SAMSUNG

User Manual

Digital Camcorder

GL-M20SN
GL-M20BN

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!
• When using the AC power adapter with your camcorder, connect the adapter to an outlet with protective grounding.
• Do not expose the camcorder battery to direct sunlight, heaters, radiators, fire, or any other source of excessive heat.

Caution
If you replace the battery with the wrong battery, you can cause an explosion.
Replace only with the same battery or an equivalent type.

Only plug the adaptor plug into a socket that is easily accessible. If any problem occurs with the product, you must pull the plug out of the socket to disconnect the power completely.

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.
- We can not compensate you for damage to or loss of your recorded contents:
  - Samsung cannot compensate you 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-M20SN, HMX-M20BN models.

- The HMX-M20SN, HMX-M20BN do not have built-in flash memory and use memory cards. Although some features of HMX-M20SN, HMX-M20BN models are different, they operate in the same way.
- Illustrations of model HMX-M20SN 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 licenses information, refer to the "Opensource_M20.pdf" in the provided CD-ROM.

Notes regarding trademarks

- All the trade names and registered trademarks mentioned in this manual or other documentation provided with your Samsung product are trademarks or registered trademarks of their respective holders.
- The SD logo is a trademark. The SDHC logo is a trademark.
- Microsoft®, Windows®, Windows Vista® and DirectX® are either registered trademarks or trademarks of the Microsoft Corporation in the United States and/or other countries.
- Intel®, Core™, and Pentium® are the registered trademarks or trademarks of the Intel Corporation in the United States and other countries.
- Macintosh, Mac OS are either registered trademarks or trademarks of Apple Inc. in the United States and/or other countries.
- YouTube is a trademark of Google Inc.
- Flickr™ is a trademark of Yahoo.
- Facebook is a trademark of Facebook Inc.
- HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC.
- Adobe, the Adobe logo, and Adobe Acrobat are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.
- All the other product names mentioned here in may be the trademark or registered trademarks of their respect companies. Furthermore, "TM" and "®" are not mentioned in each case in this manual.

important safety instructions
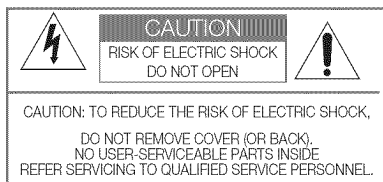
⚠ **CAUTION** RISK OF ELECTRIC SHOCK DO NOT OPEN ⚠	This symbol indicates that dangerous voltage consisting a risk of electric shock is present within this unit.
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.	This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

Warning

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Caution

Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

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

1. Read these instructions.

2. Keep these instructions.

3. Heed all warnings.

4. Follow all instructions.

5. Do not use this apparatus near water.

6. Clean only with dry cloth.

7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11. Only use attachment/accessories specified by the manufacturer.

12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.

14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

important safety instructions

15. Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

16. VENTILATION:
Slots and openings in the cabinet are provided for ventilation to ensure reliable operation of the CAMCORDER and to protect it from overheating. These openings must not be blocked or covered. Never place your CAMCORDER on a bed, sofa, rug, or other similar surface: on or near a radiator or heat register. This CAMCORDER should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

17. POWER SOURCES:
The CAMCORDER should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supply at your home, consult your appliance dealer or local power company. A CAMCORDER is intended to be operated from battery power, or other sources, refer to the operating instructions.

18. GROUNDING OR POLARIZATION:
This CAMCORDER may be equipped with either a polarized 2-wire AC line plug (a plug having one blade wider than the other) or a 3-wire grounding type plug, a plug having a third (grounding) pin. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your outlet. Do not defeat the safety purpose of the polarized plug.

19. POWER-CORD PROTECTION:
Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords or plugs, convenient receptacles, and the point where they exit from the unit.

20. OUTDOOR ANTENNA GROUNDING:
CAMCORDER, be sure the antenna or cable system is grounded to provide some protection against voltage surges and built-up static charges, Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire and supporting structure, grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding to conductors, location of antenna-discharge unit, connection to grounding electrodes and requirements for the grounding electrode. See figure below.

21. LIGHTNING:
For added protection of this CAMCORDER during a lightning storm or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the CAMCORDER due to lightning and powerline surges.
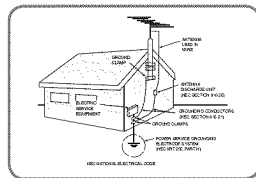
22. POWER LINES:
An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

23. OVERLOADING:

Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.

24. OBJECTS AND LIQUIDS:

Never push objects of any kind into this CAMCORDER through openings as they may touch dangerous voltage points or short out a part that could result in a fire or electric shock. Never spill liquids of any kind onto the CAMCORDER. Should spillage occur, unplug unit and have it checked by a technician before use.

25. SERVICING:

Do not attempt to service this CAMCORDER yourself. Opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

26. DAMAGE REQUIRING SERVICE:

Unplug this CAMCORDER from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a. When the power-supply cord or plug is damaged.

b. If any liquid has been spilled onto, or objects have fallen into the CAMCORDER.

c. If the CAMCORDER has been exposed to rain or water.

d. If the CAMCORDER does not operate normally by following the operating instructions, adjust only those controls that are covered by the operating instructions. Improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the CAMCORDER to its normal operation.

e. If the CAMCORDER has been dropped or the cabinet has been damaged.

f. When the CAMCORDER exhibits a distinct change in performance, this indicates a need for service.

27. REPLACEMENT PARTS:

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer and having the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

28. SAFETY CHECK:

Upon completion of any service or repairs to this CAMCORDER, ask the service technician to perform safety checks to determine that the CAMCORDER is in safe operating order.

29. To prevent damage which may result in fire or shock hazard, do not expose this appliance to rain or moisture.

30. If this power supply is used at 240V ac, a suitable plug adaptor should be used.

31. This product is covered by one or more of the following U.S. patents:

5,060,220 5,457,669 5,561,649 5,705,762
5,987,4176,043,912 6,222,983 6,272,096 6,377,524
6,377,5316,385,587 6,389,570 6,408,408 6,466,532
6,473,7366,477,501 6,480,829 6,556,520 6,556,521
6,556,5226,578,163 6,594,208 6,631,110 6,658,588
6,674,6976,674,957 6,687,455 6,697,307 6,707,985
6,721,2436,721,493 6,728,474 6,741,535 6,744,713
6,744,9726,765,853 6,765,853 6,771,890 6,771,891
6,775,4656,778,755 6,788,629 6,788,630 6,795,637
6,810,2016,862,256 6,868,054 6,894,963 6,937,552

important safety instructions

USER INSTALLER CAUTION:

Your authority to operate this FCC certified equipment could be voided if you make changes or modifications not expressly approved by this party responsible for compliance to part 15 FCC rules.

NOTE:

(Hg) LAMP(S) INSIDE THIS PRODUCT CONTAIN MERCURY AND MUST BE RECYCLED OR DISPOSED OF ACCORDING TO LOCAL, STATE OR FEDERAL LAWS. For details see lamprecycle.org, eiae.org, or call 1-800-Samsung (7267864)

CALIFORNIA USA ONLY

This Perchlorate warning applies only to primary CR (Manganese Dioxide) Lithium coin cells in the product sold or distributed ONLY in California USA

" Perchlorate Material - special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate."

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.
These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help and for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This Booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

FCC Warning

The user is cautioned that changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.
This device complies with Part 15 of FCC Rules.
Operation is subject to the following two conditions;

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

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.
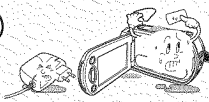
Do not touch the product.

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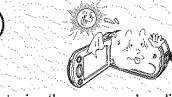
Do not aim the camcorder directly into the sun. Doing so could cause eye injuries, as well as lead to malfunctioning of internal parts of the product.

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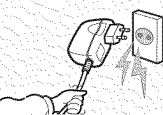
Do not disconnect the AC adaptor by pulling on its power-cord, as this could damage the power-cord.

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

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safety information

Do not connect the AC adaptor unless the plug can be fully inserted with no part of the blades exposed.
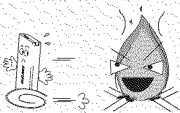
Do not dispose of battery pack in a fire as it may explode.
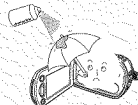
Never use cleaning fluid or similar chemicals to clean the camcorder. Do not spray cleaners directly on the camcorder.

Keep the camcorder away from water when using it 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.
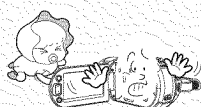
Do not fire the flash directly in front of someone's eyes (especially infants). Doing so may cause impaired vision.
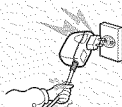
Do not plug or unplug the power cord with wet hands. There is a risk of electric shock.

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 center. There is a risk of fire or personal injury.
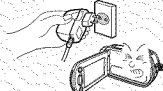
If the camcorder malfunctions, immediately detach the AC adaptor or battery from the camcorder. There is a risk of fire or injury.
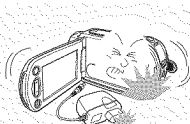
Do not attempt to disassemble, repair, or modify the camcorder or the AC adaptor to avoid a risk of fire or electric shock.
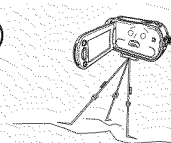
⊕ CAUTION
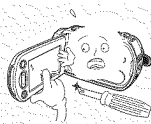
Do not press the surface of the LCD with force, or hit it with a sharp object. If you push the LCD surface, display unevenness may occur.

