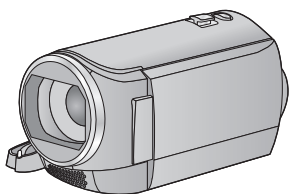


Panasonic®

Basic Owner's Manual High Definition Video Camera

Model No. **HC-V160**



Please read these instructions carefully before using this product, and save this manual for future use.

More detailed operating instructions are available in "Owner's Manual (PDF format)". To read it, download it from the website.

<https://www.pavc.panasonic.co.jp/hdw/oi/V160/>

- Click the desired language.

AVCHD™

HDMI



DOLBY
DIGITAL

Register online at www.panasonic.com/register (U.S. customers only)

If you have any questions, visit :

U.S.A. : www.panasonic.com/support

Canada : www.panasonic.ca/english/support

SQT0666

Dear Customer,

Thank you for choosing Panasonic!

You have purchased one of the most sophisticated and reliable products on the market today. Used properly, we're sure it will bring you and your family years of enjoyment. Please take time to fill in the information on the right.

The serial number is on the tag located on the back of your camera. Be sure to **retain this manual** as your convenient camera information source.

Date of Purchase _____

Dealer Purchased From _____

Dealer Address _____

Dealer Phone No. _____

Model No. _____

Serial No. _____

Safety Precautions

WARNING:

To reduce the risk of fire, electric shock or product damage,

- Do not expose this unit to rain, moisture, dripping or splashing.
- Do not place objects filled with liquids, such as vases, on this unit.
- Use only the recommended accessories.
- Do not remove covers.
- Do not repair this unit by yourself. Refer servicing to qualified service personnel.

CAUTION!

To reduce the risk of fire, electric shock or product damage,

- Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Ensure this unit is well ventilated.
- Do not obstruct this unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.
- Do not place sources of naked flames, such as lighted candles, on this unit.

AC adaptor

This AC adaptor operates on AC between 110 V and 240 V.

But

- In the U.S.A. and Canada, the AC adaptor must be connected to a 120 V AC power supply only.
- When connecting to an AC supply outside of the U.S.A. or Canada, use a plug adaptor to suit the AC outlet configuration.

The power plug is the disconnecting device. Install this unit so that the power plug can be unplugged from the socket outlet immediately.

■ Concerning the battery

Battery pack (Lithium ion battery pack)

- Use the specified unit to recharge the battery pack.
- Do not use the battery pack with equipment other than the specified unit.
- Do not get dirt, sand, liquids, or other foreign matter on the terminals.
- Do not touch the plug terminals (+ and -) with metal objects.
- Do not disassemble, remodel, heat or throw into fire.

If any electrolyte should come into contact with your hands or clothes, wash it off thoroughly with water.

If any electrolyte should come into contact with your eyes, never rub the eyes. Rinse eyes thoroughly with water, and then consult a doctor.

Warning

Risk of fire, explosion and burns. Do not disassemble, heat above 60 °C (140 °F) or incinerate.

CAUTION

- Danger of explosion if battery is incorrectly replaced. Replace only with the type recommended by the manufacturer.
- When disposing of the batteries, please contact your local authorities or dealer and ask for the correct method of disposal.

■ Product Identification Marking

Product	Location
High Definition Video Camera	Battery holder
AC adaptor	Bottom

U.S.A. CONSUMERS: ATTENTION:



A lithium ion battery that is recyclable powers the product you have purchased. Please call 1-800-8-BATTERY for information on how to recycle this battery.

IMPORTANT SAFETY INSTRUCTIONS

Read these operating instructions carefully before using the unit. Follow the safety instructions on the unit and the applicable safety instructions listed below. Keep these operating instructions handy for future reference.

- 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 attachments/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.



THE FOLLOWING APPLIES ONLY IN THE U.S.A.

FCC 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.

FCC Caution: To assure continued compliance, follow the attached installation instructions and use only shielded interface cables with ferrite core when connecting to computer or peripheral devices.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Declaration of Conformity

Trade Name:	Panasonic
Model No.:	HC-V160
Responsible Party:	Panasonic Corporation of North America Two Riverfront Plaza, Newark, NJ 07102-5490
Support Contact:	http://www.panasonic.com/contactinfo

This device complies with Part 15 of the 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.



THE FOLLOWING APPLIES ONLY IN CANADA.

CAN ICES-3(B)/NMB-3(B)

Conforms to UL STD 60065
Certified to CAN/CSA STD C22.2 No.60065.

-If you see this symbol-

Information on Disposal in other Countries outside the European Union



This symbol is only valid in the European Union. If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

■ Cautions for use

The unit and the SD card become warm during use. This is not a malfunction.

Keep this unit as far away as possible from electromagnetic equipment (such as microwave ovens, TVs, video games etc.).

- If you use this unit on top of or near a TV, the pictures and/or sound on this unit may be disrupted by electromagnetic wave radiation.
- Do not use this unit near cell phones because doing so may result in noise adversely affecting the pictures and/or sound.
- Recorded data may be damaged, or pictures may be distorted, by strong magnetic fields created by speakers or large motors.
- Electromagnetic wave radiation generated by microprocessors may adversely affect this unit, disturbing the pictures and/or sound.
- If this unit is adversely affected by electromagnetic equipment and stops functioning properly, turn this unit off and remove the battery or disconnect AC adaptor. Then reinsert the battery or reconnect AC adaptor and turn this unit on.

Do not use this unit near radio transmitters or high-voltage lines.

- If you record near radio transmitters or high-voltage lines, the recorded pictures and/or sound may be adversely affected.

