

[RESIZE] Reducing the picture size (number of pixels)

We recommend resizing to [S] if you want to attach a picture to an e-mail or use it on a website. (Pictures set to the minimum number of pixels for [ASPECT RATIO] cannot be further reduced in size.)

1 Select [RESIZE] on the [PLAYBACK] mode menu. (P28)

2 Press ▲/▼ to select [SINGLE] or [MULTI] and then press [MENU/SET].



3 Select the picture and size.

[SINGLE] setting

[SINGLE]

1 Press ◀/▶ to select the picture, and then press [MENU/SET].

2 Press ◀/▶ to select the size*, and then press [MENU/SET].

* Only the sizes to which the pictures can be resized is displayed.



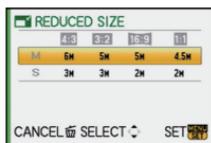
[MULTI] setting

[MULTI]

1 Press ▲/▼ to select the size, and then press [MENU/SET].

2 Press ▲/▼/◀/▶ to select the picture, and then press [DISPLAY].

- Repeat this step for each picture, and press [MENU/SET] to set.



4 Press ▲ to select [YES] and then press [MENU/SET].

5 Press  to return to the menu screen.*

*The menu screen is automatically restored when [MULTI] is selected.

- Press [MENU/SET] to close the menu.



Note

- You can set up to 50 pictures at one time in [MULTI].
- The picture quality of the resized picture will deteriorate.
- It may not be possible to resize pictures recorded with other equipment.
- Motion pictures, pictures with audio, pictures stamped with [TEXT STAMP] and pictures taken with [RAW], [RAW] or [RAW] cannot be resized.

✂ [TRIMMING]

You can enlarge and then clip the important part of the recorded picture.

1 Select [TRIMMING] on the [PLAYBACK] mode menu. (P28)

2 Press ◀/▶ to select the picture, and then press [MENU/SET].



3 Use the rear dial and press ▲/▼/◀/▶ to select the parts to be trimmed.



Rear dial (right):

Enlargement

Rear dial (left): Reduction

▲/▼/◀/▶: Move

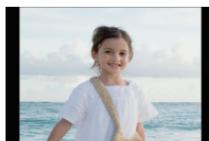
Reduction



Enlargement

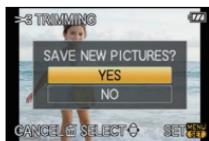


Move the position



4 Press [MENU/SET].

5 Press ▲ to select [YES] and then press [MENU/SET].



6 Press [🗑] to return to the menu screen.

- Press [MENU/SET] to close the menu.

Note

- Depending on the cut size, the picture size of the trimmed picture may become smaller than that of the original picture.
- The picture quality of the trimmed picture will deteriorate.
- It may not be possible to trim pictures recorded with other equipment.
- Motion pictures, pictures with audio, pictures stamped with [TEXT STAMP] and pictures taken with [RAW], [RAW], or [RAW] cannot be trimmed.
- Information regarding the face recognition in the original picture will not be copied to images having undergone [TRIMMING].

 [ASPECT CONV.]

You can convert pictures taken with a [16:9] aspect ratio to a [3:2], a [4:3] or a [1:1] aspect ratio.

1 Select [ASPECT CONV.] on the [PLAYBACK] mode menu. (P28)

2 Press ▲/▼ to select [3:2], [4:3] or [1:1] and then press [MENU/SET].



3 Press ◀/▶ to select a picture taken with [16:9] aspect ratio, and then press [MENU/SET].

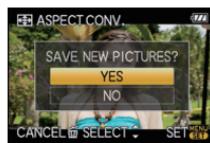


4 Press ◀/▶ to determine the horizontal position, and press [MENU/SET] to set.

- Use ▲/▼ to set the frame position for pictures rotated vertically.



5 Press ▲ to select [YES] and then press [MENU/SET].



6 Press [EXIT] to return to the menu screen.

- Press [MENU/SET] to close the menu.

 **Note**

- After converting the aspect ratio, the picture size may become larger than that of the original picture.
- You may not be able to convert pictures taken on other equipment.
- The [ASPECT CONV.] cannot be performed on the motion pictures, pictures with audio, pictures stamped with [TEXT STAMP] and pictures taken with [RAW], [RAW] or [RAW].
- Information regarding the face recognition in the original picture will not be copied to images having undergone [ASPECT CONV.].

[ROTATE]/ [ROTATE DISP.]

This mode allows you to automatically display pictures vertically if they were recorded holding the camera vertically or rotate pictures manually in 90° steps.

Rotate (The picture is rotated manually)

1 Select [ROTATE] on the [PLAYBACK] mode menu. (P28)

- The [ROTATE] function is disabled when [ROTATE DISP.] is set to [OFF].

2 Press ◀/▶ to select the picture and then press [MENU/SET].

- Motion pictures and protected pictures cannot be rotated.



3 Press ▲/▼ to select the direction to rotate the picture and then press [MENU/SET].

- : The picture rotates clockwise in steps of 90°.
- : The picture rotates counter-clockwise in steps of 90°.



4 Press [EXIT] to return to the menu screen.

- Press [MENU/SET] to close the menu.

Rotate display (The picture is automatically rotated and displayed)

1 Select [ROTATE DISP.] on the [PLAYBACK] mode menu. (P28)

2 Press ▼ to select [ON] and then press [MENU/SET].

- The pictures are displayed without being rotated when you select [OFF].
- Refer to P50 for information about how to play back pictures.



3 Press [MENU/SET] to close the menu.

Note

- [ROTATE DISP.] can only be used with the lens (P14) compatible with the Direction Detection Function (P37).
- When you play back pictures on a PC, they cannot be displayed in the rotated direction unless the OS or software is compatible with Exif. Exif is a file format for still pictures which allows recording information etc. to be added. It was established by "JEITA (Japan Electronics and Information Technology Industries Association)".
- It may not be possible to rotate pictures that have been recorded with other equipment.
- The picture will not rotate display when Multi Playback (P51) or Calendar Playback (P52) is selected.
- Pictures recorded with the camera upside down will not be displayed rotated.

[PRINT SET]

DPOF "Digital Print Order Format" is a system that allows the user to select which pictures to print, how many copies of each picture to print and whether or not to print the recording date on the pictures when using a DPOF compatible photo printer or photo printing store. For details, ask at your photo printing store.

1 Select [PRINT SET] on the [PLAYBACK] mode menu. (P28)

2 Press $\blacktriangle/\blacktriangledown$ to select [SINGLE] or [MULTI] and then press [MENU/SET].



3 Select the picture, and then press [MENU/SET].

[SINGLE]

[MULTI]



Press $\blacktriangle/\blacktriangleright$ to select the picture.

Press $\blacktriangle/\blacktriangledown/\blacktriangleleft/\blacktriangleright$ to select the pictures.

4 Press $\blacktriangle/\blacktriangledown$ to set the number of prints, and then press [MENU/SET] to set.

- When [MULTI] has been selected, repeat steps **3** and **4** for each picture. (It is not possible to use the same setting for a multiple number of pictures.)

5 Press $\left[\text{trash icon}\right]$ to return to the menu screen.

- Press [MENU/SET] to close the menu.

■ Cancelling all the [PRINT SET] settings

- 1** Select [CANCEL] on the screen shown in step **2** and then press [MENU/SET].
- 2** Press \blacktriangle to select [YES] and then press [MENU/SET].
- 3** Press [MENU/SET] to close the menu.

- You cannot select [CANCEL] if not even one picture has been set for printing.

■ To print the date

After setting the number of prints, set/cancel printing with the recording date by pressing [DISPLAY].

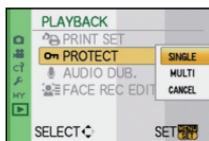
- When you go to a photo printing store for digital printing, be sure to order the printing of the date additionally if required.
- Depending on the photo printing store or the printer, the date may not be printed even if you set to print the date. For further information, ask at your photo printing store or refer to the operating instructions for the printer.
- The date cannot be printed on pictures stamped with text.

Note

- The number of prints can be set from 0 to 999.
- With a printer supporting PictBridge, the date print settings of the printer may take precedence so check if this is the case.
- It may not be possible to use the print settings with other equipment. In this case, cancel all the settings, and reset the settings.
- If the file is not based on the DCF standard, the print setting cannot be set.
- [PRINT SET] cannot be set for motion pictures recorded in [AVCHD Lite] and pictures that were taken with the [QUALITY] set to [RAW].

[PROTECT]

You can set protection for pictures you do not want to be deleted by mistake.

1 Select [PROTECT] on the [PLAYBACK] mode menu. (P28)**2 Press ▲/▼ to select [SINGLE] or [MULTI] and then press [MENU/SET].**

[SINGLE]

[MULTI]

3 Select the picture, and then press [MENU/SET].

When [MULTI] has been selected

- Repeat these steps for each picture.
- The settings are cancelled when [MENU/SET] is pressed again.



Press ◀▶ to select the picture.



Press ▲/▼/◀▶ to select the pictures.

4 Press [EXIT] to return to the menu screen.

- Press [MENU/SET] to close the menu.

■ Cancelling all the [PROTECT] settings**1 Select [CANCEL] on the screen shown in step 2 and then press [MENU/SET].****2 Press ▲ to select [YES] and then press [MENU/SET].****3 Press [MENU/SET] to close the menu.**

- If you press [MENU/SET] while cancelling protection, the cancelling will stop halfway.

Note

- The protect setting may not be effective on other equipment.
- Even if you protect pictures on a card, they will be deleted if the card is formatted.
- Even if you do not protect pictures on an SD Memory Card or an SDHC Memory Card, they cannot be deleted when the card's Write-Protect switch is set to [LOCK].

 [AUDIO DUB.]

You can add the audio after taking a picture.

1 Select [AUDIO DUB.] on the [PLAYBACK] mode menu. (P28)

2 Press ◀/▶ to select the picture and then press [MENU/SET] to start audio recording.

- The message [OVERWRITE AUDIO DATA?] screen appears when audio has already been recorded. Press ▲ to select [YES] and then press [MENU/SET] to start audio recording. (The original audio is overwritten.)
- Audio is recorded from the built-in microphone on the camera.
- If you press [🗑️], the audio dubbing is cancelled.



3 Press [MENU/SET] to stop recording.

- It will automatically stop after recording about 10 seconds without pressing [MENU/SET].



4 Press [🗑️] to return to the menu screen.

- Press [MENU/SET] to close the menu.

 **Note**

- Audio dubbing may not work properly on pictures recorded by other equipment.
- Audio dubbing does not work on motion pictures, protected pictures and pictures taken with [RAW], [RAW] or [RAW].
- **Sound from motion pictures (When [REC MODE] is set to [MOTION JPEG]) or pictures with audio recorded by this camera cannot be played back by older models of Panasonic digital cameras (LUMIX) launched before July 2008.**

[FACE REC EDIT]

You can clear and replace all information relating to face recognition in selected images.

1 Select [FACE REC EDIT] on the [PLAYBACK] Mode menu. (P28)

2 Press ▲/▼ to select [REPLACE] or [DELETE] and then press [MENU/SET].



3 Press ◀/▶ to select the picture and then press [MENU/SET].

- You cannot select pictures for which Face Recognition information has not been registered.

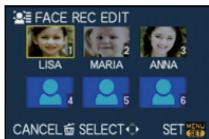


4 Press ◀/▶ to select the person and then press [MENU/SET].

- [DELETE] → step 6.
- You cannot select a person who has not been registered.



5 Press ▲/▼/◀/▶ to select the person to replace and then press [MENU/SET].



6 Press ▲ to select [YES] and then press [MENU/SET].

7 Press [EXIT] to return to the menu screen.

- Press [MENU/SET] to close the menu.



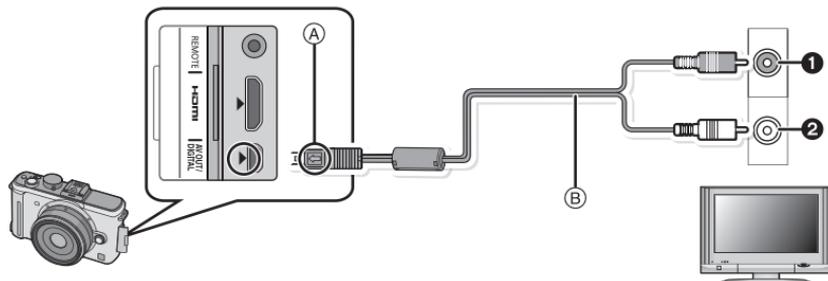
Note

- Cleared information regarding the [FACE RECOG.] cannot be restored.
- When all Face Recognition information in a picture has been cancelled, the picture will not be categorised using Face Recognition in [CATEGORY PLAY].
- You cannot edit the Face Recognition information of protected pictures.

Playing Back Pictures on a TV Screen

Playing back pictures using the AV cable (supplied)

Preparations: Set the [TV ASPECT]. (P34)
Turn this unit and the TV off.



① Yellow: to the video input socket

② White: to the audio input socket

Ⓐ Align the marks, and insert.

