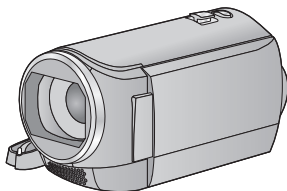




Basic Operating Instructions

High Definition Video Camera

Model No. **HC-V210**
HC-V210M
HC-V110



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

This document explains basic operations of the unit. For more detailed explanation, please refer to "Operating Instructions (PDF format)" which is recorded in the enclosed CD-ROM.



AVCHD™
Progressive

AVCHD™

HDMI



Information for Your Safety

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.

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

■ Concerning the battery

Warning

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

CAUTION

- Danger of explosion if battery is incorrectly replaced. Replace only with the type recommended by the manufacturer.
- When disposing 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

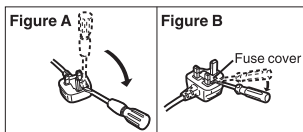
HC-V210/HC-V210M (GC/GW) only How to replace the fuse

The location of the fuse differ according to the type of AC mains plug (figures A and B).

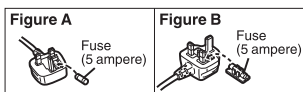
Confirm the AC mains plug fitted and follow the instructions below.

Illustrations may differ from actual AC mains plug.

- 1) Open the fuse cover with a screwdriver.



- 2) Replace the fuse and close or attach the fuse cover.



-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

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

HC-V210 / HC-V210M
HC-V110 (GC/GA/GW)

- Always use the supplied HDMI mini cable or a genuine Panasonic HDMI mini cable (RP-CDHM15, RP-CDHM30: optional).

HC-V110 (GN)

- 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.

■ About the recording format for recording motion pictures

You can select from AVCHD^{*1}, iFrame or MP4 recording formats to record motion pictures using this unit.

*1 HC-V210 / HC-V210M

It is compatible with the AVCHD Progressive (1080/50p).

AVCHD:

It is suitable for viewing on a high-definition TV or for saving to disc^{*2}.

*2 HC-V210 / HC-V210M

To save an image recorded in 1080/50p, it is required to copy to a disc using the supplied software HD Writer LE 2.0.

iFrame:

This is a recording format suitable for playing back or editing on Mac (iMovie[®] 11).

- 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 (including any other non-built-in memory related component).

■ 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, foginess 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 14 for more details on SD cards.

■ For the purposes of these operating instructions

- 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 these operating instructions.
- Functions that can be used for still picture recording/still picture playback are indicated by **PHOTO** in these operating instructions.
- Scene(s) recorded in 1080/50p or 1080/50i: "AVCHD scene(s)"
- Pages for reference are indicated by an arrow, for example: → 00

These operating instructions are designed for use with models **HC-V210**, **HC-V210M** and **HC-V110**. Pictures may be slightly different from the original.

- The illustrations used in these operating instructions show model **HC-V210**, however, parts of the explanation refer to different models.
- Depending on the model, some functions are not available.
- Features may vary, so please read carefully.
- Not all models may be available depending on the region of purchase.

Contents

■ How to open the Operating Instructions (PDF format)

When you insert the CD-ROM and open the [INDEX.pdf] in the CD-ROM, the Operating Instructions list will be displayed. Click the document name of the Operating Instructions you would like to open.

- Adobe Reader is required to view the PDF file. Please download it from the homepage of Adobe Systems Incorporated.

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Accessories [HC-V210]/[HC-V210M]

Check the accessories before using this unit.

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

Product numbers correct as of Dec. 2012. These may be subject to change.

Battery pack

VW-VBT190



AC adaptor

VSK0781



AC cable

(GC/GW)

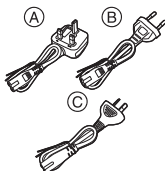
(A) K2CT2YY00095

(B) K2CQ2YY00117

• In Saudi Arabia, always use (A)

(GN)

(C) K2CJ2YY00052



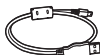
HDMI mini cable

K1HY19YY0021



USB cable

K2KYYYY00201



CD-ROM

Software



CD-ROM

Operating Instructions

VFF1156



Optional accessories

Some optional accessories may not be available in some countries.

