Panasonic®

Basic Operating Instructions
Dual Camera

Model No. **HX-DC10**
HX-DC1

Before use, please read these instructions completely.

More detailed instructions on the operation of this unit are contained in "Operating Instructions (PDF format)" in the supplied CD-ROM. Install it on your PC to read it.

VIErA
Link

HDMI

SƏ
XC™

GC GA GN

VQT3P31
1AG6P1P6302--(S)

Information for Your Safety

Dear Customer,
We would like to take this opportunity to thank you for purchasing this Panasonic Dual Camera. Please read these Operating Instructions carefully and keep them handy for future reference. Please note that the actual controls and components, menu items, etc. of your Dual Camera may look somewhat different from those shown in the illustrations in these Operating Instructions.

WARNING:
TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK OR PRODUCT DAMAGE,
- **DO NOT EXPOSE THIS APPARATUS TO RAIN, MOISTURE, DRIPPING OR SPLASHING AND THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.**
- **USE ONLY THE RECOMMENDED ACCESSORIES.**
- **DO NOT REMOVE THE COVER (OR BACK); THERE ARE NO USER SERVICEABLE PARTS INSIDE.**
  REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION!
- **DO NOT INSTALL OR PLACE THIS UNIT IN A BOOKCASE, BUILT-IN CABINET OR IN ANOTHER CONFINED SPACE. ENSURE THE UNIT IS WELL VENTILATED. TO PREVENT RISK OF ELECTRIC SHOCK OR FIRE HAZARD DUE TO OVERHEATING, ENSURE THAT CURTAINS AND ANY OTHER MATERIALS DO NOT OBSTRUCT THE VENTILATION VENTS.**
- **DO NOT OBSTRUCT THE UNIT'S VENTILATION OPENINGS WITH NEWSPAPERS, TABLECLOTHS, CURTAINS, AND SIMILAR ITEMS.**
- **DO NOT PLACE SOURCES OF NAKED FLAMES, SUCH AS LIGHTED CANDLES, ON THE UNIT.**
- **DISPOSE OF BATTERIES IN AN ENVIRONMENTALLY FRIENDLY MANNER.**

THE SOCKET OUTLET SHALL BE INSTALLED NEAR THE EQUIPMENT AND SHALL BE EASILY ACCESSIBLE.

■ **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 same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

■ **Product identification marking**

Product	Location
Dual Camera	Battery holder

-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**
For Australia and New Zealand
In the event of abnormal operation (e.g. if the unit emits smoke or an unusual smell), immediately stop operating the unit and consult the Panasonic Customer Care Centre on 132600.
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.

IMPORTANT! PLEASE READ

■ **About the models covered by this instruction manual**
● This manual pertains to models HX-DC10 and HX-DC1.
● Where passages refer to a specific model(s), the model number is indicated.

■ **Be sure to take some test pictures beforehand**
Before those important events, be sure to take some trial pictures to confirm that the images and audio are being properly recorded.

■ **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/HDD related component).

■ **Handling of built-in memory**
This unit is equipped with a built-in memory (HX-DC10: Approx. 80 MB, HX-DC1: Approx. 80 MB). When using this component, pay attention to the following points.

> **Back up data periodically.**
> The built-in memory is temporary storage. In order to avoid erasing data due to static electricity, electromagnetic waves, breakage, and failures, back up the data to a computer or DVD disc. (see page 123 in the Operating Instructions (PDF format))

● The status indicator (page 12) illuminates while the SD card or built-in memory is being accessed (reading, recording, playback, deleting etc.). Do not perform the following operations when the lamp illuminates. It may damage the built-in memory or cause a malfunction in the unit.
  ・ Turn the unit off (remove the battery)
  ・ Eject the SD card from the camera.
  ・ Insert or remove the USB cable
  ・ Expose the unit to vibrations or shock
● For disposing of or transferring this unit, please see page 112 in the Operating Instructions (PDF format).

■ **Concerning this unit's recording method and compatibility**
<Video compatibility>
● This camera is an MP4 standard (MPEG-4AVC/H.264 format) digital movie camera that records high-definition HDTV video.
The AVCHD and MPEG2 video formats are different and are therefore not compatible.
● This camera may degrade or be unable to play back videos recorded or created with other products, and other products may degrade or not be able to play back videos recorded with this camera, even if the products support the MP4 format.

<Photo compatibility>
● This unit is compliant with the unified standard DCF (Design rule for Camera File system) established by JEITA (Japan Electronics and Information Technology Industries Association) and with Exif (Exchangeable Image File Format). Files which do not comply with the DCF standard cannot be played back.
● The file format of images supported by this unit is JPEG. (Not all JPEG format files will be played back.)
● This unit may degrade or not play back images recorded or created on other products, and other products may degrade or not play back images recorded on this unit.

■ **About the battery pack**
● Never place the battery pack within the reach of infants. In the event that the battery pack is swallowed, consult a doctor immediately.

■ **About the photos and illustrations in this manual**
● The product images, illustrations, menu displays etc. in this manual may differ slightly from the actual product.
● Unless noted otherwise, the screen and camera illustrations are those of Model HX-DC10.

■ **For the purposes of these operating instructions**
● SD Memory Card, SDHC Memory Card and SDXC Memory Card are referred to as the "SD card".
● Pages for reference are indicated by parentheses, for example: (page 00).

CONTENTS

■ IMPORTANT MESSAGES AND ALERTS

CHECKING THE INCLUDED ACCESSORIES

Check the accessories before using this unit.
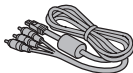Product numbers correct as of February, 2011.
These may be subject to change.

