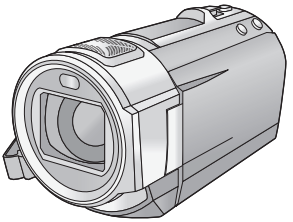
Panasonic

Basic Operating Instructions

High Definition Video Camera

Model No. **HC-V720**
HC-V720M
HC-V710



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 ™ HDMI SDXC ™ DOLBY DIGITAL

dlna CERTIFIED™ Wi Fi CERTIFIED ® Wi-Fi PROTECTED SETUP

VQT4Q83

GC GN

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.

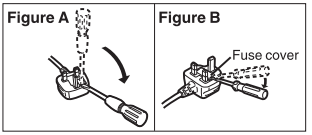
■ Product identification marking

Product	Location
High Definition Video Camera	Battery holder
AC adaptor	Bottom

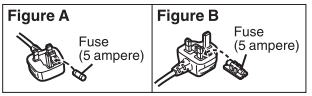
GC only
How to replace the fuse

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.

For Singapore only

Complies with
IDA Standards
DB01017

For India only

The specifications are exempted for any licensing requirement by Ministry of Communications and Information Technology, G.S.R. 45 (E)., dated 28th January, 2005.

■ 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 PC

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

About connecting to a TV

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

■ About the recording format for recording motion pictures

You can record motion pictures in either AVCHD[*1] or iFrame recording formats using this unit.

*1 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 To save an image recorded in 1080/50p, it is required to copy to a disc using the supplied software HD Writer AE 5.0.

iFrame:

This is a recording format suitable for viewing and editing on a Mac (iMovie'11).

- 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, fogginess 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 11 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”.
- Function that can be used for Motion Picture Recording Mode:

  Function that can be used for Still Picture Recording Mode:
- Function that can be used for the Playback Mode:

  Function that can be used for the Playback Mode (motion pictures only):

  Function that can be used for the Playback Mode (still pictures only):
- 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-V720, HC-V720M and HC-V710. Pictures may be slightly different from the original.

- The illustrations used in these operating instructions show model HC-V720, however, parts of the explanation refer to different models.
- Depending on the model, some functions are not available.
- HC-V720 and HC-V720M correspond to Wi-Fi® functions.
- 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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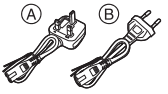
Accessories

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

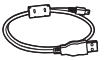
AC cable
(GC)
Ⓐ K2CT2YY00095
Ⓑ K2CQ2YY00117



- In Saudi Arabia, always use Ⓐ

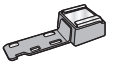
(GN)
Ⓒ K2CJ2YY00052

USB cable
K2KYYYY00201

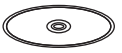


HDMI mini cable
K1HY19YY0021

Shoe adaptor
VYC1055



CD-ROM
Software



CD-ROM
Operating Instructions
VFF1124

Optional accessories

Some optional accessories may not be available in some countries.

(GC) 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)
Wide conversion lens (VW-W4907H)*
Filter kit (VW-LF46NE)*
Stereo microphone (VW-VMS10E)
Shoe adaptor (VW-SK12E)
(GC) Accessory kit (VW-ACT190E/EB)
(GN) Accessory kit (VW-ACT190GN)

* Set the flash setting to ([OFF]). Set the video light setting to ([OFF]).

Power supply

■ About batteries that you can use with this unit

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

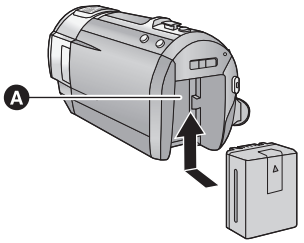
- **The unit has a function for distinguishing batteries which can be used safely. The dedicated battery (VW-VBT190/VW-VBT380) supports this function. The only batteries suitable for use with this unit are genuine Panasonic products and batteries manufactured by other companies and certified by Panasonic. 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.**

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. (➜ 12)**

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



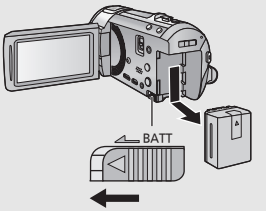
Ⓐ Battery holder

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.