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.
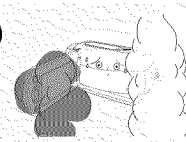
Do not use the camcorder on a tripod (not supplied) in a place where it is subject to severe vibrations or impact.
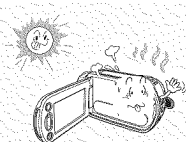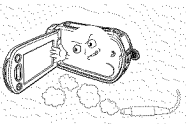
Do not use the camcorder in direct sunlight or near heating equipment. This may cause a malfunction or injury.
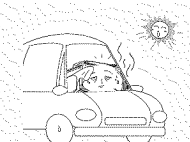
Do not leave the camcorder in a closed vehicle for a long time, where the temperature is very high.
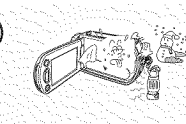
Do not expose the camcorder to soot or steam. Thick soot or steam could damage the camcorder case or cause a malfunction.

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.
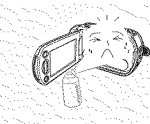
Do not expose the camcorder to insecticide. Insecticide entering the camcorder could cause the product to operate abnormally. Turn the camcorder off and cover it with a vinyl sheet, etc. before using insecticide.
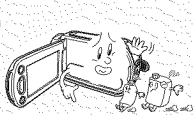
Do not expose the camcorder to sudden changes in temperature or a humid place. There is also a risk of defect or electric shock when using outdoors during lightning storms.
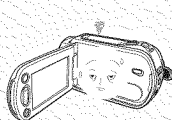
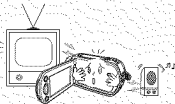Do not place the camcorder with the open LCD screen down.

Do not wipe the camcorder body with benzene or thinner. The exterior coating could peel off or the case surface could deteriorate.
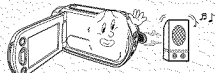
Do not leave the LCD screen open when not using the camcorder.

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 a TV or radio: This could cause noise on the TV screen or to radio broadcasts.

Do not use the camcorder near sources of strong radio waves or magnetism such as speakers or large motors. Noise from these sources could distort the video or audio you are recording.
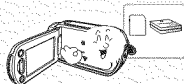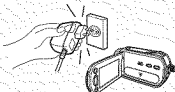
Use Samsung-approved accessories only. Using products from other manufacturers may cause overheating, fire, explosion, electric shock or personal injuries caused by abnormal operation.
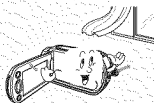
Place the camcorder on a stable surface that is well ventilated.
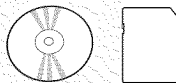
Keep important data separately. Samsung is not responsible for data loss.

Only plug the adaptor plug into a socket that is easily accessible. If any problem occurs with the product, you must pull the plug out of the socket to disconnect the power completely. Turning off the power button on the product does not completely

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ADVANCED OPERATION

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

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

3. Charge the battery fully. ➥page 25
   - The battery is fully charged when the CHG (charging) indicator light turns green.
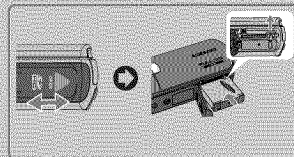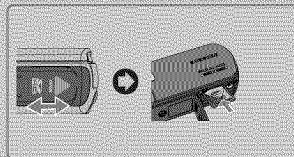
STEP2: Record with your camcorder

Zoom lever
PHOTO button
MODE lamp
MODE button

Recording start/stop button

LCD screen
Your camcorder turns on when you open the LCD screen.

POWER button
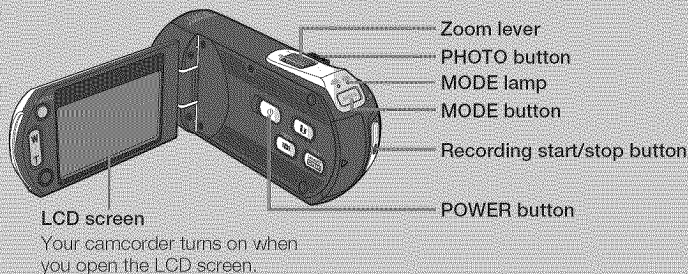
quick start guide

Recording videos with HD (high definition) image quality

Your camcorder is compatible with H.264 format "1080/60p" 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 in 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 "1080/60p" which provides highly-detailed, beautiful images. ➥page 61
- The default setting is "**1080/60i**". You can also record in SD (standard definition) video quality.
- You can also take photos while recording or playing videos. ➥pages 43, 48

STEP3: Play back videos or photos

Viewing the LCD screen of your camcorder

You can view movies and pictures on the camcorder's LCD screen.

1. Touch the Play (▶) tab on the screen in STBY mode.
2. Touch the thumbnail (⊙HD / ⊙SD / 🔺) tab, then touch the desired image.
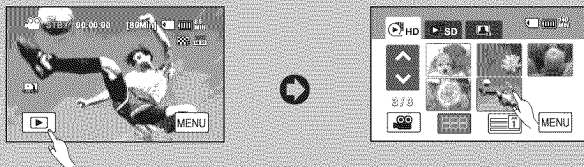
Viewing on a high definition TV

- You can enjoy HD (high definition) videos on your HDTV. ➡page 121
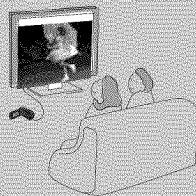
> You can also play back videos on a SD (standard definition) image quality TV.
> ➡ pages 119~121

STEP4: Save recorded videos or photos

Simple and fun! Use the built in Intelli-studio program with your Windows computer to edit and share your videos and photos.

Use the Intelli-studio program, which is built into your camcorder, to import video and photos to your computer, edit them, and share the videos and photos with your friends. For details, see pages 125~128.

quick start guide

Viewing videos and photos on your PC

1. Launch the Intelli-studio program by connecting the camcorder to your PC with a USB cable.
   - A new file saving screen appears with the Intelli-studio main window.
     Click "**Yes**," and the uploading procedure starts.

2. The new files are saved to your PC and registered to "**Contents Manager**" in the Intelli-studio program.
   - You can arrange the files by different criteria such as Face, Date, Location, etc.

Contents Manager

Saved files

Folders directory on you PC
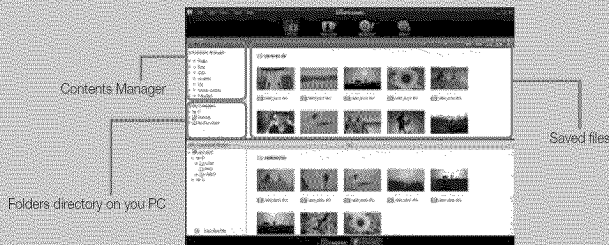
3. Double-click on the file you would like to playback.

Sharing videos and photos on Youtube/Flickr/FaceBook

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

> Intelli-studio runs automatically after you've connected your camcorder to a Windows
> computer (if you have set "**PC Software: On**"). ➥page 97

STEP5: Delete videos or photos

If the camcorder's storage media is full, you cannot record new videos or photos. Delete videos or photos you've saved to your computer from the camcorder's 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, make sure none of the items listed below are missing from your box.
The contents or the shape of the accessories may vary depending on the sales region.

Checking your accessories
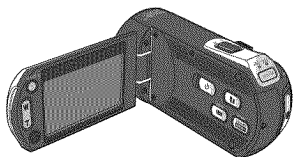
Model name	Color	Memory card slot	LCD screen	Lens
HMX-M20SN	Silver	O	Color/ Touch panel	8x(Optical), 12x(Intelli)
HMX-M20BN	Black			

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

Battery pack (BP125A) (AD43-00197A)	**AC power adapter** (AD44-00151A)	**Component/AV cable** (AD82-00668A)
USB cable (AD82-00667A)	**User manual CD** (AD82-00659A)	**Quick start guide** (AD82-00661A)
Hand strap (HMX-M20SN : AD82-00916A) (HMX-M20BN : AD82-00923A)	**Mini HDMI cable** (Optional) (AD39-00159A)	
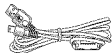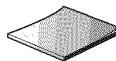
- The exact appearance of each item may vary by model.
- The contents may vary depending on the sales region.
- Parts and accessories can be purchased after consulting with your local Samsung dealer. SAMSUNG is not responsible for reduced battery life time or malfunctions caused by any unauthorised use 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.
- A memory card is not provided. Buy a memory card that is compatible with this camcorder.