(GC/GW)

Battery charger (VW-BC10E/EB)

(GN)

Battery charger (VW-BC10GN)

Battery pack (lithium/VW-VBT190)

Battery pack (lithium/VW-VBT380)

HDMI mini cable (RP-CDHM15,
RP-CDHM30)

Shoe adaptor (VW-SK12E)

(GC/GW)

Accessory kit (VW-ACT190E/EB)

(GN)

Accessory kit (VW-ACT190GN)

Accessories [HC-V110]

Check the accessories before using this unit.

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

Product numbers correct as of Dec. 2012. These may be subject to change.

Battery pack

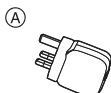
VW-VBY100



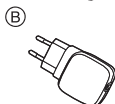
AC adaptor

VSK0784

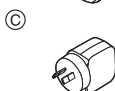
(GC) **(A)**



(GA/GW) **(B)**



(GN) **(C)**



(GC/GA/GW)

HDMI mini cable

K1HY19YY0021



(GN)

AV cable

K2KYYYY00223



USB cable

K2KYYYY00225



CD-ROM

Software



CD-ROM

Operating Instructions

VFF1156



Optional accessories

Some optional accessories may not be available in some countries.

(GC)

Battery charger (VW-BC10EB)

(GA/GW)

Battery charger (VW-BC10E)

(GN)

Battery charger (VW-BC10GN)

Battery pack (lithium/VW-VBY100)

Battery pack (lithium/VW-VBT190)

Battery pack (lithium/VW-VBT380)

HDMI mini cable (RP-CDHM15,
RP-CDHM30)

Shoe adaptor (VW-SK12E)

(GC)

Accessory kit (VW-ACT190EB)

(GA/GW)

Accessory kit (VW-ACT190E)

(GN)

Accessory kit (VW-ACT190GN)

Power supply

■ About batteries that you can use with this unit

HC-V210 / HC-V210M

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

- The unit has a function for distinguishing batteries which can be used safely. The dedicated battery (VW-VBT190/VW-VBT380) supports this function. The only batteries suitable for use with this unit are genuine Panasonic products and batteries manufactured by other companies and certified by Panasonic. Panasonic cannot in any way guarantee the quality, performance or safety of batteries which have been manufactured by other companies and are not genuine Panasonic products.

HC-V110

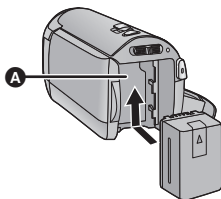
The battery that can be used with this unit is VW-VBY100/VW-VBT190/VW-VBT380.

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. (→ 15)

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



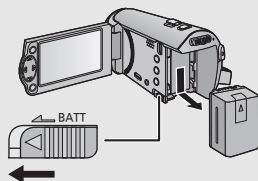
A Battery holder

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:

- It is recommended to charge the battery in a temperature between 10 °C and 30 °C. (The battery temperature should also be the same.)

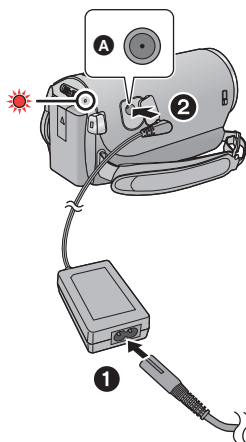
HC-V210 / HC-V210M

- Use the supplied AC adaptor. Do not use the AC adaptor of another device.
- Do not use the AC cable with any other equipment as it is designed only for this unit. Also, do not use the AC cable from other equipment with this unit.
- The battery will not be charged if the unit is turned on.

HC-V110

- 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 cannot be charged when the power is on. Press the power button to turn off the power. (→ 15)

HC-V210 / HC-V210M



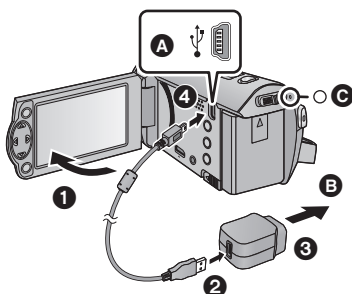
A DC input terminal

- Insert the plugs as far as they will go.

