SANYO

INSTRUCTION MANUAL

Dual Camera

VPC-FH1EX
VPC-FH1
VPC-FH1GX

Xacti **HD**

HIGH DEFINITION

SD HC
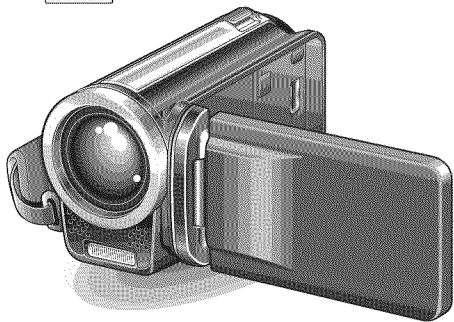
HDMI

HIGH-DEFINITION MULTIMEDIA INTERFACE

Important note

This manual explains how to safely operate the VPC-FH1EX, VPC-FH1 and VPC-FH1GX.
Any information regarding only one of these products will be labeled as such.

Please read these instructions carefully before using the camera.
Make sure to read and understand the separate booklet "SAFETY MANUAL".
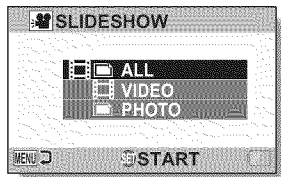Keep this manual in a safe place for later reference.

SLIDESHOW PLAYBACK

You can play back files in succession with the "slideshow playback" feature.

1 **Display the SIMPLE Mode Playback Menu (page 44), select the slideshow setting, and press the SET button.**

🔲🔳: Play back all files.

🎞️: Play back video clips and audio files.

🔳: Play back still image files.

2 **Select the type of file to play back, and press the SET button.**

• Slideshow playback begins.
• To stop slideshow playback, press the SET button or MENU button.

HINT
About the slideshow settings
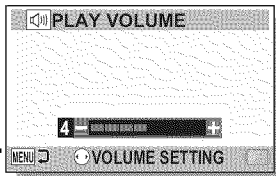• The slideshow settings can be changed from the NORMAL Mode Playback Menu (page 103).

PLAYBACK VOLUME

Adjust the playback volume for video clips and audio files.

1 **Display the SIMPLE Mode
Playback Menu (page 44), select
the playback volume setting, and
press the SET button.**
   • The volume control bar appears.

2 **Toggle the SET button to the left
or right to set the volume, and
press the SET button.**
   • The playback volume is set, and
     the display returns to the SIMPLE
     Mode Playback Menu.

HINT
The volume can be adjusted during playback
• During video clip or audio file playback, if you push the zoom switch toward
[T/🔍] or [W/█], the volume control bar will appear, allowing you to
adjust the volume.
In the NORMAL mode
• When you select "PLAY VOLUME" from the NORMAL Mode Playback
Menu and press the SET button, the volume control bar appears.

SIMPLE/PLAYBACK

DELETING FILES

You can delete files if you no longer need them. You can delete single files, selected files or all the files at one time.

Delete single/delete all

1 **Display the SIMPLE Mode Playback Menu (page 44), select the delete setting, and press the SET button.**
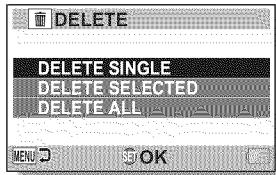**DELETE SINGLE:**
Deletes one file at a time.
DELETE SELECTED:
Deletes the selected files (page 80).
DELETE ALL:
Deletes all files.

2 **Select the desired delete mode, and press the SET button.**
• The Delete Confirmation Screen appears.
<DELETE SINGLE>
• Toggle the SET button to the left or right to select the file you wish to delete.
• There is no confirmation screen when deleting single files. Please make sure that the displayed image is one you wish to delete.
<DELETE ALL>
• Toggle the SET button to the left or right to confirm the files to delete.

3 Select "DELETE", and press the SET button.
<DELETE SINGLE>
  • The currently displayed file is deleted.
  • To delete other files, select the files, select "DELETE" and press the
    SET button.
<DELETE ALL>
  • The Delete Confirmation Screen again appears. To delete the files,
    select "YES", and press the SET button. When file delete is
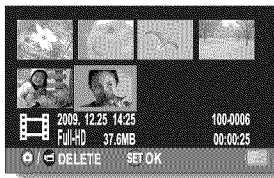   completed, "No image" is shown.

Delete selected

Delete selected files.

**1 Display the SIMPLE Mode Playback Menu (page 44), select the
delete setting, and press the SET button.**

**2 Select "DELETE SELECTED",
and press the SET button.**
  • The screen to select files to
    delete appears.

3 Select an image you wish to delete.
  • Toggle the SET button left, right, up or down to move the orange frame
    to the file you wish to delete.

DELETING FILES

4 Press the SET button.
- The selected file is marked with the delete icon [🗑].
- Up to 100 files can be selected.
- To cancel a delete selection and remove the delete icon from a file, move the orange frame to the marked file and press the SET button.

5 Press the [📷 / 🎬] button.
- The Confirm Delete Screen appears.

6 Select "YES", and press the SET button.
- The selected files are deleted.

HINT
In the NORMAL mode
- When you select "DELETE" from the NORMAL Mode Playback Menu and press the SET button, the Delete Screen appears.

CAUTION
- Files that are protected from accidental delete cannot be deleted. To delete protected files, set the protect setting for the files to off (pages 55 and 104), and then follow the file delete procedure.

PLAYBACK MODES

21-image display playback

1 Display the image you wish to play back.

Zoom switch [W/⊞]

2 Push the zoom switch toward the [W/⊞] side.
- The 21-image display appears.

3 Select the image to play back.
- Toggle the SET button up, down, left or right to move the orange frame to the desired image, and press the SET button.
- Instead of pressing the SET button, you can push the zoom switch toward the [T/◯➔] side to show the 8-image display.
- If the zoom switch is pushed toward the [W/⊞] side while the 21-image display is shown, the display changes to the screen to select the playback folder (page 83).
- It is not possible to perform the file delete or file protect settings on the 21-image display.

SET button

English **82**
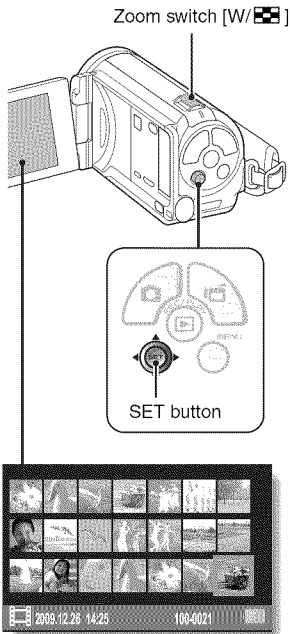
PLAYBACK MODES

Selecting the playback folder

If the card contains multiple folders, you can select from which folder you would like to play back.

