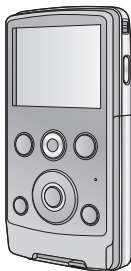


Panasonic®

Operating Instructions High Definition Mobile Camera

Model No. **HM-TA1**



Before use, please read these instructions completely.



Model number suffix "EB" denotes UK model.

EB EP GC

VQT3A10
1AG6P1P6087--(S)

Information for Your Safety

WARNING:

TO REDUCE THE RISK OF FIRE 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.**

Warning

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

(EB/EP only)

■ **EMC Electric and magnetic compatibility**

This symbol (CE) is located on the rating plate.

Use only the recommended accessories.

- Do not use any other AV cables and USB extension cords except the supplied one.
- Keep the Memory Card out of reach of children to prevent swallowing.

Product Identification Marking is located on the bottom of unit.

-If you see this symbol-

■ Information for Users on Collection and Disposal of Old Equipment and used Batteries



These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries should not be mixed with general household waste.

For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC

and 2006/66/EC.

By disposing of these products and batteries correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.

For more information about collection and recycling of old products and batteries, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items. Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.



For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

[Information on Disposal in other Countries outside the European Union]

These symbols are only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.



Cd

Note for the battery symbol (bottom two symbol examples):

This symbol might be used in combination with a chemical symbol. In this case it complies with the requirement set by the Directive for the chemical involved.

■ Indemnity about recorded content

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

■ About recording method and compatibility of this unit

This unit can record detailed high definition images based on the MP4 format (MPEG-4 AVC/H.264 codec).

- Since the recording method is different from the AVCHD format, the data is not compatible.

■ Cards that you can use with this unit

SD Memory Card, SDHC Memory Card and SDXC Memory Card

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

■ For the purposes of 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 an arrow, for example: → 00

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For the United Kingdom and Republic of Ireland customers

■ Sales and Support Information

Customer Care Centre

- For customers within the UK: 0844 844 3852
- For customers within the Republic of Ireland: 01 289 8333
- Visit our website for product information
www.panasonic.co.uk
- E-mail: customer.care@panasonic.co.uk

Technical Support for AV Software

- For customers within the UK: 0844 844 3869
- For customers within the Republic of Ireland: 01 289 8333

Direct Sales at Panasonic UK

- For customers: 0844 844 3856
- Order accessory and consumable items for your product with ease and confidence by phoning our Customer Care Centre Monday–Thursday 9.00 a.m.–5.30 p.m., Friday 9.30 a.m.– 5.30 p.m. (Excluding public holidays)
- Or go on line through our Internet Accessory ordering application at www.pas-europe.com.
- Most major credit and debit cards accepted.
- All enquiries transactions and distribution facilities are provided directly by Panasonic UK Ltd.
- It couldn't be simpler!
- Also available through our Internet is direct shopping for a wide range of finished products, take a browse on our website for further details.

Accessories

Check the accessories before using this unit.
Keep the accessories out of reach of children to prevent swallowing.
Product numbers correct as of July 2010. These may be subject to change.

Battery pack

VW-VBJ10



AV cable

VFA0530



Hand strap

VFC4627



USB extension cord

K2KYYYY00064



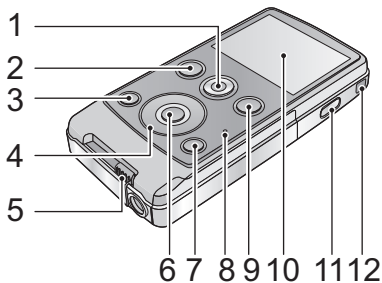
- The unit comes with built-in HD Writer PE 1.0 video editing software.

Optional accessories

Some optional accessories may not be available in some countries.

| |
|---|
| Battery pack (lithium/VW-VBJ10) |
| SD/SDHC/SDXC Memory Card (Refer to page 15) |

Parts identification and handling

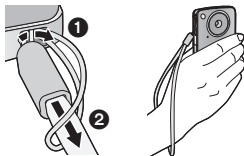


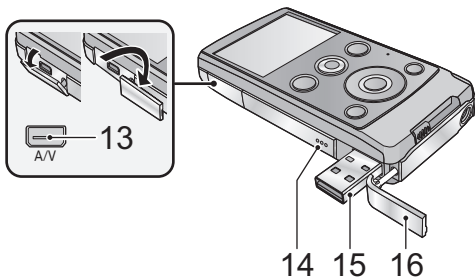
- 1 Motion picture button (→ 21)
- 2 Playback button [▶] (→ 25)
- 3 Light button [LIGHT] (→ 23)
- 4 Cursor button [T, W, ◀, ▶]
- 5 USB terminal slide lever (→ 11)
- 6 MENU/SET button [MENU/SET] (→ 32)
- 7 Delete button [🗑] (→ 30)
- 8 Status indicator (→ 11, 16, 36)
- 9 Photoshot button [📷] (→ 22)
- 10 LCD monitor

Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the LCD monitor screen. However, this is not a malfunction and does not affect the recorded picture.

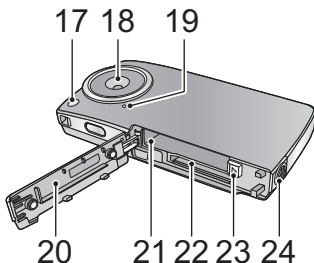
- 11 Power button [⏻/⏺] (→ 18)
- 12 Hand strap fixture

- Do not cover the microphones.





- 13 Audio-video output terminal [A/V] (→ 36)**
 - Use the AV cable (only the supplied cable).
- 14 Speaker**
- 15 USB terminal [↔] (→ 11, 44, 46, 52)**
- 16 USB terminal cover (→ 11)**



- 17 LED light (→ 23)**
- 18 Lens**
- 19 Internal microphones**
- 20 Card/battery door (→ 10, 16)**
- 21 Battery slot (→ 10)**
- 22 Card slot (→ 16)**
- 23 Battery release lever [BATT] (→ 10)**
- 24 Tripod receptacle**

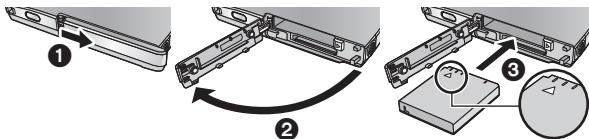
Battery supply

■ About batteries that you can use with this unit

The battery that can be used with this unit is VW-VBJ10.

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



1 Open the card/battery door and insert the battery in the direction shown in the figure.

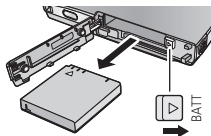
- Push the centre of the battery in the direction of the \triangle until it “clicks” and locks.

2 Close the card/battery door.

■ Removing the battery

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

- Turn off the unit and make sure the LCD monitor is turned off. Then remove the battery while supporting the unit to prevent it dropping.



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.

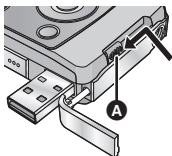
Charging the battery

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

Important:

- The battery will not be charged if the unit is turned on.

1 Slide the USB terminal slide lever while holding it down.

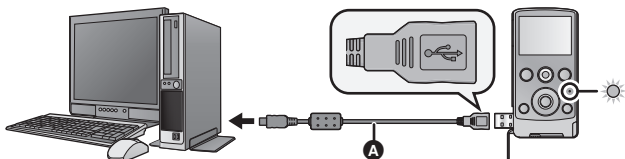


- Slide the USB terminal slide lever until it "clicks" and locks.

- This pushes the USB terminal cover open deploying the USB terminal.

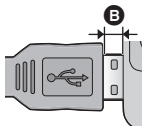
2 Connect USB terminal of this unit to a PC with a USB extension cord.

- Connect the USB extension cord by inserting it securely all the way without forcing.



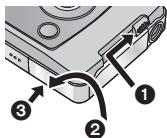
- USB extension cord (supplied)

- Do not use any other USB extension cords except the supplied one. (Operation is not guaranteed with any other USB extension cords.)
- Insert the USB extension cord securely all the way. (The insertion of the plug to the USB terminal of this unit leaves the gap **B**.) It will not operate properly if it is not inserted all the way.
- During charging, the status indicator flashes. When charging is finished, the status indicator turns off.



■ To return the USB terminal slide lever to its original position

While holding down the USB terminal slide lever, slide it to its original position and close the USB terminal cover.