Ⓑ AV cable (supplied)

• Check the directions of the connectors, and plug them straight in or unplug them straight out. (Otherwise the connectors may be bent out of shape which may cause malfunction.)

1 Connect the AV cable Ⓑ (supplied) to the video input and the audio input sockets on the TV.

2 Connect the AV cable to the [AV OUT] socket on the camera.

3 Turn the TV on and select external input.

4 Turn the camera on and then press [▶].

Note

- Depending on the [ASPECT RATIO], black bands may be displayed on the top and bottom or the left and right of the pictures.
- Do not use any other AV cables except the supplied one.
- Read the operating instructions for the TV.
- When you play back a picture vertically, it may be blurry.
- You can view pictures on TVs in other countries (regions) which use the NTSC or PAL system when you set [VIDEO OUT] in the [SETUP] menu.
- Audio will be played back in monaural.
- If the optional external viewfinder (P162) is installed, pictures will not be displayed when the camera is connected with the AV cable.

Playing back pictures on a TV with an SD Memory Card slot

Still pictures recorded on an SD Memory Card can be played back on a TV with an SD Memory Card slot.

Note

- Depending on the TV model, pictures may not be displayed on the full screen.
- Motion pictures recorded with [AVCHD Lite] can be played back on Panasonic TVs (VIERA) with the AVCHD logo mark. In all other cases, connect the camera to the TV using the AV cable (supplied) and play back the motion picture.
- You cannot play back pictures on SDHC cards if the TV does not support these cards.

Playing back on the TV with HDMI socket

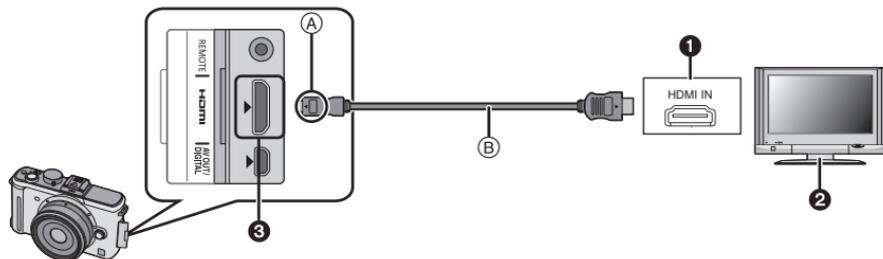
You can enjoy high quality pictures and motion pictures on the TV by connecting the camera with the HDMI compatible high definition TV using HDMI mini cable (optional).

What is HDMI?

HDMI is the interface for digital devices. When this unit is connected to a HDMI compatible device, the image and audio can be output with a digital signal. If you connect this unit to a HDMI compatible high definition TV and then play back the recorded high definition images, you can enjoy them in high resolution with high quality sound.

If you connect this unit to a Panasonic TV compatible with VIERA Link, linked operations (VIERA Link) are possible. (P151)

Preparations: Check the [HDMI MODE]. (P35)
Turn this unit and the TV off.



1 HDMI socket

2 TV with HDMI socket

3 HDMI mini (C type)

A Align the marks, and insert.

B HDMI mini cable (optional)

- Check the direction of the terminals and plug in/out straight holding onto the plug. (It may result in malfunction if it is plugged in obliquely or in the wrong direction.)

1 Connect the HDMI mini cable B (optional) to the HDMI input socket on the TV.

2 Connect the HDMI mini cable to the [HDMI] socket on the camera.

3 Turn the TV on and switch to HDMI input.

4 Turn the camera on and then press [▶].

- When [VIERA Link] (P35) is set to [ON] and the camera is connected to a TV supporting VIERA Link, input of the TV will be switched automatically and playback screen will be displayed (P151).

Note

- Depending on the [ASPECT RATIO], bands may be displayed on the top and bottom or the left and right of the pictures.
- Do not use any other cables except a genuine Panasonic HDMI mini cable (RP-CDHM15, RP-CDHM30; optional).
Part numbers: RP-CDHM15 (1.5 m), RP-CDHM30 (3.0 m)
- Output from the HDMI mini cable has priority when both AV cable and HDMI mini cable are connected.
- HDMI output is not possible even if you connect the HDMI mini cable while the unit is connected to the PC or the printer.
- HDMI connection is disabled and the connection with the USB connection cable will take priority when you connect the USB connection cable while it is outputting via the HDMI mini cable.
- Image is not displayed on the LCD monitor/optional external viewfinder when the HDMI mini cable is connected.
- [AUDIO DUB.] does not work when connected with a HDMI mini cable.
- When pictures are displayed, they may not be displayed properly depending on the type of TV.
- Read the operating instructions for the TV.
- Audio will be played back in monaural.

Playback using VIERA Link (HDMI) (HDAVI Control™)

What is the VIERA Link?

- This function allows you to use your remote control for the Panasonic TV for easy operations when this unit has been connected to a VIERA Link compatible device using a HDMI mini cable (optional) for automatic linked operations. (Not all operations are possible.)
- VIERA Link is a unique Panasonic function built on a HDMI control function using the standard HDMI CEC (Consumer Electronics Control) specification. Linked operations with HDMI CEC compatible devices made by other companies are not guaranteed. When using devices made by other companies that are compatible with VIERA Link, refer to the operating instructions for the respective devices.
- This unit is compatible with VIERA Link Ver.4. VIERA Link Ver.4 is the newest Panasonic version and is also compatible with existing Panasonic VIERA Link devices. (As of December 2008)

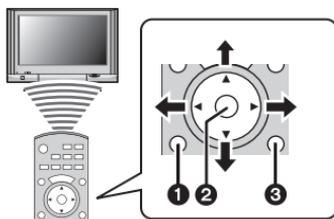
Preparations: Set the [VIERA Link] to [ON]. (P35)

1 Connect this unit to a Panasonic TV compatible with VIERA Link with a HDMI mini cable (optional) (P150).

2 Turn the camera on and then press [▶].

3 Operate with the remote control for the TV.

Panasonic TV compatible with VIERA Link



- ① [OPTION]
- ② [OK]
- ③ [RETURN]

* The shape of the remote control varies depending on the region. Operate following the TV guide displayed on screen.

■ Usable functions

Operate with the remote control for the TV.

1) Multi playback

Press red button on the TV remote control to switch the type of data for playback.

- The type of data for playback changes in the order of [ALL] → [📷] → [👤] → [📺] → [ALL].

Select the picture with ▲/▼/◀/▶ and press ② for one screen display.

- You can set the slide show etc. when you press ①.

2) One screen display

Select the image with ◀/▶.

Recording information is displayed with ▲.

You can return to multi playback (1) with ▼.

- When you select a motion picture and perform one screen display, press ② to playback the motion picture.
- During motion picture playback, use ◀/▶ for back/forward and ▼ to stop playback.

3) Slide show

Display the slide show setting screen by pressing red button in the one screen display (2).

Select [START] and press ②.

The screen will be returned to one screen display (2) by pressing ▼ to finish the slide show.

- Press ② to pause. When the slideshow is paused, you can move between the pictures using ◀/▶.
- Press ① to display the slide show setting screen.



• Playing audio in the slideshow

Set [MUSIC] to [OFF] and [AUDIO] to [ON] in the slide show setting screen.

• Turning control icon display on and off

Operation icons can be hidden when you press ③. Also, operation icons will be displayed when you press ① while the operation icons are hidden.

Note

- It is recommended to connect this unit to an HDMI terminal other than the HDMI1 if there are 2 or more HDMI input terminals on the TV.
- When the [VIERA Link] (P35) of this unit is set to [ON], operation using the button on this unit will be limited.
- VIERA Link must be activated on the connected TV. (Read the operating instructions of the TV for how to set etc.)
- If you are not using VIERA Link, set [VIERA Link] (P35) to [OFF].

Other linked operations**Turning the power off:**

If you use the remote control for the TV to turn off the power, the power on this unit also turns off. (When connecting the unit to a PC with a USB cable, the power will not turn off.)

Automatic input switching:

- If you connect with a HDMI mini cable and then turn on the power on this unit, and then press , the input channel on the TV automatically switches to this unit's screen. If the TV's power is in standby status, it will turn on automatically (if [Set] has been selected for the TV's [Power on link] setting).
- Depending on the HDMI terminal on the TV, the input channel may not switch automatically. In this case, use the remote control for the TV to switch the input channel. (For details on how to switch input, please read the operating instructions for the TV.)
- If VIERA Link does not work properly, refer to page 184.

Note

- If you are unsure whether or not the TV you are using are compatible with VIERA Link, read the operating instructions for the devices.
- Available linked operations between this unit and a Panasonic TV is different depending on the types of Panasonic TVs even if they are compatible with VIERA Link. Refer to the operating instructions of the TV for the operations that support on the TV.
- Operation is not possible with a cable that is not based on the HDMI standard. Do not use any other cables except a genuine Panasonic HDMI mini cable (RP-CDHM15, RP-CDHM30; optional).

Part numbers: RP-CDHM15 (1.5 m), RP-CDHM30 (3.0 m)

- VIERA Link will not work even if you connect the HDMI mini cable while the unit is connected to the PC or the printer.
- [HDMI MODE] (P35) [1080i] is valid only for the following conditions:
Outputting to HDMI:
 - When [PICTURE PLAY], [CATEGORY PLAY]* are selected in the [PLAYBACK MODE]
 - When [PICTURE ONLY] is selected in the [SLIDE SHOW]
 - When [CATEGORY SELECTION]* is selected in the [SLIDE SHOW]

When the [VIERA Link] is set to [ON]:

- During playback of still pictures on one screen after selecting  displayed on the TV screen
- When [PICTURE ONLY] is selected for the [SLIDE SHOW]
- When [CATEGORY SELECTION]* is selected in the [SLIDE SHOW]
- When [CATEGORY PLAY]* is selected in the [ALL], 

*Except  ([TRAVEL DATE]) or  ([AVCHD Lite]), [MOTION JPEG])

- It will be output as [720p] except for the above conditions.
- The screen will be blacked out for a while if the [HDMI MODE] (P35) is changed when the [HDMI MODE] (P35) of this unit is set to [AUTO] or [1080i], and  displayed on the TV screen is selected and displayed in 1 screen, but this is not a malfunction.
- If the picture is disrupted when [HDMI MODE] (P35) is set to [AUTO] or [1080i], change the setting to [720p].
-  ([TRAVEL DATE]) or  ([AVCHD Lite]), [MOTION JPEG]) in the [CATEGORY SELECTION] of the [SLIDE SHOW] cannot be selected when the  displayed on the TV screen is selected.

Saving the recorded still pictures and motion pictures

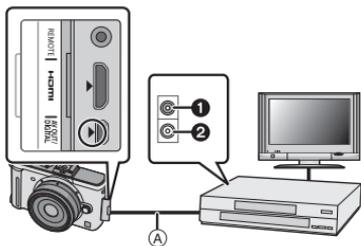
Methods to export still pictures and motion pictures to other devices will vary depending on the file format. (JPEG, RAW, AVCHD Lite, or Motion JPEG). Here are a few suggestions.

Copy the playback image using an AV cable

File formats that can be used: [AVCHD Lite], [Motion JPEG]

Copy images played back with this unit to DVD disc, hard disk, or video using a DVD recorder, or video.

This can be played back with equipment that is not compatible with high definition (AVCHD), so it is convenient for distributing copies. Image will be standard quality instead of high definition at this time.



- ① Yellow: to the video input socket
- ② White: to the audio input socket
- Ⓐ AV cable (supplied)

- 1** Connect this unit with the recording equipment with an AV cable (supplied)
- 2** Start the playback of this unit
- 3** Start the recording on the recording equipment

- When ending the recording (copying), stop the playback on this unit after stopping the recording in recording equipment.

Note

- When you play back motion pictures on 4:3 aspect ratio TV, you must set [TV ASPECT] (P34) on this unit to [4:3] before starting a copy. The image will be vertically long if you play back motion pictures copied with [16:9] setting on a [4:3] aspect TV.
- Do not use any other AV cables except the supplied one.
- It is recommended to turn off the display of the screen by pressing the [DISPLAY] on the camera while copying. (P51)
- See the instruction manual for the recording equipment about the details of copying and playing back.

Copying to a PC

File formats that can be used: [JPEG], [RAW]/[AVCHD Lite], [Motion JPEG]
 It is possible to acquire still pictures and motion pictures recorded in [AVCHD Lite] or [MOTION JPEG] formats, or create standard quality DVD video which is not high definition from the motion picture that was recorded as [AVCHD Lite], using the software "PHOTOfunSTUDIO 4.0 HD Edition" in the CD-ROM (supplied). (P155)

- If the files and folders related to [AVCHD Lite] motion pictures are deleted, modified, or moved by the Windows Explorer or similar, it becomes unable to perform playback, edit, etc., so always use "PHOTOfunSTUDIO 4.0 HD Edition" to acquire the [AVCHD Lite] motion pictures.



Connecting to a PC

You can acquire recorded pictures to a PC by connecting the camera and the PC.