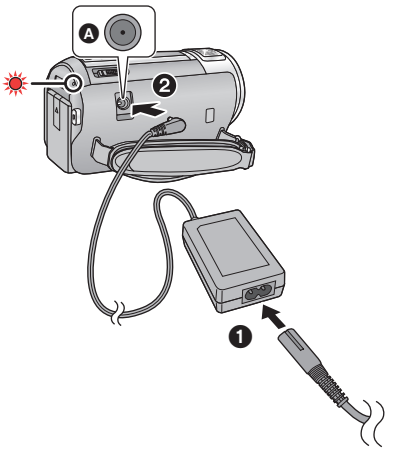
Charging the battery

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

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:

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



Ⓐ DC input terminal

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

2 **Connect the AC adaptor to the DC input terminal.**

- The status indicator will flash red at an interval of 2 seconds (approximately 1 second on, 1 second off), indicating that charging has begun.
  It will turn off when the charging is completed.

■ Connecting to the AC outlet

It is possible to use this unit with power supplied from the AC outlet by turning on the unit with the AC adaptor connected.
When recording for a long time, keep the AC adaptor connected and use it together with the battery.

■ To charge by connecting to other device

It is possible to charge by connecting to other device with the USB cable (supplied).

- Do not use any other AC adaptors except the supplied one.
- We recommend using Panasonic batteries (➜ 7).
- 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.

Charging and recording time

■ Charging/Recording time

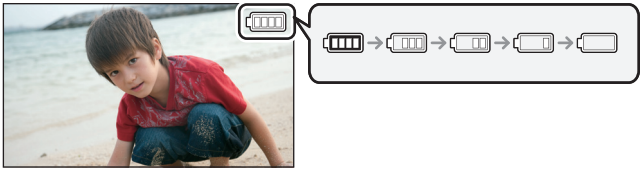
- Temperature: 25 °C/humidity: 60%RH
- Charging times in parentheses are when charging from the USB terminal.

Battery model number [Voltage/Capacity (minimum)]	Charging time	Recording mode	Maximum continuous recordable time	Actual recordable time
Supplied battery/ VW-VBT190 (optional) [3.6 V/1940 mAh]	2 h 20 min (5 h 20 min)	[1080/50p]	1 h 30 min	45 min
		[PH], [HA], [HG]	1 h 35 min	50 min
		[HE]	1 h 40 min	
		[iFrame]	1 h 45 min	55 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.



- If there is less than 3 minutes remaining, then will become red. If the battery discharges, then will flash. 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.)

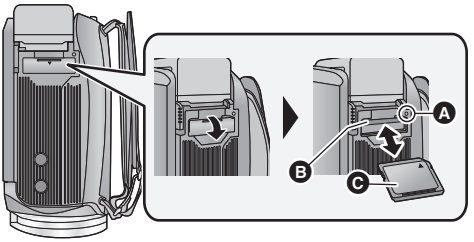
- Keep the Memory Card out of reach of children to prevent swallowing.

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. (➜ 19) 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.

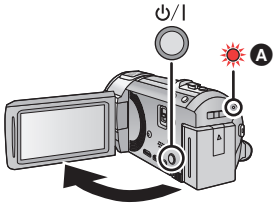
- Securely close it until it clicks.

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.

Ⓐ 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.

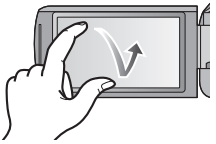
How to use the touch screen

You can operate by directly touching the LCD monitor (touch screen) with your finger.

■ Touch

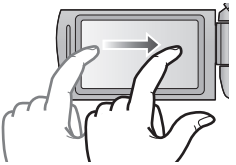
Touch and release the touch screen to select icon or picture.

- Touch the centre of the icon.
- Touching the touch screen will not operate while you are touching another part of the touch screen.



■ Slide while touching

Move your finger while pressing on the touch screen.



■ About the operation icons

/ / / :

Touch when changing a page or performing settings.

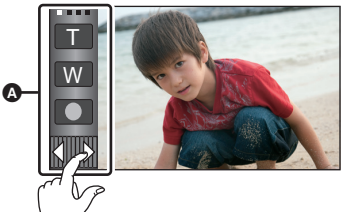
:

Touch to return to the previous screen.

About the Touch Menu

Touch ◁ (left side)/▷ (right side) of on the Touch Menu to switch the operation icons.

- It is also possible to switch the operation icons by sliding the Touch Menu right or left while touching it.



A Touch Menu

■ To display the Touch Menu

Display of the Touch Menu will disappear when no touch operation is performed for a specific period of time during recording of motion picture/still picture. To display it again, touch .