-
- Please refer to page 60 if the status indicator flashes quickly.
 - During the charging, the unit can not be turned on with the power button. In order to turn on the unit, disconnect it from the PC.
 - We recommend using Panasonic batteries (→ 7, 13).
 - 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 an automobile 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

| Battery model number [Voltage/Capacity (minimum)] | Charging time | Recording mode | Maximum continuously recordable time* | Actual recordable time |
|--|---------------|----------------|---------------------------------------|------------------------|
| Supplied battery/ VW-VBJ10 (optional) [3.6 V/940 mAh] | 4 h 10 min | 1080p | 1 h 20 min | 45 min |
| | | 720p / iFrame | 1 h 35 min | 50 min |
| | | 480p | 1 h 50 min | 1 h |

* Maximum continuously recordable time for one scene:

– If [REC MODE] is set to 1080p / 720p / 480p :

29 min 59 sec

– If [REC MODE] is set to iFrame :

Approx. 20 min (up to 4 GB recording capacity)

- 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, adjusting the zoom etc.
 - The batteries heat up after use or charging. This is not a malfunction.

Approximate operating time and number of recordable still pictures

| | | |
|--------------------------------------|-------------------------|------------------|
| Number of recordable pictures | Approx. 230 pictures | By CIPA standard |
| Recording time | Approx. 115 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)

Battery capacity indication

- The display changes as the battery capacity reduces.



If the battery discharges, then  will become red.

Preparing the card

This unit (an SDXC compatible device) is compatible with SD Memory Cards, SDHC Memory Cards and SDXC Memory Cards. When using an SDHC memory card/SDXC memory card with other equipment, check the equipment is compatible with these memory cards.

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.

| Card type | Capacity | Motion picture recording | Still picture recording |
|------------------|--|--|-------------------------|
| SD Memory Card | 8 MB/ 16 MB/ 32 MB/ 64 MB/ 128 MB/ 256 MB | Cannot be guaranteed in operation. The recording may suddenly stop during motion picture recording depending on the SD card you use. (→ 56) | Can be used. |
| | 512 MB/ 1 GB/2 GB | | |
| SDHC Memory Card | 4 GB/6 GB/ 8 GB/12 GB/ 16 GB/24 GB/ 32 GB | Can be used. | |
| SDXC Memory Card | 48 GB/64 GB | | |

* The SD Speed Class Rating is the speed standard for successive writes.

- 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.)

- 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.
- When the write-protect switch **A** on 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.

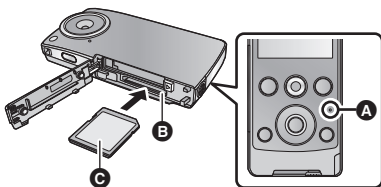


Inserting/removing an SD card

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. (→ 35) 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 status indicator has gone off.



Status indicator **A**

- When this unit is accessing the SD card, the status indicator lights up.

1 Open the card/battery door 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 card/battery door.

- Do not touch the terminals on the back of the SD card.
- Do not apply strong shocks, bend, or drop the SD card.
- Electrical noise, static electricity or the failure of this unit or the SD card may damage or erase the data stored on the SD card.

- When the status indicator is lit, do not:
 - Remove the SD card
 - Turn the unit off
 - Insert and remove the USB terminal
 - Expose the unit to vibrations or shockPerforming the above while the lamp is on may result in damage to data/SD card or this unit.
- Do not expose the terminals of the SD card to water, garbage or dust.
- Do not place SD cards in the following areas:
 - In direct sunlight
 - In very dusty or humid areas
 - Near a heater
 - Locations susceptible to significant difference in temperature (condensation can occur.)
 - Where static electricity or electromagnetic waves occur
- To protect SD cards, return them to their cases when you are not using them.
- About disposing of or giving away the SD card. (→ 63)

Turning the unit on/off

Press the power button to turn on the unit.



- The LCD monitor lights.

To turn off the unit

Continue pressing the power button until the LCD monitor goes off.

■ About the screen display

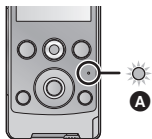
Please refer to page 53 for details of the icons displayed on the screen.

■ About the power save function


To prevent battery consumption, it will turn off the screen and go into idle mode after approx. 2 minutes of no operation. (The status indicator **A** flashes.)






The unit will be turned off automatically if no operation is performed for a further 5 minutes (approx.) while in idle mode.

- Idle mode is cancelled by pressing one of the buttons.



■ About the high temperature warning icon

When the high temperature warning icon  is displayed, the temperature of the unit is high.


- It is possible to continue recording/playback when  is displayed, but it is recommended to stop operations and turn off the unit as soon as possible.
- If the temperature rises further, the unit will be turned off automatically after  flashes. You will not be able to turn on the unit again until the temperature lowers ( will flash.), so wait until the temperature lowers before using again.
- A countdown until the recording is stopped will start from approx. 15 seconds during motion picture recording, and the recording will stop when the display reaches 0 seconds.
- When you turn off the unit while the temperature is high ( is displayed.), you will not be able to turn on the unit again until the temperature lowers. ( will flash.)

Setting date and time

When the unit is turned on for the first time, a message asking you to set the date and time will appear.

Press the MENU/SET button and perform steps 2 to 3 below to set the date and time.

1 Select the menu. (→ 32)

 : [CLOCK SET] → desired setting

[DATE]: Setting of the year/month/day

[TIME]: Setting of the hour/minute

2 Select the items to be set using ► and ◀ on the cursor button, and set the desired value using T and W.



- The year can be set between 2000 and 2039.
- The 24-hour system is used to display the time.

3 Press the MENU/SET button.

- The clock function starts at [00] seconds.
- Press ◀ to complete the setting.

-
- **The clock is not set when the unit is shipped.**
 - The date and time function is driven by a built-in lithium battery.
 - If the built-in lithium battery needs to be charged, the message “Set date and time” appears. To recharge the built-in lithium battery, connect USB terminal of this unit to a booted PC or attach the battery to this unit. Leave the unit as it is for approx. 24 hours and the battery will maintain the date and time for approx. 3 months. (The battery is still being recharged even if the unit is off.)
 - The date and time will be set to January 1, 2010 00:00 when recording is performed without the date and time set.

WARNING

THE LITHIUM BATTERY IN THIS EQUIPMENT MUST ONLY BE REPLACED BY QUALIFIED PERSONNEL. WHEN NECESSARY, CONTACT YOUR LOCAL PANASONIC SUPPLIER.

Recording

- This unit will perform automatic recording. Auto focusing, auto white balancing, and electronic stabilizer* will function during the recording.
- * The electronic stabilizer will not function when recording still pictures or using digital zoom.

Recording motion pictures

1 Press the motion picture button to start recording.



- When you begin recording, **||** changes to **●**.

2 Press the motion picture button again to pause recording.

- The images recorded between pressing the motion picture button to start recording and pressing it again to pause recording become one scene.
- In the following cases, the countdown until the recording is stopped will start from approx. 30 seconds and the recording will stop when the display reaches 0 second.
 - When the total of the capacity of the SD card is about to be used during the recording.
 - When the recording time reaches near the maximum continuously recordable time for a single scene. (→ 65)
- Please refer to page 65 for details on continuously recordable time for a single scene.
- Maximum number of recordable scenes on a single SD card is 8999100.

■ About the screen display when recording motion pictures

- 1080p**: Recording mode
- : Recording motion picture
- ||**: Recording pause
- 01h30m**: Remaining time for motion picture recording
- 00m00s**: Elapsed recording time





- “h” is an abbreviation for hour, “m” for minute and “s” for second.

About the compatibility of the recorded motion pictures

- They are not compatible with devices other than those that support MP4. Images cannot be played with equipment that does not support MP4. Confirm that your equipment supports MP4 by referring to the operating instructions.
- There are some cases where the recorded motion pictures cannot be played back, even if the device supports MP4. In such cases, play the recorded motion picture with this unit instead.


Recording still pictures

1 Press the photoshot button halfway.


-  (white) appears on the screen.
- Aspect ratio is switched in accordance with the setting in [PICTURE SIZE], and the focus is set.
-  is displayed where the focus is set.





2 Press the photoshot button fully.

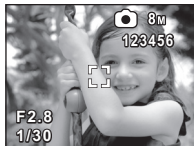
-  (red) appears on the screen.



- **Still pictures cannot be recorded while recording the motion picture.**
- The focus prioritises closer subjects. If  is not displayed at the desired position, reset the focus by getting closer to the subject or moving the unit, etc.
- It is recommended using a tripod when recording still pictures in dark places because the shutter speed becomes slow.
- The screen will turn black for an instant when pressing the photoshot button halfway/fully.

■ About the screen display when recording still pictures

- : Still picture operation indicator
- 8M: Number of recording pixels for still pictures
- 123456: Remaining number of recordable pictures
- : Focus area
- F2.8: Iris value
- 1/30: Shutter speed



Digital zoom in/out function

The maximum digital zoom ratio is 4×.