- You can easily print out or mail the pictures you have imported. Use of the "PHOTOfunSTUDIO 4.0 HD Edition" bundled software on the CD-ROM (supplied) is a convenient way of doing this.
- Read the separate operating instructions for the supplied software for more information about the software in the CD-ROM (supplied) and how to install it.

■ PC that can be used

	Windows			Macintosh
	98/98SE	Me/2000	XP/Vista	OS 9/OS X
Can the PHOTOfunSTUDIO be used?	—		○*1	—
Can the [AVCHD Lite] motion picture be acquired to the PC?	—		○*2	—
Can the still pictures and [MOTION JPEG] motion pictures in the digital camera be acquired to the PC using a USB connection cable?	—		○	○ (OS 9.2.2/OS X [10.1~10.5])

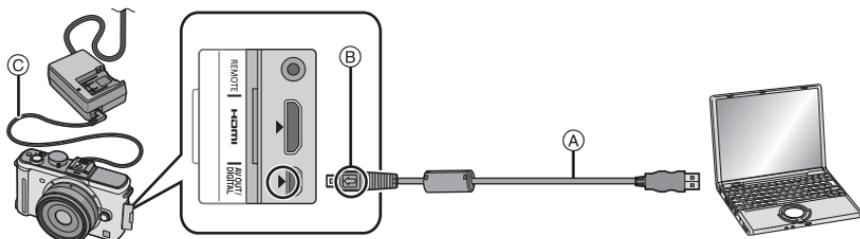
- PC with Windows 98/98SE or older, or Mac OS 8.x or older cannot be connected via USB, but it can acquire the pictures if an SD memory card reader/writer can be used.

*1 It is necessary for Internet Explorer 6.0 or newer to be installed. PC with higher processing performance is required depending on the function to be used. It may not play back correctly or operate correctly depending on the environment of the PC used.

*2 Always acquire the [AVCHD Lite] motion pictures using the "PHOTOfunSTUDIO 4.0 HD Edition".

Acquiring of still pictures and [MOTION JPEG] motion pictures (other than [AVCHD Lite] motion pictures)

Preparations: Turn on the camera and the PC.



(A) USB connection cable (supplied)

- Check the directions of the connectors, and plug them straight in or unplug them straight out. (Otherwise the connectors may be bent out of shape which may cause malfunction.)

(B) Align the marks, and insert.

(C) DC cable (DMW-DCC3; optional)

- Use a battery with sufficient battery power or the AC adaptor (P167). If the remaining battery power becomes low while the camera and the PC are communicating, the status indicator blinks and the alarm beeps.

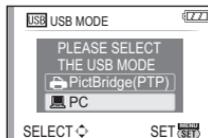
Refer to “Disconnecting the USB connection cable safely” (P157) before disconnecting the USB connection cable. Otherwise, data may be destroyed.

1 Connect the camera to a PC via the USB connection cable (A) (supplied).

- Do not use any other USB connection cables except the supplied one. Use of cables other than the supplied USB connection cable may cause malfunction.

2 Press ▲/▼ to select [PC], and then press [MENU/SET].

- If [USB MODE] (P34) is set to [PC] in the [SETUP] menu in advance, the camera will be automatically connected to the PC without displaying the [USB MODE] selection screen. Since there is no need to set this each time you connect to the PC, it is convenient.
- When the camera has been connected to the PC with [USB MODE] set to [PictBridge(PTP)], a message may appear on the PC's screen. Select [Cancel] to close the screen, and disconnect the camera from the PC. Then set [USB MODE] to [PC] again.



3 Double-click on [Removable Disk] in [My Computer].

- When using a Macintosh, the drive is displayed on the desktop. (“LUMIX”, “NO_NAME” or “Untitled” is displayed.)

4 Double-click [DCIM] folder.

5 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.

■ Disconnecting the USB connection cable safely

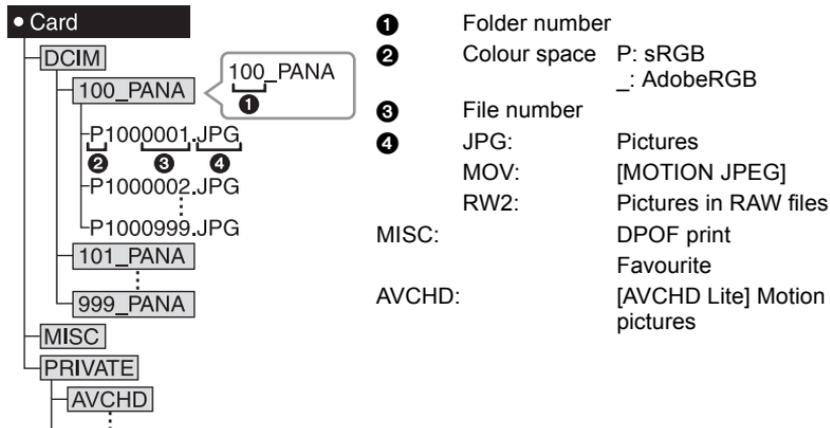
- Proceed with the hardware removal using "Safely Remove Hardware" on the task tray of the PC. If the icon is not displayed, check that [ACCESS] is not displayed on the LCD monitor of the digital camera before removing the hardware.

Note

- Turn the camera off before connecting or disconnecting the AC adaptor (P167).
- Before inserting or removing a card, turn the camera off and disconnect the USB connection cable. Otherwise, data may be destroyed.
- HDMI connection is disabled and connection with the USB connection cable will take priority when you connect the USB connection cable while the HDMI mini cable is connected (P150).

■ Viewing the contents of the card using the PC (folder composition)

- Folders and images processed in the PC cannot be played back on the camera. It is recommended to use the "PHOTOfunSTUDIO 4.0 HD Edition" bundled software on the CD-ROM (supplied) when you write the image from PC to a card.



A new folder is created when pictures are taken in the following situations.

- After [NO.RESET] (P34) in the [SETUP] menu has been executed
- When a card containing a folder with the same folder number has been inserted (Such as when pictures were taken using another make of camera)
- When there is a picture with file number 999 inside the folder

■ Connection in the PTP mode (Windows® XP, Windows Vista® and Mac OS X only)

Set [USB MODE] to [PictBridge(PTP)].

Data can now be read only from the card into the PC.

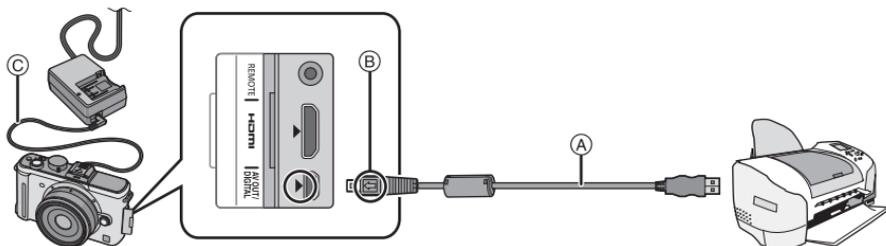
- When there are 1000 or more pictures on a card, the pictures may not be imported in the PTP mode.
- [AVCHD Lite] motion picture cannot be played back in PTP mode.

Printing the Pictures

If you connect the camera to a printer supporting PictBridge, you can select the pictures to be printed out and instruct that printing be started on the camera's LCD monitor.

Preparations: Turn on the camera and the printer.

Perform the print quality and other settings at the printer before printing the pictures.



(A) USB connection cable (supplied)

- Check the directions of the connectors, and plug them straight in or unplug them straight out. (Otherwise the connectors may be bent out of shape which may cause malfunction.)

(B) Align the marks, and insert.

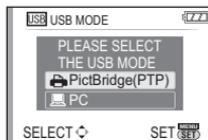
(C) DC cable (DMW-DCC3; optional)

- Use a battery with sufficient battery power or the AC adaptor (P167). If the remaining battery power becomes low while the camera and the printer are connected, the status indicator blinks and the alarm beeps. If this happens during printing, stop printing at once. If not printing, disconnect the USB connection cable.

1 Connect the camera to a printer via the USB connection cable (A) (supplied).

- When the camera is connected to the printer, the cable disconnect prohibit icon  appears. Do not disconnect the USB cable while  is displayed.

2 Press \blacktriangle / \blacktriangledown to select [PictBridge(PTP)], and then press [MENU/SET].



Note

- Do not use any other USB connection cables except the supplied one. Use of cables other than the supplied USB connection cable may cause malfunction.
- Turn the camera off before connecting or disconnecting the AC adaptor (P167).
- Before inserting or removing a card, turn the camera off, and disconnect the USB connection cable.
- HDMI connection is disabled and connection with the USB connection cable will take priority when you connect the USB connection cable while the HDMI mini cable is connected (P150).
- Motion pictures recorded in [AVCHD Lite] cannot be printed out.

Selecting a single picture and printing it

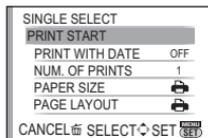
- 1 Press **◀/▶** to select the picture and then press **[MENU/SET]**.

- The message disappears in about 2 seconds.



- 2 Press **▲** to select **[PRINT START]** and then press **[MENU/SET]**.

- Refer to P160 for the items which can be set before starting to print the pictures.
- Press **[MENU/SET]** to cancel printing halfway.
- Disconnect the USB connection cable after printing.

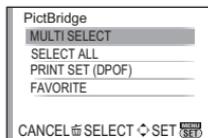


Selecting multiple pictures and printing them

- 1 Press **▲**.

- 2 Press **▲/▼** to select an item and then press **[MENU/SET]**.

- If the print check screen has appeared, select **[YES]**, and print the pictures.

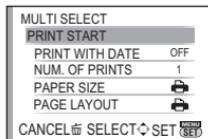


Item	Description of settings
[MULTI SELECT]	Multiple pictures are printed at one time. <ul style="list-style-type: none"> • Press ▲/▼/◀/▶ to select the pictures, and then When [DISPLAY] is pressed, [] appears on the pictures to be printed. (When [DISPLAY] is pressed again, the setting is cancelled.) • After the pictures have been selected, press [MENU/SET].
[SELECT ALL]	Prints all the stored pictures.
[PRINT SET (DPOF)]	Prints the pictures set in [PRINT SET] only. (P145)
[FAVORITE]*	Prints the pictures set as favourites only. (P137)

* Only when **[FAVORITE]** is at **[ON]** and when there are pictures set as favourites. (P137)

- 3 Press **▲** to select **[PRINT START]** and then press **[MENU/SET]**.

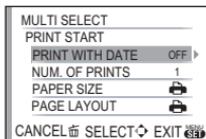
- Refer to P160 for the items which can be set before starting to print the pictures.
- Press **[MENU/SET]** to cancel printing.
- Disconnect the USB connection cable after printing.



Print Settings

Select and set the items both on the screen in step 2 of the “Selecting a single picture and printing it” and in step 3 of the “Selecting multiple pictures and printing them” procedures.

- When you want to print pictures on a paper size or a layout which is not supported by the camera, set [PAPER SIZE] or [PAGE LAYOUT] to  and then set the paper size or the layout on the printer. (For details, refer to the operating instructions of the printer.)
- When [PRINT SET (DPOF)] has been selected, the [PRINT WITH DATE] and [NUM. OF PRINTS] items are not displayed.



[PRINT WITH DATE]

Item	Description of settings
[OFF]	Date is not printed.
[ON]	Date is printed.

- If the printer does not support date printing, the date cannot be printed on the picture.
- Since the printer's settings may take precedence over the print with date setting, check the printer's print with date setting as well.
- When printing images with a text stamp, please remember to set print with date to [OFF] or the date will print on top.
- In some printers, the picture date for pictures taken with the aspect ratio set to  will be printed vertically.



Note

When asking the photo shop to print the pictures

- By stamping the date using [TEXT STAMP] (P139) or setting date printing at the time of the [PRINT SET] (P145) setting before going to a photo shop, the dates can be printed at the photo shop.

[NUM. OF PRINTS]

You can set the number of prints up to 999.

- You can also use the rear dial to set.

[PAPER SIZE]

Item	Description of settings
	Settings on the printer are prioritised.
[L/3.5"×5"]	89 mm×127 mm
[2L/5"×7"]	127 mm×178 mm
[POSTCARD]	100 mm×148 mm
[16:9]	101.6 mm×180.6 mm
[A4]	210 mm×297 mm
[A3]	297 mm×420 mm
[10×15cm]	100 mm×150 mm

[4"×6"]	101.6 mm×152.4 mm
[8"×10"]	203.2 mm×254 mm
[LETTER]	216 mm×279.4 mm
[CARD SIZE]	54 mm×85.6 mm

- Paper sizes not supported by the printer will not be displayed.

[PAGE LAYOUT] (Layouts for printing that can be set with this unit)

Item	Description of settings
	Settings on the printer are prioritised.
	1 picture with no frame on 1 page
	1 picture with a frame on 1 page
	2 pictures on 1 page
	4 pictures on 1 page

- An item cannot be selected if the printer does not support the page layout.

■ Layout printing

When printing a picture several times on 1 sheet of paper

For example, if you want to print the same picture 4 times on 1 sheet of paper, set [PAGE LAYOUT] to  and then set [NUM. OF PRINTS] to 4 for the picture that you want to print.