1 Display the Playback Screen.

2 Push the zoom switch toward the [W/⊟] side twice.
  · The screen to select the playback folder appears.
  · If the zoom switch is pushed toward the [T/◯] side, the camera changes to the 21-image display (page 82).
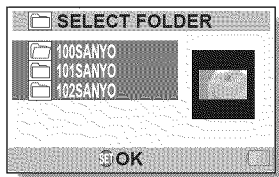
3 Toggle the SET button up or down to move the orange frame to the desired folder, and press the SET button.
  · The files in the selected folder are displayed in the Playback Screen.

HINT

In the NORMAL mode
● When you select "SELECT FOLDER" from the NORMAL Mode Playback Menu and press the SET button, the screen to select the playback folder appears.

1 Display the image that you want to magnify.

- For a video clip, pause playback at the place you want to magnify.

2 Push the zoom switch toward the [T/○_] side once.

- Magnification is enabled.
- The image is magnified, and the central portion of image is displayed.
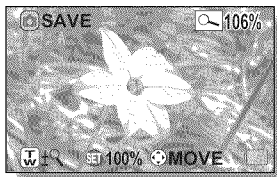- Toggle the SET button to view different parts of the magnified image.

To magnify:
Magnification increases each time the zoom switch is pushed toward the [T/○_] side.

To return to normal size:
Magnification decreases each time the zoom switch is pushed toward the [W/**]] side.

- Press the SET button to return to the normal (100%) view.

SIMPLE/PLAYBACK

HINT
The magnified portion of the image can be saved as a separate image
- Press the [◙] button. The magnified portion is saved as a new still image.

RECORDING MENU 1

You can record video clips in either the HD mode (16:9 horizontal to vertical aspect ratio) or the SD mode (4:3 aspect ratio). In addition, the higher the frame rate number, the smoother playback will be. However, as with the recording size, the file size is also proportionately larger, using up more memory. This menu is also used when making audio recordings.

CAUTION
When editing video clips...
- In order for video clips to be joined, they must have been photographed in the same mode.
- Video clips that were photographed in different modes cannot be joined.

Restrictions when 🎬 or 🎬 is set
- When the camera is connected to a TV, the image is shown on the camera monitor in the recording mode, and on the TV in the playback mode.
- When the [🎥] button is pressed, a video clip is recorded for about 10 seconds. Recording is discontinued when the [🎥] button is pressed again.
- The following recording functions are not available.
  Capturing a still image during video clip recording
  Zoom
  Image stabilizer
  Scene select (fixed at AUTO)
  Manual exposure
  Face chaser recording
  High sensitivity mode recording
  Photo wide-D range recording
  Noise reduction
- You cannot record when the possible recording time is less than about 12 seconds.
- If the AE lock setting is active, it is canceled when the 🎬 or 🎬 setting is set.

85 English

Audio recording

■ Audio recording

1 **Select [🎤], and press the SET button.**
- The audio recording mode is enabled.
- The menu display is canceled if the MENU button is pressed.

Remaining time
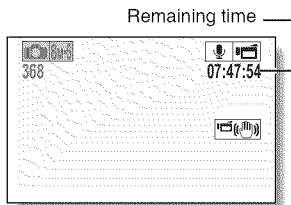
2 **Press the [🎥] button.**
- Audio recording begins. During recording, [🎤] appears in the monitor. It is not necessary to continue pressing the [🎥] button while recording.

Length of recording
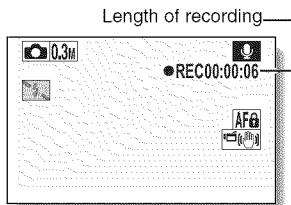
3 **End the recording.**
- Press the [🎥] button again to stop recording.

RECORDING MENU 1

HINT

You can capture a still image during an audio recording

- Press the [◙] button during audio recording to capture a 0.3_M still image.

About files saved in segments

- If the continuous recording time of a voice memo exceeds about 13 hours, the recorded file is saved once, and the recording continues in a new file. When recording a video clip whose file size exceeds 4 GB, the recorded file is saved once, and the recording continues in a new file. (These 4 GB segments are automatically created. The recording session continues until you stop recording, but video clip or voice memo recording is temporarily interrupted while the file is being saved.)

■ **Audio playback**

1 Select an audio file, and press the SET button.
• Playback begins.

To do this...		Do this
Normal playback	Start playback	Press the SET button.
	Pause	Press the SET button. Toggle the SET button up.
	Stop playback	Toggle the SET button down.
Fast forward/ fast reverse	Fast forward	During playback, toggle the SET button to the right. Each time the SET button is toggled to the right, the speed increases. If the SET button is toggled to the left during fast forward, the speed decreases.
	Fast reverse	During playback, toggle the SET button to the left. Each time the SET button is toggled to the left, the speed increases. If the SET button is toggled to the right during fast reverse, the speed decreases.
	Pause	Toggle the SET button up.
	Return to normal playback	Press the SET button.
Volume adjustment	Louder	During playback, push the zoom switch toward the [T/◯~] side.
	Softer	During playback, push the zoom switch toward the [W/▨] side.

CAUTION

If no audio is heard...

• The audio is not played back when the audio recording is played back in the fast playback or fast reverse mode.

NORMAL/SHOOTING

English **88**

RECORDING MENU 1

Still image setting

For still images, you can select either the 4:3 or 16:9 horizontal to vertical aspect ratio. This menu is also used for shooting sequential shots.

Sequential shots

1 Select ▦ or ▦ , and press the SET button.
 • The camera changes to the sequential shots mode.

2 Press the [●] button.
 • Shooting begins. Shooting continues as long as the [●] button is kept pressed.

HINT
What is the maximum number of images in a sequential shots sequence?
▦: 9 images (6 fps)
▦: 15 images (12 fps)
 • If you continue shooting even after the maximum number of images has been captured, recording does not stop.
 • If you continue shooting after the maximum number of images has been captured, subsequent captured images will overwrite the sequence already captured, beginning from the first image in the sequence.
About the focus when shooting sequential shots
 • When sequential shots are captured, the autofocus operates when the [●] button is pressed halfway, fixing the focus.
Can the flash be used?
 • The flash does not operate when shooting sequential shots.
Did the angle of view change?
 • When shooting sequential shots, the angle of view relative to that of still image shooting may change.
 • At the ▦ setting, the images are captured with an enlarged angle of view in comparison to other recording modes.
About the PHOTO NR (page 126) setting
 • During sequential shots shooting, the PHOTO NR setting automatically turns OFF.

Scene select setting

You can select from various preset settings (aperture, shutter speed, etc.) for specific shooting conditions.

HINT
- To return to normal photography, select 〔AUTO〕 from the scene select menu, and press the SET button.
- When capturing images using the lamp 〔🌄〕, fireworks 〔🎆〕 or night view portrait 〔👤★〕 setting, use a tripod or other method to stabilize the camera.
- If the recording size is set to 〔🎞SHR〕 or 〔🎞HR〕, the scene select function will be fixed at 〔AUTO〕.
- In the sequential shots mode, it is not possible to select night view portrait 〔👤★〕, fireworks 〔🎆〕, or lamp 〔🌄〕.
- A table showing the limitations for settings corresponding to scene select icons other than 〔AUTO〕 is on page 172.