Setting date and time

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

1 Select the menu. (➜ 19)

MENU : **[SETUP]** → **[CLOCK SET]**

2 Touch the date or time to be set, then set the desired value using ▲/▼.

Ⓐ **Displaying the World Time setting:**
[HOME]/ [DESTINATION]

- The year can be set between 2000 and 2039.

3 Touch [ENTER].

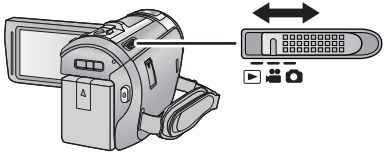
- A message prompting for World Time setting may be displayed. Perform the World Time setting by touching the screen.
- Touch [EXIT] to complete the setting.
- HC-V720 / HC-V720M
  At the time of purchase, the confirmation screen for the Wi-Fi setup is displayed after setting the world time.
  Exit the screen if the setup is not necessary.

- 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-V720M]

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

1 Change the mode to or .



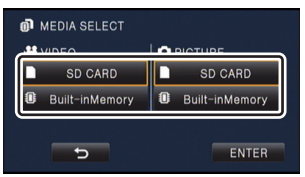
2 Select the menu. (➜ 19)

MENU : **[MEDIA SELECT]**

3 Touch the media to record motion pictures or still pictures.

- The media is selected separately to motion pictures or still pictures is highlighted in yellow.

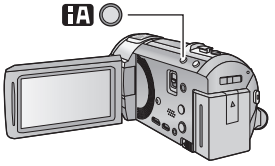
4 Touch [ENTER].



Changing the Recording Mode

■ Intelligent Auto Mode

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



Intelligent auto button

Pressing the Intelligent auto button can change the Recording Mode.

- Pressing the Intelligent auto button when other Recording Modes are set will change to Intelligent Auto Mode.

■ To change to the other Recording Modes

1 **Touch the Recording Mode button icon.**

2 **Touch the desired Recording Mode button icon.**

Mode		Effect
	Intelligent Auto	You can switch the mode to the Intelligent Auto Mode, which optimises settings to the recording environment you are in.
	Intelligent Auto Plus	You can add manually-adjusted brightness and colour balance settings to the Intelligent Auto Mode, and record.
	Creative Control*	You can record motion pictures with added effects.
SCN	**Scene Mode**	This option allows this unit to automatically adjust the shutter speed and aperture according to the scene you want to record.
MNL	**Manual**	You can set the shutter speed, focus, White Balance, and brightness (iris/gain).

* In Motion Picture Recording Mode only

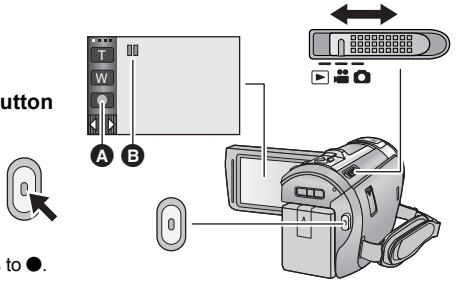
- Pressing the Intelligent auto button while in Intelligent Auto Mode can also change the Recording Mode.

Recording motion pictures

1 Change the mode to .

2 Open the LCD monitor.

3 Press the recording start/stop button to start recording.



Ⓐ Recording button icon
Ⓑ When you begin recording, ❚❚ changes to ●.

4 Press the recording start/stop button again to pause recording.

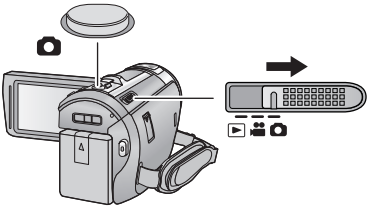
- Recording can also be started/stopped by touching the recording button icon.

Recording still pictures

1 Change the mode to .

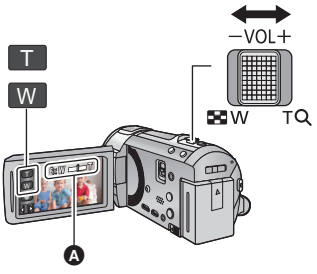
2 Open the LCD monitor.

3 Press the button halfway. (For Auto Focus only)



4 Press the button fully.

Using the zoom



Zoom lever/Zoom button icons

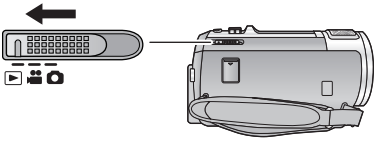
T side:
Close-up recording (zoom in)

W side:
Wide-angle recording (zoom out)

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

Ⓐ Zoom bar
The zoom bar is displayed during the zoom operation.

