



User Manual

High Definition Digital Camcorder

www.samsung.com/register



For video recording, use a memory card that supports faster write speeds.


- Recommended Memory Card: 6MB/s (Class 6) or above.

HMX-QF20BN

HMX-QF20UN

Important safety instructions

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

	This symbol indicates that dangerous voltage consisting a risk of electric shock is present within this unit.
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	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 is 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 tipover.
- 13 Unplug this apparatus during lightning storms or when unused for long periods of time.



Important safety instructions

14 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as powersupply 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.

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

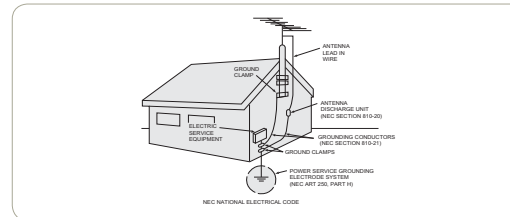
outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your outlet. Do not defeat the safety purpose of the polarized plug.

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.



Important safety instructions

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.

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:

 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, eiaa.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.




Before reading this user manual

Before reading this user manual, check the follows.

Safety warnings

Icon	Definition	Meaning
	Warning	There is a potential risk of death or serious injury.
	Caution	There is a potential risk of personal injury or damage to the product.

Icons used in this manual

Icon	Definition	Meaning
	Caution	To reduce the risk of fire, explosion, electric shock, or personal injury when using your camcorder, follow these basic safety precautions.
	Note	Here are hints or page number references you will find helpful when you operate the camcorder.
	Definition	Here are additional definitions or information you will find helpful when you operate 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 adaptor with your camcorder, connect the adaptor 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.

If you plug the AC adaptor into a 240V AC outlet, be sure to use a suitable plug adaptor.

Before reading this user manual

Important information on use

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. ↗ pages 104~116

This User Manual covers HMX-Q20BN, HMX-Q200BN, HMX-QF20UN models.

- The HMX-QF20 has the wireless networking function. ↗ pages 70~78 Although some features of HMX-Q20, HMX-Q200 and HMX-QF20 are different, they operate in the same way.
- Illustrations of model HMX-Q20BN 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 use, read 'Safety information' carefully and then use the product properly.
- Samsung is not responsible for any injury or damage caused by not following the user manual.
- In this manual, a 'memory card (card)' means a SD, SDHC, or SDXC.
- In this user manual's function description tables, the icon shown in a description of a submenu item indicates it will appear on the screen when you set the corresponding function.
Ex) **Tele Macro** Submenu item ↗ page 95
- **On** (👁): Sets to record close-up images of very small objects.
If set to **On**, the corresponding icon (👁) will appear on the screen.

Before using this camcorder

- **This camcorder records video in H.264 (MPEG4/AVC) format.**
- **You can play back and edit the video recorded by the camcorder on a personal computer using the internal software of this camcorder.**
- **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.
- **Recorded contents may be lost due to a mistake when handling the camcorder or memory card, etc.**
Samsung will not provide 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 copy them 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, we strongly recommend that you obtain permission beforehand.

Before reading this user manual

- **This wireless equipment may have radio interference in operation so it cannot support life safety services.**
- **Always be careful to transfer files via Wi-Fi, there can be a danger of data leakage.**
- **For Open Source licenses information, refer to the 'Opensource-Q20.pdf' in the provided CD-ROM.**
- 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.
- Wi-Fi®, the Wi-Fi CERTIFIED logo, and the Wi-Fi logo are registered trademarks of the Wi-Fi Alliance.
- AllShare™ is a Samsung's trademark.

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- Intel®, Core™, Core 2 Duo®, and Pentium® are the registered trademarks or trademarks of the Intel Corporation in the United States and other countries.
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- YouTube is a trademark of Google Inc.
- Flickr is a trademark of Yahoo.
- Facebook is a trademark of Facebook Inc.
- Twitter is a trademark of twitter Inc.
- Picasa is a trademark of Google Inc.
- HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC.

Safety information

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



WARNING There is a potential risk of death or serious injury.



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



Using the camcorder at temperatures over 140°F (60°C) 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 power cord or damage the AC power adaptor by pressing on it with a heavy object. There may be a risk of fire or electric shock.



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



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

Safety information



WARNING There is a potential risk of death or serious injury.



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



Do not dispose of the battery 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 a child, consult physician immediately.



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 emits 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.

Safety information



CAUTION There is a potential risk of personal injury or damage to the product.



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, 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 near a corrosive gas such as hydrogen sulfide. 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 vinyl sheet, etc. before using insecticide.



Do not expose the camcorder to sudden changes in temperature or high humidity. 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 surface could deteriorate.



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

Safety information



CAUTION There is a potential risk of personal injury or damage to the product.



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 distortion on the TV screen or interference in the 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 disconnect the power.



Manufacturers of unauthorized accessories compatible with this camcorder are responsible for their own products. Use the optional accessories according to their safety instructions. Samsung is not responsible for any malfunctions, for fires or electric shocks, or for damage caused by unauthorized accessories.

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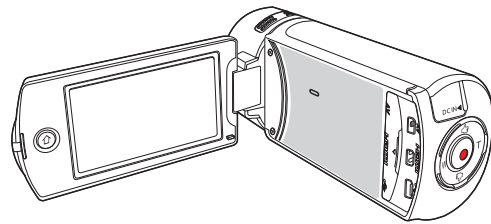
Getting Started

Learn about your camcorder's layout, icons, and home screen.


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Unpacking

Your new camcorder comes with the following accessories. If any of these items is missing from your box, call Samsung's Customer Care Center.



Model name	Color	Internal memory	Lens	WiFi module
HMX-Q20BN HMX-Q200BN	Black	No	X20 (Optical) X40 (Digital)	No
HMX-QF20UN	Indigo Blue			Yes

 Although some features of the models are different, they operate in the same way.