Filter setting

The filter feature changes image characteristics such as color tones, to apply unique effects to the photographed image.

HINT
- To return to normal photography, select 〔▩〕 from the filter menu, and press the SET button.
- A table showing the limitations for settings corresponding to filter icons other than 〔▩〕 is on page 173.

NORMAL/SHOOTING

English **90**

RECORDING MENU 1

Self-timer setting

By assigning an operation shortcut to the SET button (pages 126 and 130), you can set the self-timer from the Recording Screen.

HINT

To pause or cancel the self-timer function...

- If the [🔘] button or [📹] button is pressed again before the shutter is released, the self-timer countdown temporarily stops. Press the [🔘] button or [📹] button one more time to restart the self-timer.
- To cancel self-timer photography, select the 📷 icon from the self-timer menu, and press the SET button.
- The self-timer is automatically reset to off 📷 after the power save mode is activated and the camera turned off.

When 📷 is selected...

- When the [🔘] button or [📹] button is pressed, the multi-indicator will blink for about 10 seconds, and then the image is captured. Also, 4 seconds before the shutter releases, the indication shown in the illustration appears on the monitor.
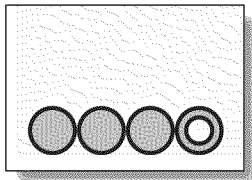
RECORDING MENU 2

Motion compensation (image stabilizer) setting

Your camera can minimize a jittery picture by compensating for unintentional hand motion.

HINT

If the motion compensation does not seem to be working...
- Due to the mechanical characteristics of this function, it may not be possible for the camera to compensate for violent motion.
- If the digital zoom (page 70) is being used, the large magnification factor may make it difficult for the motion compensation function to work correctly.
- When the scene select function is set to night view portrait ⚹★ or lamp 🔦, the motion compensation effect may be insignificant.

Can't set the "photo stabilizer" setting?
- The photo stabilizer is automatically turned off 🚫 after any of the following operations.
  - Setting the exposure to ⟦S⟧, ⟦A⟧ or ⟦M⟧ (pages 54 and 97).
  - Setting the photo wide D-range setting (pages 54 and 99) to "ON".
  - Setting the still image NR (noise reduction) setting (page 126) to "ON".
  - Starting video clip recording.
  - Setting the camera to the sequential shots mode (pages 50 and 89).

When motion compensation is enabled,
- The following icons are shown on the monitor:

Ful-HD 00:04:30	📹(🖐) The video stabilizer is active
📹(🖐)	📷(🖐) The photo stabilizer is active
	📹📷(🖐) Both the video stabilizer and the photo stabilizer are active
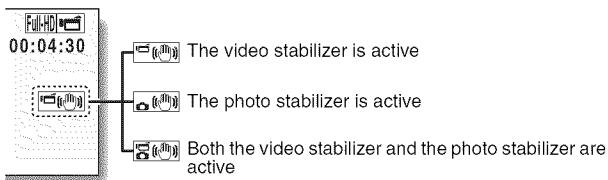
Did the scene select setting change?
- When the photo stabilizer is set to 🖐, if the scene select setting is ❀, it will automatically change to ⟦AUTO⟧.

RECORDING MENU 2

Focus range setting

How to use the manual focus

1 Select MF, and press the SET button.
  - The focus distance adjustment bar appears.
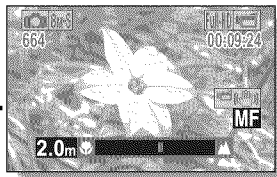
2 Toggle the SET button to the left or right to adjust the focus distance, and press the SET button.
  - The focus distance is set, and you are returned to the Recording Screen.

HINT
About the focus range
- The focus distance indication shows the distance between the center of the lens and the subject.
- In some cases there may be a slight variance between the distance (numerical figure) you set in the manual focus mode and the actual distance.

About zoom movement when using the manual focus
- If the focus distance is set to 70 cm (27.56 in.) or less, the zoom changes to the largest setting that is suitable for that focus distance.
- When the focus distance is set to 70 cm (27.56 in.) or less, the zoom will function only within the range at which the image is focused.

About the super macro mode
- When the focus range is set to super macro 🌷, the zoom is temporarily set to the wide end.
- By assigning an operation shortcut to the SET button (pages 126 and 130), you can change the focus range setting from the Recording Screen.

Focus mode setting

When the spot focus setting is selected, the focus mark + appears in the center of the monitor.
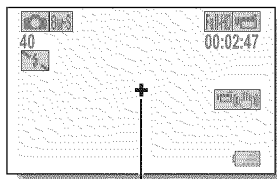
Focus mark

Light-measuring mode setting

When spot light-measuring is selected, the light-measuring spot mark □ appears in the center of the monitor.

Light-measuring spot mark

English **94**
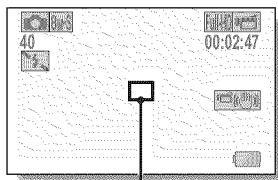
RECORDING MENU 2

ISO sensitivity setting

With the initial settings, the ISO sensitivity is automatically set according to the brightness of the subject. However, the ISO sensitivity can be set to a fixed setting.

HINT
- At the 【AUTO】 setting, the ISO sensitivity is set automatically (video clip recording: ISO 50 to 800; still image shooting: ISO 50 to 200).
- When the ISO sensitivity is set to 【3200】, video clips, as well as still images captured during video clip recording, will be recorded at ISO 【1600】.
- By setting a higher ISO sensitivity, you can set faster shutter speeds and capture images in darker locations, but noise in the captured images may increase or the images may be irregular.
- By assigning an operation shortcut to the SET button (pages 126 and 130), you can change the ISO setting from the Recording Screen.

CAUTION
Does the image appear to flicker when recording a video clip?
- If recording a video clip under fluorescent lights with the ISO sensitivity set to 【400】 or higher, a noticeable flicker may appear in the image.

RECORDING MENU 3

White balance setting

This camera automatically adjusts the white balance under most lighting conditions. However, if you want to specify the lighting conditions or change the overall tone of the image, the white balance can be manually set.

How to use the one push setting

1 **Select the ⬜ icon.**

2 **Fill the entire screen with a plain white card (or piece of paper, etc.), and press the SET button.**
  - This completes the white balance setting.

HINT
To cancel the white balance setting
  - Select AWB, and then press the SET button.

RECORDING MENU 3

Exposure setting

The shutter speed and aperture size can be set individually.

1 **Select the desired icon from the exposure menu, and press the SET button.**
<If S , A or M was selected>
① Toggle the SET button up or down to select aperture value or shutter speed.
② Toggle the SET button left or right to change the setting for the selected parameter.

M
F2.0 ◄►
1/500
— Shutter speed
— Aperture
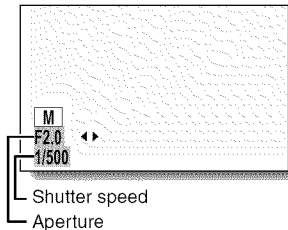
2 **Press the SET button.**
· This completes the exposure setting.