☐ **Battery pack**
VW-VBX070

☐ **AC adaptor**

① ② ③

☐ **USB cable**
VFA0544

① **(GC) VSK0752**
Hong Kong Special Administrative
Region of China and Saudi Arabia
② **(GA) VSK0751**
Areas Other than Hong Kong Special
Administrative Region of China, Saudi
Arabia
③ **(GN) VSK0753**
Australia and New Zealand
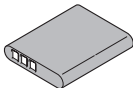
☐ **AV cable**
VFA0543

☐ **CD-ROM**
Software

☐ **Lens cap**
VFC4701
Lens cap strap
VFC4702

☐ **CD-ROM**
Operating Instructions
VFF0812

☐ **Handstrap**
* To prevent the camera from dropping, be
sure to attach the handstrap (see page 46 in
the Operating Instructions (PDF format)).
VFC4627

● Please dispose of packing materials properly.
● Keep the battery pack and the lens cap out of reach of children to
prevent swallowing.

ABOUT THE CARD

Media cards that can be used with this camera (as of February 2011)

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

This camera is compatible with SDXC devices (SD Memory Card/SDHC Memory Card/SDXC Memory Card compatible devices). If using an SDHC memory card/SDXC memory card in different device, please confirm that it is compatible with the respective memory card.

Card type	Capacity	Video recording	Photo shooting
SD Memory Card	8 MB/16 MB/ 32 MB/64 MB/ 128 MB/256 MB	Operation is not guaranteed.	Operation is not guaranteed.
	512 MB/ 1 GB/ 2 GB	Can be used.	Can be used.
SDHC Memory Card	4 GB/6 GB/ 8 GB/12 GB/ 16 GB/ 24 GB/32 GB		
SDXC Memory Card	48 GB/64 GB		

* The SD Speed class Rating is the speed standard for successive writes.
See the card label to confirm the rating.

(Example) CLASS4

Please confirm which of our SD Memory Cards/SDHC Memory Cards/
SDXC Memory Cards can be used with this product by visiting the
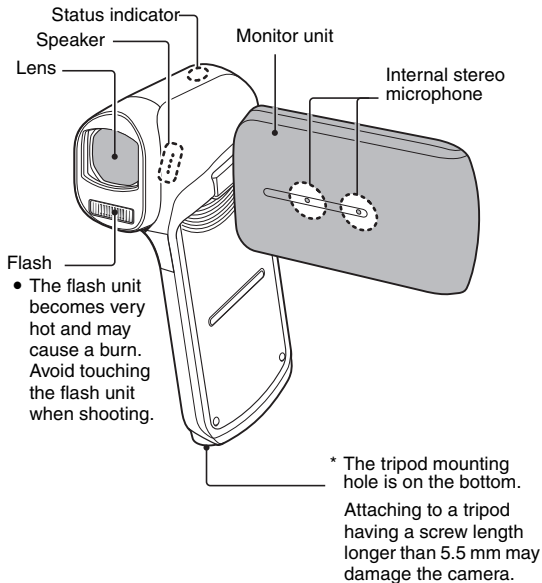support web site at the address below.

http://panasonic.jp/support/global/cs/e_cam
(This website is in English only.)

- 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.
- Cards with capacity larger than 64 GB cannot be used.
- When the write-protect switch on the SD card is locked, no recording, deletion or editing will be possible on the card.
- Keep the Memory Card out of reach of children to prevent swallowing.

Write-protect switch

PARTS NAMES

Front

Status indicator

Speaker

Lens

Monitor unit

Internal stereo microphone

Flash

• The flash unit becomes very hot and may cause a burn. Avoid touching the flash unit when shooting.

* The tripod mounting hole is on the bottom.

Attaching to a tripod having a screw length longer than 5.5 mm may damage the camera.

■ **About the status indicator (See page 167 in the Operating Instructions (PDF format) regarding the charging status.)**

Status indicator
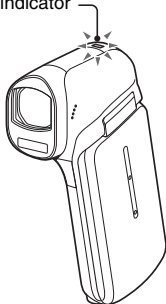
- The status indicator lights or flashes to show the camera's operating status.

Status indicator status		Camera status
Colour	Lit/flashing	
Red	Lit	Accessing built-in memory or SD card
	Flashing (Faster)	Battery charge error
	Flashing (Fast)	Self-timer is operating
	Flashing (Slow)	Battery is charging
	Flashing (Slower)	
Green	Lit	USB connection
	Flashing	During sleep mode
Orange	Lit	AV cable/ HDMI mini cable connection

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Rear

LCD monitor

Power button

Hand strap eyelet (see page 46 in the Operating Instructions (PDF format))

terminal cover

USB/AV terminal

HDMI terminal

Battery cover

■ **Operation pad**

HX-DC10

🅰 button

Zoom switch*

[📷] button
Photo shooting button

[🎥] button
Video recording button

SET button

MENU button

REC/▶ button

HX-DC1

ZOOM RANGE button

Zoom switch*

[📷] button
Photo shooting button

[🎥] button
Video recording button

SET button

MENU button

REC/▶ button

* During recording: zoom photography [W/T]
During playback: volume adjustment, image magnification, playback display switching

CHARGING THE BATTERY PACK

At the time of purchase, the battery pack is not charged. Please charge it fully before using it.

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 equipped with protective devices 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 recommend that a genuine Panasonic battery pack be used.

Guide to charging time and recording capacity

■ Charging/recording time
- Temperature: 25 °C/humidity: 60 %RH
- It is recommended that the battery be recharged in a place where the ambient temperature (and the battery temperature as well) is between 10 °C and 30 °C. (The battery temperature should also be the same.) The indicated charging time is for when the AC adaptor is used for charging.

<HX-DC10>

Battery model number [voltage/capacity (minimum)]	Charging time	Recording mode	Maximum continuous recordable time	Actual recordable time
Supplied battery/ VW-VBX070 (optional) [3.7 V/700 mAh]	Approx. 2 h	1080-60i	Approx. 1 h	Approx. 30 min
		1080-30p		
		720-60p		
		720-30p	Approx. 1 h 10 min	Approx. 35 min
		480-30p	Approx. 1 h 15 min	
		iFrame	Approx. 1 h 10 min	
		🎤	Approx. 1 h 20 min	-

<HX-DC1>

Battery model number [voltage/ capacity (minimum)]	Charging time	Recording mode	Maximum continuous recordable time	Actual recordable time
Supplied battery/ VW-VBX070 (optional) [3.7 V/700 mAh]	Approx. 2 h	1080-60i	Approx. 50 min	Approx. 30 min
		1080-30p		
		720-60p		
		720-30p	Approx. 1 h	Approx. 35 min
		480-30p	Approx. 1 h 25 min	Approx. 40 min
		iFrame	Approx. 1 h 5 min	Approx. 35 min
		🎤	Approx. 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.
- The batteries heat up after use or charging. This is not a malfunction.
- See page 115 in the Operating Instructions (PDF format) concerning the remaining battery pack charge.
- Always use genuine Panasonic batteries (VW-VBX070).
- 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 in an automobile exposed to direct sunlight for a long period of time with doors and windows closed.