About connecting to a TV

- Do not use any other AV cables except the supplied one.
- Always use a genuine Panasonic HDMI mini cable (RP-CDHM15, RP-CDHM30: optional).

About connecting to a PC

- Do not use any other USB cables except the supplied one.

Make sure to use the supplied cords and cables. If you use optional accessories, use the cords and the cables supplied with them.

Do not extend the cords and the cables.

Do not spray insecticides or volatile chemicals onto the unit.

- If the unit is sprayed with such chemicals, its body may be marred and the surface finish may peel off.
- Do not leave rubber or plastic products in contact with the unit for a long time.

Cleaning

- Before cleaning, detach the battery or pull the AC adaptor from the AC outlet, and then wipe the unit with a soft, dry cloth.
- If the unit is very dirty, dip a cloth in water and squeeze firmly, and then wipe the unit with the damp cloth. Next, dry the unit with a dry cloth.
- Use of benzene, paint thinner, alcohol, or dishwashing liquid may alter the camera body or peel the surface finish. Do not use these solvents.
- When using a chemical dust cloth, follow the instructions that came with the cloth.

When you are not going to use the unit for an extended time

- When storing the unit in a cupboard or cabinet, it is recommended that you place a desiccant (silica gel) in with it.

Be sure to detach the battery after use.

- If the battery is left attached, a minute amount of current continues to flow even if the unit is off. Keeping the unit in this state may result in over discharge of the battery. This may result in you not being able to use the battery even after it is charged.

- The battery should be stored in a cool place free from humidity, with as constant temperature as possible. (Recommended temperature: 15 °C to 25 °C (59 °F to 77 °F), Recommended humidity: 40%RH to 60%RH)
- To store the battery for a long period of time, we recommend that you charge it once every year and store it again after you have completely used up the charged capacity.

If the operating time is very short even after the battery has been recharged, the battery has worn out. Please purchase a new battery.

About the SD card

- When the card access lamp is lit, do not:
 - Remove the SD card
 - Turn the unit off
 - Insert and remove the USB cable
 - Expose the unit to vibrations or shock

■ About the recording format for recording motion pictures

You can select from AVCHD, iFrame or MP4 recording formats to record motion pictures using this unit.

AVCHD:

It is suitable for viewing on a high-definition TV or for saving to disc.

iFrame:

This is a recording format suitable for playing back or editing on Mac (iMovie etc.).

- It is not compatible with motion pictures recorded in AVCHD format.

MP4:

This is a recording format suitable for playing back or editing on a PC.

- It is not compatible with motion pictures recorded in AVCHD format.

■ Indemnity about recorded content

Panasonic does not accept any responsibility for damages directly or indirectly due to any type of problems that result in loss of recording or edited content, and does not guarantee any content if recording or editing does not work properly. Likewise, the above also applies in a case where any type of repair is made to the unit.

■ About Condensation (When the lens or the LCD monitor is fogged up)

Condensation occurs when there is a change in temperature or humidity, such as when the unit is taken from outside or a cold room to a warm room. Please be careful, as it may cause the lens or LCD monitor to become soiled, moldy, or damaged.

When taking the unit to a place which has a different temperature, if the unit is accustomed to the room temperature of the destination for about one hour, condensation can be prevented. (When the difference in temperature is severe, place the unit in a plastic bag or the like, remove air from the bag, and seal the bag.) When condensation has occurred, remove the battery and/or the AC adapter and leave the unit like that for about one hour. When the unit becomes accustomed to the surrounding temperature, fogging will disappear naturally.

■ Cards that you can use with this unit

SD Memory Card, SDHC Memory Card and SDXC Memory Card

- 4 GB or more Memory Cards that do not have the SDHC logo or 48 GB or more Memory Cards that do not have the SDXC logo are not based on SD Memory Card Specifications.
- Refer to page 15 for more details on SD cards.

■ For the purposes of this owner's manual

- SD Memory Card, SDHC Memory Card and SDXC Memory Card are referred to as the "SD card".
- Functions that can be used for motion picture recording/motion picture playback are indicated by **VIDEO** in this owner's manual.
- Functions that can be used for still picture recording/still picture playback are indicated by **PHOTO** in this owner's manual.
- Scene(s) recorded in 1080/60i: "AVCHD scene(s)"
- Pages for reference are indicated by an arrow, for example: → 00

■ Installing HD Writer LE 3.0

Check the website below to download/install the software.

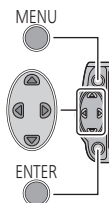
- The software is available for download until the end of March 2018.

http://panasonic.jp/support/global/cs/soft/download/f_le30.html

■ Downloading the Owner's Manual (PDF format)

You can check the URL of the website where you can download the Owner's Manual (PDF format) in [ONLINE MANUAL] in the Setup menu.

- 1 Press the **MENU** button.
- 2 Select **[SETUP]** using **▲/▼/◀/▶** and press the **ENTER** button.
- 3 Select **[ONLINE MANUAL]** using **▲/▼** and press the **ENTER** button.
- 4 Select the access method you want to check.



[URL display]:

Displays the URL of the website on the LCD monitor of this unit.

[USB connect]:

Displays the website on a PC connected to this unit with the USB cable. Click [OIBOOK], which will be displayed on the PC.

- You will need Adobe Reader to browse or print the Owner's Manual (PDF format). You can download and install a version of Adobe Reader that you can use with your OS from the following website. (As of October 2014)

<http://www.adobe.com/products/acrobat/readstep2.html>

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Accessories

Check the accessories before using this unit.

Keep the accessories out of reach of children to prevent swallowing.