Checking your accessories



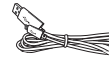
Battery
(BP125A)
(AD43-00197A)



AC power adaptor
(AA-MA9)
(AD44-00151A)



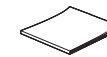
Audio/Video cable
(AD39-00184A)



USB cable
(AD39-00194A)



User manual CD
(AD46-00423A)



Quick start guide
(AD68-06831A)

Optional accessories



Mini HDMI cable
(AD39-00179A)



External battery charger
(A-BC9UA4)



Carrying case
(AD69-00929A)



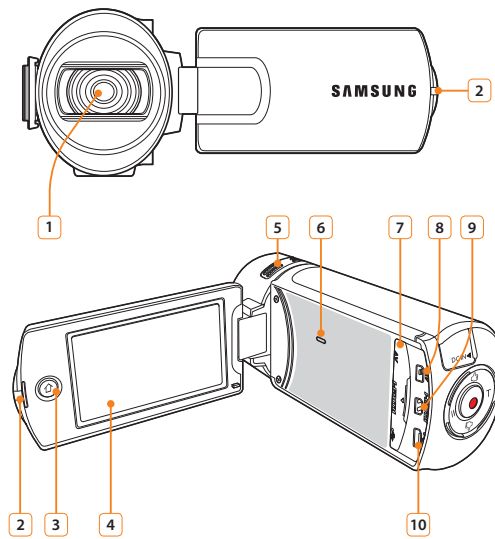
Memory card




- The exact appearance of each item may vary by model.
- The contents may vary depending on the sales region.
- You can purchase parts and accessories consulting with your local Samsung dealer. SAMSUNG is not responsible for reduced battery life time or malfunctions caused by any unauthorized use of accessories such as the AC power adaptor or the batteries.
- A memory card is not included. See page 17 for memory cards compatible with your camcorder.
- Your camcorder includes the user manual CD and printed quick start guide.

Camcorder layout

Top/Front/Left

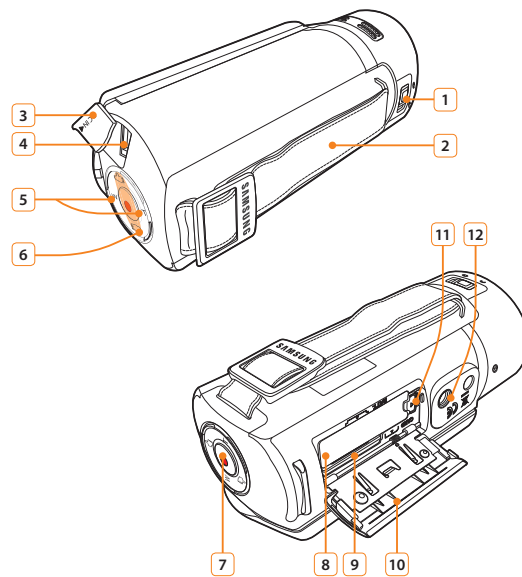


- 1 Lens
- 2 Charging indicator
- 3 Home (🏠) button
- 4 LCD screen (Touch screen)
- 5 Internal microphone
- 6 Internal speaker
- 7 Jack cover (AV/HDMI/micro USB)
- 8 AV (Audio/Video) jack
- 9 HDMI jack
- 10 micro USB jack

 Be careful not to cover the internal microphone and lens during recording.

Camcorder layout

Rear/Right/Bottom



1 Lens open/close switch

2 Grip belt

3 Jack cover (DC IN)

4 DC IN jack

5 T/W button

6 Like It (👍/👎) button

7 Recording start/stop button

8 Battery slot

9 Memory card slot

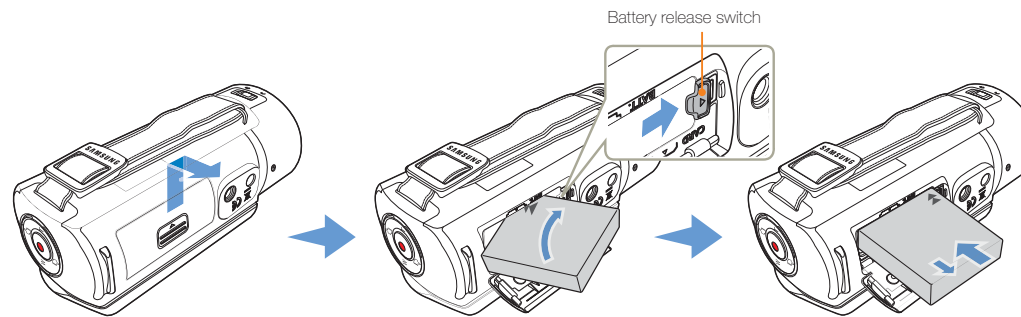
10 Battery/Memory card cover

11 Battery release switch

12 Tripod receptacle

Inserting/Ejecting the battery and memory card

Inserting/ejecting the battery



To insert the battery

- 1 Slide and open the battery slot cover as shown in the figure.
- 2 Insert the battery into the battery slot until it locks.
 - Make sure that the SAMSUNG logo is facing down and the battery is placed as shown in the figure.
- 3 Close the battery slot cover.

To eject the battery

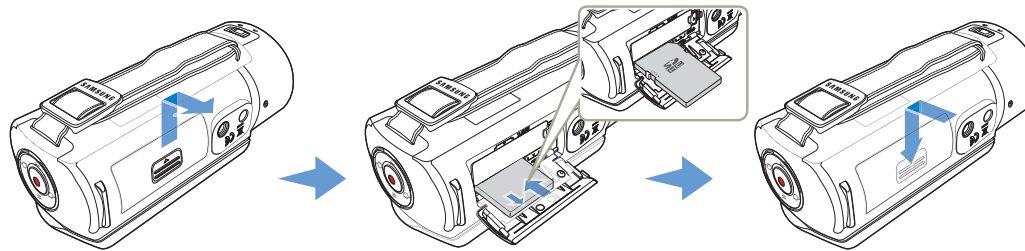
- 1 Slide and open the battery slot cover as shown in the figure.
- 2 Slide the Battery release switch in the direction as shown in the figure and pull out the battery.
- 3 Close the battery slot cover.



- Samsung is not responsible for problems that are caused by using unapproved batteries. If you use batteries from other manufacturers, there is a danger of overheating, fire, or explosion.
- Purchase extra batteries to allow continuous use of your camcorder.

Inserting/Ejecting the battery and memory card

Inserting/ejecting a memory card (not supplied)



To insert a memory card

- 1 Slide and open the memory card cover as shown in the figure.
- 2 Insert the memory card into the card slot until it softly clicks.
 - Make sure that the label portion of the card is facing up and the camcorder is placed as shown in the figure.
- 3 Close the memory card cover.

To eject a memory card

- 1 Slide and open the memory card cover as shown in the figure.
- 2 Gently push the memory card to eject it.
- 3 Close the memory card cover.