HINT
• To prevent the effects of camera shake at slow shutter speeds, it is recommended to use a tripod or other method to stabilize the camera.
• A slow shutter speed may be useful for photographing in a darker environment, but noise in the image may be increased.
• To minimize noise in the image, complete the noise reduction setting (page 126).
• The exposure setting automatically becomes P if the scene select function is active.
• In the sequential shots mode, the shutter speed is faster than 1/30 sec.
• Even if the shutter speed is set to slower than 1/29 sec., the shutter speed during video clip recording is 1/30 sec.
• If the exposure setting is set to S , A or M , by assigning an operation shortcut to the SET button (pages 126 and 130), you can select the S , A or M exposure setting from the Recording Screen.

Face chaser setting

As you record, the face chaser detects the subject's face, and adjusts the brightness and focus in a way that produces a clear and bright photo of the subject's face.

HINT

When the face chaser is set to ON...

• Each face in the Recording Screen is marked with a green frame.
• Faces that are in focus are marked with a double green frame.
• When shooting begins, the frames marking the faces that are in focus change to orange.
• If the scene select function setting was fireworks 🎆 or landscape 🏔, it automatically changes to AUTO.
• The light measuring mode changes to multi-section light measuring.
• When you play back an image that was captured using the face chaser function and magnify it, the magnified image will be centered on the face(s) that were focused on.

CAUTION

• The face chaser function does not work while the digital zoom is being used.
• The face chaser function does not work when zooming in or out.
• The face chaser function may not work when the subject's face in the monitor is relatively small or appears dark.

NORMAL/SHOOTING

RECORDING MENU 3

Photo wide D-range setting

By using the photo wide D-range feature, even in an image comprised of both bright and dark subjects, all the subjects will be captured at a natural brightness level. For example, when a strong backlight is created, as can occur when photographing in bright surroundings, a subject in a bright background appears completely white. Furthermore, the details of dark areas created by the shadows of a backlight are normally obscured in blackness. Shooting with the photo wide D-range function smoothly adjusts the brightness levels from light areas to dark areas.

HINT
Other settings during photo wide D-range shooting
- When the photo wide D-range is set to "ON", the following settings automatically change as indicated.
  Flash (page 50): Disabled (no flash) 📷
  Exposure (pages 54 and 97): P
  Photo stabilizer (page 92): 📷
  Scene select fireworks 🎆 (page 90): AUTO
  When sequential shots is active (page 89): 8M-S
  Noise reduction (page 126): "PHOTO NR" is "OFF"
- During video clip recording, the photo wide D-range is automatically switched to "OFF".
- The field of view of captured images will appear slightly narrow.

CAUTION
- When the scene select function is set to night view portrait 👤★ or lamp 🌙, the photo wide D-range effect may be insignificant.
- The photo wide D-range function does not work when the shutter speed is slower than 1/60.
- The photo wide D-range effect may be insignificant if you are shooting in an extremely bright or extremely dark environment.
- Note that the exposure time during photo wide D-range shooting is comparatively longer than for normal shooting.
- When there are smear or flare effects in the image, or when it is misty, shooting with the photo wide D-range function enabled may in some cases produce an unnatural appearing image.
- Depending on the surrounding conditions, for example, when the light sources of light and dark areas are different, an unnatural appearing image may be produced.
- Image processing after shooting may take some time.

99 English

High sensitivity mode setting

When you shoot in the high sensitivity mode, the captured image appears even brighter than that specified by the ISO sensitivity and exposure compensation settings.

CAUTION

Limitations of the high sensitivity mode

- When the shutter speed is reduced to create a bright image, video clip motion will appear uneven during playback.
- When shooting in a dark environment, the autofocus and auto exposure may not function effectively.
- If the video clip setting is ⬜ or ⬜, it changes to ⬜.

Digital zoom setting

This setting allows you to specify whether or not the digital zoom is enabled during zoom shooting.

HINT

- The digital zoom does not function in the following situation:
  When the still image mode is set to 12M.

RECORDING MENU 3

Exposure compensation

By assigning the exposure compensation operation shortcut to the SET button
(pages 126 and 130), you can make the image lighter or darker when
capturing images.

1 Assign the operation
   shortcut to the SET button
   (pages 126 and 130).

2 Toggle the SET button in
   the direction for which the
   operation shortcut was
   assigned.
   • The exposure
     compensation bar
     appears.

3 Toggle the SET button to
   the left or right to adjust the
   exposure.
   • The exposure
     compensation numerical
     value is shown at the left
     end of the exposure
     compensation bar.
   • The exposure
     compensation can be set
     to a value from −1.8 EV to
     +1.8 EV.
   • The exposure
     compensation bar is
     canceled when the MENU
     button or the SET button is
     pressed.

SET button

Pointer

Exposure compensation bar

101 English
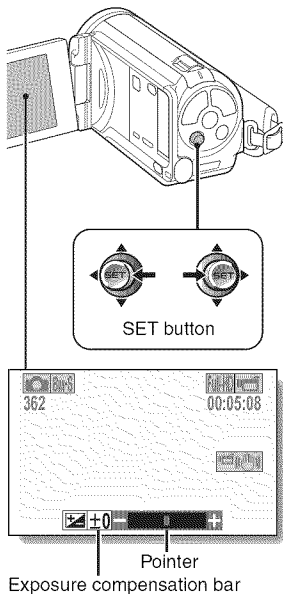
The exposure compensation setting is canceled in the following cases:
- When the pointer is set to the center position.
- When the camera is set to the playback mode.
- After the power is turned off.
- When the camera is set to the standby mode.

Field of view

By using the shortcut function to assign the field of view setting (photo view) to the SET button (pages 126 and 130), you can select whether the photo view or the video view is shown on the recording screen. You can easily see the actual recording area when the field of view for the specific recording mode is selected.

Video view

Toggle the SET button in the direction corresponding to the assigned function.

Photo view

Toggle the SET button in the direction corresponding to the assigned function.

Video clip recording area

NORMAL/SHOOTING
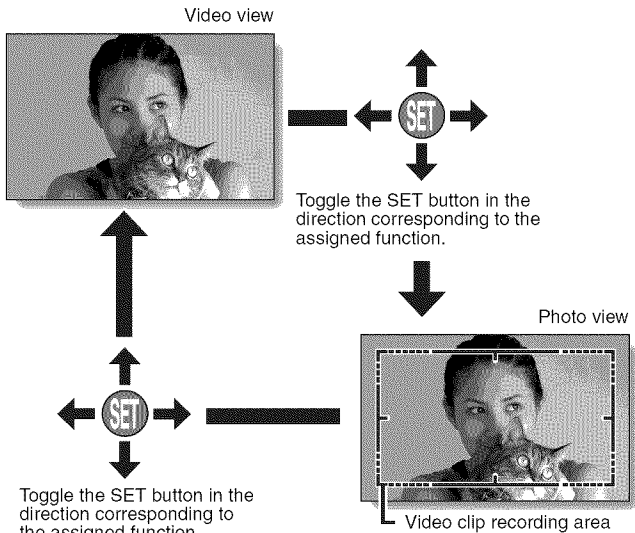
PLAYBACK MENU 1

Specify the settings for playing back files continuously in a "slideshow" format. In a slideshow of still images, you can set the transition time, transition effects and BGM.