When printing different pictures on 1 sheet of paper

For example, if you want to print 4 different pictures on 1 sheet of paper, set [PAGE LAYOUT] to  and then set [NUM. OF PRINTS] to 1 for each of the 4 pictures.

Note

- The camera is receiving an error message from the printer when the  indication lights orange during printing. After finishing printing, make sure there are no problems with the printer.
- If the number of prints is high, the pictures may be printed several times. In this case, the remaining number of prints indicated may differ from the number set.
- When the pictures in RAW files are to be printed, the JPEG pictures recorded simultaneously by the camera will be printed. If JPEG pictures do not exist, RAW file pictures cannot be printed.

Using the Optional External Viewfinder

When using the external live viewfinder (DMW-LVF1; optional), you can view the recording screen even when taking pictures with a low camera angle.

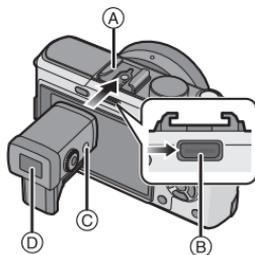
Preparations:

- Turn off the camera.
- Remove the hot shoe cover that is attached to the camera. (P13)

1 Insert the optional external viewfinder fully and securely into the hot shoe

- Press the lower part of the external viewfinder with your finger, and securely insert the connector as well.
(Do not press on the viewfinder part)

- (A) Hot shoe
- (B) Dedicated connector for external viewfinder
- (C) [LVF/LCD]
- (D) Finder



2 Switch [ON] the camera.

- [] is displayed on the LCD monitor.
It may not be connected properly if it does not display.

3 Switch to and from the optional external viewfinder by pressing [LVF/LCD].

- You can switch between LCD (LCD monitor) display and LVF (Viewfinder) display.
- Switching via the [LVF/LCD] button will be maintained even when the power of the digital camera is turned [OFF].

■ To remove the optional external viewfinder

1 Switch the power [OFF]

2 Return the angle of the external viewfinder to its original position if it has changed.

3 Pull in the direction of the arrow and remove

- Reattach the hot shoe cover in its original position.

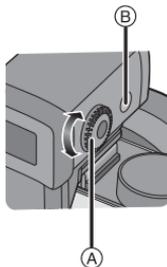


■ Diopter adjustment

Adjust the diopter to suit your vision so that you can see the Viewfinder clearly.

Look at the display on the Viewfinder and rotate the diopter adjustment dial to where the screen is clearest.

- Ⓐ diopter adjustment dial
- Ⓑ [LVF/LCD]

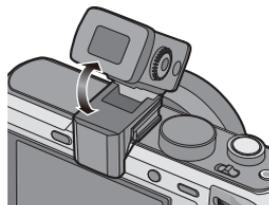


■ About the settings for recording with a low camera angle

Based on the camera angle, set the angle of the optional external viewfinder for easy viewing

(from approximately 0° - 90°)

Do not open beyond 90°. Doing so may cause damage.



Note

- When attaching and detaching the optional external viewfinder, be sure to do so slowly and carefully.
- The optional external viewfinder cannot be used with the external flash.
- When a strap is fitted, do not allow it to snag on the optional external viewfinder.
- When attaching the optional external viewfinder, do not hold only the optional external viewfinder because it may detach from the camera.
- As the eye cup cannot be removed, gently wipe it with a dry and soft cloth, and be careful not to remove it.
- If you wipe the eye cup too hard and it is removed, consult the dealer or your nearest Service Centre.
- For details, refer to the operating instructions of the optional external viewfinder.

Using an external flash (optional)

After attaching the external flash, the effective range will be increased when compared to the camera's built in flash.

Preparations:

- Turn off the camera and close the built-in flash.
- Remove the hot shoe cover that is attached to the camera.

■ Using the dedicated flash (DMW-FL220; optional)

- 1 Attach the dedicated flash to the hot shoe (A) and then turn on the camera and the dedicated flash.**

- Be sure to firmly secure to the dedicated flash with the lock ring (B).

- 2 Select [FLASH] on the [REC] mode menu. (P28)**

- 3 Press ▲/▼ to select the mode and then press [MENU/SET].**

- While the external flash is connected, the following icons are displayed.

⚡: External flash Forced ON

⚡S: External flash Slow sync.

- 4 Press [MENU/SET] to close the menu.**

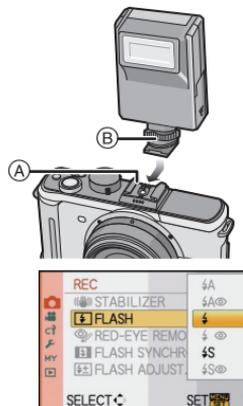
- You can also press the shutter button halfway to close the menu.

■ When using other commercially available external flashes without communication functions with the camera (DMC-GF1)

- It is necessary to set the exposure on the external flash. If you want to use the external flash in Auto Mode, use an external flash that allows you to set the aperture value and the ISO sensitivity to match the settings on the camera.
- Set to Aperture-Priority AE mode or Manual Exposure mode on the camera and then set the same aperture value and ISO sensitivity on the external flash. (The exposure cannot be compensated adequately due to the change on the aperture value in Shutter-Priority AE mode and the external flash cannot control the light adequately in Programme AE mode because the aperture value cannot be fixed.)

Note

- You can set the aperture value, the shutter speed and the ISO sensitivity on the camera even when attaching the external flash.
- Some commercial external flashes have synchro terminals with high-voltage or reversed polarity. Using such extra flashes may cause a malfunction or the camera may not operate normally.



- If you use commercially available external flashes with communication functions other than the dedicated one, they may not operate normally or they may be damaged. Do not use them.
- Even if the external flash is turned off, the camera may enter the external flash mode when the external flash is attached. When you are not using the external flash, detach it.
- When attaching the external flash, the built-in flash cannot be activated.
- Do not open the built-in flash when an external flash is attached.
- The camera will become unstable when attaching the external flash, it is recommended to use a tripod when taking picture.
- Turn off the camera when removing the external flash.
- Detach the external flash when carrying the camera.
- When attaching the external flash, do not hold only the external flash because it may detach from the camera.
- If you use the external flash when the white balance is set to [] finely adjust the white balance depending on the picture quality. (P79)
- If you take pictures close to the subject in Wide, the vignetting effect may appear on the bottom of the recorded picture.
- Read the operating instructions of the external flash for details.

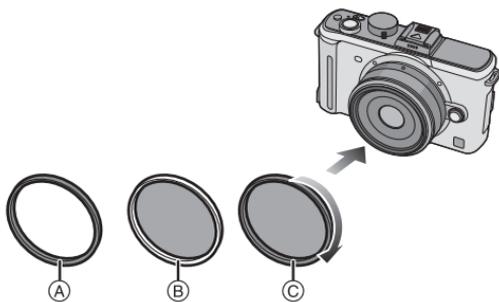
Using the Protector/Filter (optional)

The MC protector (optional) is a transparent filter which affects neither the colours nor the amount of light, so it can always be used to protect the camera's lens.

The ND filter (optional) reduces the amount of light to approximately 1/8th (equal to adjusting the aperture value 3 increments) without affecting the colour balance.

PL filter (optional) will suppress the reflected light from a metal or non spherical surfaces (flat non-metallic surfaces, water vapour or invisible particles in the air), making it possible to take a picture with enhanced contrast.

Attach the filter.



- (A) MC protector
- (B) ND filter
- (C) PL filter

Note

- Do not attach multiple filters at the same time.
- If the filter is tightened too much, you may not be able to remove it. Do not tighten it too much.
- If the filter is dropped, it may be destroyed. Be careful not to drop it when attaching it to the camera.
- Be careful not to get a fingerprint, dirt, etc., on the filter when it is attached, otherwise the focus may be adjusted to the lens, resulting in the subject being out of focus.
- You can attach the lens cap or the lens hood when the filter is attached.
- Refer to the instructions for each filter for details.
- **MC**="Multi-coated"

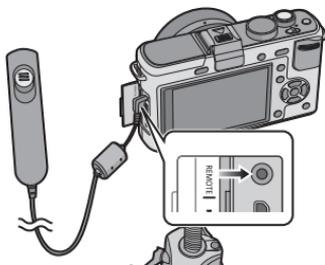
ND="Neutral Density"

- It is recommended to use the MC protector (DMW-LMC46; optional), the ND filter (DMW-LND46; optional), or the PL filter (DMW-LPL46; optional) with the 20 mm/F1.7 lens included in DMC-GF1C.
- It is recommended to use the MC protector (DMW-LMC52; optional), the ND filter (DMW-LND52; optional), or the PL filter (DMW-LPL52; optional) with the 14-45 mm/F3.5-5.6 lens included in DMC-GF1K.
- If you have difficulty attaching or removing the PL filter (DMW-LPL46; optional) on the 20 mm/ F1.7 interchangeable lens included in the DMC-GF1C, we recommend that you attach or remove the filter with the camera power turned on and the Focus Mode set to [MF].
- Accessories other than filters, such as conversion lenses, cannot be mounted. It may cause malfunction.

Using the Remote Shutter (optional)

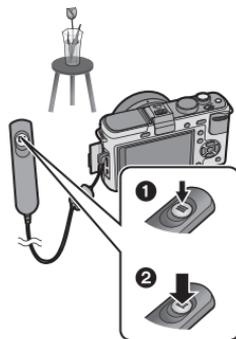
If you use the remote shutter (DMW-RSL1; optional), you can avoid jitter (camera shake) when using a tripod and you can keep the shutter pressed fully when taking pictures with [B] (Bulb) or Burst Mode. The remote shutter works similar to the shutter button on the camera.

- 1** Firmly connect the remote shutter to the [REMOTE] socket on the camera as far as it will go.



- 2** Take a picture.

- 1 Press the button lightly to press halfway.
- 2 Press the button fully to take the picture.
(Press it as far as it will go.)



■ About [LOCK] on the remote shutter

- You can keep the shutter button pressed fully. This is effective when taking pictures with Burst Mode (P66) or in [B] (Bulb) (P87).
- While pressing the shutter button fully, slide it to the [LOCK] side.
- Slide it to the other side to cancel [LOCK].



Note

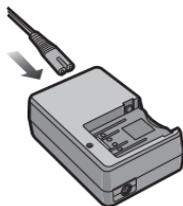
- Do not use any other remote shutters except DMW-RSL1 (optional).
- You cannot operate the camera with the remote shutter in the following cases.
 - When the power save mode is cancelled
- Record with Motion Picture P Mode (P104) when using for motion picture recording. Motion picture recording can be started/stopped with the remote shutter.

Using the AC Adaptor

You can use the camera without worrying about battery discharge when it is connected to a PC or a printer if you use the DC cable (DMW-DCC3; optional) to connect the camera to the battery charger/AC adaptor and connect the AC cable.

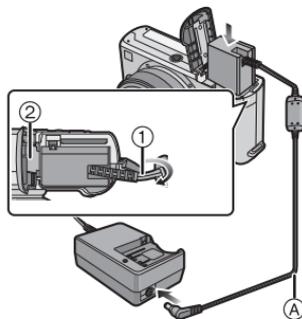
- Check that the camera is turned off.
- Close the flash.

1 Connect the AC cable.



2 Connect the DC cable (A).

- Pull open the DC cable cover ① and then connect the DC cable to the camera body using the same steps as "Inserting and Removing the Card (optional)/the Battery" (P24). Pull the DC cable through the opening as shown in the illustration and then close the battery door ②.
- Be careful not to catch the DC cable (DMW-DCC3; optional) when closing the battery door.
- You cannot charge the battery if you connect the DC cable.



Note

- Do not use any other AC cables except the supplied one.
- Do not use any other cables except a genuine Panasonic DC cable (DMW-DCC3; optional). If you use other DC cables, it may cause a malfunction.
- The camera becomes warm during use. This is not a malfunction.
- Disconnect the charger/AC adaptor and DC cable when the camera is not in use.

- It is recommended to use a fully charged battery or AC adaptor when recording motion pictures.
- If while recording motion pictures using the AC adaptor the power supply is cut off due to a power cut or if the AC adaptor is disconnected etc., the motion picture being recorded will not be recorded.
- 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.

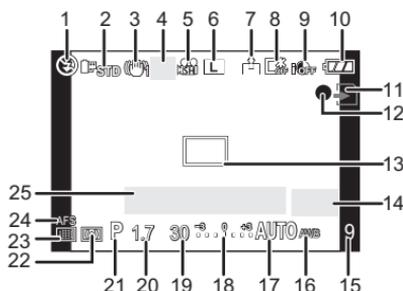
Screen Display/optional external viewfinder

- The following images are examples of when the display screen is set to [] (LCD monitor style) in the LCD monitor/optional external viewfinder.