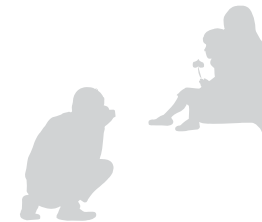
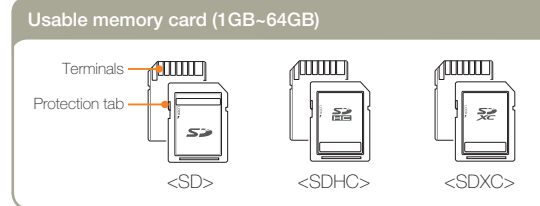


- To avoid the data loss, turn off the camcorder by pressing and hold the [Home (🏠)] button before inserting or ejecting the memory card.
- Be careful not to push the memory card too hard. The memory card may suddenly pop out.

Inserting/Ejecting the battery and memory card

Compatible memory cards

- You can use SD, SDHC, and SDXC cards with this camcorder. We recommend you use an SDHC card. This camcorder supports SD cards up to 2GB. We cannot guarantee normal operation with SD cards bigger than 2GB.
- MMC (Multi Media Card) and MMC Plus are not supported.
- Compatible memory card capacity:
 - SD: 1GB~2GB
 - SDHC: 4GB~32GB
 - SDXC: ~up to 64GB
- When you use unauthorized memory cards, the camcorder cannot record videos correctly and your recordings may be lost.
- The memory cards released after this camcorder may not be compatible with the camcorder.
- When the camcorder operates with 6MB/S (Class 6) or above memory cards, it can be stable.
- SD/SDHC/SDXC 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/SDXC cards are a higher version of SD memory cards and support higher capacity than SD memory cards.
- SD cards can be used with current SD enabled host devices.



Inserting/Ejecting the battery and memory card

Handling a memory card

- Damaged data may not be recoverable. 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.
- If you modify the name of a file or folder stored in the memory card with your PC, your camcorder may not recognize the modified file.
- The memory card does not support any data recovery mode. Therefore, care should be taken in case the memory card is damaged while recording.
- Make sure to format the memory card on this camcorder. If the memory card had been formatted by a PC or other device, using it on this camcorder without formatting may find trouble with recording and/or playback. Samsung is not responsible for damage of recorded contents caused by such reasons.
- You have to format newly-purchased memory cards, memory cards with data that your camcorder cannot recognize or with data saved by other devices. Note that formatting erases all data on the memory card and deleted data cannot be recovered.
- A memory card has a certain life span. If you cannot record new data, you have to 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 the label pasting area of the card.
- Do not use a damaged memory card.
- Be careful to keep the memory card out of the reach of children, who might swallow it.

The camcorder supports SD, SDHC, and SDXC memory cards, giving you a wider choice of cards!

The data storage speed of cards 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 on a low speed card, the camcorder forcibly stores the video on the memory card and displays a warning:

Low speed card. Please record at a 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. ➔page 95

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



- Samsung is not responsible for data loss due to misuse, including loss caused by any PC virus.
- 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.

Inserting/Ejecting the battery and memory card

Recording time available for video in minutes

Resolution	Storage media (Capacity)						
	1GB	2GB	4GB	8GB	16GB	32GB	64GB
Full HD 1080/60i	8	15	30	61	125	253	506
HD 720/60p	11	21	42	86	177	357	714

(Unit: Approximate minutes of recording)

Recordable number of photos

Resolution	Storage media (Capacity)						
	1GB	2GB	4GB	8GB	16GB	32GB	64GB
5.3M 3072X1728	931	1861	3721	7440	9999	9999	9999
2M 1920X1080	1173	2346	4654	9402	9999	9999	9999

(Unit: Approximate number of images)

1GB \approx 1,000,000,000 bytes : Actual formatted capacity may be less as the internal firmware uses a portion of the memory.



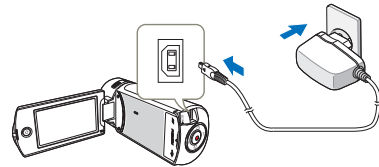
- Actual recording times may differ depending on the recording conditions and the subject.
- The higher the quality and resolution, the more memory the camcorder uses.
- Lower resolution and quality increases the recording time, but the image quality may suffer.
- The bit rate automatically adjusts to the image being recorded. Accordingly, the recording time may vary.
- Memory cards bigger than 64GB may not operate normally.
- When a video file exceeds 1.8GB, a new video file is created automatically.
- The maximum number of recordable photo and video files is 9999, respectively.
- The recording length of Art Time Lapse may vary depending on settings.

Charging the battery

Charge the battery using the AC power adaptor or the USB cable.
The charging indicator lights up and charging starts. After the battery is fully charged, the charging indicator turns green.

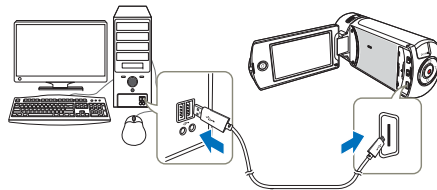
Using the AC power adaptor

Connect the AC power adaptor to the camcorder properly, and then plug the AC Power adaptor in the wall outlet.



Using the USB cable

Connect the USB cable to the camcorder properly, and then connect the other end to a USB port of a PC.



- Make sure that there are no foreign substances on plug and in the socket when you connect the AC power supply to the camcorder.
- Make sure to turn off the camcorder before disconnecting the AC power adaptor. Otherwise, you can damage the storage media or data.
- Use a nearby wall outlet when using the AC power adaptor. Disconnect the AC power 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.



- When charging, if both the USB cable and AC power adaptor are connected, the AC power adaptor will override the USB.
- You cannot operate the camcorder using USB power only. Use the AC power adaptor or battery to power the camcorder.
- USB charging time may depend on the type of USB host on your PC.
- If you use the camcorder while you are charging the battery, charging may take longer.
- Be sure to use the included AC power adaptor to power the camcorder. Using other AC power adaptors could cause electric shock or result in fire.
- You can use the AC power adaptor around the world. An AC plug adaptor is required in some foreign countries. If you need one, purchase it from your distributor.

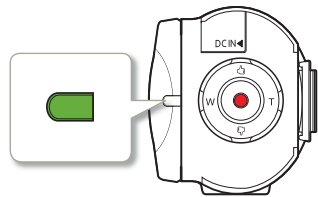
Charging the battery




Checking the battery state

You can check the charging state and remaining battery capacity.