Approximate operating time and number of recordable images

<HX-DC10>

Number of recordable images	Approx. 170 images	By CIPA standard
Recording time	Approx. 85 min	
Playback time	Approx. 180 min	

<HX-DC1>

Number of recordable images	Approx. 180 images	By CIPA standard
Recording time	Approx. 90 min	
Playback time	Approx. 180 min	

Recording conditions by CIPA standard
- CIPA is an abbreviation of Camera & Imaging Products Association.
- Using the supplied battery
- Using a Panasonic SD Memory Card (2 GB)

1 Insert the battery pack.

- It is possible to insert the battery incorrectly, so please pay particular attention when inserting that it is correctly oriented.

Battery cover

① Push out

②

③ Open

Connector markings

Battery pack

④ Insert by matching the connector markings
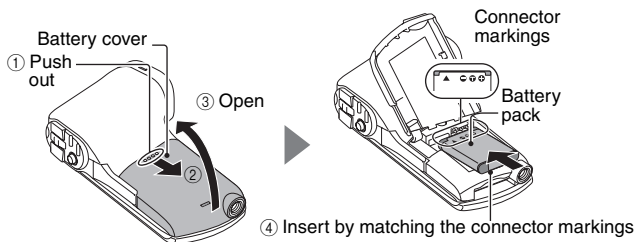
<To remove the battery pack...>
- Be sure the turn off the camera by pressing the power button until the status indicator (page 12) turns off before removing the battery pack.
- Raise the end of the battery pack to remove it.

⑤ Close

⑥ Close firmly until you hear a click.
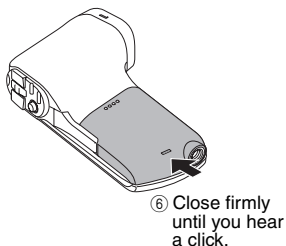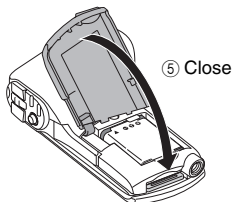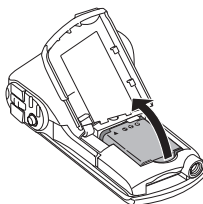
2 **Use the USB cable (supplied) to connect the camera and the AC adaptor, and then connect the AC adaptor to a power outlet.**

> • **Use only the supplied USB cable. Operation is not guaranteed if a different USB cable is used.**
> • **The AC adaptor is for this camera only. Do not use it with other devices.**

• Recharging takes place only when the camera is turned off or is in the sleep mode (page 26 in the Operating Instructions (PDF format)). Recharging does not take place when the camera is in the recording mode or playback mode.

③ To power outlet

① Open

To AC adaptor
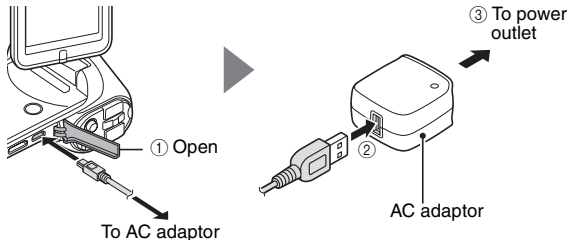
AC adaptor

• 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.
• Do not use any other AC adaptors except the supplied one.
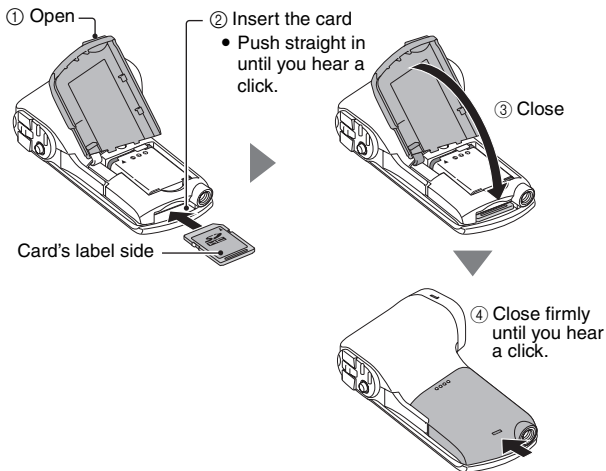• Do not use any other USB cables except the supplied one.

<During charging...>
• The status indicator flashes red at 0.5-second intervals if the battery pack is defective or is not installed correctly. Make sure that the battery pack is correctly installed.
• If the battery pack still fails to recharge, it is possible that there is a malfunction in the camera, the battery pack or the AC adaptor. In case the status indicator is flashing fast or slow, please see page 167 in the Operating Instructions (PDF format).
• When charging is completed, the status indicator turns off.
• The charging time is approx. 120 minutes.
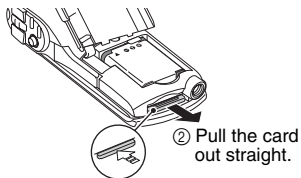
Status indicator
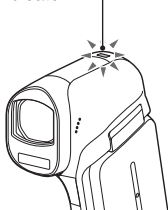
INSTALLING THE CARD

Before using a newly purchased card or one that was used in another device, be sure to format it with this camera (see pages 101 and 112 in the Operating Instructions (PDF format)). If an unformatted card is used, the card itself may become unusable.

① Open

② Insert the card
• Push straight in until you hear a click.

③ Close

Card's label side

④ Close firmly until you hear a click.

<When removing the card...>
• To remove the card, press it in, and then release. The card will protrude slightly, and you can then pull it out.

