automatically.	• Is **"Auto Power Off"** set to **"5 Min"**? If no button is pressed for about 5 minutes, the camcorder is automatically turned off (**"Auto Power Off"**). To disable this option, change the setting of **"Auto Power Off"** to **"Off."** ➥page 100 • The battery pack is almost exhausted. Charge the battery pack or replace it with a charged one.
Power cannot be turned off.	• Remove the battery pack or unplug AC power adaptor, and connect the power supply to the camcorder again before turning it on.
The battery pack is quickly discharged.	• The temperature is too low. • The battery pack is not fully charged. Charge the battery pack again. • The battery pack reached its lifespan and cannot be recharged. Use another battery pack.

Storage Media

Symptom	Explanation/Solution
Memory card functions are not operable.	• Insert a memory card into your camcorder properly. ➥page 35 • If you use a memory card formatted on a computer, format it again directly on your camcorder. ➥page 98
Image cannot be moved or deleted.	• Release the lock on the write-protect tab of the memory card (SDHC/SD memory card), if any. ➥page 36 • You cannot move or delete the protected images. Release the protection of the image on the device. ➥page 112
You cannot format the memory card.	• Release the lock on the write-protect tab of the memory card (SDHC/SD memory card), if any. ➥page 36 • The memory card is not supported on your camcorder or card has some problems.
The data file name is not indicated correctly.	• The file may be corrupted. • The file format is not supported by your camcorder. • Only the file name is displayed if the directory structure complies with the international standard.

Display

Symptom	Explanation/Solution
The TV screen or LCD display has distorted images or has stripes at the top/ bottom or on the left/right.	• It can occur when recording or viewing a 16:9-ratio image on a 4:3-ratio TV, or vice versa. For more details, see the display specification.➥page 121
Unknown image appears on the LCD screen.	• The camcorder is in Demo mode. If you do not want to see Demo image, change the setting **"Demo"** to **"Off."** ➥page 104
Unknown indicator appears on the screen.	• A warning indicator or message appears on the screen. ➥pages 131~133
The afterimage remains on the LCD screen.	• This occurs if you disconnect the AC power adaptor or remove the battery pack before turning the power off.
The image on the LCD screen looks dark.	• Ambient light too bright. Adjust the brightness and angle of LCD. • Use LCD enhancer function.

TROUBLESHOOTING

Recording

Symptom	Explanation/Solution
Pressing the **Recording start/stop** button does not start recording.	• Press the **MODE** button to set **Video** ( ). ➥page 49 • There is not enough free space to record on the storage media. • Check if memory card is not inserted or write-protect tab is set to lock.
The actual recording time is less than the estimated recording time.	• The estimated recording time may vary depending on content and features used. • When you record an object that moves fast, the actual recording time may be shortened.
The recording stops automatically.	• There is no more free space for recording on the storage media. Back up important files on your PC and format the storage media or delete the unnecessary files. • If you make recordings or delete files frequently, the performance of the storage media will be deteriorated. In this case, format the storage media again. • If you use the memory card with low writing speed, the camcorder automatically stops recording the videos and the corresponding message appears on the LCD screen.
When recording a subject illuminated by bright light, a vertical line appears.	• This is not a malfunction.
When the screen is exposed to direct sunlight during recording, the screen becomes red or black for an instant.	• This is not a malfunction.
During recording, the date/time does not display.	• **"Date/Time Display"** is set to **"Off."** Set the **"Date/Time Display"** to On. ➥page 102
You cannot record a photo image.	• Set your camcorder to Photo mode. ➥page 49 • Release the lock on the write-protection tab of the memory card if any. • The storage media is full. Use a new memory card or format the storage media. ➥page 98 Or remove unnecessary images. ➥page 113
The shutter sound is not heard when you record a photo image.	• Set **"Shutter Sound"** to **"On."**
The beep sound is not heard.	• Set "**Beep Sound**" to "**On.**" • Beep sound is temporary off while recording videos.
There is a time difference between the point where you press **Recording start/stop** button and the point where the recorded video starts/stops.	• On your camcorder, there may be a slight time delay between the point when you press **Recording start/stop** button and the actual point where the recorded video starts/stops. This is not an error.
The aspect ratio (16:9/4:3) of a video cannot be changed.	• The aspect ratio of a video at 16:9 cannot be changed to 4:3.
Horizontal stripes appear on the images.	• This occurs when recording images under a fluorescent lamp, sodium lamp, or mercury lamp. This is not a malfunction.