Product numbers correct as of October 2014. These may be subject to change.

Battery pack

VW-VBY100



AC adaptor

VSK0784



AV cable

K2KYYYY00223



USB cable

K2KYYYY00225



Power supply

■ About batteries that you can use with this unit

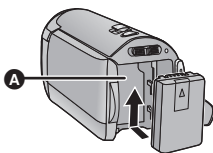
The battery that can be used with this unit is VW-VBY100/VW-VBT190/VW-VBT380.

It has been found that counterfeit battery packs which look very similar to the genuine product are made available to purchase in some markets. Some of these battery packs are not adequately protected with internal protection to meet the requirements of appropriate safety standards. There is a possibility that these battery packs may lead to fire or explosion. Please be advised that we are not liable for any accident or failure occurring as a result of use of a counterfeit battery pack. To ensure that safe products are used we would recommend that a genuine Panasonic battery pack is used.

Inserting/removing the battery

- Press the power button to turn off the unit. (→ 16)

Install the battery by inserting it in the direction shown in the figure.



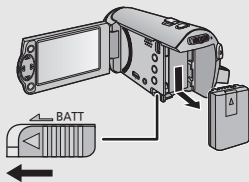
A Battery holder

Insert the battery until it clicks and locks.

Removing the battery

Be sure to hold down the power button until the status indicator goes off. Then remove the battery while supporting the unit to prevent it from dropping.

Move the battery release lever in the direction indicated by the arrow and remove the battery when unlocked.



Charging the battery

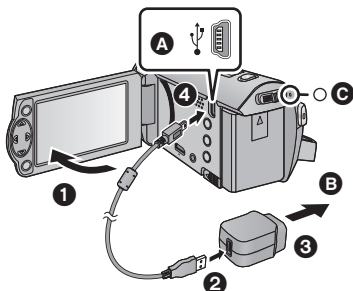
When this unit is purchased, the battery is not charged. Charge the battery fully before using this unit for the first time.

■ Charging with an AC adaptor.

The unit is in the standby condition when the AC adaptor is connected. The primary circuit is always "live" as long as the AC adaptor is connected to an electrical outlet.

Important:

- The AC adaptor and USB cable are for use with this unit only. Do not use them with other equipment. Similarly, do not use AC adaptors and USB cables from other equipment with this unit.
- The battery will not be charged if the unit is turned on. Press the power button to turn off the unit. (→ 16)
- It is recommended to charge the battery in a temperature between 10 °C and 30 °C (50 °F and 86 °F). (The battery temperature should also be the same.)



- A** USB terminal
- B** To the AC outlet

- Insert the plugs as far as they will go.

- 1** Open the LCD monitor.
- 2** Connect the USB cable to the AC adaptor.
- 3** Plug the AC adaptor into the AC outlet.
- 4** Connect the USB cable to the unit.

- The status indicator **C** will flash red with approx. 2 seconds period (off for approx. 1 second, on for approx. 1 second), indicating that charging has begun. It will turn off when the charging is completed.

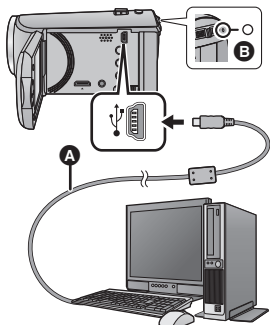
■ Connecting to the AC outlet

If you turn on the unit while connecting with the AC adaptor, you can use the unit with power supplied from the outlet.

When recording for a long time, keep the AC adaptor connected and use it together with the battery. This allows you to continue the recording even if a power failure occurs or the AC adaptor is unplugged from the AC outlet by accident.

■ Connecting to a PC and charging.

Charge the unit if you do not have the AC adaptor handy.



- A** USB cable (supplied)
- Insert the plugs as far as they will go.
 - Press the power button and turn the unit off. (→ 16)

1 Turn the power of the PC on.

2 Connect the USB cable.

- The status indicator **B** will flash red with approx. 2 seconds period (off for approx. 1 second, on for approx. 1 second), indicating that charging has begun. It will turn off when the charging is completed.
- Do not use any other USB cables except the supplied one. (Operation is not guaranteed with any other USB cables.)
- Always connect directly to a PC.
- You cannot charge when the status indicator flashes rapidly, or when it does not light at all. Charge using the AC adaptor. (→ 12)
- It will take 2 or 3 times longer to charge compared to when using the AC adaptor.

-
- Do not use any other AC adaptors except the supplied one.
 - We recommend using Panasonic batteries (→ 11).
 - If you use other batteries, we cannot guarantee the quality of this product.
 - Do not heat or expose to flame.
 - Do not leave the battery(ies) in a car exposed to direct sunlight for a long period of time with doors and windows closed.
 - If you do not intend to use the unit for an extended period, disconnect the USB cable from the unit for safety.
 - Charging may not be possible depending on the operating environment of the PC being used (such as custom-made PC).
 - Charging will stop when turning the power of the PC off or forcing it into sleep mode. Charging will start again when turning the power of the PC on again, or waking from sleep mode.
 - The unit will be charged if it is connected to a Panasonic Blu-ray disc recorder or DVD recorder with a USB cable, even if the unit is turned off.

Charging and recording time

■ Charging/Recording time

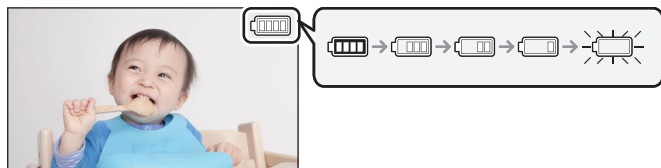
- Temperature: 25 °C (77 °F)/humidity: 60%RH
- Time in the parenthesis is charging time when this unit is connected to a PC, Panasonic Blu-ray disc recorder, or DVD recorder.