T: Close-up recording (zoom in)

W: Wide-angle recording (zoom out)

-
- Independent of zoom magnification, this unit can focus on a subject approx. 30 cm away from the lens.
 - The larger the zoom magnification, the more the image quality is degraded.

Recording with the LED light

The LED light enables brightening of the images taken in a dimly-lit place.



Light button

Each time the button is pressed, the LED light is turned on or off.

-
- The setting will be cancelled when you turn off the unit or press the playback button.
 - When the LED light is in use, the recordable time when using the battery is shortened.
 - The subject should be within approx. 70 cm of the unit.
 - Turn off the LED light at places where using a light is prohibited.
 - Do not look directly at the LED light when it is on.
 - The bright light may hurt your eyes.
 - Keep a distance of at least 1 m when recording babies.
 - Do not use pointing the LED light at drivers etc. as it may lead to accidents.

Effect function (applying special effects)

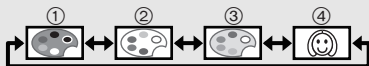
You can record with effects such as changing the colour tone or making the skin tone smooth.

1 Press ► or ◀ on the cursor button while the recording is paused.

- The effect icon appears.



2 Select the effect icon by pressing ► or ◀.








- | | |
|----------------------|-----------------------------|
| ① Monochrome: | Makes it black and white. |
| ② Normal: | Cancels the setting. |
| ③ Sepia: | Makes it sepia tone. |
| ④ Soft skin: | Makes the skin tone smooth. |
- Selected effect icon will be displayed in yellow, and the effect will be reflected on the screen.
 - When the MENU/SET button is pressed or no operation is performed for approx. 2 seconds, the effect is set and the effect icon disappears.
-
- The setting will be normal when you turn off the unit or press the playback button.

Playback

Motion picture/Still picture playback

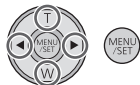
1 Press the playback button.

- The last recorded scene or still picture will be played back.
- When  is pressed during playback of a scene, the unit goes to the next scene or still picture. When  is pressed, the unit stops at the beginning of the scene that is currently being played back. When  is pressed again, the unit goes to the previous scene or still picture.
- When  () is pressed during playback of a still picture, the unit goes to the next (previous) scene or still picture.



2 Select the playback operation using the operation icon .

- Operation icon will disappear when there is no operation for a few seconds. It is displayed again when performing the playback operation again.
- Playback will end and it will go into pause mode for recording when the motion picture button is pressed.



■ Playback operation

| Playback operation | Icon | Operating steps | Playback data |
|--|------|--|---------------------------|
| Thumbnail display | | Press T during pause or stop. (→ 27) | Scenes/ still pictures |
| Pause | | Press MENU/SET button or playback button during playback. | Scenes |
| Volume adjustment | | Press T or W during playback. T: Increases the volume W: Decreases the volume | |
| Fast forward/rewind playback | | Continue pressing ► (fast forward playback) or ◀ (rewind playback) during playback or pause. <ul style="list-style-type: none"> • During fast forward/rewind playback, a playback bar showing the playback position is displayed. • It will play back at a speed of 5× only while being pressed. Once it is released, scenes will be played back normally. | |
| Playback | | Press MENU/SET button or playback button during pause or stop. | |
| Stop | | Press W during pause. <ul style="list-style-type: none"> • It will return to the beginning of the scene. | |
| Frame-by-frame playback | | With the playback paused, press ► (Frame-by-frame playback) or ◀ (Reverse frame-by-frame playback). | |
| To the next (previous) scenes/still pictures | | Press ► or ◀ during playback or stop. <ul style="list-style-type: none"> • If ◀ is pressed during playback, it will go into stop mode. | |
| | | Press ► or ◀ during playback. | Still pictures |

■ To select a scene or still picture to playback



- 1** (When playing back a scene)
Press T during pause or stop.
(When playing back still pictures)
Press T.

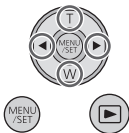
- The thumbnails are displayed.



A Thumbnail display

2 Select the scene or still picture to playback using the cursor button, and press the MENU/SET button or playback button.

- When W (T) is pressed, the next (previous) page is displayed.
- When the scene is selected,  appears and when the still picture is selected,  appears in the lower part of the screen.
- The selected scene or still picture is played back, and the operation icon is automatically displayed on the screen.



- The elapsed time for playback indication will be reset to “00m00s” for each scene.
- During fast forward/rewind playback, a playback bar showing the playback position in the scene is displayed.
- Audio is not output except for normal motion picture playback.

■ About the screen display during playback

| | |
|----------------------|-----------------|
| 00m00s: | Playback time |
| 100-0001: | File number |
| 15. 11. 2010: | Date indication |



Motion picture compatibility

- This unit is based on the MPEG-4 AVC file format.
- This unit may degrade or not play back motion pictures recorded or created on other products, and other products may degrade or not play back motion pictures recorded on this unit, even if the products support MP4.

Still picture 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.

Creating still picture from motion picture

A single frame from the recorded motion picture can be saved as a still picture.

1 Pause at the scene you want to save as a still picture during playback.

- It is convenient to use frame-by-frame playback.

2 Press the photoshot button fully.

- Date the motion picture was recorded will be registered as date of the still picture.
- Quality will be different from the normal still picture.



Picture size

Size of the still pictures will differ depending on the [REC MODE] of the recorded scenes.

| Recording mode | Size of still pictures |
|----------------|------------------------|
| 1080p | 2 M (1920×1080) |
| 720p | 0.9 M (1280×720) |
| 480p | 0.3 M (640×480) |
| iFrame | 0.5 M (960×544) |

Playing back the slide show

Recorded motion pictures and still pictures can be played back as a slide show.

Press and hold the playback button for approx. 2 seconds while playing back/stopping/pausing a scene or playing back still pictures.



- appears.
- Slide show will start from the scene/still picture that is currently being played back. It will stop once all the recorded scenes/still pictures are played back.
- Scenes are played back normally, and still pictures are played back for approx. 2 seconds each.
- Press T, W to change the volume when playing back a scene.

To cancel playing back the slide show

Press the MENU/SET button.

- The unit will switch to the normal playback screen for the scene/still picture that was being played back when the slide show was cancelled. (Scenes will stop.)


Deleting motion pictures/still pictures

Deleted scenes/still pictures cannot be restored, so perform appropriate confirmation of the contents before proceeding with deletion.

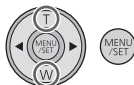
Press the  button, then select [DELETE] while playing back the motion picture/still picture.

- The scene/still picture on playback will be deleted.

■ To delete the selected scenes/still pictures or delete all

1 Press the  button during pausing of the motion picture recording or while the thumbnail view screen is displayed.

2 Select the item to delete using the cursor button, then press the MENU/SET button.




| | |
|-------------------|---|
| [DELETE SINGLE] | Scene or still picture selected in the thumbnail display is deleted. <ul style="list-style-type: none">• Press ► (◀) to go to the scene/still picture you wish to delete, and then press the MENU/SET button. |
| [DELETE SELECTED] | Proceed to step 3. |
| [DELETE ALL] | All the scenes/still pictures on the SD card will be deleted. |
| [EXIT] | Deleting is cancelled and it will switch to the thumbnail display. |

3 (When [DELETE SELECTED] is selected in step 2)

Select the scene/still picture to be deleted, then press the MENU/SET button.




- The scene/still picture is selected and the  indication appears on the thumbnail. Select the scene/still picture again to cancel the operation.
- Up to 100 scenes can be selected to be deleted.
- Press the light button to return to step 2.

4 (When [DELETE SELECTED] is selected in step 2)

Press the  button.

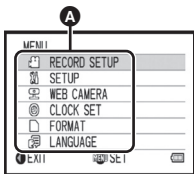
- When deleting is completed, the thumbnail display comes back.

-
- Scenes/still pictures protected on other products cannot be deleted.
 - The scenes/still pictures that cannot be played back (with  on the thumbnail) may not be deleted.
 - In case of [DELETE ALL], the deletion may take time if there are many scenes or still pictures.
 - If you delete scenes recorded on other products or still pictures conforming to DCF standard with this unit, all the data related to the scenes/still pictures may be deleted.
 - When still pictures recorded on an SD card by other products are deleted, a still picture (other than JPEG) that cannot be played back on this unit may be erased.

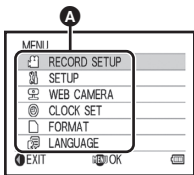
Using the menu screen

- 1 Press the **MENU/SET** button. 
- 2 Select the top menu **A** using the cursor button, and press **▶** or the **MENU/SET** button.
 - It will return to the recording screen when **◀** is pressed.