1 Connect the AC cable to the AC adaptor, then the AC outlet.

2 Connect the AC adaptor to the DC input terminal [DC IN].

- Be careful not to pinch the DC input terminal cover.
- The status indicator will flash red for approx. 2 seconds (off for approx. 1 second, on for approx. 1 second), indicating that charging has begun. It will turn off when the charging is completed.



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.

- Check that the plug portion of the AC adaptor is not loose or misaligned.

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

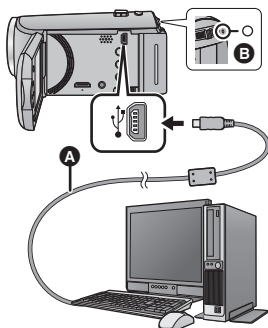
If you turn on the unit while connecting with the AC adaptor, you can use the unit with power supplied from the outlet.

When recording for a long time, keep the AC adaptor connected and use it together with the battery.

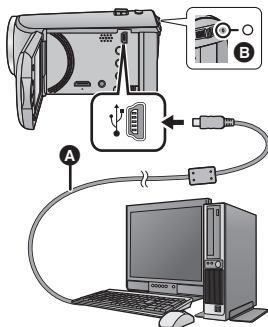
■ Connecting to a PC and charging.

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

HC-V210 / HC-V210M



HC-V110



A USB cable (supplied)

- Insert the plugs as far as they will go.
- Press the power button and turn the unit off.
(→ 15)

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. (→ 9)
- 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 (→ 8).
- 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/humidity: 60%RH

HC-V210 / HC-V210M

- Charging times in parentheses are when charging from the USB terminal.

HC-V210/HC-V210M					
Battery model number [Voltage/Capacity (minimum)]	Charging time	Recording format	Recording mode	Maximum continuously recordable time	Actual recordable time
Supplied battery/VW- VBT190 (optional) [3.6 V/1940 mAh]	2 h 20 min (5 h 20 min)	AVCHD	[1080/50p]	2 h 20 min	1 h 10 min
			[HA]	2 h 25 min	1 h 15 min
			[HG], [HE]	2 h 30 min	
		iFrame	-	2 h 55 min	1 h 30 min
		MP4	-	3 h	

HC-V110

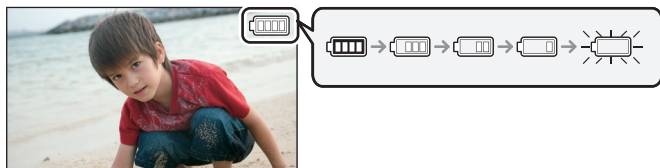
- Time in the parenthesis is charging time when this unit is connected to a PC, Panasonic Blu-ray disc recorder, or DVD recorder.

HC-V110					
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], [HE]	1 h 15 min	40 min
		iFrame	-	1 h 25 min	50 min
		MP4	-	1 h 30 min	

- 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 or built-in memory. 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.)

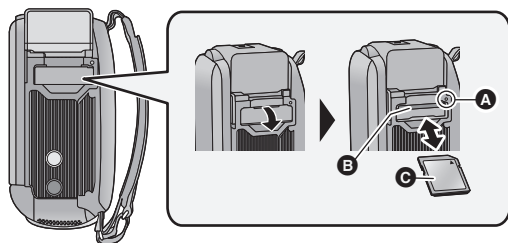
- Keep the Memory Card out of reach of children to prevent swallowing.

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. (→ 21) 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 or built-in memory, the access lamp lights up.

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

- 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 centre of the SD card and then pull it straight out.

2 Securely close the SD card cover.

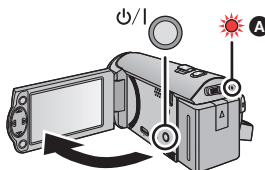
- Securely close it until it clicks.

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.

◇ Change the mode to .