② Pull the card out straight.

① Push the middle part of the card.

HINT

Do not attempt to forcibly remove the card
- Doing so may damage the card or the stored files.

If the status indicator is lit red...
- Never remove the card when the status indicator is flashing red, as doing so may result in loss of files stored in the card.
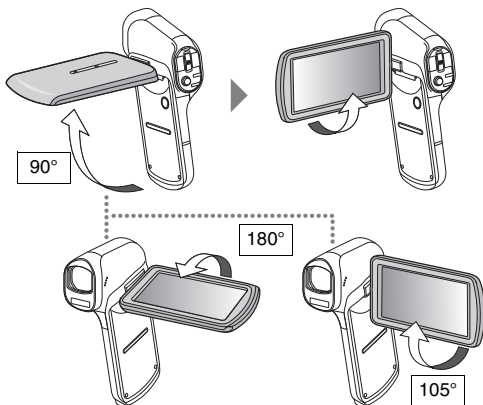
TURNING THE CAMERA ON AND OFF

Turning on the camera

1 Open the monitor unit, and press the power button.
  • The LCD monitor turns on.

Monitor unit
Power button

LCD monitor

<How to open the monitor unit>

90°

180°

105°

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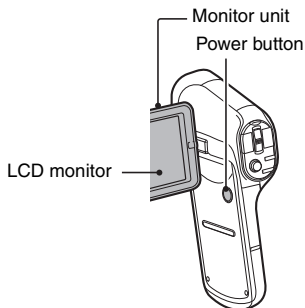
Turning off the camera

1 Press the power button for at least 1 second.
- The camera turns off.
- If you briefly press the power button, once, the camera will switch to the sleep mode.

DATE AND TIME SETTING

The camera will record the date and time an image or audio recording is taken so that you can display them during playback. Therefore, before capturing images, make sure the correct date and time are set.

- If the screen to set the date and time appears when you turn on the camera, skip to step **3** and follow the steps to set the date and time.
- To correct the date and time setting, please see under **HINT** on page 25.

Example: To set the clock to 19:30 on 20 December, 2011

1 **Turn on the camera (page 21), and display Option Setting Menu 1 (see page 97 in the Operating Instructions (PDF format)).**

2 **Select [CLOCK SET] and press the SET button.**
- The Clock Set Screen appears.
- Follow the procedures below to enable or disable the date display during playback, to set the display format for the date, and to set the date and time.

⏲ CLOCK SET		
DATE	▶	**01/01/2011**
TIME	▶	**00:00**
DISP	▶	**D / M / Y**
MENU ⤺		🖲 **ENTER**
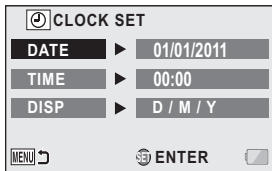
3 **Set the date.**
① Select [DATE].
② Press the SET button.
   - The Set Date Screen appears.
③ Set the date to "20/12/2011".
   - The date is set in the following order: Set the day → Set the month → Set the year.
   - Toggle the SET button left or right to select day, month or year. Toggle the SET button up or down to increase or decrease the number.
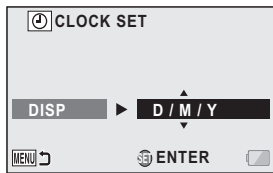④ Press the SET button.

⏲ CLOCK SET		
DATE	▶	**20/12/2011**
MENU ⤺		🖲 **ENTER**
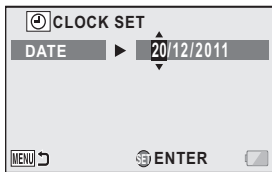
4 Set the clock.

① Select [TIME].
② Press the SET button.
  • The Set Time Screen appears.
③ Set the time to "19:30".
  • The time is set in the following order: Set the hour → Set the minute.
④ Press the SET button.

```
🕐 CLOCK SET


TIME    ▶   ▲
            19:30
            ▼

MENU ↩      ⑤ENTER    ▱
```
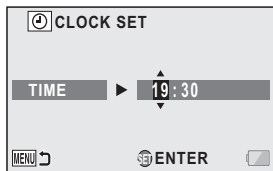
5 Set the order in which the date is displayed during playback.

① Select [DISP].
② Press the SET button.
  • The Set Date Format Screen appears.
③ Toggle the SET button up or down.
  • The order of the date display changes.
④ Press the SET button.

```
🕐 CLOCK SET


DISP    ▶   ▲
            D / M / Y
            ▼

MENU ↩      ⑤ENTER    ▱
```

6 Press the MENU button.

• The date and time setting is completed.
• To display the Recording or Playback Screen, press the MENU button.

HINT
To correct the date and time settings
① Turn on the camera.
② Display the Option Setting Menu 1 (see page 97 in the Operating Instructions (PDF format)).
③ Select [CLOCK SET] and press the SET button.
   • The screen to set the date and time appears.
   • The current date and time settings are shown.
④ Select the line you wish to change, and make the correction.
If the camera's date and time are not set...
   • The screen display and capture date information will show as follows:
      * The date and time format is determined by the [DISP] setting specified on the Clock Set Screen.
      Recording Screen display: --.--.---- --:--
      Photo capture date/time information: 01/01/2011 00:00:00
      Video/audio file recording date/time information: 01/01/2011 00:00:00

Date and time backup

Under normal conditions, while the battery pack is being replaced, an internal battery will maintain the date and time settings. However, there is a small chance the settings may be lost (the backup will last for about 7 days). It is recommended to check that the date and time settings are still correct after replacing the battery pack and before shooting or recording of any type.
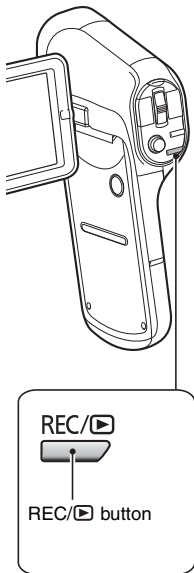
SWITCHING BETWEEN THE RECORDING MODE AND PLAYBACK MODE

Switch between the recording mode (for recording) and the playback mode (for viewing your recorded images).
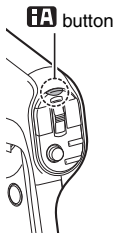
1 Turn on the camera (page 21).