(EB only)



(EP/GC only)



- 3 Select the submenu by pressing **T** or **W** and press **▶** or the **MENU/SET** button.
 - It will return to the previous screen when **◀** is pressed.
- 4 Select the desired item, and set by pressing the **MENU/SET** button.
 - Complete the menu setting by pressing the motion picture button/photoshot button. It will return to the recording screen.

Menu list

[REC MODE]

Switch the picture quality of the motion pictures to be recorded.

 : [RECORD SETUP] → [REC MODE] → **desired setting**



 /  / 



A ←————→ **B**

C


- A** Image quality prioritised
- B** Recording time prioritised
- C** Use this to playback and edit using a Mac.

- **Recordable time using the battery (→ 13)**
- This function's default setting is .
- Please refer to page 65 about approximate recordable time.
- When the unit is moved a lot or moved quickly, or when a fast-moving subject is recorded (particularly when recording using ), mosaic-type noise may appear at playback.

[PICTURE SIZE]

The higher the number of pixels, the higher the clarity of the picture when printing.

 : [RECORD SETUP] → [PICTURE SIZE] → **desired setting**

8M (3264×2448) /  (1920×1080) [16:9] / **2M** (1600×1200) /
0.3M (640×480)

- This function's default setting is **8M**.
- The recording will become longer depending on the recording pixels.
- Please refer to page 66 for details about the number of recordable pictures.

[TV ASPECT]

Output settings can be changed to match the aspect ratio of the TV screen when playing back connected to a TV.

 : [SETUP] → [TV ASPECT] → **desired setting**

[16:9]: When the aspect ratio of the TV screen is 16:9

[4:3]: When the aspect ratio of the TV screen is 4:3

[TV SYSTEM]

Output settings can be changed to match the environment in use when playing back connected to a TV.


 : [SETUP] → [TV SYSTEM] → **desired setting**

[NTSC]: Output in NTSC format video signal (North America, Japan, etc.)

[PAL]: Output in PAL format video signal (Europe, etc.)

[ALERT SOUND]

You can check the start and stop of recording, or turning the unit on/off with an audio tone.

 : [ALERT SOUND] → [ON]

[WEB CAMERA]

This unit can be used as a Skype camera. (→ 50)

 : [WEB CAMERA] → [ON]

- Except when using the unit as a camera for Skype, set to [OFF] when connecting to a PC.

[CLOCK SET]

Please refer to page 19.

[FORMAT]

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 etc. (→ 38)

: [FORMAT]

- When the confirmation message appears, select [YES], then press the MENU/SET button.
- Do not turn this unit off or remove the SD card, while formatting. Do not expose the unit to vibrations or shock.

Use this unit to format media.

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

[LANGUAGE]

Language displayed on the screen can be set.

: [LANGUAGE] → desired setting

(EB only)

[English]/[Deutsch]/[Français]/[Italiano]/[Nederlands]/[Svenska]/
[Español]/[Polski]/[Česky]/[Türkçe]

(EP only)

[English]/[Deutsch]/[Français]/[Italiano]/[Svenska]/[Español]/
[Polski]/[Česky]/[Türkçe]/[Magyar]

(GC only)

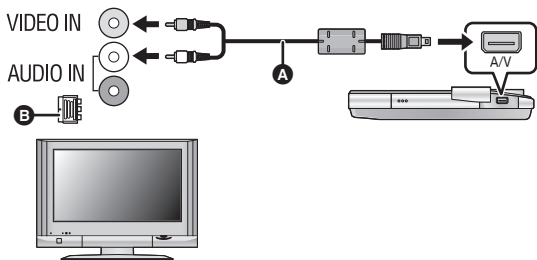
[English]/[中文]/[العربية]/[فارسی]/[ไทย]

Watching Motion/Still pictures on your TV

- Use the supplied AV cable.

1 Connect this unit to a TV.

- The LCD monitor on this unit will turn off and the status indicator will flash.
- When this unit is connected to a TV during motion picture recording, the recording will stop.
- When recording, only alert sounds will be output from the TV.



A AV cable (supplied)

- If your TV is not equipped with AV Input Sockets, the 21-pin Adaptor (B) (optional) is necessary. Consult your dealer.

- Check that the plugs are inserted as far as they go.
- Do not use any other AV cables except the supplied one.

2 Select the video input on the TV.

- Example:
Select the [Video 2] channel with an AV cable.
(The name of the channel may differ depending on the connected TV.)
- Check the input setting (input switch) and the audio input setting on the TV. (For more information, please read the operating instructions for the TV.)

3 Start playback on this unit.

■ **To watch images on a regular TV (4:3) or when both sides of the images do not appear on the screen**

Change the menu setting to display the images correctly. (Check the TV setting.)



: [SETUP] → [TV ASPECT] → [4:3]

Example of images with a 16:9 aspect ratio on a regular TV (4:3)

- If a wide-screen TV is connected, adjust the aspect setting on the TV. (Refer to the operating instructions of the TV for details.)

| [TV ASPECT] setting | |
|---------------------|-------|
| [16:9] | [4:3] |
| | |

What you can do with a PC

- The unit comes with built-in HD Writer PE 1.0 video editing software.
- See page 44 for how to install HD Writer PE 1.0 on your PC.

HD Writer PE 1.0

You can copy the motion/still picture data to the HDD of PCs or write to SD cards using the HD Writer PE 1.0 software.

Refer to the operating instructions of HD Writer PE 1.0 (PDF file) for details on how to use it.

■ Smart wizard

The Smart wizard screen is automatically displayed when you connect this unit to a PC with HD Writer PE 1.0 installed. (→ 46)



- Select the function you wish to use and follow the on-screen instructions for easy copying and upload motion pictures on the Internet.

| Available function using HD Writer PE 1.0 | Data type |
|---|----------------------------------|
| Copying data to a PC | Motion picture and still picture |
| Playing back on a PC | |
| Online sharing: You can upload motion pictures on the Internet and share them with your family and friends. | Motion picture |
| Editing: Editing motion picture data copied on an HDD of a PC <ul style="list-style-type: none"> ● Title, Transition, Delete partially, Divide Scene ● Converting part of motion picture into still picture | |

- Playing back still pictures on a PC using standard Windows picture viewer or a commercially available picture viewer, or copying still pictures to a PC using Windows Explorer is available.
- Refer to page 49 if using a Mac.

Important Notice

- When using an SDXC Memory Card, check the following support site.
<http://panasonic.net/avc/sdcard/information/SDXC.html>

-
- **Motion pictures that have been recorded on another device cannot be written to HD Writer PE 1.0.**

(EB/EP only)

- We cannot guarantee operation if you use software other than HD Writer PE 1.0 to read motion picture.

(GC only)

- We cannot guarantee operation if you use software other than HD Writer PE 1.0 to read/write motion picture.
- Do not start HD Writer PE 1.0 and other software at the same time. Close any other software if you start HD Writer PE 1.0 and close HD Writer PE 1.0 if you start any other software.

Operating environment

- Even if the system requirements mentioned in these operating instructions are fulfilled, some PCs cannot be used.
- Operation is not guaranteed in the following cases.
 - When 2 or more USB devices are connected to a PC, or when devices are connected through USB hubs or by using extension cables other than the supplied USB extension cord.
 - Operation on an upgraded OS.
 - Operation on an OS other than the one pre-installed.
- This software is not compatible with Microsoft Windows 3.1, Windows 95, Windows 98, Windows 98SE, Windows Me, Windows NT and Windows 2000.