Motion picture/Still picture playback



1 Change the mode to ▶.

2 Touch the play mode select icon Ⓐ.

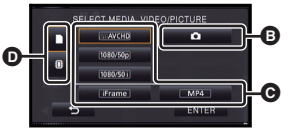
- You can also set by touching MENU, selecting [VIDEO SETUP] or [PHOTO SETUP] → [MEDIA, VIDEO/PICTURE]. (➜ 19)

3 HC-V720 / HC-V710

Select the still picture Ⓑ or the recording format of the motion picture Ⓒ you wish to play back.

HC-V720M

Select the media type Ⓓ and then select the still picture Ⓑ or the recording format of the motion picture Ⓒ you wish to play back.



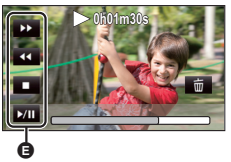
- Touch [ENTER].

- The icon is displayed in the thumbnail display when the item for motion picture is touched. (AVCHD, 1080/50p, 1080/50i, i Frame and MP4)
- 50p is displayed in the 1080/50p scene when [ALL AVCHD] is touched.

4 Touch the scene or the still picture to be played back.

- To display the next (previous) page:
  - Slide the thumbnail display upward (downward) while touching it.
  - Switch the touch menu, and then touch ▲ (up) / ▼ (down) on the thumbnail scroll lever.

5 Select the playback operation by touching the operation icon.

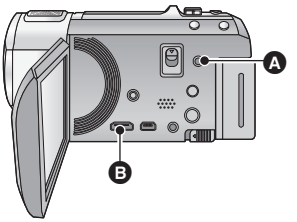


E Operation icon

- Operation icons and screen display will disappear when no touch operation is performed for a specific period of time. To display them again, touch the screen.
- Touch ►/❚❚ to start/pause playback of motion pictures.

Watching Video/Pictures on your TV

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



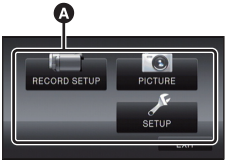
A A/V connector [A/V]
B HDMI mini connector [HDMI]

Using the menu screen

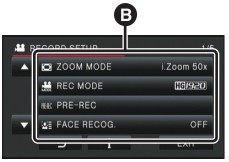
- **Touch ◁ (left side)/▷ (right side) of [touch] on the Touch Menu to display [MENU]. (➜ 13)**

1 Touch [MENU].

2 Touch the top menu Ⓐ.



3 Touch the submenu Ⓑ.



- Next (previous) page is displayed by touching ▲ / ▼.

4 Touch the desired item to enter the setting.

5 Touch [EXIT] to exit the menu setting.

■ About [i] guide display

After touching [i], touching the submenus and items will cause function descriptions and settings confirmation messages to appear.

- After the messages have been displayed, the guide display is cancelled.

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 be erased and cannot be restored. Back up important data on a PC, DVD disc etc.

[MENU] : [SETUP] → [FORMAT MEDIA] → desired media

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

*1 HC-V720M only

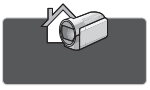
*2 Displayed when connecting a USB HDD. (Refer to the operating instructions (PDF format))

- HC-V720/HC-V710
  Media selection screen is not displayed when the USB HDD is not connected. Touch [YES].

What you can do with the Wi-Fi® function

By linking with Wi-Fi compatible devices, you can use the Wi-Fi functions of **[Remote Ctrl]**, **[DLNA Play]**, **[Live Cast]** and **[Hom.Monitor]**.
Before using the respective Wi-Fi functions, check and prepare your device.
To use the Wi-Fi function, connect this unit to a wireless access point or smartphone via Wi-Fi.

- Please refer to the Operating Instructions (PDF format) for details about the Wi-Fi connection.
- **For the operations and settings of your device such as the smartphone, please read the operating instructions of the device.**

Feature	Description of functions
[Remote Ctrl]	Using a smartphone, you can perform record/playback operations from a remote location or upload motion pictures and still pictures recorded in this unit on SNS (Social Networking Service).
[DLNA Play]	Connecting this unit to a DLNA-compatible TV via Wi-Fi, you can play back scenes and still pictures on the TV.
[Live Cast]	You can broadcast motion pictures of this unit live by setting up a link between the “LUMIX CLUB” and USTREAM.
 **[Hom.Monitor]**	You can confirm the recording screen of this unit from outside using a smartphone.