2 Press the REC/⊡ button.
- The mode changes.
- The mode changes each time the REC/⊡ button is pressed.

REC/⊡

REC/⊡ button

INTELLIGENT AUTO MODE (HX-DC10)

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

🄸🄰 button

Press the button once to activate the Intelligent Auto (iA) mode.

- The 🄸🄰 icon appears on the LCD monitor.
- Press it again to cancel the Intelligent Auto mode.

	Mode	Scene	Effect
🄸	**Portrait**	**When the subject is a person**	Faces are detected and focused automatically, and the brightness is adjusted so it is recorded clearly.
🄸	**Landscape**	**Recording outdoors**	The whole landscape will be recorded vividly without whiting out the background sky, which may be very bright.
*1 🄸	**Spot light**	**Under a spotlight**	Very bright subject is recorded clearly.
*1 🄸	**Low light**	**Dark room or twilight**	It can record very clearly even in a dark room or twilight.
*2 🄸	**Night portrait**	**Recording night portrait**	A subject and the background are recorded with near real-life brightness.

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	Mode	Scene	Effect
*2 🖼	**Night scenery**	**Recording night scenery**	You can record night scenery vividly by slowing the shutter speed.
*2 🌷	**Macro**	**Recording zooming in on a flower etc.**	This allows recording at very close proximity to the object of recording.
*1 🅰 *2 🅰	**Normal**	**Other situations**	Contrast is adjusted automatically for clear images.

*1 Video recording only
*2 Photo shooting only

HINT

- Depending on the recording conditions, the unit may not enter the desired mode.
- Using a tripod is recommended in Night Portrait, Night Scenery and Low Light modes.
- Faces may not be detected depending on the recording conditions, such as when faces are of certain sizes or at certain tilts.

VIDEO RECORDING

1 **Turn on the camera (page 21), and set it to the recording mode (page 26).**
   • If the subject is a person, a green double-frame appears around the face (See page 74 in the Operating Instructions (PDF format)).

[🎥] button

2 **Press the [🎥] button.**
   • Recording begins.
   • It is not necessary to keep the [🎥] button pressed while recording.
   • When the remaining recording time available for the currently recording video becomes 30 seconds or less, a countdown of the remaining recording time appears on the display.
   • When the file size of the current recording exceeds 4 GB, the file is saved once, and recording begins in a new file. (4-GB files are automatically created (page 175 in the Operating Instructions (PDF format)).)
   • HX-DC1: When the file size of the recording exceeds 4 GB, recording pauses (from a few seconds up to 10 seconds), and then resumes.

Elapsed recording time (hours:minutes: seconds)

3 **End the recording.**
   • Press the [🎥] button again to stop recording.
   • The elapsed recording time returns to 000:00:00 each time recording is stopped.

Available recording time remaining (seconds)

VQT3P31 **29**

TAKING PHOTOS

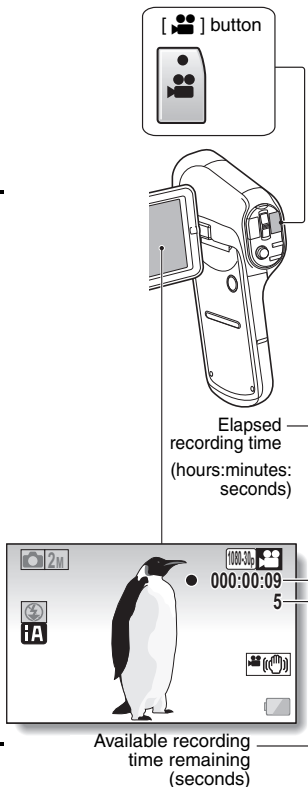**1 Turn on the camera (page 21), and set it to the recording mode (page 26).**

· If the subject is a person, a green double-frame appears around the face (See page 74 in the Operating Instructions (PDF format)).

[📷] button

2 Press the [📷] button.

① **Press the [📷] button halfway.**

· The autofocus operates, and the image is focused (focus lock).

② **Continue to gently press the [📷] button all the way.**

· The shutter releases and the image is captured.

①   ②
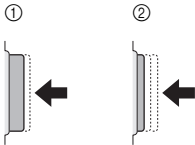
· You can view the captured image on the LCD monitor by keeping the [📷] button depressed when you capture the image.

For shooting hi-speed burst, see page 65 in the Operating Instructions (PDF format).

Target mark

30 VQT3P31
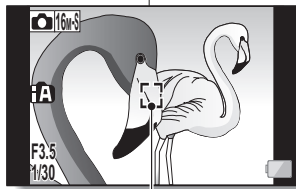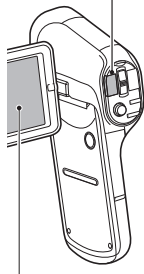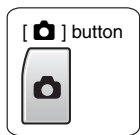
MACRO-PHOTOGRAPHY (ZOOM)

Your camera has two zoom functions: optical zoom and digital zoom (see page 39 in the Operating Instructions (PDF format)).

1 **Point the camera lens at the subject.**

Zoom switch

2 **Push the zoom switch toward [T/🔍] or [W/🔲] to compose the desired image.**
[T/🔍]: Zoom in on the subject.
[W/🔲]: Zoom out.
• When the zoom switch is pushed, the zoom bar appears on the LCD monitor.

3 **Take the picture.**
For video recording, see page 29.
For shooting photos (single), see page 30.
For shooting hi-speed bursts, see page 65 in the Operating Instructions (PDF format).