■ Operating environment for HD Writer PE 1.0

| | |
|-----------|--|
| PC | IBM PC/AT compatible PC |
| OS | Microsoft Windows XP (32 bit) Home Edition Service Pack 2/Service Pack 3 Microsoft Windows XP (32 bit) Professional Service Pack 2/Service Pack 3 Microsoft Windows Vista (32 bit) Home Basic Service Pack 1/Service Pack 2 Microsoft Windows Vista (32 bit) Home Premium Service Pack 1/Service Pack 2 Microsoft Windows Vista (32 bit) Business Service Pack 1/Service Pack 2 Microsoft Windows Vista (32 bit) Ultimate Service Pack 1/Service Pack 2 Microsoft Windows 7 (32 bit) Starter Microsoft Windows 7 (32 bit/64 bit) Home Basic Microsoft Windows 7 (32 bit/64 bit) Home Premium Microsoft Windows 7 (32 bit/64 bit) Professional Microsoft Windows 7 (32 bit/64 bit) Ultimate |

| | |
|-----------------------------------|---|
| CPU | <p>Intel Pentium 4 2.8 GHz or higher (including compatible CPU)</p> <ul style="list-style-type: none"> ● Intel Core 2 Duo 2.16 GHz or higher or AMD Athlon 64 X2 Dual-Core 5200+ or higher is recommended when a playback function is used. ● Intel Core 2 Quad 2.6 GHz or higher is recommended when using the editing function. |
| RAM | <p>Windows 7: 1 GB or more (32 bit)/2 GB or more (64 bit)</p> <p>Windows Vista: 1 GB or more</p> <p>Windows XP: 512 MB or more (1 GB or more recommended)</p> |
| Display | <p>High Colour (16 bit) or more (32 bit or more recommended)</p> <p>Desktop resolution of 1024×768 pixels or more (1280×1024 pixels or more recommended)</p> <p>Windows Vista/Windows 7: DirectX 9.0c compatible video card (DirectX 10 recommended)</p> <p>Windows XP: DirectX 9.0c compatible video card</p> <p>Compatible with DirectDraw overlay</p> <p>PCI Express™ ×16 compatible recommended</p> |
| Free hard disk drive space | <p>Ultra DMA — 100 or more</p> <p>450 MB or more (for installing the software)</p> |
| Sound | DirectSound Support |
| Interface | USB port [Hi-Speed USB (USB 2.0)] |
| Other requirements | <p>Mouse or equivalent pointing device</p> <p>Internet connection</p> |

- Input is not supported in languages other than English, German, French and Simplified Chinese.
 - Operation is not guaranteed on Microsoft Windows Vista Enterprise, Windows XP Media Center Edition, Tablet PC Edition and Windows 7 Enterprise.
 - This software is not compatible with a multi-boot environment.
 - This software is not compatible with a multi-monitor environment.
 - If using Windows XP, an administrative account user only can use this software. If using Windows Vista/Windows 7, administrative account and standard account users only can use this software. (An administrative account user should install and uninstall this software.)
-
- Operation during the playback may become slow if the CPU or memory is not fulfilling the requirements of the operating environment.
 - Always use the most current driver for the video card.
 - Always make sure there is enough capacity on the HDD in the PC. It may become inoperable or the operation may stop suddenly if the capacity gets low.

■ Operating environment for the card reader function (mass storage)

| | |
|---------------------------|---|
| PC | IBM PC/AT compatible PC |
| OS | Microsoft Windows XP (32 bit) Home Edition Service Pack 2/Service Pack 3 Microsoft Windows XP (32 bit) Professional Service Pack 2/Service Pack 3 Microsoft Windows Vista (32 bit) Home Basic Service Pack 1/Service Pack 2 Microsoft Windows Vista (32 bit) Home Premium Service Pack 1/Service Pack 2 Microsoft Windows Vista (32 bit) Business Service Pack 1/Service Pack 2 Microsoft Windows Vista (32 bit) Ultimate Service Pack 1/Service Pack 2 Microsoft Windows Vista (32 bit) Enterprise Service Pack 1/Service Pack 2 Microsoft Windows 7 (32 bit) Starter Microsoft Windows 7 (32 bit/64 bit) Home Basic Microsoft Windows 7 (32 bit/64 bit) Home Premium Microsoft Windows 7 (32 bit/64 bit) Professional Microsoft Windows 7 (32 bit/64 bit) Ultimate |
| CPU | Windows Vista/Windows 7: Intel Pentium III 1.0 GHz or higher Windows XP: Intel Pentium III 450 MHz or higher or Intel Celeron 400 MHz or higher |
| RAM | Windows 7: 1 GB or more (32 bit)/2 GB or more (64 bit) Windows Vista Home Basic: 512 MB or more Windows Vista Home Premium/Business/Ultimate/Enterprise: 1 GB or more Windows XP: 128 MB or more (256 MB or more recommended) |
| Interface | USB port |
| Other requirements | Mouse or equivalent pointing device |

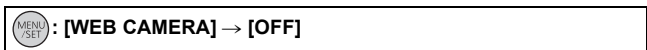
- The USB equipment operates with the driver installed as standard in the OS.

Installation

When installing the software, log on to your computer as the Administrator or with a user name with equivalent authorization. (If you do not have authorization to do this, consult your manager.)

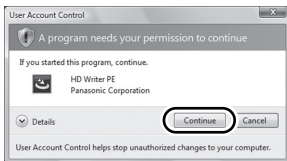
- Before starting the installation, close all applications that are running.
- Do not perform any other operations on your PC while the software is being installed.
- Explanation of operations and screens is based on Windows Vista.
- Turn on the unit.

1 Select the menu.



2 Connect USB terminal of this unit to a PC with a USB extension cord.

- Do not use any other USB extension cords except the supplied one. (Operation is not guaranteed with any other USB extension cords.)
 - The following screen is displayed automatically. Click [HD Writer PE 1.0] → [Continue].
 - When using Windows 7 or if the following screen is not displayed automatically, select [Start] → [Computer] (or double-click on [Computer] on the desktop), and then double-click [Panasonic HM-TA1]* → [setup(.exe)].
- * Depending on the PC you are using, [CAM_APP] may be displayed.



3 Click [Next].

4 Read the [End User License Agreement], then place a check beside [I accept the terms of the license agreement] if you agree to them and click [Next].

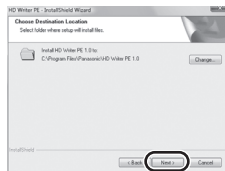
5 Select where the application is to be installed, then click **[Next]**.

6 Select **[Yes]** or **[No]** to create shortcut.

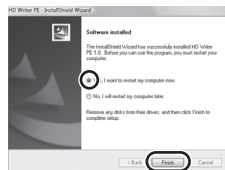
7 When installation is complete, some notes will appear.

Check the contents, then close the window.

8 Select **[Yes, I want to restart my computer now.]**, then click **[Finish]**.



The PC must be rebooted for the application to work.



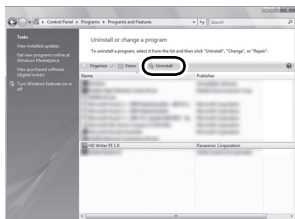
■ Uninstalling HD Writer PE 1.0

Follow the steps below to uninstall any software applications that you no longer require.

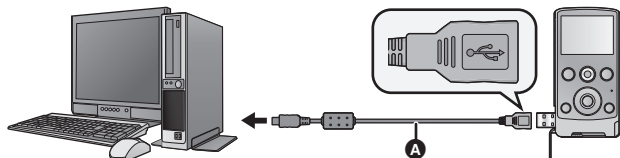
1 Select **[Start]** → **[Control Panel]** → **[Uninstall a Program]**.

2 Select **[HD Writer PE 1.0]**, then click **[Uninstall]**.

- Proceed with the uninstallation by following the on-screen instructions.
- After uninstalling the software, be sure to reboot the PC.



Connecting to a PC



A USB extension cord (supplied)

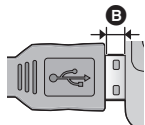
- Turn on the unit.

1 Select the menu.

MENU/SET : [WEB CAMERA] → [OFF]


2 Connect USB terminal of this unit to a PC with a USB extension cord.

- Connect the USB extension cord by inserting it securely all the way without forcing.
- Do not use any other USB extension cords except the supplied one. (Operation is not guaranteed with any other USB extension cords.)
- Insert the USB extension cord securely all the way. (The insertion of the plug to the USB terminal of this unit leaves the gap **B**.) It will not operate properly if it is not inserted all the way.
- The LCD monitor turns off.
- The Smart wizard screen is automatically displayed when HD Writer PE 1.0 is installed.
- This unit is automatically recognised as an external drive of the PC. (→ 47)



- Do not disconnect the USB terminal of this unit while the status indicator is on.
- When performing reading/writing between a PC and an SD card, be aware that some SD card slots built into PCs and some SD card readers are not compatible with the SDHC Memory Card or SDXC Memory Card.
- When using an SDXC Memory Card, check the following support site.
<http://panasonic.net/avc/sdcard/information/SDXC.html>

■ To disconnect USB terminal of this unit safely

- 1 Double click the  icon in task tray displayed on the PC.
 - Depending on your PC's settings, this icon may not be displayed.
- 2 Select [USB Mass Storage Device] and click [Stop].
- 3 Verify [MATSHITA HM-TA1/SD USB Device] or [MATSHITA HM-TA1/APP USB Device] is selected and click [OK].

About the PC display

When the unit is connected to a PC, it is recognised as an external drive.

- Removable disk (Example:  CAM_SD (G:)) is displayed in [Computer].

(EB/EP only)

We recommend using HD Writer PE 1.0 to copy motion picture data.