■ In recording

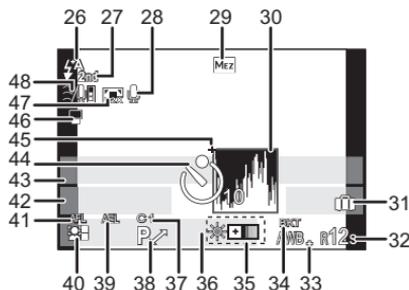
Recording in Programme AE mode [P] (Initial setting)

- 1 Flash mode (P60)
- 2 Film mode (P82)
- 3 Optical Image Stabilizer*¹ (P118)/[]:
Jitter alert (P47)
- 4 []: Burst (P66)
[]: Auto Bracket (P68)
[]: Self-timer (P70)
- 5 REC MODE (P100)/Recording quality (P100)
- 6 Picture size (P117)
- 7 Quality (P118)
- 8 LCD mode*² (P33)
- 9 Intelligent Exposure (P121)
- 10 Battery indication (P21)
- 11 Card (P25) (displayed only during recording)
- 12 Recording state (Flashes red.)/
Focus (P47) (Lights green.)
- 13 AF area (P47, 71)
- 14 Dial operation guide (P130)/
Elapsed recording time (P99)
- 15 Number of recordable pictures*³ (P187)
- 16 White balance (P77)
- 17 ISO sensitivity (P80)
- 18 Exposure compensation value (P65)/Manual exposure assistance (P86)
- 19 Shutter speed (P47)
- 20 Aperture value (P47)
- 21 Recording mode
- 22 Metering mode (P120)
- 23 AF mode (P71)
- 24 Focus mode (P46)
- 25 Exposure meter (P127)



■ In recording (after settings)

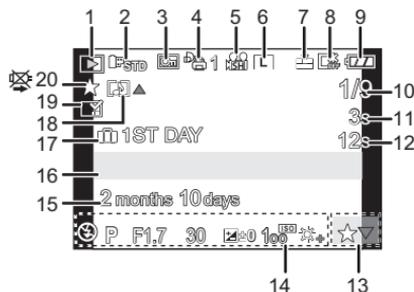
- 26 Flash output adjustment (P63)
- 27 2nd curtain synchro (P64)
- 28 Audio recording (P124)
- 29 Extra Optical Zoom (P49, 122)
- 30 Histogram (P59)
- 31 Travel date (P112)
- AF tracking operation (P43, 72)
- 32 Available recording time^{*3} (P99): R8m30s
- 33 White Balance Fine Adjustment (P79)
- 34 White Balance Bracket (P79)
- 35 My Colour Mode adjustment (P94)
- 36 Current date and time/✈: Travel destination setting^{*2, 4} (P114)
- 37 Custom settings (P96)
- 38 Programme Shift (P48)
- 39 AE lock (P75)
- 40 Face Recognition (P106)
- 41 AF lock (P75)
- 42 Age^{*2, 5} (P92)
- Location^{*2, 4} (P112)
- 43 Name^{*2, 5} (P92)
- Number of days that have passed since the departure date^{*2, 4} (P112)
- 44 Self-timer^{*6} (P70)
- 45 Spot metering target (P120)
- 46 Optional external viewfinder^{*7} (P162)
- 47 Digital zoom (P49, 122)
- 48 WIND CUT (P103)



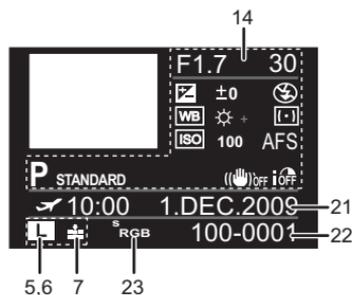
- *1 Only available when a lens that supports the Stabilizer function is attached
- *2 Only displayed in the LCD monitor.
- *3 It is possible to switch the display between the number of recordable pictures and available recording time with the [REMAINING DISP.] setting in the [CUSTOM MENU] menu. It will display [9999+] when the number of recordable pictures exceeds 10000.
- *4 This is displayed for about 5 seconds when the camera is turned on, after setting the clock and after switching from Playback mode to Recording mode.
- *5 This is displayed for about 5 seconds when this unit is turned on in [BABY1]/[BABY2] or [PET] in Scene mode.
- *6 This is displayed during countdown.
- *7 Only available when an optional external viewfinder is installed.

■ In playback

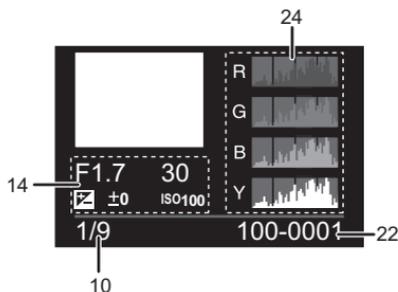
- 1 Playback mode (P50)
- 2 Film Mode (P82)
- 3 Protected picture (P146)
- 4 Number of prints (P145)
- 5 REC MODE (P100)/Recording quality (P100)
- 6 Picture size (P117)
- 7 Quality (P118)
- 8 LCD mode (P33)
- 9 Battery indication (P21)
- 10 Picture number/Total pictures
- 11 Elapsed playback time (P132): 8m30s
- 12 Motion picture recording time (P132): 8m30s
- 13 Favourites settings (P137)
- 14 Recording information*⁸
- 15 Age (P92)
- 16 Name (P92)/Location (P112)/Title (P138)
- 17 Number of days that have passed since the departure date (P112)
- 18 Audio playback (P133)
- 19 : Motion picture playback (P132)
- 20 Stamped with text indication (P139)
- 21 Favourites (P137)
- 22 Cable disconnection warning icon (P158)
- 23 Recorded date and time/Travel destination setting (P114)
- 24 Folder/File number*⁸ (P157)
- 25 Colour space*⁹ (P123)
- 26 Histogram (P59)



Detailed information display



Histogram display



*⁸ This is not displayed for motion pictures recorded in [AVCHD Lite].

*⁹ This is not displayed for motion pictures recorded in [AVCHD Lite]/[MOTION JPEG].

Cautions for Use

Optimal use of the camera

Take care not to drop or knock the unit or put a lot of pressure on it.

- Take care not to knock or drop the bag/case that you inserted the camera in as the shock may cause damage to the camera, lens or LCD monitor.
- Do not use a paper bag as it can easily rip causing the camera to fall and be damaged.
- We strongly recommend you purchase a good camera bag/case from your local dealer to protect your camera.

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

- If you use the camera on top of or near a TV, the pictures and sound on the camera may be disrupted by electromagnetic wave radiation.
- Do not use the camera near cell phones because doing so may result in noise adversely affecting the pictures and 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 the camera, disturbing the pictures and sound.
- If the camera is adversely affected by electromagnetic equipment and stops functioning properly, turn the camera off and remove the battery or disconnect AC adaptor. Then reinsert the battery or reconnect AC adaptor and turn the camera on.

Do not use the camera near radio transmitters or high-voltage lines.

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

Always 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 or the cables.

Do not spray the camera with insecticides or volatile chemicals.

- If the camera is sprayed with such chemicals, the body of the camera may be damaged and the surface finish may peel off.
- Do not keep rubber or plastic products in contact with the camera for a long period of time.

Cleaning

Before cleaning the camera, remove the battery or disconnect the power plug from the outlet. Then wipe the camera with a dry soft cloth.

- When the camera is soiled badly, it can be cleaned by wiping the dirt off with a wrung wet cloth, and then with a dry cloth.
- Wipe off any dirt or dust on the zoom ring and the focus ring with a dry, dustless cloth.
- Do not use solvents such as benzene, thinner, alcohol, kitchen detergents, etc., to clean the camera, since it may deteriorate the external case or the coating may peel off.
- When using a chemical cloth, be sure to follow the accompanying instructions.

■ About dirt on the image sensor

This camera features an interchangeable lens system so dirt may get inside the camera body when changing lenses. Depending on the recording conditions, dirt on the image sensor may appear on the recorded picture.

Do not change lenses where there is a lot of dust, and always attach the body cap when a lens is not attached to the camera, so that dirt or dust does not get inside the camera body. Remove any dirt on the body cap before attaching it.

Dust reduction function

This unit has a dust reduction function that will blow off the debris and dust that have affixed to the front of the imaging device. This function will function automatically when the camera is turned on, but if you see dust, perform the [SENSOR CLEANING] (P131) in the [CUSTOM MENU] menu.

Removing dirt on the image sensor

The image sensor is very precise and delicate, so be sure to observe the following when you do have to clean it yourself.

- Blow off the dust on the surface of the image sensor with a commercially available blower brush. Be careful not to blow too strongly.
- Do not put the blower brush further inside than the lens mount.
- Do not let the blower brush touch the image sensor as the image sensor may get scratched.
- Do not use any objects except a blower brush to clean the image sensor.
- If you cannot remove the dirt or dust with the blower, consult the dealer or your nearest Service Centre.

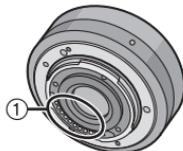
About the LCD monitor/Optional external viewfinder

- Do not press the LCD monitor with excessive force. Uneven colours may appear on the LCD monitor and it may malfunction.
- If the camera is cold when you turn it on, the picture on the LCD monitor/Optional external viewfinder will be slightly darker than usual at first. However, the picture will return to normal brightness when the internal temperature of the camera increases.

Extremely high precision technology is employed to produce the LCD monitor/Optional external viewfinder screen. However there may be some dark or bright spots (red, blue or green) on the screen. This is not a malfunction. The LCD monitor/Optional external viewfinder screen has more than 99.99% effective pixels with a mere 0.01% of the pixels inactive or always lit. The spots will not be recorded on pictures on a card.

About the Lens

- Do not press the lens with excessive force.
- Do not leave the camera with the lens facing the sun as rays of light from the sun may cause it to malfunction. Also, be careful when placing the camera outside or near a window.
- When there is dirt (water, oil, and fingerprints, etc.) on the surface of the lens, the picture may be affected. Lightly wipe the surface of the lens with a soft, dry cloth before and after taking pictures.
- Do not place the lens mount facing downwards. Do not allow the lens mount contacts ① to become dirty.



Battery

The battery is a rechargeable lithium ion battery. Its ability to generate power comes from the chemical reaction that takes place inside it. This reaction is susceptible to the surrounding temperature and humidity. If the temperature is too high or too low, the operating time of the battery will become shorter.

Always remove the battery after use.

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

- Inserting a damaged battery in the camera will damage the camera.

Bring charged spare batteries when going out.

- Be aware that the operating time of the battery becomes shorter in low temperature conditions such as at a ski resort.
- When you travel, do not forget to bring the battery charger (supplied) and the AC cable (supplied) so that you can charge the battery in the country that you are travelling in.

Dispose of unusable battery.

- The battery has a limited life.
- Do not throw the battery into fire because it may cause an explosion.

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.

Charger

- If you use the battery charger near a radio, the radio reception may be disturbed.
- Keep the charger 1 m or more away from radio.
- The charger may generate whirring sounds when it is being used. This is not a malfunction.
- After use, be sure to disconnect the power supply device from the electrical outlet. (A very small amount of current is consumed if it is left connected.)
- Keep the terminals of the charger and battery clean.

Card

Do not leave the 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 card.

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

Notice for when transferring to another party, or disposing of the memory card

- "Format" or "delete" using the camera or a PC will only modify the file management information, and it will not erase the data in the memory card completely.

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

Management of data in the memory card is the responsibility of the user.

About the personal information

If a name or birthday is set for [BABY1]/[BABY2]/face recognition function, this personal information is kept in the camera and included in the recorded image.

Disclaimer

- Information including personal information may be altered or vanish due to erroneous operation, effect of static electricity, accident, malfunction, repair, or other handlings. Please note in advance that Panasonic is not liable in any way for any direct or indirect damage from the alteration or vanishing of information or personal information.

When requesting a repair, transferring to another party or disposing

- Reset the settings to protect the personal information. (P34)
- Remove the memory card from the camera when requesting a repair.
- Settings may return to factory default when camera is repaired.
- Please contact the dealer where you purchased the camera or your nearest Service Centre if above operations are not possible due to malfunction.

When transferring to another party, or disposing of the memory card, please refer to "Notice for when transferring to another party, or disposing of the memory card" on P174.

When not using the camera for a long period of time

- Store the battery in a cool and dry place with a relatively stable temperature: [Recommended temperature: 15 °C to 25 °C, Recommended humidity: 40% to 60%]
- Always remove the battery and the card from the camera.
- If the battery is left inserted in the camera, it will discharge even if the camera is turned off. If the battery continues to be left in the camera, it will discharge excessively and may become unusable even if charged.
- When storing the battery for a long period of time, we recommend charging it once a year. Remove the battery from the camera and store it again after it has completely discharged.
- We recommend storing the camera with a desiccant (silica gel) when you keep it in a closet or a cabinet.
- **Check all the parts before taking pictures when you have not used the camera for a long period of time.**

About the picture data

- Recorded data may be damaged or lost if the camera breaks down due to inappropriate handling. Panasonic will not be liable for any damage suffered due to loss of recorded data.