Zoom bar

When both optical and digital zoom are enabled

Optical zoom

Digital zoom (blue)

When optical zoom only is enabled

Pointer
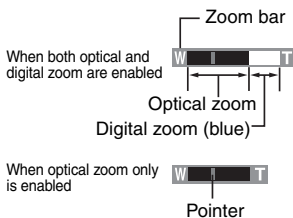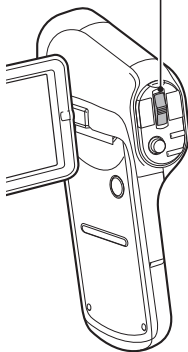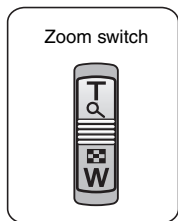
PLAYING BACK VIDEOS AND PHOTOS

1 Set the camera to the playback mode (page 26).

2 Select the image to play back.
- Toggle the SET button up, down, left or right to move the yellow frame to the file you wish to play back.
- The image information for the framed image is shown at the bottom of the LCD monitor.

Yellow frame

20.12.2011   18:41   100-0006
1080-50i 10.5MB   00:00:05
SET ENTER

Image information
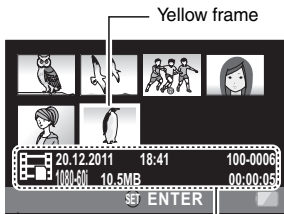
3 Press the SET button.
- The image you selected in step **2** is displayed on the LCD monitor.
- If a video was selected, playback begins.

<Photo file: To return to the screen to select playback files>
Toggle the SET button down.
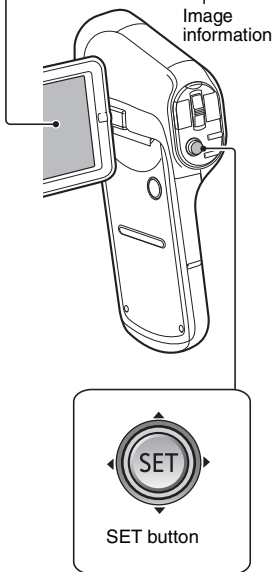
HINT
- Photos can be rotated when they are played back (pages 40 and 83 in the Operating Instructions (PDF format)).
- If you close the monitor unit, playback stops and the camera switches to the standby mode.

SET button

Video playback operation

To do this...		Do this
Normal forward playback		Press the SET button or toggle the SET button up.
Stop playback		During playback, toggle the SET button down.
Pause		During playback, press the SET button or toggle the SET button up. During accelerated playback, toggle the SET button up.
To play back one image at a time (single-frame step)	During forward playback	After pausing playback, toggle the SET button to the right.
	During reverse playback	After pausing playback, toggle the SET button to the left.
Slow playback	During forward playback	After pausing playback, press and hold the SET button to the right.
	During reverse playback	After pausing playback, press and hold the SET button to the left.
To accelerate playback	Forward playback (Maximum 15×)	During forward playback, toggle the SET button to the right. • The forward playback speed changes each time the SET button is toggled to the right. Toggle the SET button to the left to resume normal playback speed.
	Reverse playback (Maximum 15×)	During forward playback, toggle the SET button to the left. • The reverse playback speed changes each time the SET button is toggled to the left. Toggle the SET button to the right to resume normal playback speed.
Return to normal playback speed		Press the SET button.
Volume adjustment	Louder	During playback, push the zoom switch toward the [T/〇] side.
	Softer	During playback, push the zoom switch toward the [W/⊞] side.

How to save one frame from a video as a photo

1 **Play back the video. Pause the playback at the point you wish to "snap" a photo.**

2 **Press the [▢] button.**
 • The screen to select the aspect ratio of the photo appears. Select the desired aspect ratio, and press the SET button. Note, however, that if the video aspect ratio is 4:3, you cannot select 16:9.
 • The latest image number is assigned to the photo when it is saved.

HINT

The file size for a video is very large
 • Therefore, be aware that if the video is uploaded to a computer to be played back, the computer may not be able to play back the video fast enough, making it appear jerky. (The video will always be displayed properly on the camera LCD monitor or a television.)

If no audio is heard...
 • The audio is not played back when the video is played back in the frame-by-frame, slow-motion, fast playback or reverse playback mode.

BASIC OPERATION/PLAYBACK

DELETING IMAGES

1 Display the file that you want to delete.

2 Toggle the SET button up.
   • The Confirm Delete Screen appears.

3 Select "DELETE", and press the SET button.
   • The current image is deleted.
   • To return to the Playback Screen, select "EXIT", and press the SET button.

BASIC OPERATION/PLAYBACK

CONNECTING TO A TV

By connecting the camera to a TV, you can play back files from the installed SD card or the built-in memory on the TV.

HINT
Insert and pull out the cable carefully
- When connecting the cables, make sure that the cable plugs are correctly oriented and that they match the shapes of the terminal sockets on the devices. Push the plugs in straight when connecting them. If undue force is used to connect a cable, it may permanently damage the connector pins in the terminal socket.
- Do not use excessive force when connecting and disconnecting cables.

About image output: The image output destination differs depending on the camera status (see page 104 in the Operating Instructions (PDF format)).

Connection cable	Image output destination	Recording mode		Playback mode
		Standby	Recording	
AV cable (supplied)	Camera LCD monitor	NTSC: ✕ PAL: ○	○	✕
	TV	NTSC: ○ PAL: ✕	✕	○
HDMI mini cable (optional)	Camera LCD monitor	NTSC: ✕ PAL: ○	○	✕
	TV	NTSC: ○ PAL: ○	✕	○

○: Images are output　✕: Images are not output

- HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing, LLC.

Connecting to a video input terminal

Use the supplied AV cable to connect to a TV.

Insert the plugs as far as they will go.

Set the input to "VIDEO".

AV cable (supplied)

To USB/AV terminal

White plug:To Audio Input (L) terminal
Red plug:To Audio Input (R) terminal
Yellow plug:To Video Input terminal
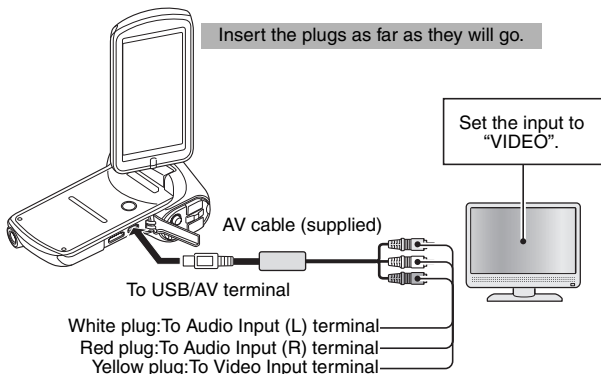
● Do not use any other AV cables except the supplied one.