To check the charging state

The color of the LED indicates the power or charging state.










LED color	Description
 (Orange)	Charging
 (Green)	Fully charged
 (Orange Blink)	Error

Battery level display

The battery level display shows the amount of battery power remaining in the battery.



Battery level icon	State	Message
	Fully charged	-
	25~50% used	-
	50~75% used	-
	75~95% used	-
	95~98% used	-
	Exhausted (flickers): The camcorder will be forced to turn off after 3 minutes. Change the battery as soon as possible.	-
-	After 3 seconds, the camcorder turns off.	Low Battery

 The figures above are based on a fully charged battery at a normal temperature. Low ambient temperature may affect the use time.

Charging the battery

Available charging and running time for the battery

Battery type	BP125A	
Charging time	Using the AC power adaptor: approx. 120 min. Using the USB cable: approx. 270 min.	
Video resolution	Full HD	HD
Continuous recording time	Approx. 105 min.	Approx. 120 min.
Playback time	Approx. 140 min.	Approx. 160 min.

- Charging time: Approximate time in minutes required to fully charge a completely exhausted battery.
- Recording/Playback time: Approximate time available when you have fully charged the battery.
- Times shown above are measured under Samsung's test conditions. Your times may differ, depending on your usage and conditions.
- The recording and playback times will be shorter when you use your camcorder in low temperatures.
- We recommend using the AC power adaptor when using the Art Time Lapse function.

Continuous Recording (without zoom)

The continuous recording time above shows the available recording time when you record without using any other function after recording starts. The battery may discharge 2-3 times faster than this reference if you use the recording start/stop, the zoom, and the playback functions. Prepare additional batteries with the expectation that the actual recording time is about 1/3 to 1/2 of the times listed above.

Using an AC power source

We recommend that you use the AC power adaptor to power the camcorder from a household AC outlet when recording and playing the camcorder indoors. The connection is the same as that for battery charging. ↪page 20



- The charging time will vary depending on the charge remaining in the battery.
- Depending on your PC specifications, the charging time can be prolonged.
- The battery is charged over 95% after about 2 hours, and the indicator color changes to green. It takes about 2 hours and 40 minutes for the battery to charge 100%.

Charging the battery

About the battery

- **Battery properties**

A lithium-ion battery is small-sized and has a high capacity. Low ambient temperature (below 50°F (10°C)) may shorten its usage time and affect its function. Before recording in low temperatures, put the battery into your pocket to warm it, then install it in the camcorder.

- **Make sure to store the battery separately after use.**

- A small amount of battery power is consumed when the battery is stored in the camcorder even if the camcorder power is off.
- The battery may be completely discharged, if it has been installed and left in the camcorder for a long period of time. If this occurs, the battery may not fully operate even if you charge it.
- 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 3 months to keep the battery functioning properly. To store the battery, remove it from your camcorder and put it in a cool, dry place.

- **Charge an extra battery before using the camcorder outdoors in cold temperatures.**

- The cold temperature may shorten the available recording time.
- Carry the supplied AC power adaptor to charge the battery while travelling.

- **Check whether the battery terminal is damaged if the battery falls or is dropped.**

- If you install a battery with the damaged terminal into the camcorder, you can damage the camcorder.

- **Remove the battery and the memory card from the camcorder and disconnect the power adaptor after use.**

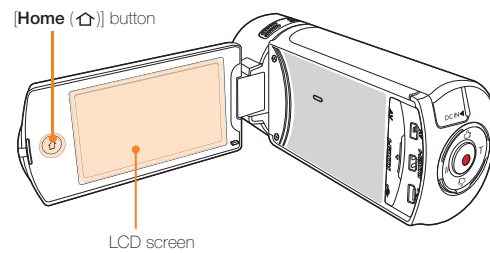
- Store the battery in a stable, cool and dry place.
(Recommended temperature : 59°F~77°F (15°C~25°C), recommended humidity: 40%~60%)
- Temperatures that are too high or too low shorten the battery lifetime.
- The battery terminals can become rusty or malfunction if the battery is stored in a smoky or dusty location.

- **Recycle or dispose of your dead batteries properly.**

- **The battery lifetime is limited.**

- 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.

Turning your camcorder on/off



- 1 Turn on the camcorder by opening the LCD screen.
 - Your camcorder turns on automatically when you open the LCD screen.
 - To turn the camcorder on when the LCD screen is already open, press and hold the **[Home (⏠)]** button.
- 2 To turn off the camcorder, press and hold the **[Home (⏠)]** button.
 - Your camcorder does not turn off even when you close the LCD screen.

- The camcorder operates the self-diagnosis function when you turn it on. ➔ pages 104~109
- If the Quick On STBY function is set to **5 Min** and you close the LCD screen when the power is on, the power saving mode activates. ➔ page 101
- The camcorder turns on automatically if connecting the AC power adaptor or inserting the battery to the camcorder with the LCD screen open.

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 at start-up. Select your geographical location and then set the date and time. ➔ page 25
If you do not set the date and time, the time zone screen appears every time you turn on the camcorder.

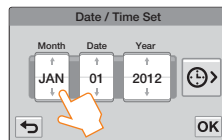
Performing the initial setup

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

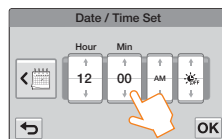
- 1 Open the LCD screen to turn on the camcorder.
 - The time zone (**Home**) screen appears based on Lisbon and London (Greenwich Mean Time).
- 2 Select your local area on the map by touching the **<** or **>** tab on the LCD screen, and then press the **OK** tab.



- 3 Touch the up or down arrows to set the date.



- 4 Touch the time (**>**) tab, and then set the time.



- 5 Make sure the clock is correctly set, and then touch the **OK** tab.
 - The date/time setting finishes.

- You can set the year up to 2037, based on **Home**.
- Set **Date/Time Display** to **On**. ↪page 98
- Activating the icon moves the time forward by 1 hour.

Internal rechargeable battery

- Your camcorder includes a internal rechargeable battery that retains the date and time settings even after the power is turned off.
- If the battery is depleted, the current date/time values are reset to the default values. If this occurs, you need to recharge the internal rechargeable battery (see below), and then re-set the current date and time.