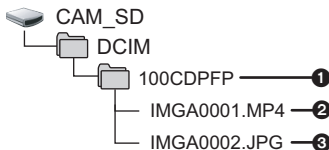
(GC only)

We recommend using HD Writer PE 1.0 to copy or write back motion picture data.

Using Windows Explorer or other programmes on the PC to copy, move or rename files and folders recorded with this unit will result in them being unusable with HD Writer PE 1.0.

Example folder structure of an SD card:

- Up to a total of 9999 files of motion pictures and still pictures can be saved in a single folder.
- Recorded scenes
- JPEG format still pictures



■ Copying your still pictures to your PC

Card reader function (mass storage)

Still pictures recorded with this unit can be copied to the PC with Explorer or other programmes.

- Double click the folder that contains the still pictures. ([DCIM] → [100CDPFP] etc.)
- Drag and drop the still pictures onto the destination folder (on the PC's HDD).

- Do not delete the SD card's folders. Doing so may make the SD card unusable in this unit.
- When data not supported by this unit has been recorded on a PC, it will not be recognised by this unit.
- Always use this unit to format SD cards.

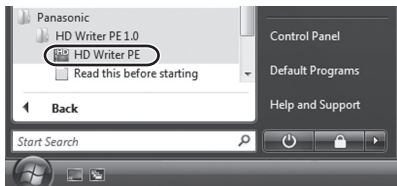
With a PC

Starting HD Writer PE 1.0

- When using HD Writer PE 1.0 on Windows XP, log on to your computer as Administrator (or with a login name equally authorized). If you log on with a login name other than Administrator, you cannot use the applications.
- When using HD Writer PE 1.0 on Windows Vista/Windows 7, log on to your computer as Administrator (or with a login name equally authorized) or with the user name for a standard user account. If you log on with a user name for a guest user account, the software cannot be used.

(On the PC)

Select [Start] → [All Programs] → [Panasonic] → [HD Writer PE 1.0] → [HD Writer PE].



- For details on how to use the software applications, read the PDF operating instructions of the software.

Reading the operating instructions of the software applications

- You will need Adobe Acrobat Reader 5.0 or later or Adobe Reader 7.0 or later to read the PDF operating instructions.

Select [Start] → [All Programs] → [Panasonic] → [HD Writer PE 1.0] → [Operating Instructions].

If using Mac

- HD Writer PE 1.0 is not available for Mac.
- iMovie'09 supported. For details about iMovie'09, please contact Apple Inc.

■ Operating environment

| | |
|------------------|------------------------------------|
| PC | Mac |
| OS | Mac OS X 10.5.8 Mac OS X 10.6 |
| CPU | Intel Core Duo Intel Core 2 Duo |
| RAM | 1 GB or more |
| Interface | USB port |

- Even if the system requirements mentioned in these operating instructions are fulfilled, some PCs cannot be used.
- The USB equipment operates with the driver installed as standard in the OS.

■ Copying still pictures on PC

- Turn on the unit.

1 Select the menu.

 : [WEB CAMERA] → [OFF]

2 Connect USB terminal of this unit to a PC with a USB extension cord.

- Do not use any other USB extension cords except the supplied one. (Operation is not guaranteed with any other USB extension cords.)

3 Double-click [CAM_SD] displayed on the desktop.

- Files are stored in [100CDPFP] folder etc. in the [DCIM] folder.

4 Using a drag-and-drop operation, move the pictures you want to acquire or the folder storing those pictures to any different folder on the PC.

■ To disconnect USB terminal of this unit safely

Drag [CAM_SD] disk icon to the [Trash], and then disconnect the USB terminal of this unit.

To use as a camera for Skype

It is possible to perform video conferencing using Skype when this unit is connected to a PC that is connected to the Internet.

Skype is a software that allows you to perform video conferencing using an Internet connection.

- Skype must first be installed before use.
- For downloading or details regarding Skype, refer to the Skype Website.
- For information on how to use Skype, refer to the Skype help file.
- Depending on the PC or Internet environment used, you may not be able to use Skype, images may be disrupted, cut off, the resolution may be low or the audio may be cut off.
- A higher performance CPU is recommended for high-quality video conferencing.

■ Operating environment for Skype

| | PC | |
|----------|---|------------------------|
| | IBM PC/AT compatible PC | Mac |
| Software | Skype 4.2 for Windows | Skype 2.8 for Mac OS X |
| OS | Microsoft Windows XP (32 bit) Home Edition Service Pack 2/Service Pack 3 Microsoft Windows XP (32 bit) Professional Service Pack 2/Service Pack 3 Microsoft Windows Vista (32 bit) Home Basic Service Pack 1/Service Pack 2 Microsoft Windows Vista (32 bit) Home Premium Service Pack 1/Service Pack 2 Microsoft Windows Vista (32 bit) Business Service Pack 1/Service Pack 2 Microsoft Windows Vista (32 bit) Ultimate Service Pack 1/Service Pack 2 Microsoft Windows Vista (32 bit) Enterprise Service Pack 1/Service Pack 2 Microsoft Windows 7 (32 bit) Starter Microsoft Windows 7 (32 bit/64 bit) Home Basic Microsoft Windows 7 (32 bit/64 bit) Home Premium Microsoft Windows 7 (32 bit/64 bit) Professional Microsoft Windows 7 (32 bit/64 bit) Ultimate | Mac OS X 10.6 |

| | PC | |
|---------------------------------------|---|---------------------------------------|
| | IBM PC/AT compatible PC | Mac |
| CPU | Intel Pentium 4 1.7 GHz or higher | Intel Core Duo Intel Core 2 Duo |
| RAM | Windows 7: 1 GB or more (32 bit)/ 2 GB or more (64 bit) Windows Vista Home Basic: 512 MB or more Windows Vista Home Premium/ Business/Ultimate/Enterprise: 1 GB or more Windows XP: 512 MB or more | 512 MB or more |
| Free hard disk drive space | 100 MB free disk space | |
| Sound | Speaker or headphones | |
| Interface | USB port | |
| Other requirements | High-speed broadband internet connection | |

- Even if the system requirements mentioned in these operating instructions are fulfilled, some PCs cannot be used.
- This software is not compatible with Microsoft Windows 3.1, Windows 95, Windows 98, Windows 98SE, Windows Me, Windows NT and Windows 2000.
- Operation on an upgraded OS is not guaranteed.
- Operation on an OS other than the one pre-installed is not guaranteed.

How to connect

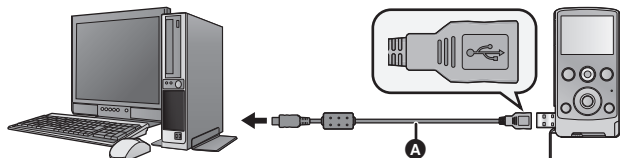
- Turn on the unit.

1 Select the menu.

 : [WEB CAMERA] → [ON]

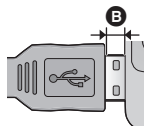
2 Connect USB terminal of this unit to a PC with a USB extension cord.

- Connect the USB extension cord by inserting it securely all the way without forcing.



A USB extension cord (supplied)

- Do not use any other USB extension cords except the supplied one. (Operation is not guaranteed with any other USB extension cords.)
- Insert the USB extension cord securely all the way. (The insertion of the plug to the USB terminal of this unit leaves the gap **B**.) It will not operate properly if it is not inserted all the way.



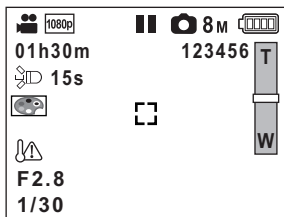
3 (On a PC)

Start Skype.

- Check this unit is selected with the Skype settings.
- The image quality will automatically vary among 640×480, 320×240 and 160×120 depending on the internet environment.
- Zoom can be changed by pressing T or W on this unit.
- When disconnecting the USB terminal of the unit from your PC, shut down Skype before disconnecting.