getting to know the camcorder

LOCATION OF CONTROLS

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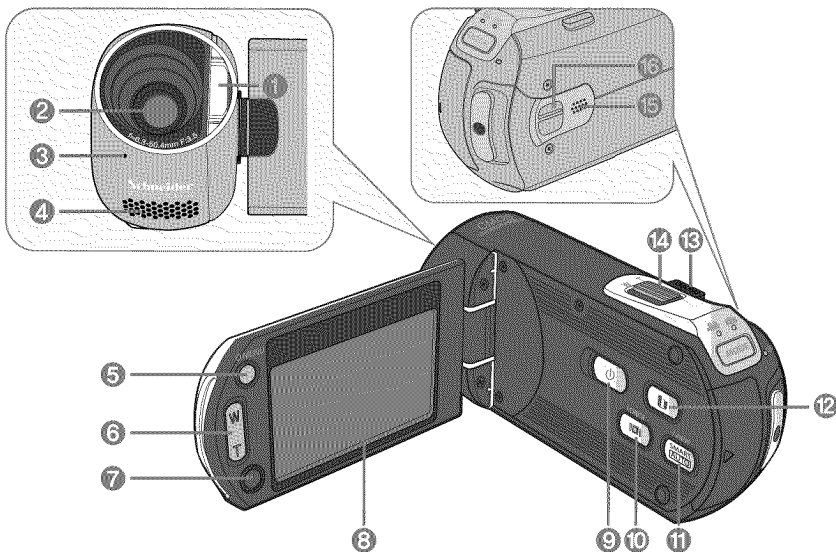
1	Built-in flash	9	Power( ) button
2	Lens	10	Display (▢/iCHECK) button
3	Recording indicator button	11	Smart Auto/ iVIEW button
4	Internal microphone	12	Share button
5	Q.MENU button	13	PHOTO button
6	Zoom (W/T) button	14	Zoom(W/T) lever
7	Recording start/stop button	15	Built-in speaker
8	LCD screen (Touch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

During a recording, be careful not to block the internal microphone and lens.
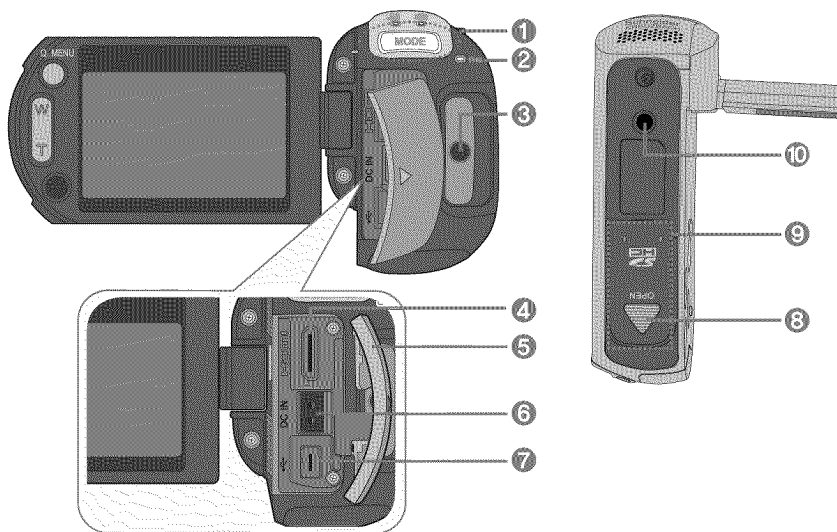
1 MODE button/Mode indicator
(Video(📹)/Photo(📷) mode)
2 Charging (CHG) lamp
3 Recording start/Stop button
4 HDMI jack
5 Jack cover

6 DC IN jack
7 ↩ (USB,Component/AV)jack
8 Battery/Memory card cover switch
9 Battery/Memory card cover
10 Tripod receptacle

getting to know the camcorder

IDENTIFYING THE SCREEN DISPLAYS

The available functions vary depending on the selected operation mode. Different indicators appear depending on the setting values. The indicators below only appear in the Video Record mode.

PRECHECK!

- The On Screen display (OSD) below appears only when the camcorder is in Video record (🎥) mode.
- Select the Video (🎥) mode by pressing the **MODE** button. ➡page 31

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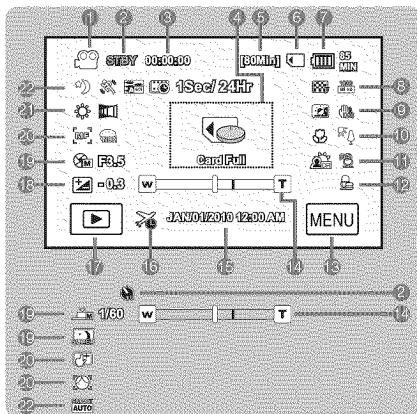
1 Video record mode	13 Menu ([MENU])tab
2 Operating status (STBY (standby)/● (recording))/ Self Timer *	14 Optical zoom/Digital zoom bar
	15 Date/Time
3 Time counter(video recording time)	16 Time Zone
4 Warning indicators and messages	17 Play ([▶]) tab
5 Remaining recordable time	18 EV*
6 Storage media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

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

The available functions vary depending on the selected operation mode. Different indicators appear depending on the setting values. The indicators below only appear in the Video Play mode.

PRECHECK!
- The On Screen display (OSD) below appears only when the camcorder is in Video playback (回) mode.
- Select the Play (回) tab on the LCD screen to select the playback mode →page 49

Video play mode
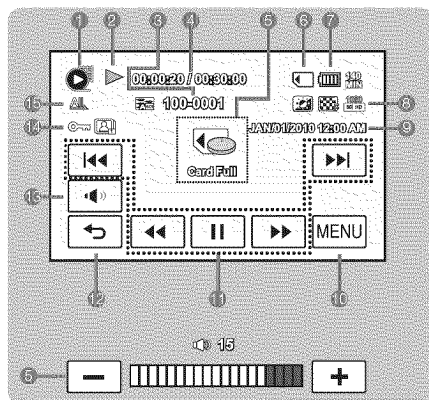
1 Video play mode
2 Operating status (Play/Pause)
3 File name (file number)
4 Playback time/Recorded time
5 Warning indicators and messages/Volume control
6 Storage media (memory card)
7 Battery info. (Remaining battery level/time)
8 LCD Enhancer, Quality, Resolution

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 starts. Touch anywhere on the screen to display them again.
- For warning indicators and messages, see pages 131~137

getting to know the camcorder

IDENTIFYING THE SCREEN DISPLAYS

The available functions vary depending on the selected operation mode. Different indicators appear depending on the setting values. The indicators below only appear in the Photo Record mode.

PRECHECK!

- The On Screen display (OSD) below only appears when the camcorder is in Photo record ( ) mode.
- Select the Photo ( ) mode by pressing the **MODE** button. ➥page 49

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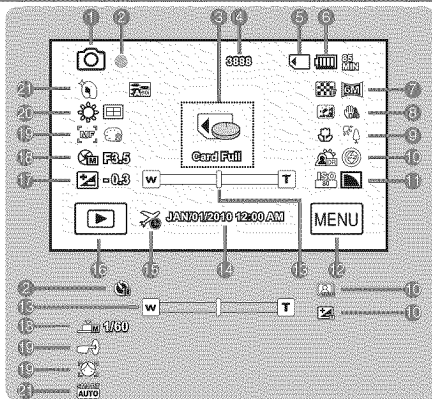
|	
1 Photo record mode	12 Menu ([MENU])tab
2 Focus indicator (half shutter) / Self Timer*	13 Optical zoom/Digital zoom bar
3 Warning indicators and messages	14 Date/Time
4 Image counter (total number of recordable photo images)	15 Time Zone
5 Storage media (memory card)	16 Play ([▶])tab
6 Battery info.(remaining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

- The settings of functions marked with * are not retained when you turn the camcorder off.
- For warning indicators and messages, see pages 131~137
- The total number of recordable photos is based on available space on the storage media.
- Small changes to the remaining memory space may not change the photo counter after recording.
- The largest number the OSD Image Counter can display is "9,999."

The available functions vary depending on the selected operation mode. Different indicators appear depending on the setting values. The indicators below only appear in the Photo Play mode.

PRECHECK!

- The On Screen display (OSD) below appears only when the camcorder is in Video playback (□) mode.
- Select the Play (□) tab on the LCD screen to select the Playback mode →page 49

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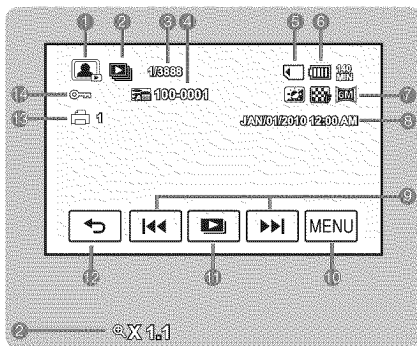
1	Photo play mode	8	Date/time
2	Slide show/zooming control	9	Previous image, Next image tab
3	Image counter (current image/total number of recorded images)	10	Menu(MENU) tab
4	File name (file number)	11	Slide show playback(□) tab
5	Storage media (memory card)	12	Return tab
6	Battery info. (Remaining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

getting started

USING THE BATTERY PACK

Purchase extra battery packs to allow continuous use of your camcorder.
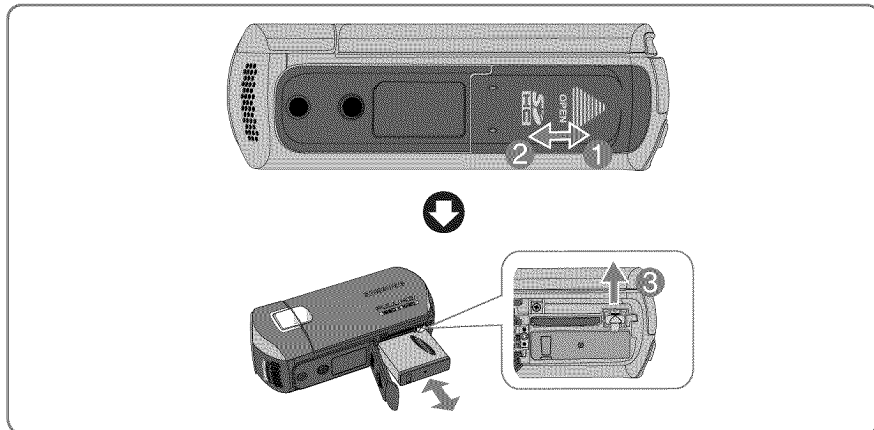
▌Inserting the battery pack

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. Other manufacturer's batteries can cause overheating, fire or explosion.
- Samsung is not responsible for problems that occur you if you use unapproved batteries.