Adjusting the image during recording

Symptom	Explanation/Solution
Focus does not adjust automatically.	• Set **"Focus"** to **"Auto."** ➥page 70 • The recording conditions are not suitable for auto focus. Adjust the focus manually. ➥page 70 • The lens is dusty on the surface. Clear the lens and check the focus. • Recording is being made in a dark location. Use a light to brighten the area.
The image appears too bright or flickering, or changes in colour.	• This may occur when you make a recording under a fluorescent sodium or mercury lamp. Cancel **"*i*SCENE"** to avoid or minimise this phenomenon. ➥page 60
Image's colour balance is not natural.	• White balance adjustment is required. Adjust to the proper **"White Balance."** ➥page 64
The subject passing by the frame appears very quickly.	• This is called the focal plane phenomenon. This is not a malfunction. Because of the way the image device (CMOS sensor) reads out video signals, the subject passing by the frame rapidly may appear to bend, depending on the recording condition.
When the camcorder is connected to the external device, no image is displayed on the LCD, as well as the screen information on the TV screen.	• When the resolution is set to 1080/50p, the LCD and the TV screen cannot output simultaneously. Only the screen information is displayed on the LCD, while the screen is output on the TV.

TROUBLESHOOTING

Playback on your camcorder

Symptom	Explanation/Solution
Playback (Play/Pause) function does not work.	• Image files recorded using another device may not be played on your camcorder. • Check out the memory card compatibility. ➥page 36
Photo images stored on a storage media are not displayed in the actual size.	• Photo images recorded on other device may not appear in the actual size. This is not an error.
Playback is interrupted unexpectedly.	• Check if the AC power adaptor or battery back is properly connected and secure.

Playback on other devices (TV, etc)

Symptom	Explanation/Solution
You cannot view the image or hear the sound from the connected device.	• Connect the audio of the Component/AV cable to your camcorder or connected device (TV, HD recorder, etc). (Red colour- right, White colour- left) • The connection cable (Component/AV cable) is not connected properly. Make sure that the connection cable is connected to the proper jack. ➥pages 118~120 • When you are using the Component/AV cable, make sure the red and white plugs of your Component/AV cable are connected. ➥pages 118~120 • This camcorder does not support the audio output signal when the camcorder is connected with TV in the video or photo record mode. The audio output signal is supported as long as the camcorder is connected in the video playback mode. This is not an error.
The image appears distorted on a TV.	• This happens when TV type of the camcorder is different from the TV. Set the TV type to match the aspect ratio of your TV. ➥page 102
You cannot view the image or hear the sound from a TV connected using the HDMI cable.	• Images will not be output from the HDMI jack if the material is copyright protected.

Connecting/Dubbing with other devices (Recorder, PC, Printer, etc)

Symptom	Explanation/Solution
You cannot dub correctly using the HDMI cable.	• You cannot dub images using the HDMI cable.
You cannot dub correctly using the Component/AV cable.	• The Component/AV cable is not connected properly. Make sure that the Component/AV cable is connected to the proper jack, i.e. to the input jack of the device used for dubbing images from your camcorder. ➥page 122
Printouts cannot be made using a PictBridge printer.	• Your printer may not print images edited on a computer or recorded using other device. This is not an error.

TROUBLESHOOTING

Connecting to a computer

Symptom	Explanation/Solution
The computer does not recognise your camcorder.	• Disconnect the USB cable from the computer and camcorder, restart the computer, then connect it again correctly.
Cannot play a video file properly on a PC.	• A video codec is needed to play the file recorded on your camcorder. Install the software provided with your camcorder. ➥page 128 • Make sure you insert the connector in the correct direction, and connect the USB cable to the USB jack on your camcorder firmly. • Disconnect the cable from the computer and camcorder, restart the computer. Connect it again properly. • To play back an HD video file, a computer with better specification is required. Check a computer with recommended specification. ➥page 124
Intelli-studio does not function properly.	• Exit the Intelli-studio application, and restart the Windows computer.
Intelli-studio is not performed.	• Set PC Software to on in the Settings menu or install Intelli-studio in the computer. ➥pages 125~128
The image or sound on your camcorder is not played on your computer properly.	• Video playback or sound may stop temporarily depending on your computer. The video or sound copied to your computer is not affected. • If your camcorder is connected to a computer that does not support Hi-speed USB (USB2.0), the image or sound may not be played correctly. The image and sound copied to your computer are not affected.
The playback screen is paused or distorted.	• Check the system requirements to play a video. • Exit other all applications running on the current computer. • If a recorded video is played on your camcorder connected to a computer, the image may not play smoothly, depending on the transfer speed. Please copy the file to your PC, and then play it back.