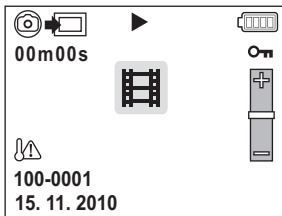
Indications

■ Recording indications



| | |
|-----------------|---|
| | Recording mode (→ 33) |
| ● | Recording motion picture |
| | Recording pause |
| 01h30m | Remaining time for motion picture recording (→ 21) |
| 00m00s | Elapsed recording time (→ 21) |
| ● | “h” is an abbreviation for hour, “m” for minute and “s” for second. |
| 15s | Countdown until recording stops (→ 18, 21) |
| | LED light (→ 23) |
| | High temperature warning (→ 18) |
| | Remaining battery power (→ 14) |
| (White) | Pressing the photoshot button halfway |
| (Red) | Recording still picture |
| 8M / 2M / 0.3M | Number of recording pixels for still pictures (→ 33) |
| 123456 | Remaining number of recordable pictures (→ 22) |
| | Focus area (→ 22) |
| F2.8 | Iris value |
| 1/30 | Shutter speed |
| | Effect icon (→ 24) |

■ Playback indications



| | |
|---------------------------|--|
| | Motion picture icon (→ 27) |
| | Still picture icon (→ 27) |
| (White) | Create still pictures from motion picture (→ 28) |
| (Red) | Creating still pictures from motion picture (→ 28) |
| | Display during playback (→ 26) |
| | Playing back the slide show (→ 29) |
| | Protected motion pictures/still pictures (→ 31) |
| 00m00s | Playback time (→ 27) |
| 100-0001 | File number (→ 27) |
| 15. 11. 2010 12:34 | Date/Time indication (→ 19) |

Messages/Troubleshooting

■ Messages

Major confirmation/error messages to be indicated on the screen in text.

INCOMPATIBLE CARD. PLEASE CHECK CARD.

This card is not compatible or it cannot be recognised by the unit. If this message appears even though motion pictures and still pictures are recorded on an SD card, the card may be unstable. Reinsert the SD card, then turn the unit off and then on again.

■ Troubleshooting

Problem

This unit cannot be turned on.

This unit does not stay on long enough.

Battery runs down quickly.



Check points

- Charge the battery again to ensure it is sufficiently charged. (→ 11)
- In cold places, the battery using time becomes shorter.
- The battery has a limited life. If the operating time is still too short even after the battery is fully charged, the battery has worn out and needs to be replaced.

Battery is swollen.



- The lithium-ion battery used in this unit may swell after being charged/discharged many times, but there is no problem regarding safety. Continued use in such a state may result in the battery getting jammed, so please stop using the battery, and purchase a new one.

Problem

This unit cannot be operated though it is turned on.

This unit does not operate normally.



- Remove the battery, wait about 1 minute and then insert the battery. Then about 1 minute later, turn on the unit again. (Conducting the above operation while the SD card is being accessed may damage the data on the SD card.)
- If normal operation is still not restored, remove the battery and consult the dealer who you purchased this unit from.


The unit arbitrarily stops recording.



- Use an SD card that can be used for motion picture recording. (→ 15)
- The recordable time may have shortened due to the deterioration of the data writing speed or repeated recording and deletion. Using the unit, format the SD card. (→ 35)

Any scenes/still pictures cannot be played back.



- Any scenes/still pictures where the thumbnails are displayed as  cannot be played back.

Although this unit is correctly connected to a TV, images cannot be seen.

The images are squeezed horizontally.




- Please read the operating instructions of your TV and select the channel that matches the input used for the connection.
- Change the [TV ASPECT] setting to match the aspect ratio of the TV. (→ 34)

Problem

Scenes cannot be deleted.



- Any scenes/still pictures where the thumbnails are displayed as  cannot be deleted. If the scenes/still pictures are unnecessary, format the SD card to erase the data. (→ 35)
Please be aware that if an SD card is formatted then all the data recorded on the SD card is erased and cannot be recovered. Back up important data on a PC etc.

If the SD card is inserted in this unit, it is not recognised.



- If the SD card is formatted on a PC, it may not be recognised by this unit. Use this unit to format SD cards. (→ 35)

If the SD card is inserted in another device, it is not recognised.



- Check that the device is compatible with the capacity or type of SD card (SD Memory Card/SDHC Memory Card/SDXC Memory Card) that you inserted. Refer to the operating instructions of the device for details.

Colour or brightness of the image changes, or you may see horizontal bars in the image.



- Colour or brightness of the image may change, or you may see horizontal bars in the image when the object is recorded under fluorescent light, mercury light or sodium light, etc., but this is not a malfunction.

The LCD monitor flickers indoors.

Problem

“ERROR OCCURRED. PLEASE TURN UNIT OFF, THEN TURN ON AGAIN.” is displayed.



- The unit has automatically detected an error. Restart the unit by turning off and on.
- After re-inserting the battery, turn on the unit again.
- Repair is needed if it is repeatedly displayed even if it is restarted. Remove the battery and consult the dealer who you purchased this unit from. Do not attempt to repair the unit by yourself.

When connected by the USB terminal, this unit is not detected by the PC.



- After re-inserting the SD card into the unit, reconnect the USB terminal of this unit.
- Select another USB terminal on the PC.
- Check the operating environment. (→ 40, 49, 50)
- Connect the USB terminal of this unit again after restarting the PC and turning on this unit again.

Cannot see the PDF operating instructions for HD Writer PE 1.0.



- You will need Adobe Acrobat Reader 5.0 or later or Adobe Reader 7.0 or later to read the PDF operating instructions for HD Writer PE 1.0.

When using Skype, the image/audio is cut off.



- Reconnect the USB terminal of this unit after shutting down Skype, and connect to Skype again.

Cautions for use

About this unit

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

Do not drop or bump the unit. Do not subject to strong pressure.

- A strong impact can break the lens, LCD monitor or the unit's casing, causing it to malfunction.
- Do not attach any other items to the hand strap that's supplied with the unit. While being stored, that item can rest against the LCD monitor and damage it.
- While the unit is stored in a bag, be careful not to drop or hit the bag so that the unit may not be subjected to impact.

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. Then reinsert the battery 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.

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

Do not extend the cords and the cables.

Do not spray insecticides or volatile chemicals onto the unit.

- If the unit is sprayed with such chemicals, its body may be marred and the surface finish may peel off.

- Do not leave rubber or plastic products in contact with the unit for a long time.

When you use the unit in a sandy or dusty place such as a beach, do not let sand or fine dust get into the body and terminals of the unit.

Also, keep the unit away from sea water.

- Sand or dust may damage the unit. (Care should be taken when inserting and removing a card.)
- If sea water splashes onto the unit, wipe off the water with a well wrung cloth. Then wipe the unit again with a dry cloth.

Do not use the unit for surveillance purposes or other business uses.

- In certain situations, continuous use could cause the unit to overheat and cause a malfunction. Such use is strongly discouraged.
- This unit was designed for consumer intermittent use. It was not intended for continuous use, or for any industrial or commercial application resulting in prolonged use.

About status indicator during charging

When the status indicator is flashing at a particularly fast rate, the following should be considered.

- The battery is not charged. Remove the battery from the unit, and try charging again.
- Check that the terminals of the unit or battery are not dirty or covered with a foreign object, and connect the battery correctly once again. If a foreign object or dirt is present, turn off the unit and then remove it.
- The battery or environment is at an extremely high or low temperature. Wait until the temperature has returned to an appropriate level and try charging again. If you are still unable to charge, there may be a fault in the unit or battery.

Cleaning

Before cleaning, detach the battery and then wipe the unit with a soft, dry cloth.

- If the unit is very dirty, dip a cloth in water and squeeze firmly, and then wipe the unit with the damp cloth. Next, dry the unit with a dry cloth.

- Use of benzene, paint thinner, alcohol, or dishwashing liquid may alter the unit body or peel the surface finish. Do not use these solvents.
- When using a chemical dust cloth, follow the instructions that came with the cloth.

LCD monitor

- Do not press the LCD monitor with excessive force. Uneven colours may appear on the LCD monitor and it may malfunction.
- When the unit has become very cold, for example due to storage in a cold area, its LCD monitor will be slightly darker than usual immediately after the unit is turned on. The normal brightness will be restored when the unit's internal temperature rises.
- When the LCD monitor gets dirty, wipe it with a soft cloth such as eye glass cleaner.
- In a place with drastic temperature changes, condensation may form on the LCD monitor. Wipe it with a soft cloth such as eye glass cleaner.

Extremely high precision technology is employed to produce the LCD Monitor screen featuring a total of approximately 153,000 dots. The result is more than 99.99% effective dots with a mere 0.01% of the dots inactive or always lit. However, this is not a malfunction and does not affect the recorded picture.

About the lens

- Do not press against the lens with excessive force.
- Do not leave the unit with the lens facing the sun, as rays of light from the sun may cause it to malfunction. Also, be careful when placing the unit outside or near a window.
- If the lens gets dirty with fingerprints etc., wipe the lens surface with a soft dry cloth. (If you leave fingerprints on or otherwise dirty the lens, the pictures you take may look whiter than normal.)

About the battery

The battery used in this unit is a rechargeable lithium-ion battery. It is susceptible to humidity and temperature and the effect increases the more the temperature rises or falls.

Be sure to detach the battery after use.

- Extremely high temperatures or low temperatures will shorten the life of the battery.

Prepare spare batteries when going out for recording.