Charging the internal rechargeable battery

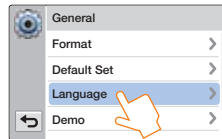
- The internal battery is always recharged while your camcorder is connected to the AC power or while the battery is attached.
- If you have not used the camcorder for about 2 weeks and you have not connected the AC power or the battery to it, the internal battery fully discharges. If this occurs, charge the internal battery by connecting the camcorder to the supplied AC adaptor for 24 hours.

Selecting the language

You can select the language in which the camcorder displays the menu screen or messages. The camcorder retains the language setting even when you turn it off.

1 Press the **[Home (🏠)]** button, and then drag the Home screen left.

2 Touch **Settings → General → Language**.



3 Touch the desired language.



4 Touch the Return (⏪) tab to complete the setting.

- The camcorder displays the menu screen and messages in the language you selected.

Supported languages

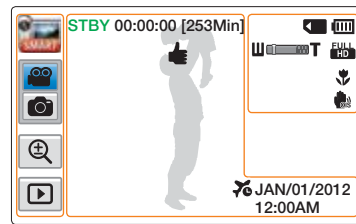
English	한국어	Français	Deutsch
Italiano	Español	Português	Nederlands
Svenska	Suomi	Norsk	Dansk
Polski	Čeština	Slovensky	Magyar
Română	Български	Ελληνικά	Srpski
Hrvatski	Українська	Русский	中文 (简体中文)
中文 (繁体中文)	日本語	ไทย	Türkçe
ایرانی	العربية	עברית	

- **Language** options may be changed without prior notice.
- The camcorder retains the language you select even when not connected to the battery or AC power.
- The date and time format may change depending on the language you selected.

Learning icons

The available functions vary depending on the operation mode you have selected. Different icons appear depending on the setting values.

Video recording mode



Left of the LCD screen

Icon	Description
	Smart Auto mode/Manual mode/Art Film mode/Art Time Lapse mode/Vertical HD Recording mode
	Video/Photo recording mode tab
	Zoom tab
	Playback tab

Center of the LCD screen

Icon	Description
	Operating status (standby/recording/pause)
	Time counter (video recording time)
	Remaining recordable time
	Like It
	Time Zone (Visit)
	Date/Time

Right of the LCD screen

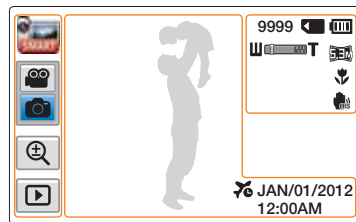
Icon	Description
	Storage media (Memory card)
	Battery information (remaining charge level)
	Optical zoom/Digital zoom bar
	Video resolution
	Tele Macro
	OIS Duo



- The icons are based on an 32GB SDHC memory card capacity.
- The screen above is an example and may differ from the actual display.
- For warning icons and messages, see pages 104-109
- The illustrated items above and their positions can be changed without notice to improve performance.

Learning icons

Photo recording mode



Left of the LCD screen

Icon	Description
	Smart Auto mode/Manual mode/Art Film mode
	Video/Photo recording mode tab
	Zoom tab
	Playback tab

Right of the LCD screen

Icon	Description
	Storage media (Memory card)
	Battery information (remaining charge level)
	Optical zoom/Digital zoom bar
	Photo resolution
	Tele Macro
	OIS Duo

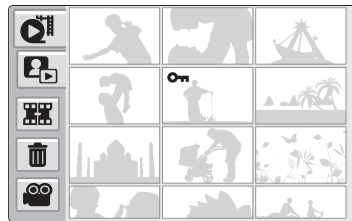
Center of the LCD screen

Icon	Description
9999	Photo image counter (total number of recordable photos)
	Time Zone (Visit)
JAN/01/2012 12:00 AM	Date/Time

- The total number of recordable photos is based on available space on the storage media.
- The largest number the OSD Image Counter can display is 9999.

Learning icons

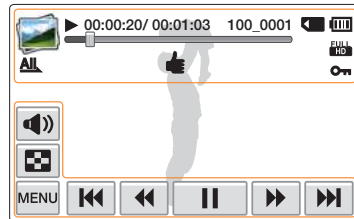
Video playback mode: Thumbnail view



Icon	Description
	Video thumbnail view tab
	Photo thumbnail view tab
	Combine tab

Icon	Description
	Delete tab
	Video recording mode tab
	Erase protection

Video playback mode: Single view



Top of the LCD screen

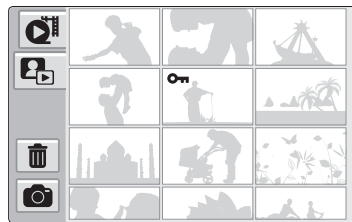
Icon	Description
	Video playback mode
	Operating status (playback/pause etc.)
00:00:00/00:00:55	Time code (elapsed time/recorded time)
100_0001	File name (File number)
	Storage media (memory card)
	Battery information (remaining battery level)
	Playback progress bar
	Video resolution
	Video playback option
	Like It
	Erase protection

Bottom of the LCD screen

Icon	Description
	Volume tab
	Thumbnail view tab
	MENU tab
	Playback related function tab (skip/search/pause/playback/slow playback/frame by frame playback)

Learning icons

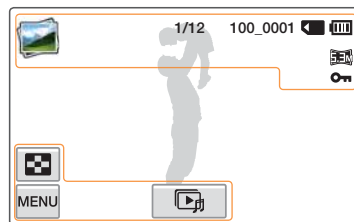
Photo playback mode: Thumbnail view



Icon	Description
	Video thumbnail view tab
	Photo thumbnail view tab
	Delete tab

Icon	Description
	Photo recording mode tab
	Erase protection

Photo playback mode: Single view



Top of the LCD screen

Icon	Description
	Photo playback mode
1/12	Photo image counter (current image/total number of recorded images)
100_0001	File name (file number)
	Storage media (memory card)
	Battery information (remaining battery level)
	Photo resolution
	Erase protection

Bottom of the LCD screen

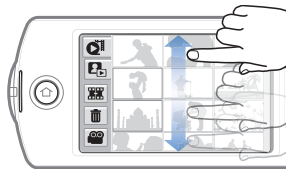
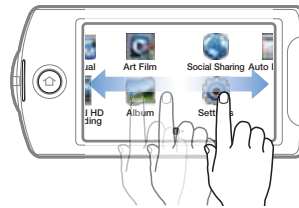
Icon	Description
	Thumbnail view tab
MENU	MENU tab
	Slide show start tab

Using the touch screen

The touch screen lets you 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.