Battery model number [Voltage/Capacity (minimum)]	Charging time	Recording format	Recording mode	Maximum continuously recordable time	Actual recordable time
Supplied battery/VW- VBY100 (optional) [3.6 V/970 mAh]	2 h 20 min (3 h 10 min)	AVCHD	[HA], [HG]	1 h 5 min	40 min
			[HE]	1 h 10 min	
		iFrame	-	1 h 20 min	45 min
		MP4	-		

- These times are approximations.
- **The indicated charging time is for when the battery has been discharged completely. Charging time and recordable time vary depending on the usage conditions such as high/low temperature.**
- The actual recordable time refers to the recordable time when repeatedly starting/stopping recording, turning the unit on/off, moving the zoom lever etc.

■ Battery capacity indication

The battery capacity indication is displayed on the LCD monitor.



- The display changes as the battery capacity reduces.  If the battery discharges, then  will flash red. Recharge the battery or replace it with a fully charged battery.

Recording to a card

The unit can record still pictures or motion pictures to an SD card. To record to an SD card, read the following.

Cards that you can use with this unit

Use SD cards conforming to Class 4 or higher of the SD Speed Class Rating for motion picture recording.

Please confirm the latest information about SD Memory Cards/SDHC Memory Cards/SDXC Memory Cards that can be used for motion picture recording on the following website.

http://panasonic.jp/support/global/cs/e_cam

(This website is in English only.)

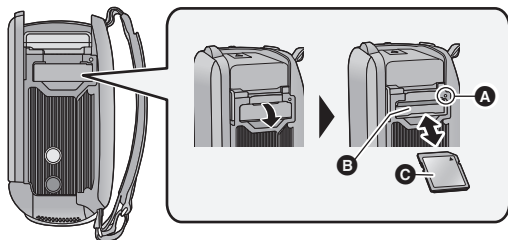
- Keep the Memory Card out of reach of children to prevent swallowing.

Inserting/removing an SD card

When using an SD card not from Panasonic, or one previously used on other equipment, for the first time on this unit, format the SD card. (→ 22) When the SD card is formatted, all of the recorded data is deleted. Once the data is deleted, it cannot be restored.

Caution:

Check that the access lamp has gone off.



Access lamp [ACCESS] (A)

- When this unit is accessing the SD card, the access lamp lights up.

1 Open the SD card cover and insert (remove) the SD card into (from) the card slot (A).

- Face the label side (C) in the direction shown in the illustration and press it straight in as far as it will go.
- Press the center of the SD card and then pull it straight out.

2 Securely close the SD card cover.

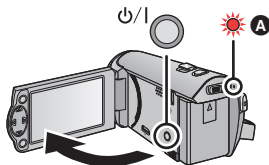
- Securely close it until it clicks.

Turning the unit on/off

You can turn the unit on and off using the power button or by opening and closing the LCD monitor.

Turning the unit on and off with the power button

Open the LCD monitor and press the power button to turn on the unit.



To turn off the unit

Hold down the power button until the status indicator goes off.

A The status indicator lights on.

The unit is turned on when the LCD monitor is opened, and unit is turned off when it is closed.

Setting date and time

The clock is not set at the time of purchase. Make sure to set the clock.

- When you turn on this unit, the message “Set home region and date/time.” may be displayed. Select [YES], and follow the steps below to make these settings:
 - Step 2 of “Setting your home region for the first time”
 - Steps 2–3 of “Setting date and time”

◇ Change the mode to .

1 Select the menu. (→ 22)

MENU : [SETUP] → [CLOCK SET]

2 Select the date or time using ◀/▶ and set the desired value using ▲/▼.

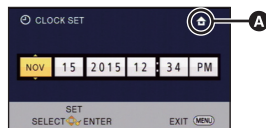
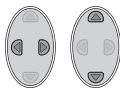
A Displaying the World time setting:

[HOME] / [DESTINATION]

- The year can be set between 2000 and 2039.

3 Press the ENTER button.

- Press the MENU button to complete the setting.



Setting your home region for the first time

You can set your home region in [SET WORLD TIME].

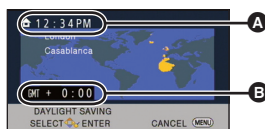
1 Select the menu. (→ 22)

MENU : [SETUP] → [SET WORLD TIME]

- A message will be displayed. Press the ENTER button.

2 Select your home region using ◀/▶ and press the ENTER button.

- When the clock is not set, the current time is displayed as "--:--:--".

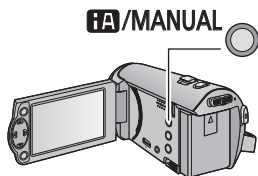


- A** The current time
- B** The time difference from GMT (Greenwich Mean Time)

- For information on how to change your home region or set the region of your travel destination, refer to the Owner's Manual (PDF format).

Intelligent Auto Mode

The modes (appropriate for the condition) are set just by pointing the unit to what you want to record.




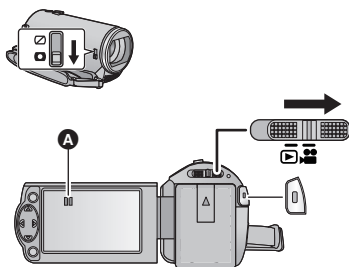
Intelligent auto/Manual button



Press this button to switch Intelligent Auto Mode/Manual Mode.