Charging the battery pack with the AC power adaptor

Power(⏻) button

AC power adaptor
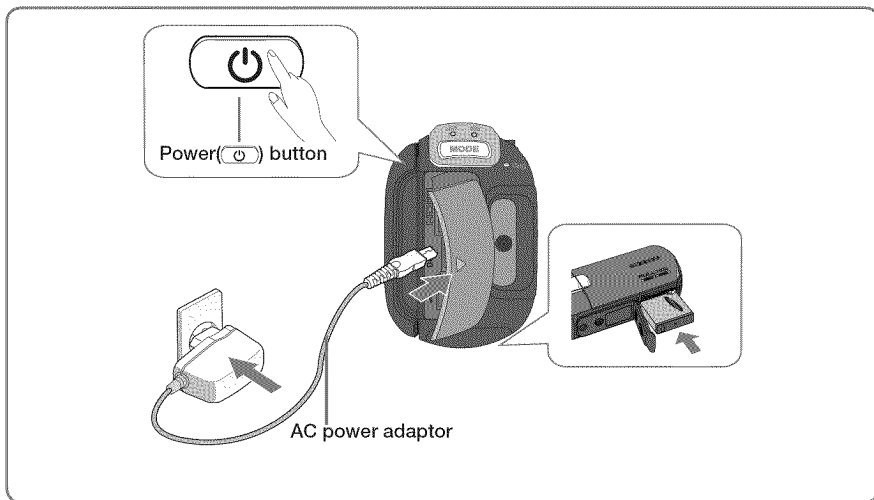
<u>PRECHECK!</u>
<u>Before starting this procedure, make sure that the battery pack is inserted in your camcorder. ➥page 29</u>

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

- The battery pack does not charge in the power saving mode, which may keep the mode indicator on or flashing. Start charging the battery only after turning off the camcorder by pressing the power (⏻) button.
- Even with the power switched off, the battery pack still discharges if you leave it inserted in the camcorder.
- We recommend that you to have one or more additional battery packs to allow continuous use of your camcorder.

getting started

CHECKING THE BATTERY STATE

You can check the charging state and remaining battery capacity.

To check the charging state

The color of the CHG lamp indicates the power or charging state.
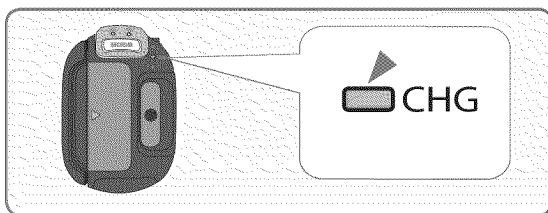
Charging (CHG) lamp

The color of the charging indicator shows the charging state.

Charging state	Charge		
	Charging	Fully Charged	Error
LED color	● (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 helps extend the life of the battery.
- The Battery pack charges to over 95% of capacity after about 2 hour and 40 minutes, and the indicator color changes to green.
  It takes about 3 hours for the battery pack to charge 100%.

Battery Type	BP125A	
Charging time	Approx. 180 min.	
Video Resolution	HD (1080/60i)	SD (480/60p)
Continuous recording time	Approx. 85min.	Approx. 90min.
Playback time	Approx. 140min.	Approx. 170min.

(Unit: minutes.)

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

About battery packs

- Recharge the battery pack only where the temperature is between 0°C (32°F) and 40°C (104°F).
- When exposed to cold temperatures (below 0°C (32°F)), the battery's recording time decreases and it may cease to function. If this happens, remove the battery from the camcorder, place the it in your pocket or other warm, protected place for a short time, and 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 the battery pack's terminals to be short-circuited. This may cause the battery to leak, generate heat, or cause a fire.

Maintaining the battery pack

- The recording time is affected by temperature and environmental conditions.
- We recommend using only the battery type that came with your camcorder. This battery type is available from your Samsung retailer. When the battery reaches the end of its life, please contact your local dealer. The batteries must 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 still discharges if you leave it in the camcorder. We recommend that you remove the battery pack from the camcorder.
- If the battery is not used for a long time, fully charge the battery and then, using your camcorder, drain the charge completely once every 6 months to keep the battery functioning properly. To store the battery, remove it from your camcorder and put it in a cool, dry 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 the battery with a new one.
- Each battery's life is affected by storage, operating, and environmental conditions.

getting started

About the running time

- The recording times in the table on the previous page were measured when using the camcorder at 25°C (77°F). 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 may be shorter depending on the conditions under which you use your camcorder. For example, in actual recording, the battery may discharge 2 to 3 times faster than listed if you use Record start/stop and Zoom frequently, and use playback to view your recordings. Assume that the recordable time with a fully charged battery is between 1/2 and 1/3 of the time in the table, so you have enough charged 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. However, the battery pack will not display Battery Info correctly 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

We recommend that you use the AC power adaptor to power the camcorder from a household AC outlet when you change settings, play back or edit images, or use it indoors. To power the camcorder from an AC outlet, you make the same connections you make 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 place the AC Adaptor in a confined space when you use it, such as between a wall and a piece of 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, the AC adaptor continues to supply AC power to the camcorder as long as it's plugged in.

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

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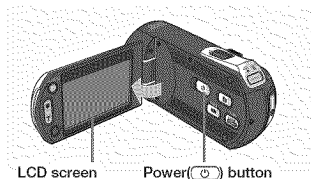
• The camcorder operates the self-diagnosis function when powered on. If a warning message appears, refer to 'warning indicators and messages' (↪pages 131~137) and take corrective action.
• If you close the LCD screen when the power is on, the power saving mode activates.

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 as 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.

basic operation of the camcorder

SWITCHING TO THE POWER SAVING MODE

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

In STBY mode:
• The camcorder switches to "Quick On STBY" mode when you close the LCD screen.
  ➥page 96

In Playback mode (Includes the thumbnail view mode):
• The camcorder switches to the sleep mode when you close the LCD screen, and then, if idle for more than 20 minutes, the camcorder turns off.
  However, if you set **Auto Power Off** to **5 Min**, the camcorder turns off in 5 minutes.
• If you open the LCD screen or connect a cable to the camcorder when the camcorder is in sleep mode, the camcorder exits sleep mode and returns to the last active operation.

LCD screen is open   LCD screen is closed   After 20 minutes

<When the power is on>   <Sleep mode>   <Power off>
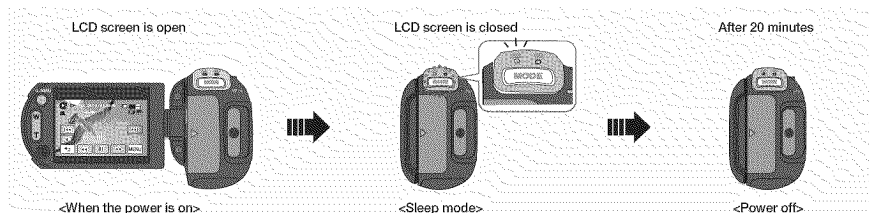
• The power saving mode does not work in the following situations:
  - When the camcorder has a cable connection. (USB, Component/AV, or HDMI)
  - While recording, playing back, or running a slideshow.
  - When the LCD screen is opened.
• The camcorder consumes battery power in the power saving mode (about 50% of the power consumed in the standby mode) However, if you plan to use the camcorder for the maximum length of time without recharging, we recommend you 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.
- Touching the Play (▣) tab in the video or photo record mode switches the operation mode to the video or photo playback mode.
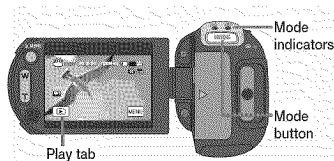
Mode	Icon	Functions
Video mode	📹	Records videos
Photo mode	📷	Records photos

- When you turn on the camcorder for the first time, the video mode starts up by default.
- You can select the Booting mode by setting "**Booting Mode**" to "**Photo Mode**" or "**Previous Mode**." The change takes effect the next time you turn the camcorder on. ↪page 95

USING THE DISPLAY (▣ / iCHECK) BUTTON

Switching the information DISPLAY mode

You can switch the on-screen information display mode.
Press the display (▣ / iCHECK) button.
- The full and minimum display modes will alternate.

<Full display mode>

<Minimum display mode>
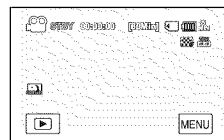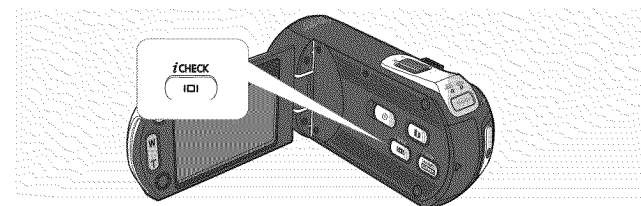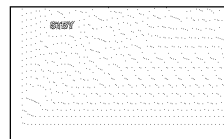
- Warning indicators and messages may appear depending on the recording conditions.
- **Display (▣ / iCHECK) button** does not work in the menu or quick menu screen.