1 Select the menu. (→ 20)

: [SETUP] → [CLOCK SET]

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

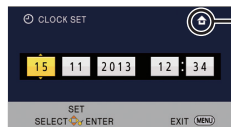
A Displaying the World time setting:

[HOME]/ [DESTINATION]

- The year can be set between 2000 and 2039.

3 Press the ENTER button.

- A message prompting for World Time setting may be displayed. Perform the World Time setting by pressing the ENTER button.
- Press the MENU button to complete the setting.

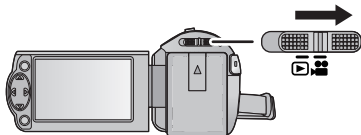


- When the unit is turned on for the first time, a message asking you to set the date and time will appear. Select [YES] and perform Steps 2 to 3 to set the date and time.

Selecting a media to record [HC-V210M]

The card and built-in memory can be selected separately to record motion pictures or still pictures.

1 Change the mode to .

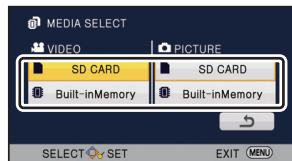


2 Select the menu. (→ 20)

MENU : [MEDIA SELECT]

3 Select the media for recording the motion pictures and the media for recording the still pictures using ▲/▼/◀/▶, and press the ENTER button.

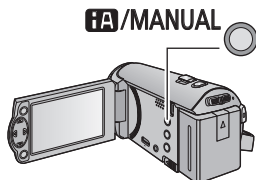
- The media is selected separately to motion pictures or still pictures is highlighted in yellow.
- Select  and press the ENTER button to return to the previous screen. (settings will not be changed)



4 Press the MENU button to complete the settings.

Intelligent Auto Mode

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



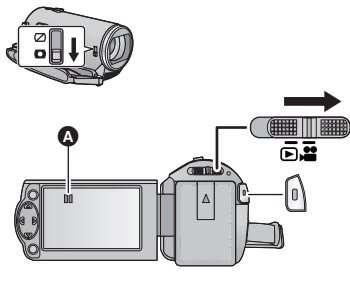
Intelligent auto/Manual button

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.



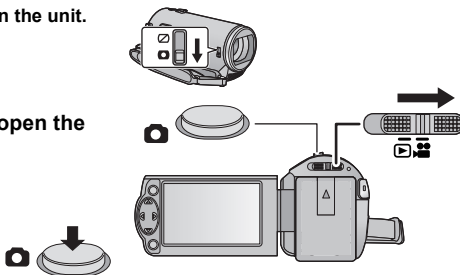
- A** When you begin recording,  changes to .

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

Recording still pictures

- Open the lens cover before turning on the unit.

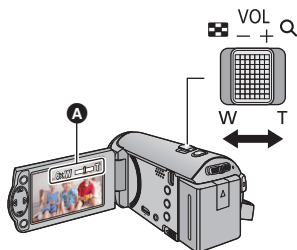
- 1 Change the mode to  and open the LCD monitor.
- 2 Press the  button.



- 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)

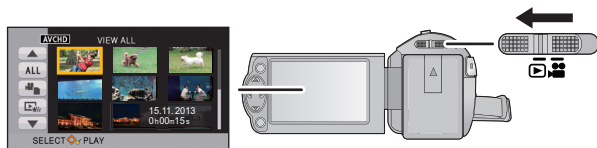
W side:

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



 is displayed only for **HC-V210** / **HC-V210M**

- 1 Change the mode to .
- 2 Select the play mode select icon **A** using Δ / ∇ / $\blacktriangleleft$ and press the **ENTER** button.

- This can also be set from the menu.

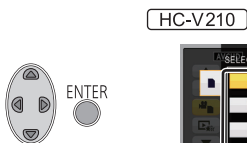
[VIDEO SETUP] or [PHOTO SETUP] → [MEDIA, VIDEO/PICTURE]



3

HC-V210 / HC-V110

Select still picture **B** or motion picture **C** to playback using ▲/▼/◀/▶ and press the ENTER button.