Recording motion pictures

- Open the lens cover before turning on the unit.

- 1 Change the mode to  and open the LCD monitor.
- 2 Press the recording start/stop button to start recording.




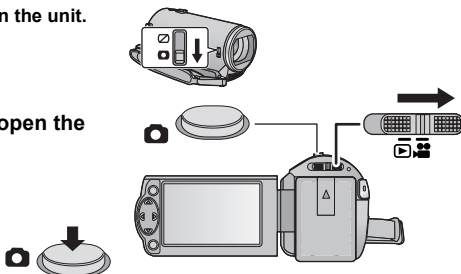
- A** When you begin recording,  changes to .


- 3 Press the recording start/stop button again to pause recording.

Recording still pictures


- Open the lens cover before turning on the unit.

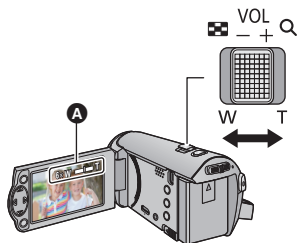
- 1 Change the mode to  and open the LCD monitor.
- 2 Press the  button.



- The still picture operating display () will turn red while recording still pictures.

Using the Zoom

- ◇ Change the mode to .



Zoom lever

T side:

Close-up recording (zoom in)

W side:

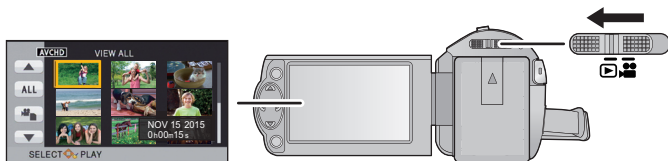
Wide-angle recording (zoom out)


- The zoom speed varies depending on the range over which the zoom lever is moved.

A Zoom bar

Zoom bar is displayed during the zoom operation.

Motion picture/Still picture playback



1 Change the mode to .

2 Select the play mode select icon **A** using $\blacktriangle/\blacktriangledown/\blacktriangleleft$ and press the ENTER button.

- This can also be set from the menu.

[VIDEO SETUP] or [PICT. SETUP] → [MEDIA, VIDEO/PICTURE]

3 Select still picture **B** or motion picture **C** to playback using $\blacktriangle/\blacktriangledown/\blacktriangleleft/\blacktriangleright$ and press the ENTER button.

- If you press the MENU button, or select motion picture/still picture and press the ENTER button, the setting is complete.

- When a motion picture item is selected, an icon will appear on the thumbnail display. (**AVCHD**, **i Frame**, **MP4**)

4 Select the scene or the still picture to be played back using $\blacktriangle/\blacktriangledown/\blacktriangleleft/\blacktriangleright$, then press the ENTER button.

- When you select $\blacktriangle/\blacktriangledown$ and press the ENTER button, the next (previous) page is displayed.

5 Select the operation icon using $\blacktriangle/\blacktriangledown/\blacktriangleleft/\blacktriangleright$.

D Operation icon

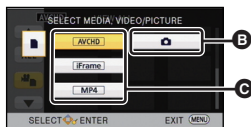
- Press the ENTER button to display/not display the operation icon.
- Press \blacktriangle to start/pause playback of motion pictures.



ENTER



ENTER




ENTER

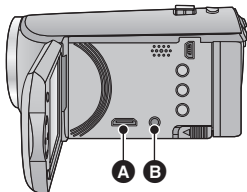


D

Watching Video/Pictures on your TV

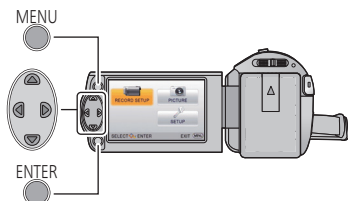
Connect this unit to a TV using an HDMI mini cable (optional) or an AV cable (supplied).

Change the mode to  to play back.



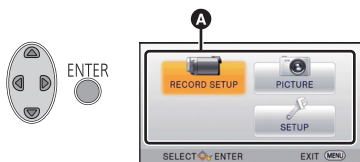
- A** HDMI mini connector [HDMI]
- B** AV connector [A/V]

Using the menu screen

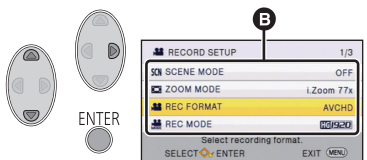


1 Press the **MENU** button.

2 Press **▲/▼/◀/▶** to select the top menu **A**, then press the **ENTER** button.



3 Select the submenu **B** using **▲/▼** and press **▶** or press the **ENTER** button.



4 Select the desired item using **▲/▼/◀/▶**, and press the **ENTER** button to set.



To get back to the previous screen

Press **◀** of the cursor button.

To exit the menu screen

Press the **MENU** button.

About the information display

Descriptions of the selected submenu and items displayed in Steps 3 and 4 are displayed.

About the operation icons



Select and press the **ENTER** button to switch page.



Select and press the **ENTER** button to return to previous screen.



Language selection

You can select the language on the screen display and the menu screen.

MENU : **[SETUP]** → **[LANGUAGE]** →
desired language

Formatting


Please be aware that if a medium is formatted, then all the data recorded on the medium will erase and cannot be restored. Back up important data on a PC, disc, etc.

MENU : **[SETUP]** → **[FORMAT MEDIA]**

- Do not format an SD card using any other equipment such as a PC. The card may not be used on this unit.