31

basic operation of the camcorder

Checking the remaining battery and recording capacity

- When the power is off, press and hold the display (❙□❙/iCHECK) button.
- When the power is on, press and hold the display (❙□❙/iCHECK) 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	☒
35 Min	▊▊▊▊▊▊▊▊
Card (HD 1080/60i F)	
30 Min	
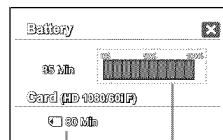
Available recording time (approx.)

Remaining battery (approx.)

- Battery information is available only when the battery pack is inserted in your camcorder.
- If you are using the AC Power adaptor to power the camcorder, and you do not have the battery 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.
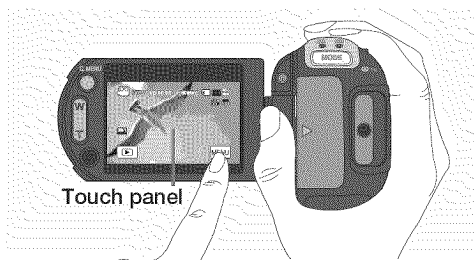
Touch panel

- 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.
- If a film is attached for a long time, strong adhesion between the film and the surface of the screen may cause a malfunction of the touch panel.

first time settings

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

Set the date and time of your local area when you turn 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 centered on Lisbon, London (Greenwich Mean Time 00.00).
   - 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, and 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, and then touch the ([OK]) tab.
   - The message "**Date/Time Set**" appears.
   - If you finish the setting with ([↩]) tab without touching the ([OK]) tab, the camcorder does not apply the date/time values you selected and the <Time zone> screen appears again the next time you start the camcorder.
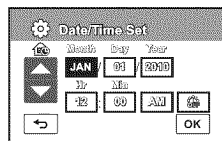
- You can set the year up to 2039.
- Set "**Date/Time Display**" to "**On.**" ➥page 91
- Activating the (☼) icon moves the time ahead by 1 hour.

Built-in rechargeable battery
- Your camcorder includes a built-in rechargeable battery that retains the date and time settings even after you turn the camcorder's power off.
- If the rechargeable battery discharges completely, the current date/time values are reset to the default values. If this occurs, you need to recharge the built-in rechargeable battery (see below), and then re-set the date and time.
- 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 when you connect your camcorder to AC power or attach the battery pack.
- If you do not connect the camcorder to AC power or attach the battery pack for two weeks, the built-in battery fully discharges. If this occurs, charge the built-in battery by connecting the camcorder to the AC adaptor for 24 hours.

first time settings

SELECTING A LANGUAGE

You can select the language the camcorder uses for menus and messages. The camcorder retains the language setting even when you turn it off.

1. Touch Menu (MENU)→Setting (⚙) tab.

2. Touch up (▲)/down (▼) tab until "**Language**" appears.

3. Touch "**Language**," and then touch the desired OSD language.

4. Touch the Exit (✕) or Return (↩) tab to complete the setting.
   • The camcorder displays the menus and messages in the language you selected.
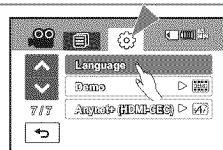
Submenu items

"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.
• The camcorder retains the language you selected even without the battery pack or AC power adaptor.
• The date and time format may change depending on the language you selected.

getting ready to start recording

INSERTING AND REMOVING A MEMORY CARD (NOT SUPPLIED)
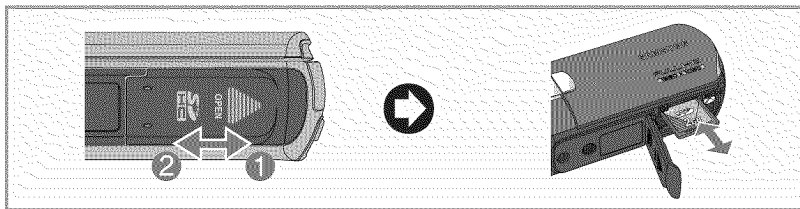
To insert a memory card

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 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 the 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. Card compatibility with the camcorder may vary depending on the manufacturer and the type of memory card.

getting ready to start recording

SELECTING A SUITABLE MEMORY CARD

Compatible memory cards

- You can use SD (Secure Digital) and SDHC (Secure Digital High Capacity) cards with this camcorder.
  We recommend you use an SDHC (Secure Digital High Capacity) card.
  The camcorder supports SD cards up to 2GB. We cannot guarentee normal operation 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. Others are not guaranteed to work. A list of compatible brands is below:
  - SDHC/SD cards: Panasonic, Sandisk, TOSHIBA
- To record videos, use a memory card that supports faster write speeds (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.
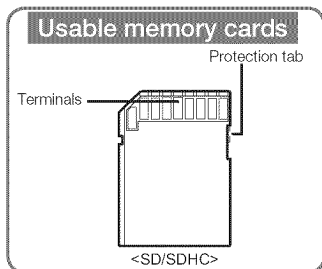
SDHC (Secure Digital High Capacity) cards

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

Common cautions for memory cards

- Damaged data may not be recovered. We recommend 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

- We recommend you turn the camcorder off before inserting or removing the memory card to avoid data loss.
- We can not guaranteed that you can use memory cards formatted by other devices. When you format a card, be sure to format the memory card using this camcorder.
- You must format newly-purchased memory cards, memory cards with data that your camcorder cannot recognise, and cards with data saved by other devices. Note that formatting erases all data on the memory card.

Usable memory cards

Protection tab

Terminals

<SD/SDHC>

- 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 the card cannot record new data, you must purchase a new memory card.
- Do not bend, drop, or subject the card to strong impacts.
- 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 the label provided with the card on label pasting area of the card.
- 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 data loss that can be caused by moving the card or by 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, giving you a wider choice of cards to choose from!

The data storage speed may differ, depending on 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 a 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 every bit of the recorded video, the camcorder forcibly stores the movie on the memory card, and then displays a warning:

"Low speed card. Please record at lower resolution."

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

The higher the resolution and quality, the more memory the camcorder uses.

getting ready to start recording

Available recording time for video

Video resolution	Quality	Storage media (Capacity)					
		1GB	2GB	4GB	8GB	16GB	32GB
1080/60p	Super Fine	5min	10min	20min	40min	80min	160min
	Fine	7min	14min	28min	56min	112min	224min
1080/60i	Super Fine	7min	14min	28min	56min	112min	224min
	Fine	10min	20min	40min	80min	160min	320min
1080/30p	Super Fine	7min	14min	28min	56min	112min	224min
	Fine	10min	20min	40min	80min	160min	320min
720+480/30p	Fine	12min	23min	45min	90min	180min	360min
720/60p	Super Fine	10min	20min	40min	80min	160min	320min
	Fine	13min	26min	52min	104min	208min	416min
720/30p	Super Fine	15min	29min	57min	114min	228min	456min
	Fine	19min	37min	73min	146min	292min	584min
480/60p	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)

Number of photos camcorder can record

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)

- Actual recording times may differ depending on the recording conditions and the subject.
- The higher the quality and resolution, the more memory the camcorder uses.
- Lower resolution and quality increases the recording time, but the image quality may suffer.
- The bit rate automatically adjusts to the image being filmed. Accordingly, 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(⌷)**/**iCHECK** button. ➥page 31
- The maximum number of recordable photos and videos is 9,999.
- The items above marked with * represents the default setting value.

USING THE HAND STRAP

Attach the strap and place your hand through the loop to
prevent the camcorder from being dropped.
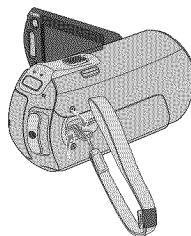
ADJUSTING THE LCD SCREEN

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 180° towards the lens, and then fold it back
     to the body.
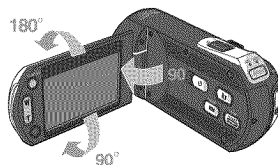
Excessive rotation may damage the connective hinge between the screen and the camcorder.

---

* Clean fingerprints or dust on the screen with a soft cloth.
* When you rotate the LCD screen 180° toward the lens, the screen displays the left and the right
  sides of the subject reversed, as if you are looking at them in a mirror. This is not a problem and
  does not affect the image the camera records.

getting ready to start recording

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 both your hands.

2. Put your hand through the hand strap.

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.
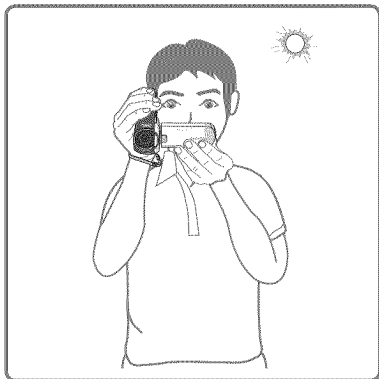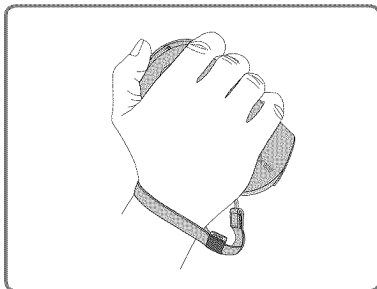
⚠	The camcorder's lens angle is approximately 25° higher than the rest of the camcorder body. Make sure you angle the camcorder accordingly for proper shooting.