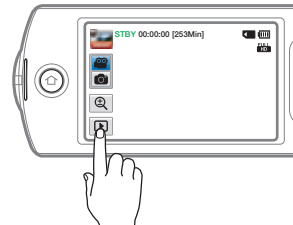
Drag

Drag the touch screen up, down, left, or right to select the desired items or files.



Touch

Slightly touch the items to select or execute with your finger.



- Do not place any protective film on the LCD screen.
- If you leave a film attached for a long while, strong adhesion between the film and the surface of the screen may cause a malfunction of the touch screen.

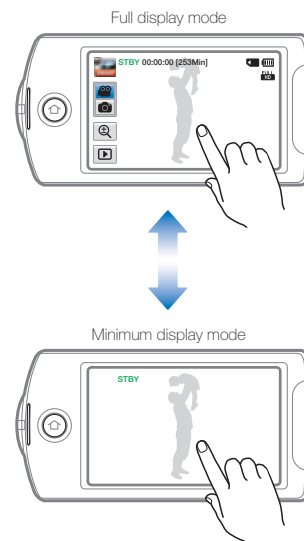



- Be careful not to accidentally press the button near the LCD screen while using the touch screen.
- The tabs and icons that appear on the LCD screen depend on the current recording/playback status of your camcorder.
- The camcorder does not recognize touches if you touch more than two points on the screen at the same time. Touch one point at a time.

Using the touch screen

Switching the information display mode

You can switch the on-screen information display mode. Each time you touch the LCD screen, the full and minimum display modes alternate.

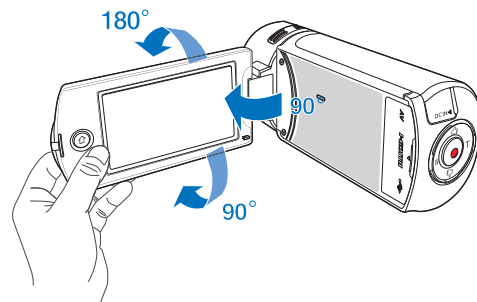


 Warning icons and messages may appear, depending on the recording conditions. ▶ pages 104~109


Using the touch screen

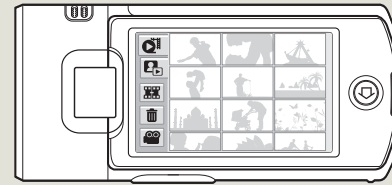
Adjusting the LCD screen


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




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

 When you reverse and close the LCD screen by rotating it to 180° towards the lens, the camcorder switches to the playback mode automatically.



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

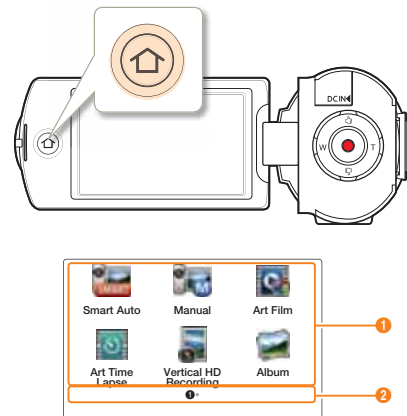
 Clean fingerprints or dust on the screen with a soft cloth.

Using the Home screen

Accessing the Home screen

You can select a operating mode or access the settings menu by touching the icons on the Home screen.

Press the [Home (🏠)] button to access the Home screen.



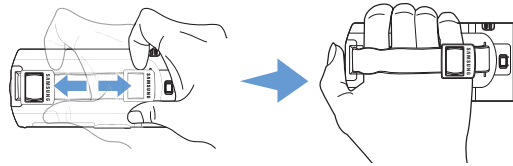
No.	Description
1	Touch an icon to access a mode or function. Drag or flick your finger on the LCD screen to move to the next page.
2	The number of the current page (1, 2)

Icons on the Home screen

Icon	Description
	Smart Auto: Records a video or photo using a scene mode selected automatically by the camcorder. ↳ page 42
	Manual: Records a video or photo using manually setting items for scene conditions. ↳ pages 45~50
	Art Film: Records a video or photo using items for a fun and unique look. ↳ pages 51~52
	Art Time Lapse: Records a time lapse video using Art Time Lapse items. ↳ pages 53~54
	Vertical HD Recording: Records a video in portrait mode. ↳ page 39
	Album: Views videos or photos using playback or editing items. ↳ pages 56~68
	Social Sharing: Uploads videos or photos to share web sites. ↳ page 74 (HMX-QF20 model only)
	Auto Backup: Sends videos or photos to a PC using Auto Backup. ↳ pages 76~78 (HMX-QF20 model only)
	TV Link: Views videos or photos on an AllShare-enabled TV. ↳ page 75 (HMX-QF20 model only)
	Settings: Adjusts settings to match your preferences. ↳ pages 94~102

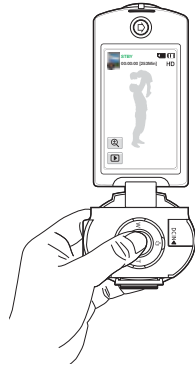
Using the grip belt

Adjust the length of grip belt so that the camcorder is stable when you press the **[Recording start/stop]** button with your thumb.



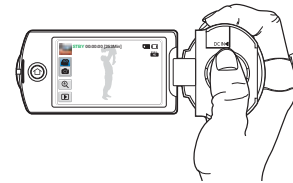
90° Vertical grip

Select **Vertical HD Recording** to record in vertical position. → page 39
Rotate your camcorder to the vertical position.



180° Switch grip

The camcorder is designed for you to use conveniently with either your right or left hand. If you want to use this function, set **Switch Grip** to **On** in the Settings menu. → page 101



<When you hold the camcorder with your right hand>



<When you hold the camcorder with your left hand>



- If you make the grip belt too tight and use excessive force to insert your hand, the grip belt hook of the camcorder may be damaged.
- When you change the Switch Grip direction while recording, the recording may be temporarily interrupted.

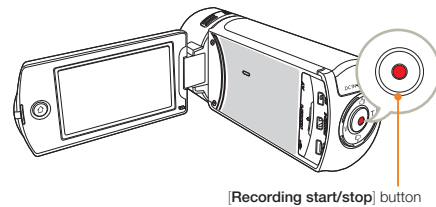
Basic functions

Learn about basic functions for video and photo shooting.