Troubleshooting

■ It is not a malfunction in the following cases

A clicking sound is heard when the unit is shaken.	<ul style="list-style-type: none"> This is the sound of the lens moving and is not a defect. This sound will no longer be heard when the unit is turned on and change the mode to .
Object seems to be warped.	<ul style="list-style-type: none"> Object seems to be warped slightly when the object moves across the image very fast, but this is because the unit is using MOS for the image sensor. This is not a malfunction.
The lens or LCD monitor fog up.	<ul style="list-style-type: none"> This is due to condensation. It is not a malfunction. Please refer to page 7.



Power

Problem	Check points
<p>This unit cannot be turned on.</p> <p>This unit does not stay on long enough.</p> <p>Battery runs down quickly.</p>	<ul style="list-style-type: none"> Charge the battery again to ensure it is sufficiently charged. (→ 12) In cold places, the battery using time becomes shorter. The battery has a limited life. If the operating time is still too short even after the battery is fully charged, the battery has worn out and needs to be replaced.
<p>This unit cannot be operated though it is turned on.</p> <p>This unit does not operate normally.</p>	<ul style="list-style-type: none"> Remove the battery or AC adaptor, wait about 1 minute and then reconnect the battery or AC adaptor. Then about 1 minute later, turn on the unit again. (Conducting the above operation while the media is being accessed may damage the data on the media.) If normal operation is still not restored, detach the power connected, and consult the dealer who you purchased this unit from.
<p>"ERROR OCCURRED. PLEASE TURN UNIT OFF, THEN TURN ON AGAIN." is displayed.</p>	<ul style="list-style-type: none"> The unit has automatically detected an error. Restart the unit by turning the unit off and on. The unit will be turned off in about 1 minute if the unit is not turned off and on. Repair is needed if it is repeatedly displayed even if it is restarted. Detach the power connected, and consult the dealer who you purchased this unit from. Do not attempt to repair the unit by yourself.

Recording

Problem	Check points
<p>Color or brightness of the image changes, or you may see horizontal bars in the image.</p> <p>The LCD monitor flickers indoors.</p>	<ul style="list-style-type: none"> Color or brightness of the image may change, or you may see horizontal bars in the image when the object is recorded under fluorescent light, mercury light or sodium light, etc., but this is not a malfunction. Record in Intelligent Auto Mode or set the shutter speed to 1/60 in areas where the power supply frequency is 60 Hz, or 1/100 in areas of 50 Hz.

Playback

Problem	Check points
Scenes/still pictures cannot be played back.	<ul style="list-style-type: none">Any scenes/still pictures where the thumbnails are displayed as  cannot be played back.Motion pictures recorded with other devices may not be possible to play back on this unit. ( is displayed.)

Please refer to “Owner’s Manual (PDF format)” for details.

Others

About copyright

■ Carefully observe copyright laws

Whatever you have recorded and created can be used for your personal entertainment only. Under copyright laws, other materials cannot be used without obtaining permission from the holders of the copyrights.

■ Licenses

- SDXC Logo is a trademark of SD-3C, LLC.
- “AVCHD” and the “AVCHD” logo are trademarks of Panasonic Corporation and Sony Corporation.
- Manufactured under license from Dolby Laboratories.
Dolby and the double-D symbol are trademarks of Dolby Laboratories.
- HDMI, the HDMI Logo, and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.
- Microsoft®, Windows® and Windows Vista® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- iMovie, Final Cut Pro, Mac and OS X are trademarks of Apple Inc. registered in the U.S. and other countries.
- Other names of systems and products mentioned in these instructions are usually the registered trademarks or trademarks of the manufacturers who developed the system or product concerned.

This product is licensed under the AVC patent portfolio license for the personal and non-commercial use of a consumer to (i) encode video in compliance with the AVC Standard (“AVC Video”) and/or (ii) decode AVC Video that was encoded by a consumer engaged in a personal and non-commercial activity and/or was obtained from a video provider licensed to provide AVC Video. No license is granted or shall be implied for any other use. Additional information may be obtained from MPEG LA, LLC.
See <http://www.mpegla.com>.

Specifications

High Definition Video Camera

Information for your safety

Power source:	DC 5.0 V (When using AC adaptor) DC 3.6 V (When using battery)
Power consumption:	Recording; 3.5 W Charging; 5.3 W

Motion picture recording format:

[AVCHD]; AVCHD format version 2.0 compliant [iFrame], [MP4]; MPEG-4 AVC file format compliant (.MP4)

Motion picture compression:

MPEG-4 AVC/H.264

Audio compression:

[AVCHD]; Dolby[®] Digital/2 ch [iFrame], [MP4]; AAC/2 ch

Recording mode and transfer rate:

[HA]; Average 17 Mbps (VBR)
[HG]; Average 13 Mbps (VBR)
[HE]; Average 5 Mbps (VBR)
[iFrame]; Maximum 28 Mbps (VBR)
[MP4]; Average 1.5 Mbps (VBR)
Refer to the Owner's manual (PDF format) for the picture size and recordable time of a motion picture.

Still picture recording format:

JPEG (Design rule for Camera File system, based on Exif 2.2 standard)
Refer to the Owner's manual (PDF format) for the number of recordable pictures.

Recording media:

SD Memory Card
SDHC Memory Card
SDXC Memory Card
Refer to page 15 for details on SD cards usable in this unit.