Changing a setting

1 Select the item you wish to change, and press the SET button.

2 Toggle the SET button up or down to change the setting.

3 Press the SET button.

```
┌─────────────────────────┐
│  🎬 SLIDESHOW            │
│  MODE      ▶    ALL      │
│  TIME      ▶    1sec     │
│  EFFECT    ▶    OFF      │
│  BGM       ▶    OFF      │
│        START             │
│  MENU ⤶        OK        │
└─────────────────────────┘
```
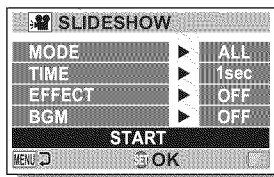
Begin the slideshow

1 Select "START" and press the SET button.
  • Slideshow playback begins.
  • To stop slideshow playback, press the SET button or MENU button.

HINT
BGM for video clips?
  • When video clips are played back in a slideshow, the recorded audio track is played back; the BGM is not played.

103 English

File protect setting

Prevent accidental erasure of image and audio files.

Protect files one by one

1 Display the file that you want to protect from accidental erasure, and display the NORMAL Mode Playback Menu (page 44).

2 Select "PROTECT" and press the SET button.

3 Select "PROTECT SINGLE" and press the SET button.
  • "LOCK" appears.
  • If the protect mode has already been enabled for the file, then "UNLOCK" appears.

PROTECT

LOCK
EXIT

MENU OK
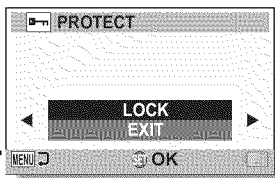
4 Toggle the SET button up or down to select "LOCK", and press the SET button.
  • The protect mode is set for the file.
  • The protect mark 🔒 indicates that the file is locked.

NORMAL/PLAYBACK

CAUTION
  • Even if the protect mode is set for certain files, they will be deleted if the card is reformatted.

HINT
To select a different image in steps 2 and 3...
  • Toggle the SET button to the left or right.
To cancel the protect mode for a file...
  • Display the desired file and repeat steps **1** to **3**. The protect mark 🔒 will disappear and the protect mode is canceled.

PLAYBACK MENU 1

Protect selected files

Select multiple files to protect.

---

1 Display the NORMAL Mode Playback Menu (page 44).

---

2 Select "PROTECT" and press the SET button.

---

3 Select "PROTECT SELECTED" and press the SET button.
   - Toggle the SET button left, right, up or down to move the orange frame to the file you wish to protect.

---

4 Press the SET button.
   - The selected file is marked with the protect icon [⌼].
   - To cancel a protect selection and remove the protect icon from a file, move the orange frame to the marked file and press the SET button.

Resize

A captured image can be resized to a smaller size and saved as a separate image.

HINT
Why can't the image be resized?
• An image can be resized only to a smaller (or the same) size, not to a larger size.

Rotate

Captured still images can be rotated to the correct orientation for viewing.

HINT
• An image for which the protect mode has been enabled cannot be rotated. To rotate a protected image, cancel the protect mode before beginning the rotate image procedure (pages 55 and 104).

NORMAL/PLAYBACK

PLAYBACK MENU 2

Correcting the image

Repair the red-eye effect in still images to make the eyes appear more natural, enhance the contrast, or correct a blurry image due to camera shake.

HINT

If the "Contrast correction not successful", "Red-eye correction not successful" or "Blur correction not successful" message appears...
- The camera was not able to successfully repair the image.
- The correction function works to automatically edit flaws that the camera detects in captured images. In some cases, the camera may fail to correct a flaw.

Concerning the date and time information for the saved image
- When an image is corrected and saved, the recorded date and time of capture (Exif information) remains unchanged from the original image. However, the file date shown on the computer changes to the date and time the image was revised.

Editing video clips

You can trim away unwanted portions from a video clip and save it as a new video clip (video clip cutting [extracting]). You can also join video clips together and save them as one separate clip ("joining").

Procedure to cut (extract) a portion of a video clip

Specify the frames (①, ②) where the video clip is to be cut.

▼
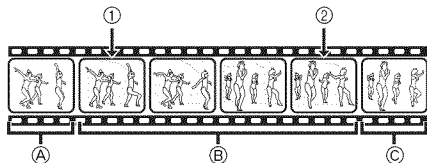
Extract the specified portion.

[Two ways to cut the video clip]

• Trim away portions Ⓐ and Ⓒ, and save portion Ⓑ.

• Delete portion Ⓑ, and join portions Ⓐ and Ⓒ.

• The original video clip is not affected.

(You can also choose to erase the original video clip when the new clip is saved.)

PLAYBACK MENU 2

Procedure to join video clips

Specify the video clip that will come first.

▼

Specify the video clip that you wish to append (join).

▼

Join the video clips.

- The video clips are joined.

- The original video clips are not affected. (You can also choose to erase the original video clips when the new clip is saved.)
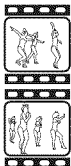
CAUTION

Caution when editing video clips

- When editing video clips, do not press the REC/PLAY button. If you press the REC/PLAY button while editing video clips, not only will the editing not be properly completed, but the original video clip may also be erased.
- As the number or size of the video clips increases, the card memory may become full, making it impossible to edit or save the video clips. In this case, you will need to free some of the memory on the card by deleting files that are no longer necessary (pages 55 and 79).

Regarding the capture date of the saved files

- The capture date of edited images changes to the date that the files are saved.

PLAYBACK MENU 2

Video clip cutting (extracting)

1 Display the video clip from which you wish to extract a segment.

2 Display the NORMAL Mode Playback Menu (page 44), select "EDIT VIDEO", and press the SET button.

3 Select "CUT" and press the SET button.
  • The Cutting Screen appears.
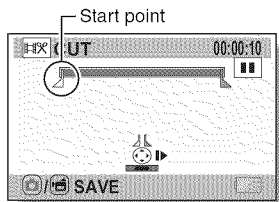
4 Specify the start point of the extract.

- Use the procedure below to specify the frame from which the video clip extract will start.
- Play the video clip until approximately the desired point, pause the video clip, then play the video clip one frame at a time, stopping at the start point of the extract. This will be the first frame of the extract.
- If the start point of the video clip is also the start point of the extract, proceed to step **5**.

<Procedure>

Play:
After pausing playback, press and hold the SET button to the right for about 2 seconds for forward playback, or to the left for reverse playback.

Pause:
During playback, press the SET button.

Accelerated playback:
During playback, toggle the SET button to the left or right to change the playback speed.