Recording videos	37
Recording videos in portrait mode	39
Tagging great moments while recording.....	40
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Recording with ease for beginners (SMART AUTO).....	42
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Recording videos

Learn how to record videos easily and quickly in the video recording mode.



1 In STBY mode, touch the Video recording mode (📹) tab.

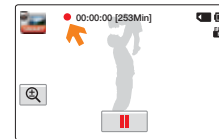


2 Select a subject to record.

- Adjust the LCD screen to the best angle for recording.
- Use the [T/W] button or Zoom (🔍) tab on the LCD screen to adjust the size of the subject. →page 43

3 Press the [Recording start/stop] button.

- The recording (●) icon appears and recording starts.

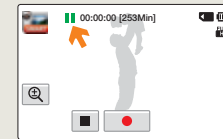


4 To stop recording, press the [Recording start/stop] button again.

🔍 Recording pause/resume

The camcorder allows you to pause temporarily while recording a video. With this function, you can record your favorite scenes as a single video.

Touch the Pause (⏸) tab to pause while recording. Touch the Recording (●) tab to resume.



Recording videos



- If the 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.
- Do not turn off the camcorder or remove the memory card while accessing the storage media. Doing so may damage the storage media or the data in the storage media.



- Videos are compressed in the H.264 (MPEG-4.AVC) format.
- Eject the battery when you have finished recording to prevent unnecessary battery power consumption.
- For the on-screen information display, see page 27.
- For approximate recording time, see page 19.
- Sound is recorded by the internal stereo microphone located on the front of the camcorder. 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 or video recording.
- For various functions available during recording, see pages 45–54.
- If the power cable/battery is disconnected or recording is disabled during recording, the system is switched to the data recovery mode. While data is being recovered, no other function is enabled. When the recording time is short, the data recovery might fail.
- 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 97
- The menu setting tabs shown on the LCD screen do not affect the image being recorded.
- The **[Home (🏠)]** button cannot be used during video recording.
- Recording videos in a quiet environment increases microphone sensitivity that may record surrounding ambient noise. The increasing microphone sensitivity can let the camcorder record zoom noises during zooming (the sound of the zoom mechanism etc).
- When you record indoors or in the dark places, ISO sensitivity is automatically adjusted. It can make interference effects on images and you cannot view the images recorded in the dark places correctly. We recommend you to use professional camcorders like an infrared camcorder when recording at night.
- An image can be shaken when the OIS Duo function is enabled if the camcorder is mounted on a tripod or fixed on a place. Release the OIS Duo function when the camcorder is mounted on a tripod.

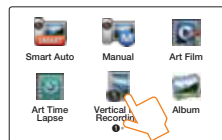
Recording videos

Recording videos in portrait mode

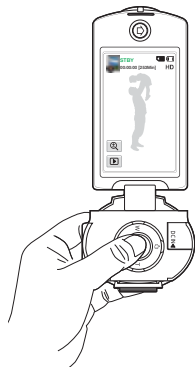
The camcorder can record videos in portrait mode. Set your camcorder to the vertical position.

- 1 Press the **[Home (🏠)]** button → touch **Vertical HD Recording**.

- The camcorder switches to portrait mode (vertical position).



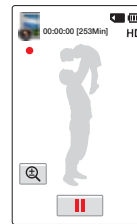
- 2 Rotate the camcorder to 90° for vertical recording.




- 3 Select a subject to record.

- 4 Press the **[Recording start/stop]** button.

- The recording (●) icon appears and recording starts.



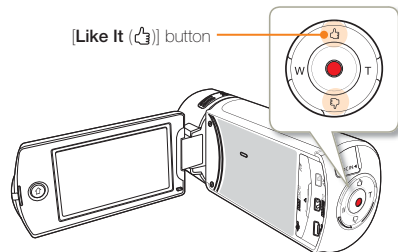
- 5 To stop recording, press the **[Recording start/stop]** button again.

 In portrait mode, you can record videos in 1920x1080/30p resolution only.

Recording videos

Tagging great moments while recording

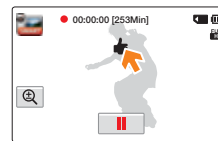
Using the Like It function, you can tag good scenes while recording and enjoy the scenes tagged as Like It (👍) from a long video.



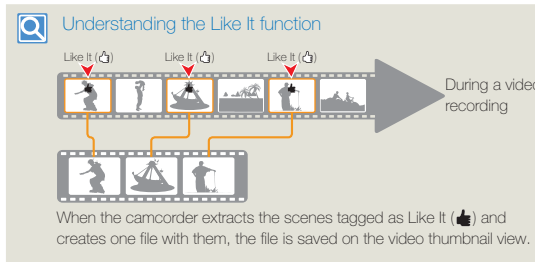
- 1 In STBY mode, touch the Video recording mode (📹) tab.



- 2 Select a subject to record.
 - The recording (●) icon appears and recording starts.
- 3 Press the [Recording start/stop] button.
 - The recording (●) icon appears and recording starts.
- 4 Press the [Like It (👍)] button every great moment while recording.
 - The camcorder tags the scene as Like It (👍).



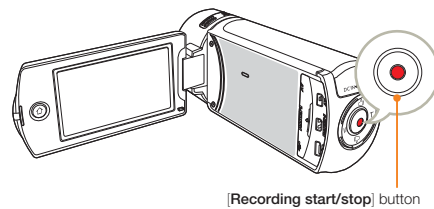
- 5 To stop recording, press the [Recording start/stop] button again.



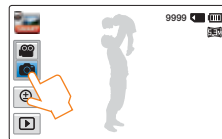
- The camcorder tags the scene recorded between before 3 seconds and after 5 seconds when pressing the [Like It (👍)] button while recording in all video recording modes.
- You can also tag any scenes of a video by pressing [Like It (👍)] button during a video playback. ➔ page 60
- To skip boring parts of a video and enjoy exciting parts, you can combine the tagged scenes sequentially. ➔ page 64
- The camcorder can tag up to 999 as Like It (👍) from a video.
- When the Like It function completes, the Like It (👍) icon on the LCD screen disappears after 3 seconds.

Recording photos

Learn how to capture photos easily and quickly in the photo recording mode.



1 In STBY mode, touch the Photo recording mode (📷) tab.



2 Select a subject to record.

- Adjust the LCD screen to the best angle for recording.
- Use the [T/W] button or Zoom ([Q]) tab on the LCD screen to adjust the size of the subject. →page 43

3 Adjust the subject at the center of the LCD screen, and press the [Recording start/stop] button.

- The shutter sound is heard and the photo is recorded.