Image sensor:

1/5.8" 1MOS image sensor
Total; 2510 K
Effective pixels;
Motion picture/Still picture; 2200 K (16:9)

Lens:

Auto Iris, 38× Optical Zoom, F1.8 to F4.2
Focal length;
2.35 mm to 89.3 mm
Macro (Full range AF)
35 mm equivalent;
Motion picture/Still picture; 32.3 mm to 1646 mm (16:9)
Minimum focus distance;
Normal; Approx. 3 cm (1.2") (Wide)/Approx. 1.6 m (5.2 feet) (Tele)

Zoom:

i.Zoom OFF 50×
77× i.Zoom, 100×/2500× Digital Zoom

Image stabilizer function:

Electronic

Creative Control:

[Miniature Effect]/[Silent movie]/[8mm movie]/ [Time Lapse Rec]

Monitor:

2.7" wide LCD monitor (Approx. 230 K dots)

Microphone:

Stereo

Minimum required illumination:

Approx. 4 lx (1/30 with Low Light mode in the Scene Mode)

Approx. 1 lx with the Color Night Rec function

AV connector video output level:

1.0 Vp-p, 75 Ω, NTSC system

HDMI mini connector video output level:

HDMI™ 1080i/480p

AV connector audio output level (Line):

251 mV, 600 Ω, 2 ch

HDMI mini connector audio output level:

[AVCHD]; Dolby Digital/Linear PCM
[iFrame], [MP4]; Linear PCM

USB:

Reader function

SD card; Read only (No copyright protection support)

Hi-Speed USB (USB 2.0), USB terminal Type Mini B

Battery charging function (Charges from USB terminal when the main unit is off)

Dimensions:

53 mm (W)×60 mm (H)×114 mm (D)
[2.087 " (W)×2.362 " (H)×4.488 " (D)]
(including projecting parts)

Mass (Weight):

Approx. 181 g (Approx. 0.399 lbs.)
[without battery (supplied) and an SD card (optional)]

Mass (Weight) in operation:

Approx. 207 g (Approx. 0.456 lbs.)
[with battery (supplied) and an SD card (optional)]

Operating temperature:

0 °C to 40 °C (32 °F to 104 °F)

Operating humidity:

10%RH to 80%RH

Battery operation time:

See page 14

AC adaptor

Information for your safety

Power source:

AC 110 V to 240 V, 50/60 Hz

Power consumption:

7 W

DC output:

DC 5.0 V, 1.0 A





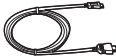





Dimensions:

48.9 mm (W)×32.8 mm (H)×75.2 mm (D)
[1.93 " (W)×1.29 " (H)×2.96 " (D)]

Mass (Weight):

Approx. 54 g (Approx. 0.119 lbs.)

Optional accessories

Accessory No.	Figure	Description
VW-BC10PP		Battery charger
VW-VBY100*1		Rechargeable Lithium Ion Battery Pack
VW-VBT190		Rechargeable Lithium Ion Battery Pack
VW-VBT380		Rechargeable Lithium Ion Battery Pack
RP-CDHM15 RP-CDHM30		HDMI mini cable
VW-SK12PP		Shoe adaptor
VW-ACT190PP		Accessory kit
VW-LED1PP*2		LED Video Light
VW-SCA100		Suction Cup Mount
RP-CMC10PP		Video Camera Mount (For Handlebar)

*1 Please refer to page 14, concerning the battery charging time and available recording time.

*2 To use the LED Vide Light/VW-LED1PP, the Shoe adaptor/VW-SK12PP is required.

NOTE:

Accessories and/or model numbers may vary by country. Please consult your local dealer. Product numbers correct as of October 2014. These may be subject to change.

Accessory Order Form (For USA Customers)

Please photocopy this form when placing an order.

1. Model # _____

2. Items Ordered

Accessory #	Description	Price Each	Quantity	Total Price
Shipping & Handling				\$6.95
Subtotal				
Your State & Local Sales Tax				
Total				

3. Method of payment (check one)

- American Express
- VISA Credit Card # _____
- MasterCard Expiration Date _____
- Discover Customer Signature _____

(Please do not send cash)

4. Shipping information (UPS delivery requires complete street address)

Ship To:

Mr.

Mrs.

Ms. _____

First

Last

Phone#:

Day () _____

Street Address

Night () _____

City

State

Zip

TO OBTAIN ANY OF OUR ACCESSORIES YOU CAN DO ANY OF
THE FOLLOWING:
VISIT YOUR LOCAL PANASONIC DEALER
OR
YOU MAY CONTACT US DIRECTLY AT: 1-800-237-9080 (FAX ONLY)
OR
MAIL THIS ORDER TO: PANASONIC NATIONAL PARTS CENTER
20421 84th Avenue South, Kent, WA 98032

In CANADA, please contact your local Panasonic dealer for more information on Accessories.

Limited Warranty (ONLY FOR U.S.A.)

Panasonic Products Limited Warranty

Limited Warranty Coverage (For USA Only)

If your product does not work properly because of a defect in materials or workmanship, Panasonic Corporation of North America (referred to as "the warrantor") will, for the length of the period indicated on the chart below, which starts with the date of original purchase ("warranty period"), at its option either (a) repair your product with new or refurbished parts, (b) replace it with a new or a refurbished equivalent value product, or (c) refund your purchase price. The decision to repair, replace or refund will be made by the warrantor.

Product or Part Name	Parts	Labor
High Definition Video Camera	1 Year	90 Days
All included Accessories (Except Non-Rechargeable Batteries)	90 Days	Not Applicable
Only Non-Rechargeable Batteries	10 Days	Not Applicable

During the "Labor" warranty period there will be no charge for labor. During the "Parts" warranty period, there will be no charge for parts. This Limited Warranty excludes both parts and labor for non-rechargeable batteries, antennas, and cosmetic parts (cabinet). This warranty only applies to products purchased and serviced in the United States. This warranty is extended only to the original purchaser of a new product which was not sold "as is".