Overall operations

Symptom	Explanation/Solution
The date and time are incorrect.	• Has the camcorder been left unused for a long period of time? The backup built-in rechrgeable battery may be discharged. ➥page 33

Menu items that cannot be used at the same time

Symptom	Cannot use	Because of the following settings
Menu items are grayed out	Shutter	“Cont. Shot:High Speed”
	“Focus:Touch Point”	Slow Motion
	3D-NR	“Resolution:1080/50p”
	“Quality:Super Fine”	“Resolution:720+576/25p”

- You cannot select grayed items in the current recording/playback mode.
- There are some functions you cannot activate simultaneously. The list shown above shows examples of unworkable combinations of functions and menu items.
- Menu and quick menu cannot be used in SMART AUTO mode.
- Some functions cannot be used at the same time. In this case, a message appears and asks if you accept that the related function is disabled. Touch “Yes,” to disable the related function setting and then continue the menu setting as you desired.

MAINTENANCE

Your camcorder is a product of superior design and craftsmanship and should be treated with care.
The suggestions below will help you fulfill any warranty obligations and allow you to enjoy this product for many years.

- For safekeeping of the camcorder, turn off the camcorder.
  - Remove the battery pack and AC power adaptor. ➥page 24
  - Remove the memory card. ➥page 35

Cautions when storing

- **Do not leave the camcorder in a place where the temperature is very high for a long period of time:**
  The temperature inside a closed vehicle or trunk can become very high in a hot weather. If you leave the camcorder in such a place, it could malfunction or the case could be damaged. Do not expose the camcorder to a direct sunlight or place it near a heater.
- **Do not store the camcorder in a place where the humidity is high or in a dusty place:**
  Dust entering the camcorder could cause a malfunction. If humidity is high, the lens could become moldy, and the camcorder could become inoperative. It is recommended that you put the camcorder in a box together with a small silica bag when storing it in a closet, etc.
- **Do not store the camcorder in a place subject to strong magnetism or intense vibration:**
  This could cause malfunctions.
- **Detach the battery pack from the camcorder and store it in a cool place:**
  Leaving the battery pack attached or storing it at a high temperature could shorten its life.

Cleaning the camcorder

Before cleaning, turn off the camcorder and remove the battery pack and AC power adaptor.

- **To clean the exterior**
  - Wipe gently with a soft dry cloth. Do not apply excessive force when cleaning, gently rub the surface.
  - Do not use benzene or thinner to clean the camcorder. The coating of exterior could peel off or the case could deteriorate.
- **To fix the case the LCD screen**
  Wipe gently with a soft dry cloth. Be careful not to damage the monitor.
- **To clean the lens**
  Use an optional air blower to blow out dirt and other small objects. Do not wipe the lens with cloth or your fingers.
  If necessary, wipe gently with lens with a paper.
  - Mold may form if the lens is left dirty.
  - If the lens looks dim, turn off the camcorder and leave it for about 1 hour.

ADDITIONAL INFORMATION

Storage media

- **Be sure to follow the guidelines below to prevent corruption or damage to your recorded data.**
  - Do not bend or drop the storage media, or subject it to strong pressure, jolts or vibrations.
  - Do not splash the storage media with water.
  - Do not use, replace, or store the storage media in locations that are exposed to a strong static electricity or electrical noise.
  - Do not turn off the camcorder power or remove the battery or AC power adaptor during recording, playback, or when accessing the storage media.
  - Do not bring the storage media near to objects that have a strong magnetic field or that emit strong electromagnetic waves.
  - Do not store the storage media in locations with high temperature or high humidity.
  - Do not touch the metal parts.
- **Copy the recorded files to your PC. Samsung shall not be responsible for any lost data. (It is recommended that you copy the data from your PC to other media for storage.)**
- **A malfunction may cause the storage media to fail to operate properly. Samsung will not provide any compensation for any lost contents.**
- **Refer to pages 131~137 for details.**

LCD screen

Before cleaning, turn off the camcorder and remove the battery pack and AC power adaptor.

- **To clean the exterior**
  - Do not push it too hard or knock it on anything.
  - Do not place the camcorder with the LCD screen facing the bottom.
- **To prolong the service life, avoid rubbing it with a coarse cloth.**
- **Be aware of the following phenomena for LCD screen use. They are not malfunctions.**
  - While using the camcorder, the surface around the LCD screen may heat up.
  - If you leave power on for a long time, the surface around the LCD screen becomes hot.