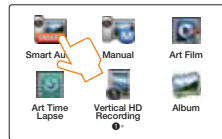
⚠ Do not turn off the camcorder or remove the memory card when taking photos as it may damage the storage media or data.

- The recordable number of photos varies depending on the photo resolution. →page 19
- The camcorder does not record audio when you take photos.
- 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 97
- For on-screen display information, see page 28.
- For various functions available during recording, see pages 45–52.
- Photo files conform to the DCF (Design rule for Camera File system) standard, established by JEITA (Japan Electronics and Information Technology Industries Association.)

Recording with ease for beginners (SMART AUTO)

User-friendly SMART AUTO optimizes your camcorder to the recording conditions automatically, providing beginners with the best performance.

1 Press the **[Home (🏠)]** button → touch **Smart Auto**.



2 Align your subject in the frame.

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



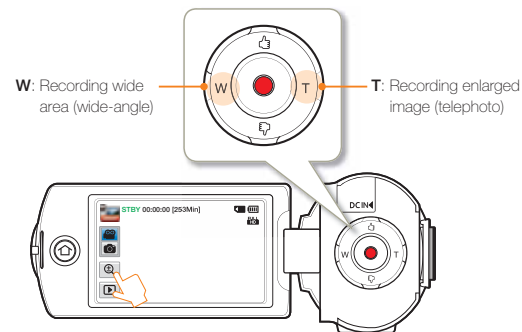
3 To record the video or photo, press the **[Recording start/stop]** button.

Icon	Description
	Appears when the camcorder fails to recognize the recording situations.
	Appears when recording at night. (Night)
	Appears when recording images of landscapes with backlighting. (Backlight)
	Appears when recording people. (Portrait)
	Appears when recording a very bright scene. (White)
	Appears when recording an outdoor scene. (Landscape)
	Appears when recording images using close-up. (Macro)
	Appears when recording images of clear skies. (Blue sky)
	Appears when recording images of forested areas. (Natural green)
	Appears when recording images of sunsets. (Sunset)
	Appears when the camcorder and subject are stationary for a while. (Tripod)

- Most settings are automatically adjusted in the Smart Auto mode. To set or adjust functions on your own, select **Manual** on the Home screen.
- The camcorder may not select the correct scene depending on shooting conditions, such as camcorder shake, lighting, and distance to the subject.
- The camcorder may not detect the portrait mode depending on the orientation or the brightness of faces.

Zooming

This camcorder allows you to record using optical X20 zoom and digital X40 zoom by pressing the [T/W] button or touching the Zoom (🔍) tab on the LCD screen.



W: Recording wide area (wide-angle)

T: Recording enlarged image (telephoto)

To zoom in

Press the [T] button (telephoto). Or touch the Zoom (🔍) tab, and then touch the Telephoto (👤) tab.

- The distant subject is gradually magnified.
- The highest zoom magnification ratio is X20 in the normal zoom-in.

To zoom out

Press the [W] button (wide-angle). Or touch the Zoom (🔍) tab, and then touch the Wide-angle (🏠) tab.

- The subject gets smaller and further away.
- The smallest zoom ratio is the subject's original size in the zoom-out.

Example of zoom-in/out

T: Telephoto



W: Wide-angle



- Using the optical zoom function does not degrade the image quality and clarity.
- Use the digital zoom function when you want to zoom more than the optical zoom range. ▶ page 96
- Focusing may become unstable when you record with a fast zoom or zoom into a subject standing too far away. If this occurs, use the manual focus function. (Video recording mode only) ▶ page 48
- The minimum distance you can have between the camcorder and subject while maintaining sharp focus is about 1 cm (about 0.4 inches) for wide angle and about 1 m (about 40 inches) for telephoto. If you want to shoot the subject close to the lens at a wide angle, use the Tele Macro function. ▶ page 95
- Frequent use of the zoom function consumes more power.
- The camcorder can record the sound of the zoom mechanism.

Extended functions

Learn how to record a video and photo by selecting a mode.

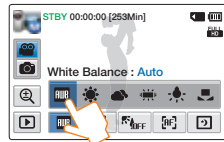
Using the Manual modes	45
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Using the Manual modes

White Balance

The color of your image depends on the type and quality of the light source. If you want the color of your image to be realistic, select an appropriate lighting condition to calibrate the white balance.

- 1 Press the **[Home (🏠)]** button → touch **Manual** → **White Balance** (📷) tab.
- 2 Touch the desired submenu item.






Icon	Description
	Auto: Adjusts the white balance automatically according to the recording conditions.
	Daylight: Use outdoors in normal daylight. Adjusts the white balance according to outdoor lighting conditions.
	Cloudy: Use when recording in the shade or cloudy weather.
	Fluorescent: Use when recording under white fluorescent lights.
	Tungsten: Use when recording under halogen lamps and incandescent lights.
	Custom WB: Manually adjust the white balance to match the light source or situation.

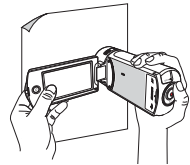
Understanding White Balance

White balance (WB) is the process of removing unrealistic color casts, so that objects which appear white are rendered white in your image. 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.

Using the Manual modes

To set the white balance manually



- 1 In Manual mode, touch **White Balance** () tab → **Custom WB** () tab.
 - The  **Set White Balance** icon appears.
- 2 Fill the screen with a white object, and then touch the **OK** tab.
 - The white balance setting is stored.
 - The stored white balance setting will be applied the next time you record.

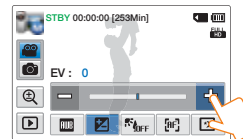


- When setting the white balance manually, the subject must be white, otherwise, your camcorder may not detect an appropriate setting value.
- The adjusted setting remains until you set the white balance again.
- During normal outdoor recording, setting to **Auto** may provide better results.
- Cancel the digital zoom function for clear and precise setting.
↳ page 96
- Reset the white balance if light conditions change.

EV (Exposure Value)

Depending on the intensity of the ambient light, your videos and photos may be too bright or dark. In these cases, you can adjust the exposure to get a better videos and photos.

- 1 Press the **[Home (↑)]** button → touch **Manual** → **EV** () tab.
- 2 Touch the  tab to adjust the setting values.
 - The setting values range from -2.0 to +2.0



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. For example, +0.3 lets in more light than -0.3.