Mail-In Service--Online Repair Request

Online Repair Request

To submit a new repair request and for quick repair status visit our Web Site at www.panasonic.com/support.

When shipping the unit, carefully pack, include all supplied accessories listed in the Owner's Manual, and send it prepaid, adequately insured and packed well in a carton box. When shipping Lithium Ion batteries please visit our Web Site at www.panasonic.com/BatteryHandling as Panasonic is committed to providing the most up to date information. Include a letter detailing the complaint, a return address and provide a daytime phone number where you can be reached. A valid registered receipt is required under the Limited Warranty.

IF REPAIR IS NEEDED DURING THE WARRANTY PERIOD, THE PURCHASER WILL BE REQUIRED TO FURNISH A SALES RECEIPT/PROOF OF PURCHASE INDICATING DATE OF PURCHASE, AMOUNT PAID AND PLACE OF PURCHASE. CUSTOMER WILL BE CHARGED FOR THE REPAIR OF ANY UNIT RECEIVED WITHOUT SUCH PROOF OF PURCHASE.

Limited Warranty Limits And Exclusions

This warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage. The warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which are caused by products not supplied by the warrantor, or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, power line surge, lightning damage, modification, introduction of sand, humidity or liquids, commercial use such as hotel, office, restaurant, or other business or rental use of the product, or service by anyone other than a Factory Service Center or other Authorized Servicer, or damage that is attributable to acts of God.

THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER "LIMITED WARRANTY COVERAGE".

THE WARRANTOR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY.

(As examples, this excludes damages for lost time, travel to and from the servicer, loss of or damage to media or images, data or other memory or recorded content. The items listed are not exclusive, but for illustration only.)

ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE PERIOD OF THE LIMITED WARRANTY.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the exclusions may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state. If a problem with this product develops during or after the warranty period, you may contact your dealer or Service Center. If the problem is not handled to your satisfaction, then write to:

Consumer Affairs Department
Panasonic Corporation of North America
661 Independence Pkwy
Chesapeake, VA 23320

PARTS AND SERVICE, WHICH ARE NOT COVERED BY THIS LIMITED WARRANTY, ARE YOUR RESPONSIBILITY.

Shop Accessories!

for all your Panasonic gear

Go to

www.panasonic.com/accessories

Get everything you need to get the most out of
your Panasonic products

Accessories & Parts for your Camera, Phone, A/V
products, TV, Computers & Networking, Personal
Care, Home Appliances, Headphones, Batteries,
Backup Chargers & more...

Customer Services Directory

For Product Information, Operating Assistance,
Parts, Owner's Manuals, Dealer and Service info
go to www.panasonic.com/support

For the hearing or speech impaired TTY: 1- 877-833-8855

As of October 2014

Warranty (For Canadian Customers)

Panasonic Canada Inc.

5770 Ambler Drive, Mississauga, Ontario L4W 2T3

PANASONIC PRODUCT – LIMITED WARRANTY

Panasonic Canada Inc. warrants this product to be free from defects in material and workmanship under normal use and for a period as stated below from the date of original purchase agrees to, at its option either (a) repair your product with new or refurbished parts, (b) replace it with a new or a refurbished equivalent value product, or (c) refund your purchase price. The decision to repair, replace or refund will be made by Panasonic Canada Inc.

Camcorder Products - One (1) year, parts and labour

This warranty is given only to the original purchaser, or the person for whom it was purchased as a gift, of a Panasonic brand product mentioned above sold by an authorized Panasonic dealer in Canada and purchased and used in Canada, which product was not sold "as is", and which product was delivered to you in new condition in the original packaging.

IN ORDER TO BE ELIGIBLE TO RECEIVE WARRANTY SERVICE HEREUNDER, A PURCHASE RECEIPT OR OTHER PROOF OF DATE OF ORIGINAL PURCHASE, SHOWING AMOUNT PAID AND PLACE OF PURCHASE IS REQUIRED

LIMITATIONS AND EXCLUSIONS

This warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage. The warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which are caused by products not supplied by Panasonic Canada Inc., or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, improper batteries, power line surge, lightning damage, modification, introduction of sand, humidity or liquids, commercial use such as hotel, office, restaurant, or other business or rental use of the product, or service by anyone other than an Authorized Servicer, or damage that is attributable to acts of God.

Dry cell batteries are also excluded from coverage under this warranty. Rechargeable batteries are warranted for ninety (90) days from date of original purchase.

THIS EXPRESS, LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT WILL PANASONIC CANADA INC. BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT OR ARISING OUT OF ANY BREACH OF ANY EXPRESS OR IMPLIED WARRANTY. (As examples, this warranty excludes damages for lost time, travel to and from the Authorized Servicer, loss of or damage to media or images, data or other memory or recorded content. This list of items is not exhaustive, but for illustration only.)

In certain instances, some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, or the exclusion of implied warranties, so the above limitations and exclusions may not be applicable. This warranty gives you specific legal rights and you may have other rights which vary depending on your province or territory.

WARRANTY SERVICE

For product operation, repairs and information assistance, please visit our Support page:

www.panasonic.ca/english/support

IF YOU SHIP THE PRODUCT TO A SERVICENTRE

Carefully pack and send prepaid, adequately insured and preferably in the original carton.
Include details of the defect claimed, and proof of date of original purchase.

Panasonic Corporation of North America

Two Riverfront Plaza, Newark, NJ 07102-5490

<http://www.panasonic.com>

Panasonic Canada Inc.

5770 Ambler Drive, Mississauga, Ontario, L4W 2T3

www.panasonic.com

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