🖉	• We recommend that you keep the sun behind you while shooting. • To avoid underexposing a backlit subject when taking a photo, please use the flash.

basic recording

RECORDING VIDEOS

This camcorder supports both High Definition (HD) and Standard Definition (SD) image resolutions.
Set the resolution you want 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.
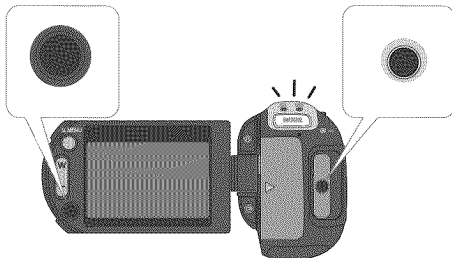
basic recording

- If power is interrupted or an error occurs during recording, the video may not be recorded/edited.
- Samsung is not responsible for any damage caused 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 below the lens. Make sure that the microphone is not blocked.
- Before recording an important video, make sure to test the recording function to see if there are any problems with the audio and video recording.
- You can adjust the brightness of the LCD screen in the menu options. Adjusting the LCD screen does not affect the image being recorded. ➥page 94.
- For the functions available during recording, see "Recording menu items" ➥pages 55~85
- Do not turn off the camcorder or remove the memory card while it is 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 camcorder switches to the data recovery mode. While the camcorder is recovering data, no other function is enabled. After data recovery, the camcorder switches to the STBY mode. When available recording time is short, data recovery might fail.
- The menu setting tabs shown on the LCD screen do not affect the image the camcorder is recording.
- 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 1080/60p, 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 appears, and recording starts.

2. While recording the video, frame the scene you want to photograph, and then press the **PHOTO** button.
   - When the (▶▶▶) indicator disappears, the camcorder has recorded the photo image without a shutter sound.
   - Video keeps recording, even while you take photos.
   - 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 (▶▶▶) indicator appears, and the camcorder makes the shutter sound and records the photo.

<Dual recording in STBY mode>

- You cannot capture photos in the following conditions:
  - When recording a video in the slow motion record mode.
  - When recording a time lapse video.
  - When you record in 1080/60p, 720+480/30p
- You cannot use the flash during dual recording.
- The resolution of the captured photos varies according to the resolution of the recorded videos:
  - Movie images recorded in HD resolution (1080/60p, 1080/60i, 1080/30p): 1920x1080 photo resolution.
  - Movie images recorded in HD resolution (720/60p, 720/30p, 720+480/30p): 1280x720 photo resolution.
  - Movie images recorded in SD quality (480/60p): 896x504 photo resolution.
  - Movie images recorded in the Web&Mobile: 640x480 photo resolution.

basic recording

RECORDING PHOTOS

You can take photos and store them in an SD/SDHC memory card. Set the resolution and quality you want 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
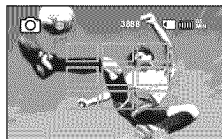
2. Frame the subject in the LCD screen, and half-press the **PHOTO** button.
   - Your camcorder adjusts to the ideal aperture and focus automatically (if "**Aperture**" and "**Focus**" are set to "**Auto**" ➥pages 65, 70)
   - When the subject is in focus, (●) indicator appears green. If it appears red, readjust the focus.

3. Fully press the **PHOTO** button.
   - The shutter sounds (when "**Shutter Sound: On**" is set).
   - To take additional pictures, wait until the camera has saved the current photo completely on the storage media.
   - If you have set the Quick View function to a desired time, the camcorder displays the recorded photo image for that time as soon as you finish taking the photo. ➥page 85

- Recordable number of photos varies depending on the photo size and quality. ➥page 38
- The camcorder does not record audio when you take 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 on-screen display information, see pages 20~23.
- Adjust the brightness or contrast of the LCD screen using the menu. Adjusting the brightness or contrast 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)

When you use the SMART AUTO function, the camera detects the kind of scene you want to record, and then adjusts most of its settings automatically. 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.
   - (AUTO) indicator is displayed. (When you activate the SMART AUTO mode, the Anti-shake (🖐) indicator also appears.)

2. Adjust the subject on the LCD screen.
   - The camcorder automatically detects a scene (Landscape, Sunset, etc.) and adjusts the camcorder settings accordingly.
   - The appropriate scene icon appears on the LCD screen.

<Video mode>

<Photo mode>

Menu	Functions	Movie	Photo
	Portrait shot	●	●
	Outdoor portrait shot at night	●	●
	Night landscape shot	●	●
	Backlight landscape shot without people	●	●
	Portrait shot under backlight	●	●
	Outdoor landscape shot	●	●
	Close-up shot	●	●
	Sunset shot	●	●
	Under strong light shot, such as theatrical performances	X	●
	Very bright background shot	X	●
	Close-up character shot	X	●
	Close-up shot of a subject with various colors	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.

basic recording

Detecting scenes in the SMART AUTO mode

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

- A scene icon appears according to the scene the camcorder detects.
- If the camcorder does not detecte a scene, the (AUTO) indicator appears.
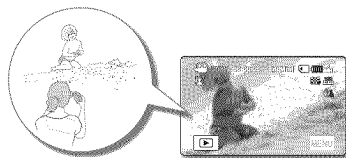
- The SMART AUTO mode automatically sets the following record functions: "iSCENE," "White Balance," "Aperture," "Shutter," "EV," "3D-NR," "Super C.Nite," "Back Light," "Focus," "Face Detection," "Anti-Shake (HDIS)," "Digital Effect," "Fader," "Tele Macro," "Digital Zoom," "ISO," "Dynamic Range," "Flash," "Magic Touch," "Metering," "Cont. Shot," "Bracket Shot," etc. Cancel the SMART AUTO function if you want to add effects or settings to the images.
- **Buttons unavailable during SMART AUTO operation:**
  Menu (MENU) tab / **Q.MENU** button / etc. The camcorder adjusts most settings automatically 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 the position of the face or the brightness of the scene.

CAPTURING PHOTOS WHILE PLAYING BACK VIDEOS

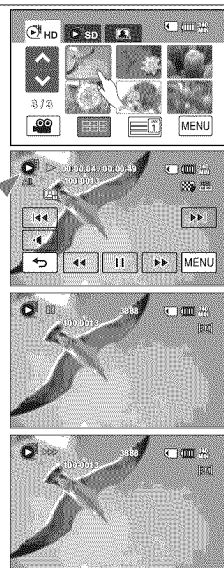You can capture photos during video playback.

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 camcorder plays the video you selected.
3. Aim the camcorder at the scene you want to photograph, and then press the **PHOTO** button halfway.
   • The video playback pauses.
4. Press the **PHOTO** button fully down.
   • The camcorder captures a still image and records it 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

• The resolution of the captured photos varies according to the resolution of the recorded videos:
  - Movie images recorded in HD resolution (1080/60p, 1080/60i, 1080/30p): 1920x1080
  - Movie images recorded in HD resolution (720/60p, 720/30p): 1280x720
  - Movie images recorded in SD quality (480/60p): 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 you want to record continuously using the "**Cont. Capture**" menu. ➡page 90
2. Touch video clip you want to play.
3. Press and hold the **PHOTO** button to capture still images continually.
   • The number of captured images varies depending on how long you press the **PHOTO** button.
     - The camcorder captures photos continuously up to the memory's storage capacity.
   • The interval between each continuously captured image varies according to the continuous capture option. ➡page 90

basic recording

ZOOMING

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

To zoom in
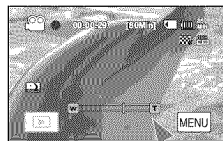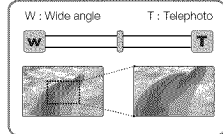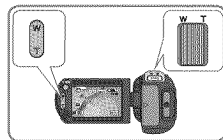
Press the **T** (zoom) button on the LCD panel or slide the zoom lever towards **T** (telephoto).
- The distant subject is gradually magnified.

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.