Single frame:
After pausing playback, toggle the SET button to the right to move forward one frame, or to the left to move back one frame.

PLAYBACK MENU 2

5 Toggle the SET button up.

- The start point of the video clip extract is set, and the screen to specify the end point appears.
- Specify the end point of the extract by following the same procedure as in step **4**.

<When joining the first and latter portions>

① Toggle the SET button down.
- Each time the SET button is toggled down, the sections to delete and the sections to save are reversed.

② Specify the end point of the extract. The frame following the end point of the extract will be the start point of the latter portion to be joined.

Approximate playback time

End point

Portion to be deleted
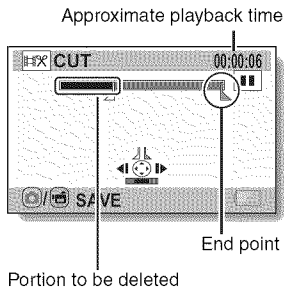
6 Press the [🗖 / 🎬] button.

- A screen appears for you to select either to save the edited video clip as a new (separate) file, or to delete the original video clip and replace it with the edited video clip.

SAVE AS NEW:
The edited video clip will be saved as a new file. The original video clip remains unchanged.

OVERWRITE:
The original video clip will be deleted. Only the edited video clip will be saved.

REVIEW CLIP:
Play back the edited video clip before saving it.

113 English

7 Select the desired option, and press the SET button.

- Editing starts.
- When editing ends, you are returned to the NORMAL Mode Playback Menu.

HINT

- You will not be able to overwrite the file if the original file is protected.
- If the "Insufficient memory remaining" message appears, you will need to free some of the memory by deleting files that you do not need to keep.

CAUTION

Warning concerning the battery pack remaining charge

- During the editing of lengthy video clips, the time to process the large amount of data can become quite long. To avoid problems caused by the battery pack becoming depleted in the middle of video clip editing, before starting to edit be sure that a sufficiently charged battery pack is installed in the camera, or connect the AC adaptor.
- It is recommended that a computer be used to edit long video clips.

NORMAL/PLAYBACK

PLAYBACK MENU 2

Joining video clips

CAUTION
* Video clips that were photographed in different modes cannot be joined.

---

1 Display the NORMAL Mode Playback Menu (page 44), select "EDIT VIDEO", and press the SET button.

---

2 Select "JOIN" and press the SET button.
* The 8-image playback display for video clips appears.

---

3 Move the orange frame to the video clip you wish to join, and press the SET button.
* The specified video clip is labeled with a number.
* Up to 9 video clips can be selected.
* To cancel a selection and remove the number label from a video clip, select the video clip and press the SET button.

---

115 English

4 Press the [◘ / 🎥] button.

- A screen appears for you to
  select either to save the joined
  video clip as a new (separate)
  file, or to delete the original video
  clips and replace them with the
  joined video clip.

SAVE AS NEW:
The joined video clip will be saved
as a new file. The original video
clips remain unchanged.

OVERWRITE:
The original video clips will be
deleted. Only the joined video clip
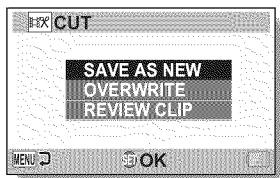will be saved.

REVIEW CLIP:
Play back the joined video clip
before saving it.

5 Select the desired option, and press the SET button.

- Editing starts.
- When editing ends, you are returned to the NORMAL Mode Playback
  Menu.

HINT

- If the file size of the video clip after editing exceeds 4 GB, it is not possible
  to either "SAVE AS NEW" or "OVERWRITE".
- You will not be able to overwrite the file if the original file is protected. If you
  want it to be erased, you will need to first remove the protection (pages 55
  and 104).
- If the "Insufficient memory remaining" message appears, you will need to
  free some of the memory by deleting files that you do not need to keep.

CAUTION

Warning concerning the battery pack remaining charge

- During the editing of lengthy video clips, the time to process the large
  amount of data can become quite long. To avoid problems caused by the
  battery pack becoming depleted in the middle of video clip editing, before
  starting to edit be sure that a sufficiently charged battery pack is installed
  in the camera, or connect the AC adaptor.
- It is recommended that a computer be used to edit long video clips.

NORMAL/PLAYBACK

English **116**

PLAYBACK MENU 2

Printing instructions

In addition to using your printer to print out still images captured with your camera, as with conventional film, you can have prints made at shops offering digital print services. Moreover, this camera is DPOF-compatible, so you can use the camera to specify the number of prints, whether or not the date is displayed on the print, and also to request an index print.

Display the Printing Instructions Screen

1 Display the NORMAL Mode Playback Menu (page 44), select "PRINT INSTRUCTIONS", and press the SET button.
ALL IMAGES:
The specified printing instructions apply to all the images.
EACH IMAGE:
The printing instructions are specified for each individual image.
INDEX:
All the still images are printed as miniature images (thumbnail images), several images on one print.
ALL CLEAR:
Clear all the printing instructions. This cannot be selected if no printing instructions have been specified for the image.
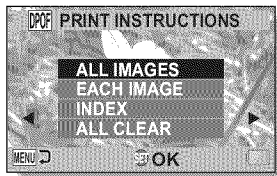
HINT

Printing a single frame from a video clip

- To print with a printer or have the digital print service shop print out a still image from a video clip, you must first save it (extract still) as a still image (page 76).

About the DPOF format

- DPOF (Digital Print Order Format) is a print order format. You can connect your camera to a DPOF-compatible printer to produce your prints. You can also set the printing instructions for the desired images, and then have the requested images printed automatically (page 151).

About the finished prints

- Rotated images (pages 55 and 106) will be printed in their original orientation.
- The quality of the print output will differ depending on the print service and printer used.

Specifying date imprinting and print quantities

You can specify printing instructions for each individual image (EACH IMAGE), or apply the printing instructions to all the images (ALL IMAGES).

1 Display the Printing Instructions Screen (page 117).

2 Select "ALL IMAGES" or "EACH IMAGE".
   ALL IMAGES:
   The printing instructions are applied to all the images.
   EACH IMAGE:
   The printing instructions are applied only to the image currently displayed.
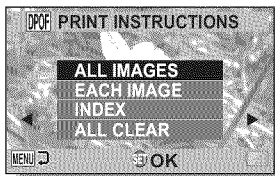
3 Press the SET button.

- The Date/Copies Print Screen appears.
- If "EACH IMAGE" was selected, toggle the SET button to the left or right to display the desired image to print.
- The printing instructions that are currently active for the displayed image are shown. You can toggle the SET button to the left or right to confirm the printing instructions for each image.
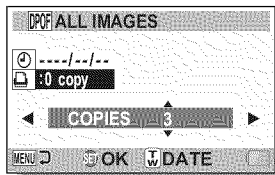
Printing instructions

<Completed printing instructions>
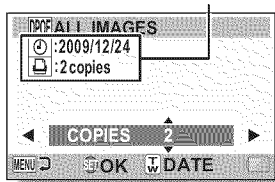
4 Specify whether the date is displayed on the print, and the number of prints.