Connecting to the HDMI terminal

Use a separately sold HDMI mini cable to connect to a TV.

Insert the plugs as far as they will go.

Set the input to "HDMI".

HDMI mini cable (optional)

To HDMI terminal   To HDMI terminal on the TV
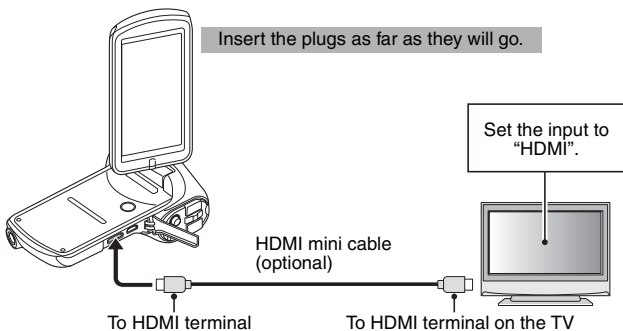
● Always use a genuine Panasonic HDMI mini cable (RP-CDHM15, RP-CDHM30; optional).

PLAYING BACK ON A TV

- After connecting the camera to the television, switch the TV input to the terminal to which the camera is connected.
- The same playback procedure as when playing back with the camera is used to play back audio recordings as well.
- The playback method is the same as when viewing images on the camera's LCD monitor. (Use the TV controls to adjust the volume.)

CONNECTING TO A TV

OPTIONAL ACCESSORIES

Product numbers correct as of February, 2011.
These may be subject to change.
- Battery pack (VW-VBX070)
- HDMI mini cable (RP-CDHM15, RP-CDHM30)

IMPORTANT MESSAGES AND ALERTS

SPECIFICATIONS

Specifications may change without prior notice.

Digital Movie Camera

Power source:	DC 5.0 V (when using AC adaptor)
	3.7 V (when using battery)
Power consumption:	(When recording)
	HX-DC10: 2.3 W; HX-DC1: 2.9 W

Signal system:
1080/60i, 1080/30p, 720/60p, 720/30p, 480/30p, 540/30p

Recording format:
Video: MPEG-4 AVC/H.264 file format compliant, iFrame
Voice memo: MPEG-4 AAC audio

Image sensor:
<HX-DC10>
1/2.3" type (1/2.3") MOS image sensor
Total: Approx. 16,790,000 pixels (16.79 megapixels)
Effective pixels
    Video: Approx. 16 Mpx (4:3), Approx. 11.9 Mpx (16:9)
    Photo: Approx. 16 Mpx (4:3), Approx. 11.9 Mpx (16:9)

<HX-DC1>
1/2.33" type (1/2.33") MOS image sensor
Total: Approx. 14,400,000 pixels (14.4 megapixels)
Effective pixels
    Video: Approx. 14.3 Mpx (4:3), Approx. 11.9 Mpx (16:9)
    Photo: Approx. 14.3 Mpx (4:3), Approx. 11.9 Mpx (16:9)

IMPORTANT MESSAGES AND ALERTS

Lens:
<HX-DC10>
Auto iris, 5× power zoom
Macro
F3.5 to F3.7 (f=6.8 mm to 34.0 mm)
35mm equivalent:
Video:	38.1 mm to 457.2 mm (4:3)
	41.5 mm to 249.0 mm (60i/60p, 16:9)
	41.5 mm to 498.0 mm (30p, 16:9)
Photo:	38.1 mm to 190.5 mm (4:3)
	41.5 mm to 207.5 mm (16:9)

Minimum focus distance:
Normal:	Approx. 10 cm (Wide)/Approx. 80 cm (Tele)
Intelligent Auto macro:	Approx. 1 cm (Wide)/Approx. 80 cm (Tele)

<HX-DC1>
Auto iris, 5× power zoom
Macro
F3.5 to F3.7 (f=6.8 mm to 34.0 mm)
35 mm equivalent
Video (Wide):	39.2 mm to 235.2 mm (4:3)
	40.1 mm to 240.6 mm (16:9)
(Tele):	80.9 mm to 485.4 mm (4:3)
	82.4 mm to 494.4 mm (16:9)
Photo:	38.6 mm to 193.0 mm (4:3)
	39.9 mm to 199.5 mm (16:9)

Minimum focus distance:
Normal:	Approx. 10 cm (Wide)/Approx. 80 cm (Tele)
Macro:	Approx. 1 cm (Wide)/Approx. 80 cm (Tele)

Zoom:
<HX-DC10>
(Photo) 5× optical zoom; (Video) 12× (30p)/6× (60i/60p) advanced zoom
Digital zoom; 120× (video mode, 30p mode), 60× (video mode, 60i/60p mode), 50× (photo mode)
<HX-DC1>
(Photo) 5× optical zoom; (Video)12× double-range zoom
Digital zoom; 60× (video mode), 50× (photo mode)

Image stabiliser:
Electronic

Monitor:
7.5 cm (3.0") wide LCD monitor (Approx. 230 K dots)

Microphone:
Internal stereo microphone

Speaker:
1 round speaker, dynamic type

White balance adjustment:
Auto tracking white balance system

Standard illumination:
1,400 lx

Minimum required subject illumination:
<HX-DC10>
Approx. 3 lx (1/15 sec in the scene mode low light setting),
Approx. 9 lx (1/30 sec in the scene mode OFF setting)

<HX-DC1>
Approx. 5 lx (1/15 sec in the scene mode low light setting),
Approx. 17 lx (1/30 sec in the scene mode OFF setting)