HC-V210



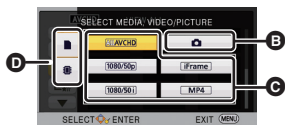
HC-V110



HC-V210M

Select media **D** and still picture **B** or motion picture **C** to playback using ▲/▼/◀/▶ and press the ENTER button.

HC-V210M

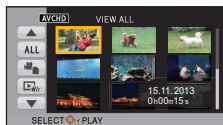


- If you press the MENU button, or select motion picture/still picture and press the ENTER button, the setting is complete.
- When a motion picture item is selected, an icon will appear on the thumbnail display. (AVCHD , 1080/50p^{*}, 1080/60i^{*}, iFrame, MP4)
- 50p is displayed in the 1080/50p scene when [ALL AVCHD] is selected.^{*}
- ^{*} HC-V210 / HC-V210M only

4

Select the scene or the still picture to be played back using ▲/▼/◀/▶, then press the ENTER button.

- When you select ▲/▼ and press the ENTER button, the next (previous) page is displayed.



5

Select the operation icon using ▲/▼/◀/▶.

E Operation icon

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



E

Watching Video/Pictures on your TV

HC-V210 / **HC-V210M**

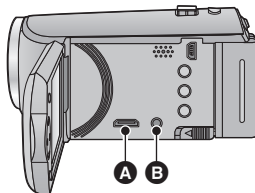
HC-V110 (GC/GA/GW)

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

HC-V110 (GN)

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

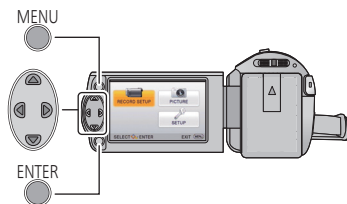
Change the mode to  to play back.



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

Basic

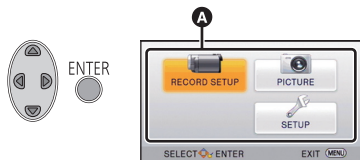
Using the menu screen



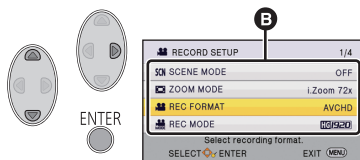
1 Press the MENU button.



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 submenus 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] →
desired setting

[Built-inMemory]^{*1}/[SD CARD]/[HDD]^{*2}

*1 HC-V210M only

*2 HC-V210 / HC-V210M

Displayed when connecting a USB HDD.

- HC-V210
Media selection screen is not displayed when the USB HDD is not connected. Select [YES] and press the ENTER button.
- HC-V110
Media selection screen is not displayed. Select [YES] and press the ENTER button.

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;	Charging;
	HC-V210 / HC-V210M	HC-V210 / HC-V210M
	3.7 W	7.7 W
	HC-V110	HC-V110
	3.5 W	5.3 W

Motion picture recording format:

[AVCHD]; AVCHD format version 2.0 compliant (AVCHD Progressive^{*1})
[iFrame], [MP4]; MPEG-4 AVC file format compliant (.MP4)

^{*1} HC-V210 / HC-V210M only

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:

[1080/50p]; Maximum 28 Mbps (VBR)^{*2}

[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)

^{*2} HC-V210 / HC-V210M only

Refer to the operating instructions (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 operating instructions (PDF format) for the number of recordable pictures.

Recording media:

SD Memory Card

SDHC Memory Card

SDXC Memory Card

Refer to page 14 for details on SD cards usable in this unit.

HC-V210M

Built-in memory; 16 GB

Image sensor:

1/5.8 type (1/5.8") 1MOS image sensor

Total; 2510 K

Effective pixels;

HC-V210 / HC-V210M

Motion picture/Still picture; 2200 K (16:9)

HC-V110

Motion picture/Still picture; 2070 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;

HC-V210 / HC-V210M

Motion picture/Still picture; 32.3 mm to 1365 mm (16:9)

HC-V110

Motion picture/Still picture; 34.4 mm to 1646 mm (16:9)

Minimum focus distance;

Normal; Approx. 3 cm (Wide)/Approx. 1.6 m (Tele)