- 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
- Automatic focusing may become unstable when you record using a fast zoom or when you zoom into a subject that is too far away. If this occurs, use the manual focus function. ➥page 69
- The minimum distance you can have between the 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 a subject close up at a wide angle, use the **Tele Macro** function. ➥page 79
- When using the zoom function and holding the camcorder in your hands, use "**Anti-Shake (HDIS)**" for stable recording. ➥page 76
- Frequent use of the zoom function consumes more power.

basic playback

- You can switch the operation mode directly into the playback thumbnail display by touching the Play (▣) tab on the LCD screen. The most recently created file is highlighted in the thumbnail view.
- The camcorder selects the thumbnail display options depending on the standby mode that was last used. 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, 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.
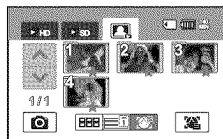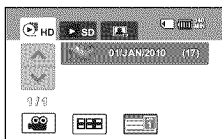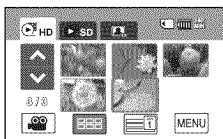
Understanding how to change the operation modes
You can change the operation modes easily by touching the LCD screen or using the buttons as shown in the following figures:
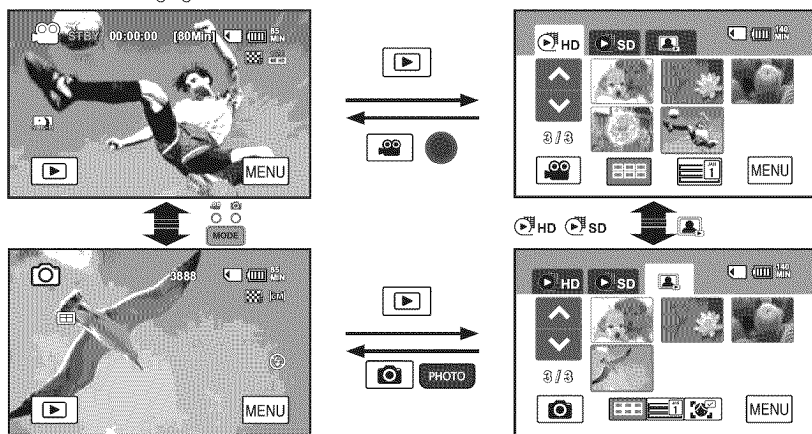
- You can choose the thumbnail display options: 3x2 (⊞), or Date (⊞).
- You can switch the thumbnail display options between 3x2 and 4x3 by moving the Zoom (W/T) lever.

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basic playback

PLAYING BACK VIDEOS

You can preview recorded videos in a thumbnail index view. Find the video you want quickly, and playback directly.

<u>PRECHECK!</u>
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 video clip you want to view.
   - The camcorder plays the video and playback control tabs appear briefly. They reappear whenyou touch 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.
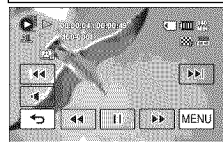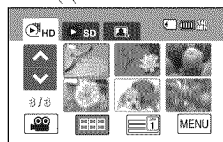
Tip

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

- The camcorder may take some time to start playback, depending on the size and quality of the selected video.
- When you close the LCD screen during playback, the built-in speaker automatically turns off.
- The camcorder may not play the following video files:
  - A video recorded on another device
  - A video whose file format is not supported on the camcorder
- You can use various play options during video playback. ➥page 86
- You can play the recorded videos on a TV or PC. ➥pages 121, 127
- If you touch the Menu (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 alternate when you touch 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 plays.

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 play back videos recorded at "**Slow Motion**" or "**Resolution: Web & Mobile,**" you can adjust the image's viewing size by using the zoom button or the zoom lever.
Touching the zoom button or pushing the zoom lever toward the T, 'telephoto', magnifies the image's viewing size.
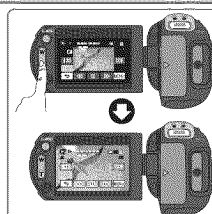
To adjust the volume

The camcorder's built-in speaker plays the recorded sound.
You can adjust the sound volume level from "**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 and hold the (➕)/(➖) tab, the sound level adjusts continuously.
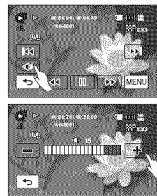
You can also control the volume levels by dragging your finger up or down on the LCD screen.

basic playback

VIEWING PHOTOS

You can view recorded photos by using various playback functions.

PRECHECK!

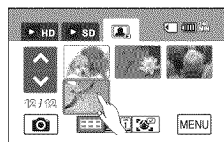Touch the Play ([▶]) tab on the LCD screen to select the Playback mode. ➡page 49

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.
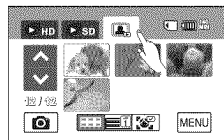
2. Touch the photo you want to play back.
   - The camcorder displays the photo in full screen and playback control tabs appear briefly. They reappear when you touch anywhere on the screen.
   - Touch previous image ([◄◄])/ next image ([►►]) tab to view the previous and next photo.
   - Place and hold your finger on the previous image ([◄◄])/next image ([►►]) tab to search for a desired photo quickly. When you lift off your finger, the camcorder displays the photo you selected.

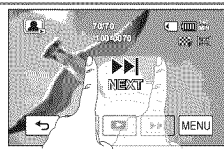3. To return to the thumbnails, touch the Return ([↩]) tab.
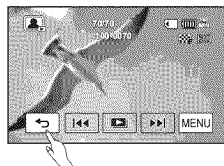
Tip

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 play back the following photo files normally:
  - A photo recorded on another device.
  - A photo with a file format not supported by 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 appears.The slide show starts from the current selected photo.
   - The camcorder plays back all photos continuously while applying the slide show options ("**Music,**" "**Interval,**" "**Effect,**" "**Play Option**") you have selected. See below.
   - 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.
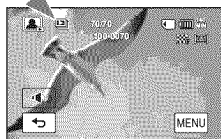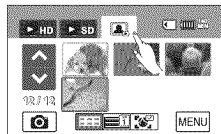
Tip

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."**
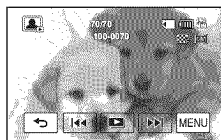
Using the Slide Show Options

You can apply the options in the "**Slide Show Option**" menus below to your slide shows:

- **Music** : (built-in music plays) "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."

basic playback

ZOOMING DURING PLAYBACK

You can magnify an image you've played back. Touch up ([▲])/down ([▼])/left ([◄])/right ([►]) to select an area of the magnified photo to view.

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 center 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 to see on the magnified photo.

5. To cancel, touch the Return ([↩]) tab.
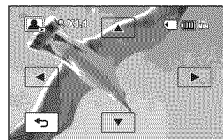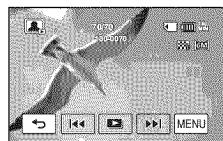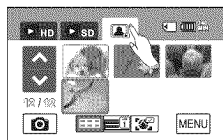
advanced recording

HANDLING MENUS AND Q.MENUS

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

Using the MENU (MENU) tab

Q.MENU button   Menu (MENU) tab

1. Open the LCD screen to turn on the camcorder.
   - If you find the LCD screen is already open and 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. If there is a conflict, a message appears telling you that the related function will be changed or disabled. Touch "**Yes,**" to change or disable the related function setting, and then continue to set the function values.
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>
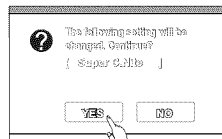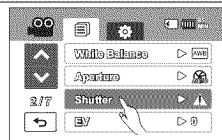
Using the Q.MENU button

1. Open the LCD screen to turn on the camcorder.
   - If you find the LCD screen is already open and 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.
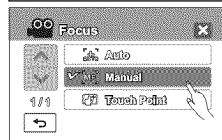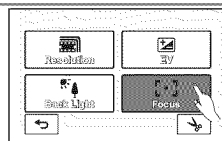
- Some menu items listed on the menu or Q.Menu can not be used at the same time, or may be grayed out.
- For more information, see the Troubleshooting pages, "134~137."
- To make the procedures described above easy to understand, all the menu setting examples on this page are based on the simplest setting methods.
  Menu setting methods can differ, depending on the menu options you have chosen.

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

advanced recording

Customizing the Q.MENU items

You can choose which menu 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.
   - The Q.MENU screen is modified according to your changes.

> - You cannot use the **Q.MENU** button in the SMART AUTO mode.
>   To use the **Q.MENU** function, disable the SMART AUTO function.
> - This function is not available while you are recording videos or photos.
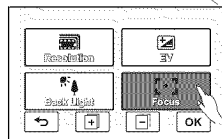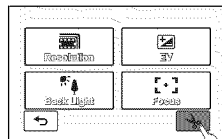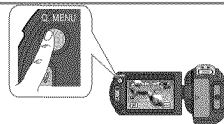
MENU ITEMS

- The items available in each menu vary depending on the operating mode.
- For operation details, see the page number listed under Page in the table.

Recording menu items

● : available, X : not available

Operation mode	Video ( )	Photo ( )	Default value	Page
*i*SCENE	●	●	Auto	60
Resolution	●	●	1080/60i, 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

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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	JAN/01/2010	91
Time Type	12 Hr	92
Date/Time Display	Off	91
LCD Control	Brightness 18, Color 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 that contain functions you frequently use. Pressing the Q.MENU
button lets you access the functions and start changing settings directly.

Recording menu items (default)

	Video (🎥)	Photo (📷)	Default value	Page
Resolution	●	●	1080/60i, 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)

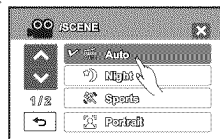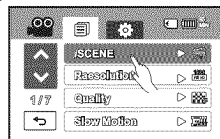|		Video(Thumbnail)	Video(Single)	Photo(Thumbnail/Single)	Default value	Page
Highlight		●	●	X	-	89
Playlist		●	X	X	-	108
Slide Show Start		X	X	●	-	53
Delete		●	●	●	-	105, 113
Protect		X	●	●	Off	112
Edit	Partial Delete	●	●	X	-	105
	Divide	●	●	X	-	106
	Combine	●	X	X	-	107
Print Mark		X	X	●	-	114

● : available, X : not available

advanced recording

iSCENE

Using the *i*SCENE function, you can select a setting that matches the scene you are shooting (Sports, Portrait, etc.). Based on your selection, the camcorder sets the appropriate shutter speed and aperture automatically for optimal 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.