<Specify the number of prints>
- Toggle the SET button up or down.
  - The quantity indication changes.
  - Display the desired number of prints.
- Press the SET button.
  - The number of prints is set.

<Specify dated prints>
- From the screen on which the number of prints is set, press the zoom switch.
- Press the SET button.

Dated prints
Quantity

```
DPOF ALL IMAGES
⏱ :2009/12/24
🖶 :0 copy

◄    COPIES    1    ►

MENU↩    ⬤OK    🔍DATE
```
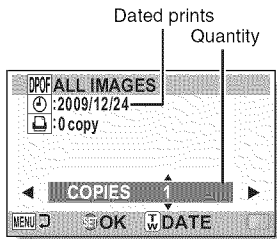
5 Press the MENU button.
- The printing instructions for the requested print quantities and dated prints are stored.
- The display returns to the Printing Instructions Screen.

HINT

Can't specify dated prints?
- Dated prints are not possible for photos that were captured before the camera's date and time setting was completed.

Index print

Printing out many small images on one sheet is called an "index print". This is convenient for use as a list of the images you have captured.

FILE INFO DISPLAY

On the Information Screen you can check what the settings were when a file was recorded with your camera.

1 Display the desired file on the camera monitor.

2 Press the MENU button for at least 1 second.
   - The Information Screen appears.
   - If the MENU button is pressed again, the Information Screen is canceled.
   ① Video clip mode settings
   ② Image or sound number
   ③ Protect setting
   ④ File size
   ⑤ Shooting or recording time
   ⑥ Exposure compensation setting
   ⑦ Aperture value
   ⑧ Shutter speed
   ⑨ Remaining battery charge
   ⑩ Date and time of image
   ⑪ Still image resolution settings
   ⑫ ISO sensitivity setting

ⓘ INFO 100-0001
HD-SHQ
1280x720 30fps SHQ 11.9MB
MPEG-4 AVC/H.264 00:00:03

EXPOSE ►+0.3

2009.12.25 19:30

<Video clip file>

ⓘ INFO 100-0002
2M
1600×1200 987KB
IRIS ►F6.8
SHUTTER ►1/1000
EXPOSE ►+0.3
ISO ►50
2009.12.25 19:30

<Still image file>

ⓘ INFO 100-0003
987KB
AAC 00:00:03

2009.12.25 19:30

<Audio file>
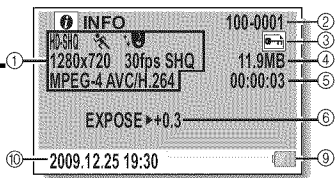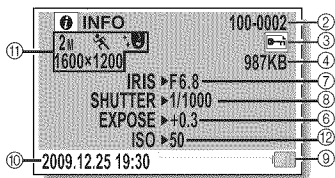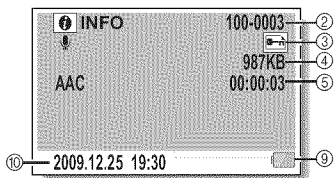
DISPLAY THE OPTION SETTING MENU

The camera settings are executed via the Option Setting Menu.

1 **Turn on the camera, set it to the NORMAL mode, and press the MENU button.**

RECORDING MENU 1
VIDEO
PHOTO
SCENE SELECT
FILTER
FLASH
SELF-TIMER
EXIT OK

Option tab

2 **Select an Option tab (1, 2 or 3), and press the SET button.**
- The Option Setting Menu appears.
- If you toggle the SET button to the right, the screen to select a setting to change appears.

OPTION MENU 1
CLOCK SET
INFO DISPLAY
STARTUP DISPLAY
OPERATION BEEP
POST VIEW
REC FOLDER
EXIT OK
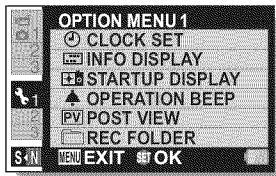
To access a Setting Screen

3 **Toggle the SET button up or down to select the item you wish to set, and press the SET button.**
- The Setting Screen for the selected item appears.
- To return to the Menu Screen, press the MENU button.

OPTION SETTINGS

INTRODUCTION TO THE OPTION SETTING MENU

Tab 1


```
OPTION MENU 1
🕐 CLOCK SET                ——①
🔲 INFO DISPLAY             ——②
🔳 STARTUP DISPLAY          ——③
🔺 OPERATION BEEP           ——④
PV POST VIEW                ——⑤
📁 REC FOLDER               ——⑥
MENU EXIT  SET OK        ▮  ——⑦
```
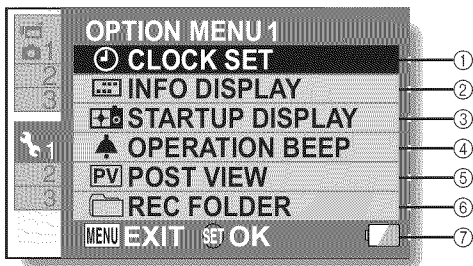
① **CLOCK SET setting (page 38)**
- Set the camera's clock.

② **INFO DISPLAY setting**
- Specify the information to display on the playback screen.

  SHOW ALL:
  Display the capture date and playback time (video clips).

  DATE & TIME:
  Display the capture date.

  COUNTER:
  Display the playback time when playing back a video clip.

  OFF:
  Do not display the capture date or playback time.

③ **STARTUP DISPLAY setting**
- Select the display that appears on the monitor when the camera is turned on in the recording mode.

  DATE & TIME:
  The camera's date and time setting is shown.

  Xacti:
  The Xacti logo is shown.

  OFF:
  No startup display.

④ **OPERATION BEEP setting**
- Settings for the camera's operation sounds, audio guide and volume.

  TURN ON/OFF:
  Mute or enable the sounds when the camera is turned on or off.

  SHUTTER:
  Select the sound that is produced when the [🔘] button is pressed.

KEY SW:
Select the sound that is produced when the SET button, MENU button, etc. are pressed.

AUDIO GUIDE:
Mute or enable the camera's audio help guide.

OPERATION VOL:
Adjust the volume of the operation sounds.

⑤ **POST VIEW setting**
- Specify the duration that the captured image is shown on the monitor (post-view) after the [🔘] button is pressed.

⑥ **REC FOLDER setting (page 129)**

⑦ **Remaining battery charge display (page 142)**

OPTION SETTINGS

INTRODUCTION TO THE OPTION SETTING MENU

Tab 2
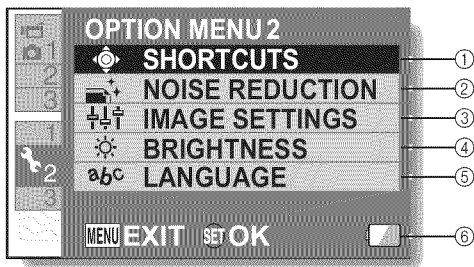
① **SHORTCUTS setting**
(page 130)

② **NOISE REDUCTION setting**
- Compared to normal shooting, when the PHOTO NR function is ON, the image processing time after shooting a still image is slightly longer.