USING YOUR CAMCORDER ABROAD

- **Each country or region has its own electric and colour systems.**
- **Before using your camcorder abroad, check the following items.**
- **Power sources**
  The provided AC adaptor features automatic voltage selection in the AC range from 100 V to 240 V. You can use your camcorder in any countries/regions using the AC power adaptor supplied with your camcorder within the AC 100 V to 240 V, 50/60 Hz range.
  Use a commercially available AC plug adaptor, if necessary, depending on the design of the wall outlet.
- **Viewing videos recorded with HD (high definition) image quality**
  In countries/regions where 1080/50p is supported, you can view the images with the same HD (high definition) image quality as that of the recorded images. You need an **PAL**-system-based and 1080/50p compatible TV (or monitor) with an HDMI or Component cable connected.
- **Viewing videos recorded with SD (standard definition) image quality**
  To view images recorded with SD (standard definition) image quality, you need an PAL-system-based TV with Audio/Video input jacks. A component cable or Multi-AV cable connected.
- **On TV colour systems**
  Your camcorder is an **PAL**-system-based camcorder.
  If you want to view your recordings on a TV or to copy it to an external device, it must be an **PAL**-system-based TV or an external device and have the appropriate Audio/Video jacks. Otherwise, you may need to use a separate video format transcoder (PAL-NTSC format converter).

The format transcoder is not provided by Samsung.

PAL-compatible countries/regions

Australia, Austria, Belgium, Bulgaria, China, CIS, Czech Republic, Denmark, Egypt, Finland, France, Germany, Greece, Great Britain, Holland, Hong Kong, Hungary, India, Iran, Iraq, Kuwait, Libya, Malaysia, Mauritius, Norway, Romania, Saudi Arabia, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Syria, Thailand, Tunisia, etc.

NTSC-compatible countries/regions

Bahamas, Canada, Central America, Japan, Korea, Mexico, Philippines, Taiwan, United States of America, etc.

You can make recordings with your camcorder and view pictures on the LCD screen from anywhere in the world.

specifications

Model name	HMX-M20SP, HMX-M20BP

System	**Video signal** **Picture compression format** **Audio compression format** **Image device** **Lens** **Focal length**	PAL H.264 (MPEG-4.AVC) AAC (Advanced Audio Coding) 1/2.33" 10M Pixel CMOS F3.5, 8x optical zoom (12x Intelli) 6.3mm~50.4mm
LCD screen	**Size/dot number** **LCD screen method**	2.7" Wide Touch LCD TFT LCD
Connectors	**Composite output** **Component output** **HDMI output** **Audio output** **USB output**	1Vp-p (75 Ω terminated) Y: 1 Vp-p, 75 Ω, Pb/Pr, Cb/Cr: 0.350Vp-p, 75 Ω C type connector -7.5 dBs (600 Ω terminated) USB 2.0
General	**Power source** **Power source type** **Power consumption (Recording)** **Operating temperature** **Storage temperature** **Storage media** **External dimensions (WxHxD)** **Weight** **Internal MIC**	DC 5 V, Lithium Ion battery pack 3.7 V Lithium Ion battery pack, Power supply (100 V ~ 240 V) 50/60 Hz 3.7W (LCD on) 32 ℉~104 ℉ (0 ℃~40 ℃) -4 ℉ ~ 140 ℉ (-20 ℃ ~ 60 ℃) Memory card (SD/SDHC) (Optional) Width 38.3 mm(1.50 inches), Height 56.8 mm(2.23 inches), Length 128.2 mm (5.04 inches) 229g(0.50lb,8.07oz) (Except for Lithium Ion battery pack) Omni-directional stereo microphone

- These technical specifications and design may be changed without notice.

Contact SAMSUNG WORLD WIDE

If you have any questions or comments relating to Samsung products, please contact the SAMSUNG customer care centre.

Region	Country	Contact Centre ☎	Web Site
North America	CANADA	1-800-SAMSUNG(726-7864)	www.samsung.com
	MEXICO	01-800-SAMSUNG(726-7864)	www.samsung.com
	U.S.A	1-800-SAMSUNG(726-7864)	www.samsung.com
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(Applicable in the European Union and other European countries with separate battery return systems)

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To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle them through your local, free battery return system.

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Our product complies with “The Restriction Of the use of certain Hazardous Substances in electrical and electronic equipment”, and we do not use the 6 hazardous materials- Cadmium(Cd), Lead (Pb), Mercury (Hg), Hexavalent Chromium (Cr +6), Poly Brominated Biphenyls (PBBs), Poly Brominated Diphenyl Ethers(PBDEs)- in our products.