If the Wi-Fi connection cannot be established

Problem	Check points
It cannot connect to the wireless access point. **The wireless access point is not detected.**	**(General)** ● Turn ON the wireless access point. ● Approach the wireless access point and reconnect. ● If it takes time to complete the connection, the Wi-Fi connection will be aborted. Reset the connection settings. ● Check how to connect to the wireless access point and how to set the security settings. ● Make sure the wireless access point is registered in this unit. ● The device may be unable to locate the wireless access point due to problems with the signal. Use [Manual Connection]. **(Easy Connection)** ● Make sure the wireless access point is in the correct WPS standby mode. ● Make sure the PIN code has been correctly input. **(Manual Connection)** ● Make sure the SSID and password have been correctly input. ● Check the Authentication method, Encryption type, and Encryption key (Password).
Radio waves of the wireless access point get disconnected.	● The condition may improved by moving the location or changing the angle of the wireless access point. ● If you use another 2.4 GHz band device such as a microwave oven or cordless telephone nearby, you may interrupt the signal. Keep a sufficient distance from these types of devices.

Problem	Check points
The Wi-Fi connection is not possible between this unit and a smartphone.	**(Wireless Access Point Connection)** ● Make sure the smartphone is properly connected to the wireless access point by checking the Wi-Fi settings of the smartphone. ● Make sure this unit and the smartphone are connected to the same wireless access point. ● Make sure the wireless access point is registered in this unit. **(Direct Connection)** ● Make sure the smartphone is properly connected to this unit by checking the Wi-Fi settings of the smartphone. ● Make sure the SSID and password have been correctly input. ● Make sure the smartphone is not connected to the wireless access point. If it is connected to the wireless access point, change the Wi-Fi access point using the smartphone's Wi-Fi set up.
It takes long time every time to connect to a smartphone.	● It may take longer time to connect depending on the Wi-Fi connection setting of the smartphone, but it is not a malfunction.
This unit is not displayed in the Wi-Fi setting screen of the smartphone.	● Try switching the ON/OFF of the Wi-Fi function in the Wi-Fi settings of the smartphone.
The Wi-Fi connection is disconnected immediately.	● If there is a setting for avoiding poor connections in the Wi-Fi setting menu of the Android™ device 4.0 or later version, turn it off.
Cannot be connected using NFC.	● Make sure your smartphone is compatible with NFC. This unit can be used with NFC-compatible terminals via Android (OS version 2.3.3 or later). ● Make sure the NFC function of your smartphone is ON. ● Make sure this unit is not turned off with the power button. ● Some smartphones cannot be easily checked simply by touching. If this unit is not recognised even after touching, change positions and try again by touching slowly. ● Touch again if it does not connect after touch.

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; 6.7 W
Charging; 7.7 W

Motion picture recording format:
[AVCHD]; AVCHD format version 2.0 compliant (AVCHD Progressive)
[iFrame]; MPEG-4 AVC file format compliant (.MP4)

Motion picture compression:
MPEG-4 AVC/H.264

Audio compression:
[AVCHD]; Dolby® Digital/5.1 ch (built-in microphone), 2 ch (built-in microphone/external microphone)
[iFrame], [MP4]; AAC/2 ch

Recording mode and transfer rate:
[1080/50p]; Maximum 28 Mbps (VBR)
[PH]; Maximum 24 Mbps (VBR)
[HA]; Average 17 Mbps (VBR)
[HG]; Average 13 Mbps (VBR)
[HE]; Average 5 Mbps (VBR)
[iFrame]; Maximum 28 Mbps (VBR)
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 picture size of a still picture and number of recordable pictures.

Recording media:
SD Memory Card
SDHC Memory Card
SDXC Memory Card
Refer to the operating instructions (PDF format) for details on SD cards usable in this unit.