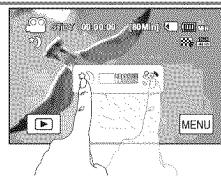3. To exit the menu, touch the Exit (❌) or Return (🔙) tab.

Submenu items

Menu	Functions	Movie	Photo
Auto(▦)	Use for the regular recording conditions. The camcorder automatically adjusts the shutter speed and the aperture values for optimum recording.	●	●
Night(🌙)	Use to record in dark places or at night. However, an afterimage may appear with a moving subject. If you have difficulty with automatic focusing, adjust the focus manually.	●	●
Sports(🏃)	For recording rapidly moving subjects such as people engaged in sports.	●	●
Portrait(👤)	For recording portraits. Use this setting to capture natural skin tone.	●	●
Spotlight(💡)	For recording subjects under strong light. For example, stage spotlights in theaters.	●	●
Beach/Show (🏖)	For recording in a place with intense light reflection, such as a beach or ski resort.	●	●
Food(🍽)	For recording food images using high color saturation	●	●
Candle Light(🕯)	For 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 color tone to the subject's face.	X	●
Children (🧒)	For recording moving subjects such as active children. The camcorder selects the optimal recording settings automatically.	X	●
Landscape(🏞)	For recording landscapes and outdoor scenes.	X	●
Close-up (🔍)	For recording close-ups.	X	●
Text (📄)	For recording close-ups of text.	X	●
Sunset(🌅)	For recording sunsets.	X	●
Dawn(🌄)	For recording at dawn.	X	●
Fireworks(🎆)	For recording fireworks with the optimal recording settings selected automatically.	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 SCENE mode by simply touching the LCD screen.
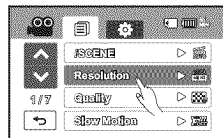
Resolution

You can select the resolution of the video to be recorded.

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

- **1080/60p** (📹): Records in the HD (1920x1080/60p) format.
- **1080/60i** (📹): Records in the HD (1920x1080/60i) format.
- **1080/30p** (📹): Records in the HD (1920x1080/30p) format.
- **720+480/30p** (📹): Records both in the HD (1280x720/30p) and SD (720x480/30p) formats.
- **720/60p** (📹): Records in the HD (1280x720/60p) format.
- **720/30p** (📹): Records in the HD (1280x720/30p) format.
- **480/60p** (📹): Records in the SD (720x480/60p) format.
- **Web & Mobile** (📹): Records videos in the VGA (640x480/30p) resolution at Normal image quality.
  This setting makes videos easier to upload to a web site without down-sizing via a compression
  program. 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)(🔲)

- "60p" indicates the camcorder will record in progressive scan mode at 60 frames per second.
- "60i" indicates the camcorder will record in interlaced scan mode at 60 fields per second.
- "30p" indicates the camcorder will record in progressive scan mode at 30 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 video resolution you select.
- The camcorder takes photos at 10 mega pixels. When you set the resolution to 12M, the
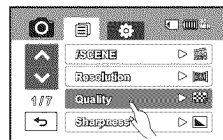 camcorder up-scales the photos you take to 12 mega pixels.

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Quality

You can select the quality of the video to be recorded.

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 in super fine image quality.
- **Fine (📼):** Records video in fine image quality.

Quality submenu in the Photo Record mode

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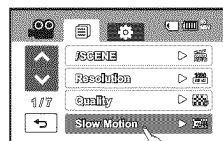- **Normal (📼):** Records photos in normal image quality.

Slow Motion

You can record videos in 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]240frame/sec (📼) :** Records 240 frames per second in "432 x 324" resolution.
- **[SD]420frame/sec (📼) :** Records 420 frames per second in "400 x 224" resolution.
- **[SD]720frame/sec (📼) :** Records 720 frames per second in "208 x 116" resolution.

Understanding Slow Motion
ex)The number of frames the camcorder uses to record video in one second:
   When Slow Motion is set to Off: 60 frames per second

   When the Slow Motion function is set to [SD] 240frame/sec: 240 frames per second

> • When recording in slow motion, the camcorder stops recording after 10 seconds. However, when
>   you play back the same recording, it plays back for the following times:
>   - 240 Frame/Sec: 40 seconds
>   - 420 Frame/Sec: 70 seconds
>   - 720 Frame/Sec: 120 seconds
> • Recording continues for 10 seconds even if you press the Recording start/stop button to stop it.
> • The camcorder does not record audio while recording in slow motion.
> • If you have the camcorder connected to a TV while it is recording in slow motion, it does not display
>   the images it is recording on the TV screen.
> • You cannot capture photos in slow motion.
> • The Q.MENU function is not available while the camcorder is recording slow motion videos.
> • The image quality of "Slow Motion" recordings is not as good as that of normal recording.
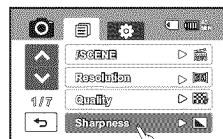
Sharpness

This function lets you create a sharper or softer image by processing the image after you've recorded the photo.

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. Makes edges and images appear softer.
• **Normal (▣):** The photo images appear with sharp edges and are suitable for printing.
• **Sharp (▣):** Sharpens the edges in photo images further.

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White Balance

Using the White Balance function, you can select a setting that matches the light illuminating the subject you are shooting (Daylight, Fluorescent, etc.). Based on your selection, the camcorder automatically adjusts the color of the subject so the colors in your recording or photo look natural.

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.
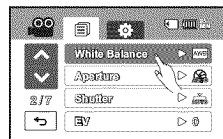
Submenu items

- **Auto:** Sets the white balance automatically in response to the available light.
- **Daylight (☼):** For recording outdoors in clear, natural light.
- **Cloudy (☁):** For recording in the shade or cloudy weather.
- **Fluorescent (▦):** For recording under white fluorescent lights.
- **Tungsten (🔆):** For recording under halogen lamps and incandescent lights.
- **Custom WB (⚙):** Lets you set the white balance manually 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 appears.
2. Fill the screen with a white object, and touch OK (OK) tab.
   - The camcorder stores the white balance setting.
3. To exit the menu, touch the Exit (✖) or Return (↩) tab.
   - The camcorder applies the stored white balance the next time you record.
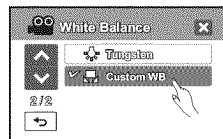
Understanding White Balance:

The White balance (WB) process removes unrealistic color casts, so that white objects appear white in your photos and all other colors look natural. Proper white balance has to take into account the "color 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 White Balance to "**Auto**" may provide better results.
- Cancel the digital zoom function for a clear and precise white balance setting.
- Reset the white balance if light conditions change.
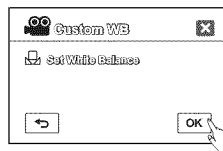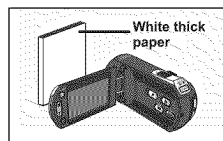
ISO

ISO sensitivity is a measure of how rapidly the camcorder reacts to a light source. If you leave the aperture (lens opening) setting unchanged, the higher the ISO sensitivity, the brighter your images will be.

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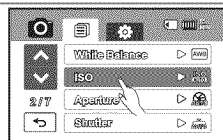
Submenu items
- **Auto:** Automatically sets the ISO to compensate for various lighting conditions (ISO 3200).
- **80 ( ):** For bright lighting conditions.
- **100 ( ):** For most situations except when lighting is poor or when higher shutter speeds are required.
- **200 ( ):** For taking photos of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

> Higher ISO sensitivity might produce grainy (noisy) effects in photo images.
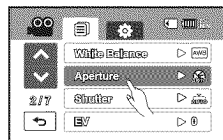
Aperture

The camcorder adjusts the aperture (lens opening) automatically depending on the subject and recording conditions. You can also manually adjust the aperture.

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.
   - Aperture value can be set between "**3.5**" and "**16**" (f3.5 to f16).
3. To exit the menu, touch Exit (🔀) or Return (↩) tab.

Submenu items
- **Auto:** Sets the aperture value automatically.
- **Manual ( ):** Lets you set the aperture value manually.

Understanding Aperture

You can adjust the aperture to control the amount of light reaching the image sensor. The smaller the aperture value, the greater the amount of light.
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 in a refl ective natural environment such as at the beach or when skiing.
- When the background is overly dark (for example, night scenery).
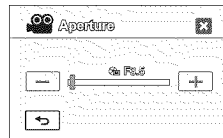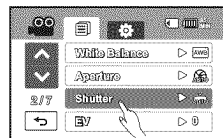
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Shutter

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

PRECHECK!

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

1. Touch the 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 (1/XX):** Touch decrease ( ) or increase ( ) tab to adjust the setting values. You can choose from the following values:
  - Video Record mode: 1/60, 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 video and photo image brightness.

PRECHECK!

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

1. Touch the Menu ( ) tab ➔"**EV.**"
2. Touch the decrease ( ) or increase ( ) tab to adjust the setting values. You can choose from:
   - 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.
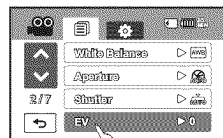
Understanding EV(Exposure Value)

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. The higher the number, the greater the exposure.
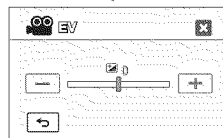
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