HC-V210 / HC-V210M

Tele macro; Approx. 70 cm (Tele)

Zoom:

HC-V210 / HC-V210M

i.Zoom OFF 42×

HC-V110

i.Zoom OFF 48×

72× i.Zoom, 100×/2500× Digital Zoom

Image stabilizer function:

HC-V210 / HC-V210M

Optical (Active mode)

HC-V110

Electronic

Monitor:

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

Microphone:

Stereo

Minimum required illumination:

Approx. 4 lx (1/25 with Low Light mode in the Scene Mode)

Approx. 1 lx with the Colour Night View function

AV connector video output level:

1.0 Vp-p, 75 Ω, PAL system

HDMI mini connector video output level:

HDMI™ 1080p*/1080i/576p

* HC-V210 / HC-V210M only

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)

HC-V210M

Built-in memory; Read only

HC-V210 / HC-V210M

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

USB host function (for USB HDD)

HC-V110

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)
(including projecting parts)

Mass:

HC-V210

Approx. 184 g

[without battery (supplied) and an SD card (optional)]

HC-V210M

Approx. 185 g

[without battery (supplied)]

HC-V110

Approx. 181 g

[without battery (supplied) and an SD card (optional)]

Mass in operation:

HC-V210

Approx. 229 g

[with battery (supplied) and an SD card (optional)]

HC-V210M

Approx. 228 g

[with battery (supplied)]

HC-V110

Approx. 207 g

[with battery (supplied) and an SD card (optional)]

Operating temperature:

0 °C to 40 °C

Operating humidity:

10%RH to 80%RH

Battery operation time:

See page 12

AC adaptor

Information for your safety

HC-V210 / HC-V210M

Power source:

AC 110 V to 240 V, 50/60 Hz

Power consumption:

12 W

DC output:

DC 5.0 V, 1.6 A

Dimensions:

49 mm (W)×24 mm (H)×79 mm (D)

Mass:

Approx. 91 g

HC-V110

Power source:

AC 110 V to 240 V, 50/60 Hz

Power consumption:

7 W

DC output:

DC 5.0 V, 1.0 A

(GC)

Dimensions:

49.7 mm (W)×49.0 mm (H)×80.9 mm (D)

Mass:

Approx. 64 g

(GA/GW)

Dimensions:

48.9 mm (W)×32.8 mm (H)×95.6 mm (D)

Mass:

Approx. 58 g

(GN)

Dimensions:

48.9 mm (W)×40.5 mm (H)×76.0 mm (D)

Mass:

Approx. 56 g

About copyright

■ Carefully observe copyright laws

Recording of pre-recorded tapes or discs or other published or broadcast material for purposes other than your own private use may infringe copyright laws. Even for the purpose of private use, recording of certain material may be restricted.

■ Licenses

- SDXC Logo is a trademark of SD-3C, LLC.
- "AVCHD", "AVCHD Progressive", the "AVCHD" logo and the "AVCHD Progressive" 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, Mac and Mac OS 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>.

HC-V210 / HC-V210M

This product incorporates the following software:

- (1) the software developed independently by or for Panasonic Corporation,
- (2) the software owned by third party and licensed to Panasonic Corporation,
- (3) the open source software.

For the software categorized as (3), please refer to the detailed terms and conditions thereof shown in the attached software CD-ROM.

Limited Warranty (ONLY FOR AUSTRALIA)

Panasonic Warranty

1. The product is warranted for 12 months from the date of purchase. Subject to the conditions of this warranty Panasonic or its Authorised Service Centre will perform necessary service on the product without charge for parts or labour, if in the opinion of Panasonic, the product is found to be faulty within the warranty period.
2. This warranty only applies to Panasonic products purchased in Australia and sold by Panasonic Australia or its Authorised Distributors or Dealers and only where the products are used and serviced within Australia or its territories. Warranty cover only applies to service carried out by a Panasonic Authorised Service Centre and only if valid proof of purchase is presented when warranty service is requested.
3. This warranty only applies if the product has been installed and used in accordance with the manufacturer's recommendations (as noted in the operating instructions) under normal use and reasonable care (in the opinion of Panasonic). The warranty covers normal domestic use only and does not cover damage, malfunction or failure resulting from use of incorrect voltages, incorrect installation, accident, misuse, neglect, build-up of dirt or dust, abuse, maladjustment of customer controls, mains supply problems, thunderstorm activity, infestation by insects or vermin, tampering or repair by unauthorised persons (including unauthorised alterations), introduction of sand, humidity or liquids, commercial use such as hotel, office, restaurant, or other business or rental use of the product, exposure to abnormally corrosive conditions or any foreign object or matter having entered the product.
4. This warranty does not cover the following items unless the fault or defect existed at the time of purchase:

(a) Cabinet Part(s)	(e) DVD, Blu-ray or Recordable Discs
(b) Video or Audio Tapes	(f) Video / Audio Heads from wear and tear in normal use
(c) SD cards or USB devices	(g) Information stored on Hard Disk Drive, USB stick or SD card
(d) User replaceable Batteries	(h) DTV reception issues caused by TV Aerial / Cabling / Wall socket(s)

 etc
5. Some products may be supplied with Ethernet connection hardware. The warranty is limited on such products and will not cover
 - (a) Internet and/or DLNA connection / setup related problems
 - (b) Access fees and/or charges incurred for internet connection
 - (c) The use of incompatible software or software not specifically stipulated in the product operations manual; and
 - (d) Any indirect or consequential costs associated with the incorrect use or misuse of the hardware, its connection to the internet or any other device.
6. To claim warranty service, when required, you should:
 - Telephone Panasonic's Customer Care Centre on 132600 or visit our website referred to below and use the Service Centre Locator for the name/address of the nearest Authorised Service Centre.
 - Send or take the product to a Panasonic Authorised Service Centre together with your proof of purchase receipt as a proof of purchase date. Please note that freight and insurance to and / or from your nearest Authorised Service Centre must be arranged by you.
 - Note that home or pick-up/delivery service is available for the following products in the major metropolitan areas of Australia or the normal operating areas of the nearest Authorised Service Centres:
 - Plasma/LCD televisions / displays (screen size greater than 103 cm)
7. The warranties hereby conferred do not extend to, and exclude, any costs associated with the installation, de-installation or re-installation of a product, including costs related to the mounting, de-mounting or remounting of any screen, (and any other ancillary activities), delivery, handling, freight, transportation or insurance of the product or any part thereof or replacement of and do not extend to, and exclude, any damage or loss occurring by reason of, during, associated with, or related to such installation, de-installation, re-installation or transit.

Panasonic Authorised Service Centres are located in major metropolitan areas and most regional centres of Australia, however, coverage will vary dependant on product. For advice on exact Authorised Service Centre locations for your product, please telephone our Customer Care Centre on 132600 or visit our website and use the Service Centre Locator.

In addition to your rights under this warranty, Panasonic products come with consumer guarantees that cannot be excluded under the Australian Consumer Law. If there is a major failure with the product, you can reject the product and elect to have a refund or to have the product replaced or if you wish you may elect to keep the goods and be compensated for the drop in value of the goods. You are also entitled to have the product repaired or replaced if the product fails to be of acceptable quality and the failure does not amount to a major failure.

If there is a major failure in regard to the product which cannot be remedied then you must notify us within a reasonable period by contacting the Panasonic Customer Care Centre. If the failure in the product is not a major failure then Panasonic may choose to repair or replace the product and will do so in a reasonable period of time from receiving notice from you.

THIS WARRANTY CARD AND THE PURCHASE DOCKET (OR SIMILAR PROOF OF PURCHASE) SHOULD BE RETAINED BY THE CUSTOMER AT ALL TIMES

If you require assistance regarding warranty conditions or any other enquiries, please visit the **Panasonic Australia** website www.panasonic.com.au or contact by phone on **132 600** *If phoning in, please ensure you have your operating instructions available.*

Panasonic Australia Pty. Limited

ACN 001 592 187 ABN 83 001 592 187

1 Innovation Road, Macquarie Park NSW 2113

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Panasonic Corporation

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