- Be aware that the operating time of the battery becomes shorter in low temperature conditions such as at a ski resort.

If you drop the battery accidentally, check to see if the terminals are damaged.

- Inserting a battery with damaged terminals can damage the unit.

Do not throw an old battery into fire.

- Heating a battery or throwing it into a fire may result in an explosion.

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

Do not allow battery terminals to come into contact with metal objects (such as necklaces, hairpins etc.).

- This can cause short circuiting or heat generation and you may be badly burned if you touch a battery.

About the SD card

- The memory capacity indicated on the label of an SD card is the total of the capacity for copyright protection and management and the capacity which can be used on the unit, a PC etc.

Do not leave the SD card where the temperature is high, where electromagnetic waves or static electricity are easily generated or exposed to direct sunlight.

Do not bend or drop the SD card.

- The SD card may be damaged or the recorded content may be damaged or deleted.
- Put the SD card in the card case or the storage bag after use and when storing or carrying the SD card.
- Do not allow dirt, dust or water to get into the terminals on the back of the SD card and do not touch the terminals with your fingers.

When disposing of or giving away the SD card, note that:

Formatting and deletion of this unit or computer only changes the file management information and does not completely delete the data in the SD card.

It is recommended to physically destroy the SD card or use the commercially available computer data deletion software to completely erase the data in the SD card before transferring to another party or disposing.

The customer is responsible for the management of the data in the SD card.

When not using the unit for a long period of time

- The battery should be stored in a cool place free from humidity, with as constant temperature as possible. (Recommended temperature: 15 °C to 25 °C, Recommended humidity: 40%RH to 60%RH)
- Always remove the battery and the SD card from the unit.
- If the battery is left attached, a minute amount of current continues to flow even if the unit is off. Keeping the unit in this state may result in over discharge of the battery. This may result in you not being able to use the battery even after it is charged.
- When storing the battery for a long period of time, we recommend charging it once a year. Remove the battery from the unit and store it again after it has completely discharged.
- When storing the unit in a cupboard or cabinet, it is recommended that you place a desiccant (silica gel) in with it.

About condensation

- Condensation occurs when the ambient temperature or humidity changes. Be careful of condensation since it causes lens stains, fungus and unit malfunction.
- If condensation occurs, turn the unit off and leave it for about 2 hours. The fog will disappear naturally when the temperature of the unit becomes close to the ambient temperature.

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.


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Recording modes/approximate recordable time

- SD cards are only mentioned with their main memory size. The stated times are the approximate recordable times for continuous recording.

| | |  | | | C |
|----------------|-------|---|-------------|-------------|------------|
| Recording mode | | 1080p | 720p | 480p | iFrame |
| Picture size | | 1920×1080 | 1280×720 | 640×480 | 960×540 |
| SD card | 4 GB | 40 min | 50 min | 2 h 20 min | 20 min |
| | 8 GB | 1 h 20 min | 1 h 40 min | 4 h 40 min | 40 min |
| | 16 GB | 2 h 40 min | 3 h 30 min | 9 h 40 min | 1 h 20 min |
| | 32 GB | 5 h 30 min | 7 h 20 min | 19 h 20 min | 2 h 40 min |
| | 48 GB | 7 h 40 min | 9 h 50 min | 20 h | 3 h 50 min |
| | 64 GB | 10 h 20 min | 13 h 30 min | 27 h | 5 h 20 min |

- A** Image quality prioritised
- B** Recording time prioritised
- C** Use this to playback and edit using a Mac.
- The default setting is .
- Maximum continuously recordable time for one scene:
 - If [REC MODE] is set to / / : 29 min 59 sec
 - If [REC MODE] is set to : Approx. 20 min (up to 4 GB recording capacity)
- If a recording with a lot movements is recorded, the recording time is reduced.
- The recordable time may be reduced if recording of short scene is repeated.

Approximate number of recordable pictures

- SD cards are only mentioned with their main memory size. The stated number is the approximate number of recordable pictures.

| Aspect ratio | | 4:3 | | |
|--------------|--------|-----------------|-----------------|-----------------|
| Picture size | | 8M 3264×2448 | 2M 1600×1200 | 0.3M 640×480 |
| SD card | 512 MB | 180 | 730 | 3770 |
| | 1 GB | 360 | 1470 | 7550 |
| | 2 GB | 740 | 2920 | 15360 |
| | 4 GB | 1470 | 5740 | 30170 |
| | 8 GB | 2990 | 11690 | 61400 |
| | 16 GB | 6020 | 23530 | 123550 |
| | 32 GB | 12080 | 47200 | 247830 |
| | 48 GB | 17340 | 60710 | 364280 |
| 64 GB | 23530 | 82380 | 494330 | |

| Aspect ratio | | 16:9 |
|--------------|--------|-----------------|
| Picture size | | 2M 1920×1080 |
| SD card | 512 MB | 680 |
| | 1 GB | 1370 |
| | 2 GB | 2790 |
| | 4 GB | 5480 |
| | 8 GB | 11160 |
| | 16 GB | 22460 |
| | 32 GB | 45060 |
| | 48 GB | 60710 |
| 64 GB | 82380 | |

- Maximum number of recordable pictures that can be displayed is 999999.

If the number of recordable pictures exceeds 999999, the number will not change when the picture is taken until the number of recordable pictures gets less than 999999.

Specifications

High Definition Mobile Camera

Information for your safety

Power source:

DC 5.0 V (When using USB)/DC 4.2 V (When using battery)

Power consumption:

Recording; 2.5 W/Charging; 2.5 W

Signal system:

1080/30p, 720/30p, 540/30p, 480/30p

Recording format:

MPEG-4 AVC file format compliant

Image sensor:

1/4 type (1/4") MOS image sensor

Total; 5330 K

Effective pixels;

Motion picture; 2930 K (16:9), 2190 K (4:3)

Still picture; 2930 K (16:9), 5080 K (4:3)

Lens:

F2.8

Focal length; 4.1 mm

35 mm equivalent;

Motion picture; 49 mm (16:9)/59 mm (4:3)

Still picture; 49 mm (16:9)/39 mm (4:3)

Minimum focus distance;

Approx. 30 cm

Zoom:

1× optical zoom, 4× digital zoom

Monitor:

5.08 cm (2.0") LCD monitor (Approx. 153 K dots)

Microphone:

1 ch monaural microphone

Speaker:

1 round speaker, dynamic type

White balance adjustment:

Auto tracking white balance system

Standard illumination:

1,400 lx

Minimum required illumination:

Approx. 12 lx

AV terminal video output level:

Video OUT; 1.0 Vp-p, 75 Ω , NTSC/PAL system

AV terminal audio output level (Line):

Output level; -1 dBV \pm 3 dB (0.891 Vrms), 47 k Ω termination (for playback of 0 dBFS data)

Output impedance; 2.2 k Ω or less, 1 ch

USB:

(EB/EP only)

Card reader function (No copyright protection support)

(GC only)

Card reader/writer function (No copyright protection support)

Hi-Speed USB (USB 2.0), USB terminal Type A

Battery charging function (charge via USB terminal with the unit turned off)

WEB camera;

Compression; Motion JPEG

Picture size; 640 \times 480, 320 \times 240, 160 \times 120

Dimensions:

53 mm (W) \times 104 mm (H) \times 17.8 mm (D)

(excluding projecting parts)

Mass in operation:

Approx. 115 g [with battery (supplied) and an SD card (optional)]

Mass:

Approx. 93 g [without battery (supplied) and an SD card (optional)]

Operating temperature:

0 °C to 35 °C

Operating humidity:

10%RH to 80%RH

Battery operation time:

See page 13

■ Motion pictures

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 15 for details on SD cards usable in this unit.

Compression:

MPEG-4 AVC/H.264, iFrame

Recording mode and transfer rate:

1080p; Approx. 12 Mbps (VBR)

720p; Approx. 9 Mbps (VBR)

480p; Approx. 3 Mbps (VBR)

iFrame; Approx. 24 Mbps (VBR)

Refer to page 65 for the recordable time.

Picture size:

1080p; 1920×1080/30p

720p; 1280×720/30p

480p; 640×480/30p

iFrame; 960×540/30p

Audio compression:

AAC (1 ch)

■ Still pictures

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 15 for details on SD cards usable in this unit.

Compression:

JPEG (Design rule for Camera File system, based on Exif 2.2 standard)

Picture size:

Picture aspect [4:3];

3264×2448/1600×1200/640×480

Picture aspect [16:9];

1920×1080

Refer to page 66 for the number of recordable pictures.

Specifications may change without prior notice.

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EU



EU

Pursuant to at the directive 2004/108/EC, article 9(2)
Panasonic Testing Centre
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