About tripods or unipods

- When you use a tripod, make sure the tripod is stable when this unit is attached to it.
- You may not be able to remove the card or the battery when using a tripod or unipod.
- Make sure that the screw on the tripod or unipod is not at an angle when attaching or detaching the camera. You may damage the screw on the camera if you use excessive force when turning it. Also, the camera body and the rating label may be damaged or scratched if the camera is attached too tightly to the tripod or unipod.
- When a large-diameter lens is attached to the camera, certain tripods/unipods may make contact with the lens. There is a risk that such tripods/unipods will damage the camera or lens so their use should be avoided.
- Read the operating instructions for the tripod or unipod carefully.

About the shoulder strap

- If you attach a heavy interchangeable lens (more than about 1 kg) to the camera body, do not carry the camera by the shoulder strap. Hold the camera and the lens when carrying them.

Message Display

Confirmation messages or error messages will be displayed on the screen/optional external viewfinder in some cases.

The major messages are described below as examples.

[THIS MEMORY CARD IS LOCKED]

- The Write-Protect switch on the SD Memory Card and the SDHC Memory Card are moved to [LOCK]. Move the switch back to unlock it. (P25)

[NO VALID PICTURE TO PLAY]

- Record a picture or insert a card with a recorded picture and then play it.

[THIS PICTURE IS PROTECTED]

- Delete the picture after cancelling the protect setting. (P146)

[THIS PICTURE CANNOT BE DELETED]/[SOME PICTURES CANNOT BE DELETED]

- Pictures not based on the DCF standard cannot be deleted.
- If you want to delete some pictures, format the card after saving necessary data on a PC etc. (P36)

[NO ADDITIONAL SELECTIONS CAN BE MADE]

- The number of pictures, which can be set at one time when [MULTI] has been selected for [DELETE MULTI] (P54), [FAVORITE] (P137), [TITLE EDIT] (P138), [TEXT STAMP] (P139) or [RESIZE] (P141) has been exceeded.
- Reduce the number of pictures set, and then repeat the operation.
- More than 999 favourites have been set.

[CANNOT BE SET ON THIS PICTURE]

- [TITLE EDIT], [TEXT STAMP] or [PRINT SET] cannot be set for pictures not based on the DCF standard.

**[MEMORY CARD ERROR
FORMAT THIS CARD?]**

- This card has a format which is not recognised by the camera.
→ Format the card again with the camera after saving necessary data on a PC etc. (P36)

**[PLEASE CHECK THAT THE LENS IS ATTACHED CORRECTLY]/[PLEASE CHECK
THE STATUS OF A LENS.]**

- Do not press the lens release button.
- Check that the lens is attached correctly and then turn the camera off and on.
→ If the message persists, contact the dealer or your nearest Service Centre.
- When using a Leica lens mount adaptor (DMW-MA2M or DMW-MA3R; optional), set [SHOOT W/O LENS] (P131) to [ON] in the custom menu.

[THE LENS IS NOT ATTACHED PROPERLY.]

- Detach the lens and then attach it again. (P16)

[MEMORY CARD PARAMETER ERROR]/[THIS MEMORY CARD CANNOT BE USED]

- Use a card compatible with this unit. (P25)
- You can only use an SDHC Memory Card if using cards with 4 GB or more capacity.

[INSERT SD CARD AGAIN]/[TRY ANOTHER CARD]

- An error has occurred accessing the card.
→ Insert the card again.
→ Insert a different card.

**[READ ERROR/WRITE ERROR
PLEASE CHECK THE CARD]**

- It has failed to read or write data.
→ Remove the card after turning the power [OFF]. Insert the card again, turn the power on, and try to read or write the data again.
- The card may be broken.
→ Insert a different card.

**[CANNOT RECORD DUE TO INCOMPATIBLE FORMAT (NTSC/PAL) DATA ON THIS
CARD.]**

- If you want to delete some pictures, format the card after saving necessary data on a PC etc. (P36)
- Insert a different card.

**[MOTION RECORDING WAS CANCELLED DUE TO THE LIMITATION OF THE
WRITING SPEED OF THE CARD]**

- It is recommended to use a card with SD Speed Class* with "Class 6" or higher when recording motion pictures.
- * SD speed class is the speed standard regarding continuous writing.
- When you set the picture quality to [FHD], [Full HD] or [4K], we recommend using a high-speed card with "10MB/s" or greater displayed on the package.
- In the event that it stops even after using a "10MB/s" card or higher, the data writing speed has deteriorated so it is recommended to make a backup and then format (P36).
- Depending on the type of SD Memory Card or SDHC Memory Card, motion picture recording may stop in the middle.

[THIS CARD IS NOT FORMATTED WITH THIS CAMERA, AND NOT SUITABLE FOR MOVIE RECORDING.]

- The writing speed is lower if the card has been formatted using a PC or other equipment. As a consequence, motion picture recording may stop in the middle. If this happens, make a backup of the data and format (P36) the card in this unit.

[A FOLDER CANNOT BE CREATED]

- A folder cannot be created because there are no remaining folder numbers that can be used. (P157)
 - Format the card after saving necessary data on a PC etc. (P36) If you execute [NO.RESET] in the [SETUP] menu after formatting, the folder number is reset to 100. (P34)

[PICTURE IS DISPLAYED FOR 16:9 TV]/[PICTURE IS DISPLAYED FOR 4:3 TV]

- The AV cable is connected to the camera.
 - Press [MENU/SET] if you want to delete this message at once.
 - Select [TV ASPECT] in the [SETUP] menu if you want to change the TV aspect. (P34)
- This message also appears when the USB connection cable is connected to the camera only. In this case, connect the other end of the USB connection cable to a PC or a printer. (P156, 158)

[PRINTER BUSY]/[PLEASE CHECK THE PRINTER]

- The printer cannot print.
 - Check the printer.

[NO BATTERY POWER REMAINS]

- The remaining battery power is low.
 - Charge the battery.

[THIS BATTERY CANNOT BE USED]

- The battery cannot be recognised by the camera.
 - Use a genuine Panasonic battery. If this message is displayed even when a genuine Panasonic battery is used, contact the dealer or your nearest Service Centre.
- The battery cannot be recognised as its terminal is dirty.
 - Remove any dirt etc. from the terminal.

Troubleshooting

First, try out the following procedures (P178–186).

If the problem is not resolved, it may be improved by selecting **[RESET] (P34)** on the **[SETUP]** menu.

Battery and power source

The camera cannot be operated even when it is turned on.

- The battery is not inserted correctly. (P24)
- The battery is exhausted.
- Charge the battery.
- AC adaptor is not connected properly. (P167)

The LCD monitor turns off while the camera is turned on.

- Is the display set to optional external viewfinder (P162)?
→ Switch to LCD monitor display by pressing [LVF/LCD] on the optional external viewfinder (P162).
- Is [AUTO LCD OFF] (P31) of the [ECONOMY] mode active?
→ Press the shutter button halfway to cancel these modes.
- Is the LCD monitor switched off?
→ Switch the display by pressing [DISPLAY]. (P56)
- The battery is exhausted.
- Charge the battery.

The camera turns off immediately after it is turned on.

- The battery is exhausted.
- Charge the battery.
- If you leave the camera on, the battery will be exhausted.
→ Turn the camera off frequently by using the [ECONOMY] mode etc. (P31)

This unit is turned off automatically.

- If you connect to a TV compatible with VIERA Link with a HDMI mini cable (optional) and turn off the power on the TV with the remote control for the TV, the power on this unit also turns off.
→ If you are not using VIERA Link, set [VIERA Link] to [OFF]. (P35)

The [CHARGE] lamp flashes.

- Is the temperature of the battery excessively high or low? If it is, it will take longer than usual to charge the battery or charging may remain incomplete.
- Are the terminals of the charger or battery dirty?
→ Wipe off the dirt using a dry cloth.

Recording

The picture cannot be recorded.

- Is the Mode Dial correctly set?
- Is the card inserted?
- Is there any memory remaining on the card?
 - Delete the pictures which are not necessary to increase the available memory. (P54)

The shutter will not operate immediately when the shutter button is pressed.

- Is the subject focused?
 - [FOCUS PRIORITY] is set to [ON] at the time of purchase, and so you cannot take pictures until the subject is in focus. If you want to be able to take a picture when you press the shutter button fully even if the subject is not focused, set [FOCUS PRIORITY] in the [CUSTOM MENU] menu to [OFF]. (P129)

The recorded picture is whitish.

- Picture might look whitish when lens or image sensor gets dirty with finger print or similar.
 - If the lens is dirty turn the camera off and then gently wipe the lens surface with a soft dry cloth.
 - Refer to P172 when the image sensor gets dirty.

The recorded picture is too bright or dark.

- Check that the exposure is correctly compensated. (P65)
- Is the AE Lock (P75) applied incorrectly?

2 or 3 pictures are taken at one time.

- Unset the settings of White Balance Bracket (P79).

The subject is not focused properly.

- The subject is beyond the focus range of the camera. (P45)
- There is camera shake (jitter) or the subject is moving slightly. (P47)
- Is [FOCUS PRIORITY] in the [CUSTOM MENU] menu set to [OFF]? (P129)
 - In this case, the picture may not be properly focused even if [AFS] or [AFC] in Focus Mode is set.
- Is the AF Lock (P75) applied incorrectly?

The recorded picture is blurred.

The Optical Image Stabilizer is not effective.

- The shutter speed will become slower and the Optical Image Stabilizer function may not work properly when taking pictures especially in dark places.
 - We recommend holding the camera firmly with both hands when taking pictures. (P37)
 - We recommend using a tripod and the self-timer (P70) when taking pictures with a slow shutter speed.
- Are you using a lens which supports the Stabilizer function? (P17)

Taking pictures using White Balance Bracket is not possible.

- Is the number of recordable pictures 2 or less?

The recorded picture looks rough. Noise appears on the picture.

- Is the ISO sensitivity high or the shutter speed slow? (ISO sensitivity is set to [AUTO] when the camera is shipped. Therefore, when taking pictures indoors etc. noise will appear.)
 - Decrease the ISO sensitivity. (P80)
 - Increase the setting for [NOISE REDUCTION] in [FILM MODE] or lower the setting for each of the items other than [NOISE REDUCTION]. (P83)
 - Take pictures in bright places.
 - Set the [LONG SHTR NR] to [ON]. (P121)

The brightness or the hue of the recorded picture is different from the actual scene.

- If recording under fluorescent light, the brightness or the hue may change slightly when the shutter speed becomes fast. This occurs due to the characteristics of fluorescent light. It is not a malfunction.

Reddish horizontal streaks appear on the LCD monitor during recording.

- This is characteristic of MOS sensors which serve as the camera's pickup sensors. It appears when the subject has a bright part. Some unevenness may occur in the surrounding areas, but this is not a malfunction.
It is recorded in motion pictures but is not recorded on still pictures.
- It is recommended that you take pictures while taking care not to expose the screen to sunlight or any other source of strong light.

Bright spot not in subject is recorded.

- This could be an inactive pixel. Perform the [PIXEL REFRESH] (P130) in the [CUSTOM MENU].

You cannot compensate the exposure.

- Are you in Exposure Compensation operation?
 - Press the rear dial to switch to Exposure Compensation operation. (P65)

Subject cannot be locked. (AF tracking not possible)

- Set the AF area to the distinctive colour of the subject if there is a part that is different from the surrounding colour. (P72)

Motion pictures

Motion picture recording stops in the middle.

- It is recommended to use a card with SD Speed Class* with "Class 6" or higher when recording motion pictures.

* SD speed class is the speed standard regarding continuous writing.

- Depending on the type of the card, recording may stop in the middle.
 - When you set the picture quality to [Hi], [VGA] or [VGA], we recommend using a high-speed card with "10MB/s" or greater displayed on the package.

- If motion picture recording stops during use of a card of at least "10MB/s" or if you use a card that has been formatted on a PC or other equipment, the data-writing speed is lower. In such cases, we recommend that you make a backup of the data and then format (P36) the card in this unit.

Object seems to be warped.

- Object seems to be warped slightly when the object moves across the image very fast, but this is because the unit is using MOS for the image sensor. This is not a malfunction.

Under fluorescent lighting, flicker or horizontal bars may be seen.

- This is characteristic of MOS sensors which serve as the camera's pickup sensors. This is not a malfunction.
- If there is marked flicker or striping when recording motion pictures in regions with a 60 Hz mains supply, set the Flicker Reduction Function (P104) to [ON]. The Flicker Reduction Function will then activate, automatically adjusting the shutter speed to 1/120.

A clicking sound or the sound of the auto focus operation is recorded in motion pictures.

- This unit automatically adjusts the aperture during motion picture recording. A clicking sound may occur at this time depending on the lens, and this sound may be recorded on the motion pictures. This is not a malfunction.
- With certain lenses, the sound of the Auto Focus Operation is recorded when recording motion pictures. In this case, we recommend setting [CONTINUOUS AF] (P98, 103) to [OFF].
- Operating sounds may be recorded when the zoom or buttons are operated etc. while recording motion pictures. Also, the operating sound of the dial may be recorded when the rear dial is operated.

Lens

Recorded image may be warped, or nonexistent colour is surrounding the subject.