AV multi connector video output:
1.0 Vp-p, 75Ω

HDMI mini connector video output:
HDMI™ 1080i/720p/480p

AV multi connector audio output:
155 mV, output impedance 220Ω, 2 ch

HDMI mini connector audio output:
Linear PCM

USB:
Reader/writer function
    SD card: Read/Write (No copyright protection support)
    Built-in memory: Read/Write
    Hi-Speed USB (USB 2.0), micro USB terminal
Webcam
    Compression: Motion JPEG
    Image size: 640×480 pixels

Flash:
Effective range: Approx. 80 cm to 2.1 m

Dimensions (excluding projecting parts):
86.2 mm (W)×120.8 mm (H)×38.1 mm (D)

Mass (weight):
<HX-DC10>
Approx. 161 g (without battery and SD card)
<HX-DC1>
Approx. 163 g (without battery and SD card)

Mass (weight) in operation:
<HX-DC10>
Approx. 179 g (with battery and SD card)
<HX-DC1>
Approx. 181 g (with battery and SD card)

Operating temperature:
0 °C to 35 °C

Operating humidity:
10 %RH to 80 %RH

Battery operation time:
See page 14

■ **Video**

Recording media:
SD Memory Card (FAT12 and FAT16 system compliant)
SDHC Memory Card (FAT32 system compliant)
SDXC Memory Card (exFAT system compliant)
Refer to page 9 for details concerning SD cards that can be used in this unit.
Built-in memory: Approx. 80 MB (HX-DC10)
                             Approx. 80 MB (HX-DC1)

Compression:
MPEG-4 AVC/H.264, iFrame

Recording modes:
[1080-60i] : Approx. 17 Mbps (VBR)
[1080-30p] : Approx. 15 Mbps (VBR)
[720-60p] : Approx. 15 Mbps (VBR)
[720-30p] : Approx. 9 Mbps (VBR)
[480-30p] : Approx. 3 Mbps (VBR)
[iFrame] : Approx. 24 Mbps (VBR)
Refer to page 175 in the Operating Instructions (PDF format) for recordable
times.

Picture size:
[1080-60i] : 1920×1080/60i
[1080-30p] : 1920×1080/30p
[720-60p] : 1280×720/60p
[720-30p] : 1280×720/30p
[480-30p] : 640×480/30p
[iFrame] : 960×540/30p

Audio compression:
AAC (2 ch)

■ Photo

Recording media:
SD Memory Card (FAT12 and FAT16 system compliant)
SDHC Memory Card (FAT32 system compliant)
SDXC Memory Card (exFAT system compliant)
Refer to page 9 for details concerning SD cards that can be used in this unit.
Built-in memory: Approx. 80 MB (HX-DC10)
                 Approx. 80 MB (HX-DC1)

Compression:
JPEG (DCF/Exif2.2 standard)

Picture size:
Photo recording (single-shot)

<HX-DC10>
16ᴍ-H: 4608×3456 pixels
16ᴍ-S: 4608×3456 pixels
12ᴍ : 4608×2592 pixels

<HX-DC1>
14ᴍ-H: 4352×3264 pixels
14ᴍ-S: 4352×3264 pixels
10ᴍ : 4352×2448 pixels

<HX-DC10/HX-DC1>
2ᴍ : 1920×1080 pixels
2ᴍ : 1600×1200 pixels
0.9ᴍ: 1280×720 pixels
0.3ᴍ: 640×480 pixels

Hi-Speed Burst
<HX-DC10>
16↑: 4608×3456 pixels
<HX-DC1>
14↑: 4352×3264 pixels
<HX-DC10/HX-DC1>
2↑: 1600×1200 pixels

Refer to page 177 in the Operating Instructions (PDF format) for the number of recordable images.

AC adaptor

Power source:	AC 100 V to 240 V, 50/60 Hz
AC input:	130 mA
DC output:	5.0 V, 1.0 A

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.

It is forbidden to copy the software accompanying this unit, or to reproduce it on a network, without permission.

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- iMovie and Mac are trademarks of Apple Inc., registered in the U.S. and other countries.
- PowerPC is a trademark of International Business Machines Corporation.
- 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.
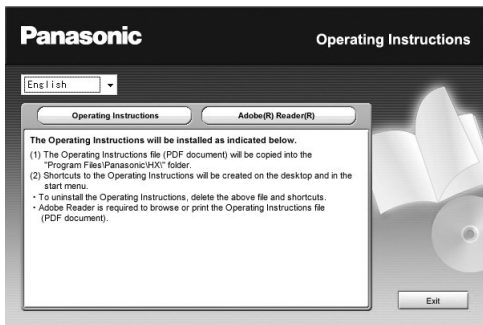
Reading the Operating Instructions (PDF format)

More detailed instructions on the operation of this unit are contained in "Operating Instructions (PDF format)" in the supplied CD-ROM. Install it on your computer to read it.

∎ **For Windows**

1 **Turn the PC on and insert the CD-ROM containing the Operating Instructions (supplied).**

2 **Select the desired language and then click [Operating Instructions] to install.**

3 **Double click the "Operating Instructions" shortcut icon on the desktop.**

∎ **If the Operating Instructions (PDF format) do not open**
You will need Adobe Acrobat Reader 5.0 or later or Adobe Reader 7.0 or later to browse or print the Operating Instructions (PDF format).
Download and install a version of Adobe Reader that you can use with your OS from the following web site.
http://get.adobe.com/reader/otherversions

If using the following OS
- Windows 2000 SP4
- Windows XP SP3
- Windows Vista SP2
- Windows 7

Insert the CD-ROM containing the Operating Instructions (supplied), click [Adobe(R) Reader(R)] and then follow the messages on the screen to install.

■ **To uninstall the Operating Instructions (PDF format)**

Delete the PDF file from the "Program Files\Panasonic\HX\" folder.
- If the contents in the Program Files folder are not displayed, click the [Show the contents of this folder] to display them.

■ **For Mac**

1 **Turn the computer on and insert the CD-ROM containing the Operating Instructions (supplied).**

2 **Open the "Manual" folder in the CD-ROM and then copy the PDF file with the desired language inside the folder.**

3 **Double click the PDF file to open it.**

IMPORTANT MESSAGES AND ALERTS

Panasonic Corporation
Web site: http://panasonic.net