HC-V720M
Built-in memory; 16 GB

Image sensor:
1/2.33 type (1/2.33″) 1MOS image sensor
Total; 17520 K
Effective pixels;
Motion picture; 4140 K (16:9)*
Still picture; 3240 K (4:3), 3240 K (3:2), 4140 K (16:9)
* When Level shot is set to off

Lens:
Auto Iris, 21× optical zoom, F1.8 to F3.5
Focal length;
2.82 mm to 59.2 mm
Macro (Full range AF)
35 mm equivalent;
Motion picture;
28 mm to 729.6 mm (16:9)
Still picture;
33.9 mm to 712.6 mm (4:3),
33.2 mm to 697.6 mm (3:2),
28 mm to 729.6 mm (16:9)
Minimum focus distance;
Normal; Approx. 3.0 cm (Wide)/ Approx. 1.5 m (Tele)
Tele Macro; Approx. 60 cm (Tele)
Intelligent Auto Macro;
Approx. 1 cm (Wide)/Approx. 60 cm (Tele)

Filter diameter:
46 mm

Zoom:
i.Zoom OFF 26×, 50× i.Zoom, 60×/1500× digital zoom
(Using image sensor effective area)

Image stabilizer function:
Optical (Hybrid Optical Image Stabilizer, Active Mode (Rotation correction), Optical Image Stabilizer Lock, Tilt correction function)

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

Monitor:
7.5 cm (3.0″) wide LCD monitor (Approx. 460 K dots)

Microphone:
5.1 channel surround microphone/
Zoom microphone/Focus microphone/
Stereo microphone

Minimum required illumination:
Approx. 3 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™ (x.v.Colour™) 1080p/1080i/576p

AV connector audio output level (Line):
316 mV, 600 Ω, 2 ch

HDMI mini connector audio output level:
[AVCHD]; Dolby Digital/Linear PCM
[iFrame], [MP4]; Linear PCM

MIC input:
−60 dBV (Mic sensitivity −40 dB equivalent, 0 dB=1 V/Pa, 1 kHz)
(Stereo mini jack)

USB:
Reader function
SD card; Read only (No copyright protection support)
HC-V720M
Built-in memory; Read only
Hi-Speed USB (USB 2.0), USB terminal Type Mini AB
USB host function (for USB HDD)
Battery charging function (Charges from USB terminal when the main unit is off)

Flash:
Available range; Approx. 1.5 m or less

Dimensions:
60.1 mm (W)×69.3 mm (H)×124.4 mm (D) (including projecting parts)

Mass:
HC-V720
Approx. 277 g
[without battery (supplied) and an SD card (optional)]
HC-V720M
Approx. 278 g
[without battery (supplied)]
HC-V710
Approx. 273 g
[without battery (supplied) and an SD card (optional)]

Mass in operation:
HC-V720
Approx. 322 g
[with battery (supplied) and an SD card (optional)]
HC-V720M
Approx. 321 g
[with battery (supplied)]
HC-V710
Approx. 318 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 10

HC-V720/HC-V720M
Wireless transmitter:
Compliance standard; IEEE802.11b/g/n
Frequency range used;
Central frequency 2412 MHz to 2462 MHz [11ch]
Encryption method; Wi-Fi compliant WPA™/WPA2™/WEP
Access method; Infrastructure mode

AC adaptor
Information for your safety

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

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” 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.
- x.v.Colour™ is a trademark.
- iMovie, Mac and Mac OS are trademarks of Apple Inc. registered in the U.S. and other countries.
- Android and Google Play are trademarks or registered trademarks of Google Inc.
- The Wi-Fi CERTIFIED Logo is a certification mark of the Wi-Fi Alliance.
- The Wi-Fi Protected Setup Mark is a mark of the Wi-Fi Alliance.
- “Wi-Fi”, “Wi-Fi Protected Setup”, “WPA” and “WPA2” are marks or registered marks of the Wi-Fi Alliance.
- DLNA, the DLNA Logo and DLNA CERTIFIED are trademarks, service marks, or certification marks of the Digital Living Network Alliance.
- 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.

This product incorporates the software licensed under the GNU General Public License Version 2.0 (GPL V2.0), the GNU LESSER General Public License Version 2.1 (LGPL V2.1) or the other open source software licenses. A copy of the corresponding source code licensed under GPL V2.0 or LGPL V2.1 is available to you in response to your request. For the detailed terms and conditions thereof and the contact information, please refer to the Operating Instructions shown in the attached Operating Instructions 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 it's 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)
   (b) Video or Audio Tapes
   (c) SD cards or USB devices
   (d) User replaceable Batteries etc
   (e) DVD, Blu-ray or Recordable Discs
   (f) Video / Audio Heads from wear and tear in normal use
   (g) Information stored on Hard Disk Drive, USB stick or SD card
   (h) DTV reception issues caused by TV Aerial / Cabling / Wall socket(s)

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, freighting, 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

PRO-031-F11 Issue: 4.0 01-01-2011

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Web site: http://panasonic.net
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VQT4Q83
F0113KK0 (1000 Ⓐ)