- Depending on the lens used, picture may be warped slightly or you may see colours along the edge depending on the zoom factor, due to the characteristics of the lens. Also, the peripherals of the image might look warped because the perspective is enhanced when the wide angle is used. This is not a malfunction.

Flash

The flash is not activated.

- Is the flash closed?
→ Press the [ OPEN] button to open the flash. (P60)

The flash is activated 2 times.

- The flash is activated 2 times. The interval between the first and second flash is longer when Red-eye Reduction (P61) is set so the subject should not move until the second flash is activated.

LCD monitor/optional external viewfinder

The LCD monitor turns off although the camera is turned on.

- The LCD monitor turns off when [AUTO LCD OFF] (P31) is selected for the [ECONOMY] mode. [This does not happen when using the AC adaptor (P167).]
If the remaining battery power is low, it may take longer for the flash to be charged, and the time during which the LCD monitor is turned off may become longer.

The LCD monitor/optional external viewfinder is too bright or dark.

- Adjust the brightness of the LCD monitor/Optional External Viewfinder to a proper level. (P33)
- [POWER LCD] is activated. (P33)

The LCD monitor/optional external viewfinder is disrupted momentarily while recording.

- This occurs due to the aperture of the lens changing when the shutter button is pressed half-way, or when the brightness of the subject changes. This is not a malfunction.
- This may occur more often when a bright lens, such as the 20 mm/F1.7 interchangeable lens included with the DMC-GF1C, is used for recording in brightly lit outdoor environments.

The picture is not displayed on the LCD monitor.

- Is the LCD monitor switched off?
→ Switch the display by pressing [DISPLAY]. (P56)
- Does the picture appear on the Optional External Viewfinder?
→ Switch to LCD monitor display by pressing [LVF/LCD] on the Optional External Viewfinder (P162).

The picture does not switch between LCD monitor and optional external viewfinder when [LVF/LCD] is pressed on the optional external viewfinder (P162).

- It is only displayed on the LCD monitor when the camera is connected to a PC or printer.

Black, red, blue and green dots appear on the LCD monitor.

- This is not a malfunction.
These pixels do not affect the recorded pictures.

Noise appears on the LCD monitor.

- In dark places, noise may appear to maintain the brightness of the LCD monitor.

You see red, green, or blue flashes when you move your eyes in the optional external viewfinder (P162), or when the camera is moved rapidly.

- This is a characteristic of the drive system of the Optional External Viewfinder (P162) of this unit, and it is not a malfunction. There will be no problem with the recorded image.

Playback

The picture being played back is not rotated, or is rotated in an unexpected direction, when displayed.

- You can display the pictures without being rotated when [ROTATE DISP.] (P144) is set to [OFF].
- You can rotate pictures with the [ROTATE] function. (P144)
- You can only display the pictures rotated if you use a lens (P14) that supports the Direction Detection Function (P37) and [ROTATE DISP.] is set to [ON].

The picture is not played back.

- Did you press [▶]?
- Is the card inserted?
- Is there a picture on the card?
- Is this a picture whose file name has been changed in the PC? If it is, it cannot be played back by this unit.

The recorded pictures are not displayed.

- Has [PLAYBACK MODE] been set for playback?
→ Change to [NORMAL PLAY]. (P135)

The folder number and the file number are displayed as [—] and the screen turns black.

- Is this a non-standard picture, a picture which has been edited using a PC or a picture which was taken by another make of digital camera?
- Did you remove the battery immediately after picture-taking or did you take the picture using a battery with a low remaining charge?
→ Format the data to delete the pictures mentioned above. (P36)
(Other pictures will be deleted as well and it will not be possible to restore them. Therefore, check well before formatting.)

Images with different date as recorded date are played back in the Calendar Playback.

- Is the clock in the camera set properly? (P26)
- Images edited on a PC or images recorded on other cameras might display a different date to the recorded date during the Calendar Playback.

White round spots like soap bubbles appear on the recorded picture.

- If you take a picture with the flash in a dark place or indoors, white round spots may appear on the picture caused by the flash reflecting of particles of dust in the air. This is not a malfunction.
A characteristic of this is that the number of round spots and their position differ in every picture.



[THUMBNAIL IS DISPLAYED] appears on the screen.

- Is it a picture that has been recorded with other equipment? In such cases, these pictures may be displayed with a deteriorated picture quality.

Red part of the recorded image has changed colour to black.

- When Digital Red-Eye Reduction ([~~AE~~], [~~AE~~], [~~AE~~]) is in operation, if you take a picture of subject with red colour surrounded by a skin tone colour, that red part may be corrected to black by the Digital Red-Eye Reduction Function.
→ It is recommend to take picture with Flash Mode set to [~~A~~], [~~AE~~] or [~~AE~~], or [RED-EYE REMOVAL] on the [REC] Mode menu set to [OFF]. (P119)

TV, PC and printer

The picture does not appear on the television.

- Is the camera connected to the TV correctly?
→ Set the TV input to external input mode.
- Output from the [HDMI] socket is not possible when it is connected to the PC or the printer.
→ Connect it only to the TV.

The display areas on the TV screen and the camera's LCD monitor are different.

- Depending on the TV model, the pictures may be extended horizontally or vertically or they may be displayed with their edges cut off.

The motion pictures cannot be played back on a TV.

- Are you trying to play back the motion pictures by directly inserting the card in the card slot of the TV?
→ Connect the camera to the TV with the AV cable (supplied), or with the HDMI mini cable (optional), and then play back the motion pictures on the camera. (P149, 150)
→ Motion pictures recorded in [AVCHD Lite] can be played back on Panasonic televisions (VIERA) with the AVCHD logo.

The picture is not displayed fully on the TV.

- Check [TV ASPECT] setting. (P34)

VIERA Link does not work.

- Is it connected properly with the HDMI mini cable (optional)? (P150)
→ Confirm that the HDMI mini-cable (optional) is firmly fitted.
→ Press [▶] on this unit.
- Is the [VIERA Link] on this unit set to [ON]? (P35)
→ Depending on HDMI terminal of the TV, the input channel may not switch automatically. In this case, use the remote control for the TV to switch input. (For details on how to switch input, please read the operating instructions for the TV.)
→ Check the VIERA Link setting on the connected device.
→ Turn the power to the unit off and then back on again.
→ Set [VIERA Link] to [Off] on the TV and then turn it back to [On]. (Refer to the operating instructions of the TV for details.)
→ Check [VIDEO OUT] setting. (P34)

The picture cannot be transferred when the camera is connected to a PC.

- Is the camera connected to the PC correctly?
- Is the camera recognised by the PC correctly?
→ Set to [PC] in [USB MODE]. (P34, 156)

The card is not recognised by the PC.

- Disconnect the USB connection cable. Connect it again while the card is inserted in the camera.

The picture cannot be printed when the camera is connected to a printer.

- Pictures cannot be printed using a printer which does not support PictBridge.
→ Set to [PictBridge(PTP)] in [USB MODE]. (P34, 158)

The ends of the pictures are cut at printing.

- When using a printer with a trimming or borderless printing function, cancel this function before printing. (For details, refer to the operating instructions for the printer.)
- When you order photo studios to print pictures, ask the photo studio if the pictures can be printed with both ends.

Others

There is a sound from lens unit.

- It is a sound of lens movement or aperture operation when the power is turned [ON] or [OFF], and it is not a malfunction.
- You may hear a sound from the lens and image in the LCD monitor may suddenly change when the brightness has changed by zoom operation or moving the camera, but there is no effect on recording.
The sound is caused by the automatic adjustment of the aperture. This is not a malfunction.

An unreadable language was selected by mistake.

- Press [MENU/SET], select the [SETUP] menu icon [] and then select the [] icon to set the desired language. (P36)

Part of the picture is flashing in black and white.

- This is a highlight function showing the white saturated area. (P32)
- Is the [HIGHLIGHT] set to [ON]?

A red lamp sometimes turns on when the shutter button is pressed halfway.

- In dark places, the AF assist lamp (P129) lights red to make it easier to focus on a subject.

The AF assist lamp does not turn on.

- Is [AF ASSIST LAMP] on the [CUSTOM MENU] menu set to [ON]? (P129)
- The AF assist lamp does not turn on in bright places.

The camera becomes warm.

- The surface of the camera may become warm during use. This does not affect the performance or quality of the camera.

The clock is reset.

- If you do not use the camera for a long time, the clock may be reset.
→ When the message [PLEASE SET THE CLOCK] appears, set the clock again. When you take a picture before setting the clock, [0:00 0. 0. 0] is recorded. (P26)

The file numbers are not recorded consecutively.

- When you perform an operation after taking a certain action, the pictures may be recorded in folders with different numbers from the ones used prior to the operation. (P157)

The file numbers are recorded in ascending order.

- If the battery was inserted or removed without first turning the camera's power off, the folder and file numbers for the pictures taken will not be stored in the memory. When the power is then turned back on and pictures are taken, they may be stored under file numbers which should have been assigned to previous pictures.

Age is not displayed correctly.

- Check the clock (P26) and birthday settings (P93).

Number of Recordable Pictures and Available Recording Time

- The number of recordable pictures and the available recording time are an approximation. (These vary depending on the recording conditions and the type of card.)
- The number of recordable pictures and the available recording time varies depending on the subjects.

■ Number of recordable pictures

Aspect ratio		4:3							
Picture size		L : 4000×3000 pixels (12 million pixels)				M : 2816×2112 pixels (5.9 million pixels)			
Quality				RAW 	RAW 			RAW 	RAW 
Card	32 MB	3	7	0	1	6	14	1	1
	64 MB	7	16	2	3	15	31	3	3
	128 MB	17	35	5	6	32	64	6	7
	256 MB	34	71	11	13	63	125	13	14
	512 MB	70	140	22	26	125	250	26	29
	1 GB	140	280	45	54	250	510	52	59
	2 GB	290	570	92	110	520	1020	105	120
	4 GB	570	1130	180	210	1030	2010	210	230
	6 GB	870	1720	270	320	1560	3050	320	350
	8 GB	1160	2310	370	440	2090	4090	430	480
	12 GB	1760	3490	550	660	3160	6170	650	720
16 GB	2350	4660	740	880	4220	8230	860	960	
32 GB	4710	9350	1490	1770	8470	16520	1740	1930	

Aspect ratio		4:3				3:2			
Picture size		S : 2048×1536 pixels (3.1 million pixels)				L : 4000×2672 pixels (10.7 million pixels)			
Quality				RAW	RAW			RAW	RAW
Card	32 MB	17	35	1	1	3	8	1	1
	64 MB	37	74	3	3	8	18	2	3
	128 MB	77	150	7	8	18	39	6	7
	256 MB	150	290	15	15	38	77	12	14
	512 MB	300	590	30	31	77	155	24	29
	1 GB	600	1180	60	63	155	310	50	60
	2 GB	1220	2360	120	125	310	620	100	120
	4 GB	2410	4640	240	250	620	1230	200	240
	6 GB	3660	7050	360	380	940	1870	300	360
	8 GB	4910	9440	490	510	1270	2500	410	490
	12 GB	7400	14240	730	770	1910	3770	620	740
	16 GB	9880	19000	980	1030	2550	5040	830	980
32 GB	19820	38120	1970	2070	5130	10110	1660	1980	

Aspect ratio		3:2							
Picture size		M : 2816×1880 pixels (5.3 million pixels)				S : 2048×1360 pixels (2.8 million pixels)			
Quality				RAW	RAW			RAW	RAW
Card	32 MB	7	15	1	1	20	39	1	2
	64 MB	16	33	3	3	42	82	4	4
	128 MB	34	69	7	8	87	165	8	9
	256 MB	68	135	14	16	170	330	16	17
	512 MB	135	270	29	32	340	650	33	35
	1 GB	270	540	58	65	680	1310	67	71
	2 GB	550	1070	115	130	1360	2560	135	140
	4 GB	1090	2110	230	260	2680	5020	260	280
	6 GB	1660	3210	350	390	4070	7640	410	430
	8 GB	2230	4300	470	530	5450	10230	540	570
	12 GB	3360	6490	720	800	8230	15430	820	860
	16 GB	4490	8660	960	1070	10980	20590	1100	1150
32 GB	9010	17390	1930	2150	22020	41300	2210	2320	

Aspect ratio		16:9							
Picture size		L : 4000×2248 pixels (9.0 million pixels)				M : 2816×1584 pixels (4.5 million pixels)			
Quality				RAW 	RAW 			RAW 	RAW 
Card	32 MB	4	9	1	1	12	25	2	2
	64 MB	9	20	3	4	26	53	4	4
	128 MB	21	43	7	8	54	105	9	10
	256 MB	43	86	14	17	105	210	18	20
	512 MB	86	170	29	35	210	420	36	40
	1 GB	175	340	58	70	430	850	73	80
	2 GB	350	700	115	140	870	1700	145	160
	4 GB	700	1380	230	280	1720	3350	290	320
	6 GB	1060	2100	350	430	2620	5090	440	480
	8 GB	1420	2820	480	570	3500	6820	600	650
	12 GB	2150	4250	720	860	5290	10290	900	980
	16 GB	2870	5670	960	1150	7050	13720	1200	1310
32 GB	5760	11390	1930	2320	14160	27530	2420	2640	

Aspect ratio		16:9				16:1			
Picture size		S : 1920×1080 pixels (2.1 million pixels)				L : 2992×2992 pixels (9.0 million pixels)			
Quality				RAW 	RAW 			RAW 	RAW 
Card	32 MB	26	52	2	2	4	10	1	1
	64 MB	56	105	5	5	10	23	3	4
	128 MB	115	220	10	10	23	48	7	8
	256 MB	220	430	20	21	47	95	14	17
	512 MB	440	860	40	42	95	185	29	34
	1 GB	900	1720	81	84	190	380	59	70
	2 GB	1800	3410	160	170	390	760	120	140
	4 GB	3540	6700	320	330	760	1500	230	270
	6 GB	5390	10190	490	510	1160	2290	350	420
	8 GB	7220	13640	650	680	1560	3060	480	560
	12 GB	10890	20580	990	1030	2350	4620	720	850
	16 GB	14530	27450	1320	1380	3140	6170	970	1140
32 GB	29150	55070	2650	2770	6310	12390	1940	2290	

Aspect ratio		15:1							
Picture size		M: 2112×2112 pixels (4.5 million pixels)				S: 1504×1504 pixels (2.3 million pixels)			
Quality				RAW 	RAW 			RAW 	RAW 
Card	32 MB	12	25	1	2	24	48	2	2
	64 MB	26	53	4	4	52	100	4	5
	128 MB	54	105	8	9	105	200	9	10
	256 MB	105	210	17	19	210	390	19	20
	512 MB	210	420	35	38	410	790	38	40
	1 GB	430	850	71	78	830	1580	77	81
	2 GB	870	1700	145	155	1660	3070	155	165
	4 GB	1720	3350	280	310	3260	6030	310	320
	6 GB	2620	5090	430	470	4950	9170	470	490
	8 GB	3500	6820	580	630	6630	12280	630	660
	12 GB	5290	10290	870	950	10010	18520	950	990
	16 GB	7050	13720	1170	1270	13350	24700	1270	1320
32 GB	14160	27530	2340	2550	26790	49560	2540	2660	

Aspect ratio		4:3	3:2	16:9	15:1
Quality		RAW			
Card	32 MB	2	2	2	2
	64 MB	4	4	5	5
	128 MB	8	9	11	11
	256 MB	16	18	22	21
	512 MB	33	37	44	42
	1 GB	67	75	89	86
	2 GB	135	150	180	170
	4 GB	260	300	350	340
	6 GB	400	450	540	520
	8 GB	540	610	720	690
	12 GB	820	920	1090	1050
	16 GB	1090	1220	1450	1400
32 GB	2190	2460	2920	2810	

■ Available recording time (when recording motion pictures)

File format		[AVCHD Lite]			[MOTION JPEG]			
Recording quality setting								
Card	32 MB	Cannot be guaranteed in operation.			4 s	16 s	17 s	55 s
	64 MB				12 s	37 s	38 s	1 min 57 s
	128 MB				29 s	1 min 18 s	1 min 21 s	4 min 00 s
	256 MB				59 s	2 min 35 s	2 min 40 s	7 min 50 s
	512 MB	3 min 45 s	4 min 50 s	7 min 10 s	2 min 00 s	5 min 10 s	5 min 20 s	15 min 40 s
	1 GB	7 min 20 s	9 min 30 s	14 min 00 s	4 min 00 s	10 min 20 s	10 min 50 s	31 min 20 s
	2 GB	15 min 20 s	20 min 00 s	29 min 00 s	8 min 20 s	21 min 20 s	22 min 10 s	1 h 04 min
	4 GB	30 min 30 s	40 min 00 s	1 h 00 min	16 min 30 s	41 min 50 s	43 min 40 s	2 h 05 min
	6 GB	46 min 40 s	1 h 01 min	1 h 28 min	25 min 10 s	1 h 03 min	1 h 06 min	3 h 11 min
	8 GB	1 h 02 min	1 h 22 min	1 h 58 min	33 min 40 s	1 h 25 min	1 h 28 min	4 h 15 min
	12 GB	1 h 34 min	2 h 04 min	2 h 59 min	50 min 50 s	2 h 08 min	2 h 14 min	6 h 26 min
	16 GB	2 h 06 min	2 h 45 min	4 h 00 min	1 h 08 min	2 h 52 min	2 h 59 min	8 h 35 min
32 GB	4 h 14 min	5 h 32 min	8 h 00 min	2 h 16 min	5 h 45 min	5 h 59 min	17 h 13 min	

• Motion picture recorded continuously in [MOTION JPEG] is up to 2 GB. Only the maximum recordable time for 2 GB is displayed on the screen. [AVCHD Lite] can be recorded to the capacity of the card.*

* The recording may stop even if there is more space left in the card depending on the life of the battery. (P22)

Note

- The number of recordable pictures and the available recording time displayed on the screen may not decrease in order.
- If you set [EX. OPT. ZOOM] (P122) to [ON], [**71**] is displayed on the screen when the picture size is set to a size other than the maximum picture size for each aspect ratio.

Specifications

Digital Camera Body (DMC-GF1):

Information for your safety

Power Source:	DC 9.3 V
Power Consumption:	2.4 W (When recording with LCD Monitor) [When 20 mm/F1.7 lens included in DMC-GF1C is used] 2.7 W (When recording with LCD Monitor) [When 14–45 mm/F3.5–5.6 lens included in DMC-GF1K is used] 1.5 W (When playing back with LCD Monitor) [When 20 mm/F1.7 lens included in DMC-GF1C is used] 1.8 W (When playing back with LCD Monitor) [When 14–45 mm/F3.5–5.6 lens included in DMC-GF1K is used]

Camera effective pixels:	12,100,000 pixels
Image sensor:	4/3" Live MOS sensor, total pixel number 13,060,000 pixels, Primary colour filter
Digital zoom:	Max. 4×
Extra Optical Zoom: (Except for the maximum picture size for each aspect ratio)	ON/OFF simple enlargement (compatible with lenses from other manufacturers)
Focus:	Auto focus/Manual Focus, Face detection/AF Tracking/ 23-area-focusing/1-area-focusing
Shutter system:	Focal-plane shutter
Burst recording	
Burst speed:	3 pictures/second (High speed), 2 pictures/second (Low speed)
Number of recordable pictures:	Max. 7 pictures (when there are RAW files) Depends on the capacity of the card (when there are no RAW files)
ISO sensitivity (Standard Output Sensitivity):	AUTO/ \square ISO/100/200/400/800/1600/3200
Shutter speed:	B (Bulb) (max. 4 minutes), 60 seconds to 1/4000th of a second
Metering range:	EV 0 to EV 18
White balance:	Auto white balance/Daylight/Cloudy/Shade/Incandescent lights/ Flash/White set1/White set2/White balance K set
Exposure (AE):	Programme AE (P)/Aperture-priority AE (A)/Shutter-priority AE (S)/Manual exposure (M)/AUTO Exposure Compensation (1/3 EV Step, –3 EV to +3 EV)
Metering mode:	Multiple/Centre weighted/Spot
LCD monitor:	3.0" TFT LCD (Approx. 460,000 dots) (field of view ratio about 100%)

Flash:	<p>Built-in pop up flash GN 6 equivalent (ISO100·m) Flash range: Approx. 40 cm to 7.0 m (When the 20 mm/F1.7 lens included in DMC-GF1C is mounted, [ISO AUTO] is set) Flash range: Approx. 1.0 m to 3.4 m (When the 14–45 mm/F3.5–5.6 lens included in DMC-GF1K is mounted, WIDE, [ISO AUTO] is set) AUTO, AUTO/Red-eye reduction, Forced ON, Forced ON/ Red-eye reduction, Slow sync., Slow sync./Red-eye reduction, Forced OFF</p>
Flash synchronization speed:	Equal to or smaller than 1/160th of a second
Microphone:	Monaural
Speaker:	Monaural
Recording media:	SD Memory Card/SDHC Memory Card
Picture size	
Still picture:	<p>When the aspect ratio setting is [4:3] 4000×3000 pixels, 2816×2112 pixels, 2048×1536 pixels When the aspect ratio setting is [3:2] 4000×2672 pixels, 2816×1880 pixels, 2048×1360 pixels When the aspect ratio setting is [16:9] 4000×2248 pixels, 2816×1584 pixels, 1920×1080 pixels When the aspect ratio setting is [1:1] 2992×2992 pixels, 2112×2112 pixels, 1504×1504 pixels</p>
Recording quality	
Motion pictures:	<p>[AVCHD Lite] (With audio) When set to [SH]: 1280×720 pixels (50p recording*/17 Mbps)/ When set to [H]: 1280×720 pixels (50p recording*/13 Mbps)/ When set to [L]: 1280×720 pixels (50p recording*/9 Mbps) (*Sensor output is 25 frames/sec.) [MOTION JPEG] (With audio) When set to [HD]: 1280×720 pixels (30 frames/sec.)/ When set to [WVGA]: 848×480 pixels (30 frames/sec.)/ When set to [VGA]: 640×480 pixels (30 frames/sec.)/ When set to [QVGA]: 320×240 pixels (30 frames/sec.)</p>
Quality:	RAW/RAW+ Fine/RAW+ Standard/Fine/Standard
Recording file format	
Still Picture:	JPEG (based on "Design rule for Camera File system", based on "Exif 2.21" standard)/DPOF corresponding
Pictures with audio:	JPEG (based on "Design rule for Camera File system", based on "Exif 2.21" standard)+ "QuickTime" (pictures with audio)
Motion pictures with audio:	AVCHD Lite/QuickTime Motion JPEG
Interface	
Digital:	"USB 2.0" (High Speed)

Analogue video/ audio: NTSC/PAL Composite (Switched by menu)
Audio line output (monaural)

Terminal

[REMOTE]: ϕ 2.5 mm jack
[AV OUT/DIGITAL]: Dedicated jack (8 pin)
[HDMI]: MiniHDMI TypeC (1.3a corresponding)
[DC IN]: None (when using an AC adaptor, use optional DC cable)
[External viewfinder]: Dedicated connector
[External microphone]: None

Dimensions: Approx. 119 mm (W)×71 mm (H)×36.3 mm (D)
(excluding the projecting parts)

Mass: Approx. 285 g (camera body),
Approx. 442 g,
(with the 20 mm/F1.7 lens included in DMC-GF1C, card and battery)
Approx. 537 g,
(with the 14–45 mm/F3.5–5.6 lens included in DMC-GF1K, card and battery)

Operating temperature: 0 °C to 40 °C

Operating humidity: 10% to 80%

AC Adaptor (Panasonic DE-A49C):

Information for your safety

Input:	110 V to 240 V ~ 50/60 Hz, 0.3 A
Output:	DIGITAL CAMERA 9.3 V === 1.2 A CHARGE 8.4 V === 0.65 A

Battery Pack (lithium-ion) (Panasonic DMW-BLB13E):

Information for your safety

Voltage/capacity :	7.2 V/1250 mAh
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Interchangeable Lens (H-H020)**“LUMIX G 20 mm/F1.7 ASPH.”**

Focal length:	f=20 mm (35 mm film camera equivalent: 40 mm)
Aperture type:	7 leaf shutters/iris diaphragm/circular diaphragm
Aperture range:	F1.7
Minimum aperture value:	F16
Lens construction:	7 elements in 5 groups (2 non-spherical lenses)
In focus distance:	20 cm to ∞ (from the focus distance reference line)
Maximum image magnification:	0.13 \times (35 mm film camera equivalent: 0.25 \times)
Stabilizer:	None
Mount:	“Micro Four Thirds Mount”
Angle of view:	57°
Filter diameter:	46 mm
Max. diameter:	Approx. 63 mm
Overall length:	Approx. 25.5 mm (from the tip of the lens to the base side of the lens mount)
Mass:	Approx. 100 g

Interchangeable Lens (H-FS014045)**“LUMIX G VARIO 14–45 mm/F3.5–5.6 ASPH./MEGA O.I.S.”**

Focal length:	f=14 mm to 45 mm (35 mm film camera equivalent: 28 mm to 90 mm)
Aperture type:	7 leaf shutters/iris diaphragm/circular diaphragm
Aperture range:	F3.5 (Wide) to F5.6 (Tele)
Minimum aperture value:	F22
Lens construction:	12 elements in 9 groups (1 non-spherical lenses)
In focus distance:	30 cm to ∞ (from the focus distance reference line)
Maximum image magnification:	0.17 \times (35 mm film camera equivalent: 0.34 \times)
Optical Image Stabilizer:	Available
Mount:	“Micro Four Thirds Mount”
Angle of view:	75° (Wide) to 27° (Tele)
Filter diameter:	52 mm
Max. diameter:	Approx. 60 mm
Overall length:	Approx. 60 mm (from the tip of the lens to the base side of the lens mount)
Mass:	Approx. 195 g

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AVCHD Lite™



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VQT2G57
F0809WT0 (4000 Ⓐ)



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