VIDEO NR:
Turn ON/OFF the image noise reduction function during video clip recording.

PHOTO NR:
Turn ON/OFF the image noise reduction function during still image shooting.
- If the photo stabilizer and/or photo Wide-D range setting is ON, the PHOTO NR setting is automatically turned OFF. In addition, it is turned off during sequential shots shooting.

WIND SOUND NR:
Turn ON/OFF the wind noise reduction function during video clip/audio recording.

③ **Image quality setting**
- Set the vividness and sharpness of the images.

④ **BRIGHTNESS setting**
- Adjust the brightness of the camera's monitor display.

⑤ **LANGUAGE setting**

⑥ **Remaining battery charge display (page 142)**

INTRODUCTION TO THE OPTION SETTING MENU

Tab 3

OPTION MENU 3
- ▢ TV OUTPUT — ①
- PS POWER SAVE — ②
- No. FILE NO. CONT'D — ③
- SD FORMAT — ④
- RESET RESET SETTINGS — ⑤

MENU EXIT SET OK — ⑥
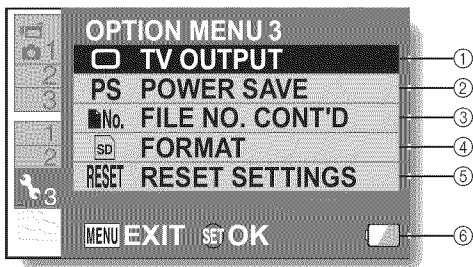
① **TV OUTPUT setting (page 132)**
② **POWER SAVE setting (page 36)**
  • Specify the elapsed period of inactivity before the power save mode (to conserve battery power) is activated.
③ **FILE NO. CONT'D setting (page 137)**
④ **FORMAT (page 139)**
⑤ **RESET SETTINGS**
  • Reset the camera settings to the factory-preset settings.
  • The following settings do not change with this procedure:
    Date and time setting
    Language setting
    TV system setting
⑥ **Remaining battery charge display (page 142)**

OPTION SETTINGS

INTRODUCTION TO THE OPTION SETTING MENU

Storage folder setting

Create or select a recording folder (a folder in which to store recorded files).

1 **Select "REC FOLDER", and press the SET button.**
<Create a new folder>
  • Select "CREATE NEW FOLDER".
<Select an existing folder>
  • Select the desired folder number.

REC FOLDER
CREATE NEW FOLDER
100SANYO

MENU ↰   SET OK
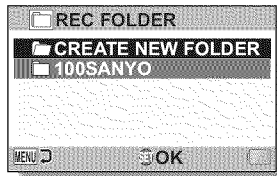
2 **Press the SET button.**
  • This completes the create/select folder setting.
  • If you created a new folder, it automatically becomes the selected recording folder.

CAUTION
When an existing folder cannot be selected or a new one created...
  • A folder cannot be selected if it was created using a different device, or if it already contains the maximum number of files.

Assign functions (operation shortcuts) to the SET button when it is toggled up, down, left or right when the Recording Screen is displayed.

1 Select "SHORTCUTS", and press the SET button.

⊙ : Assign the function when the SET button is toggled up.

⊙ : Assign the function when the SET button is toggled down.

⊙ : Assign the function when the SET button is toggled to the left.

⊙ : Assign the function when the SET button is toggled to the right.

RECOMMENDED SETTINGS:
The most commonly used settings are automatically assigned.

⊙ **SHORTCUTS**

⊙	►	OFF
⊙	►	OFF
⊙	►	OFF
⊙	►	OFF

RECOMMENDED SETTINGS

| MENU ⊃ | SET OK | |

SET button operations

2 Select the SET button operation to which you wish to assign the function, and press the SET button.

• The screen to assign a function to the key appears.

OFF: No operation shortcut is assigned to the key.

AF🔒 **AF LOCK:** Lock the focus (page 65).

AE🔒 **AE LOCK:** Lock the exposure setting (page 65).

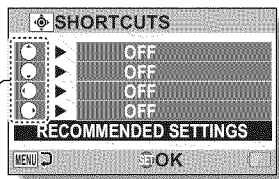❁ **FOCUS:** Set the focus range (pages 61 and 93). (This operation shortcut can be assigned only to the ⊙ or ⊙ key.)

⚡ **FLASH:** Set the flash operation (pages 46, 50 and 66).

☒ **EXP COMPENSATION:** Adjust the exposure (page 101).

ISO **ISO:** Set the ISO sensitivity (pages 52 and 95).

⟳ **SELF-TIMER:** Set the self-timer (pages 50 and 91).

M **EXPOSURE:** Set the exposure value for the exposure setting (pages 54 and 97).

▦ **DISP. ON/OFF:** Turn the shooting settings display on/off.

▣ **SEQUENTIAL:** Set the image size for single shots and sequential shots.

▣ **PHOTO VIEW:** Switch the field of view.

OPTION SETTINGS

English **130**

INTRODUCTION TO THE OPTION SETTING MENU

3 **Toggle the SET button up or down.**
   - Display the function you wish to assign to the key.

4 **Press the SET button.**
   - The selected function is assigned to the key, and you are returned to the Shortcuts Screen.
   - To assign functions to the other keys, repeat steps **2** through **4**.

<When "RECOMMENDED SETTINGS" is selected>
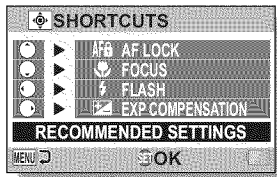
5 **Press the MENU button.**
   - The screen to confirm the shortcut settings appears, and then you are returned to the Option Setting Menu.
   - This completes the shortcuts setting.

   <To confirm the assigned shortcuts>
   - On the screen in step **1**, press the MENU button, and the screen to confirm the shortcut settings appears.
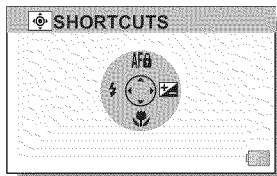
TV output setting

Specify the type of image signal that is output from your camera's COMPONENT/AV terminal or HDMI terminal.

1 **Select "TV OUTPUT", and press the SET button.**
TV SYSTEM:
Set the type of TV signal that is output from the COMPONENT/AV terminal.
TV TYPE:
Set the TV's aspect ratio.
HDMI:
Set the signal that is output from the HDMI terminal.
HDMI-CEC:
Set the HDMI-CEC function.
COMPONENT:
Set the signal that is output from the COMPONENT/AV terminal.

□ TV OUTPUT		
TV SYSTEM	►	NTSC
TV TYPE	►	16:9
HDMI	►	1080i
HDMI-CEC	►	OFF
COMPONENT	►	1080i
MENU ⤴		OK

OPTION SETTINGS

English **132**

INTRODUCTION TO THE OPTION SETTING MENU

2 Select the desired setting, and press the SET button.

• The screen to change the parameter for the selected setting appears.

<If "TV SYSTEM" is selected>

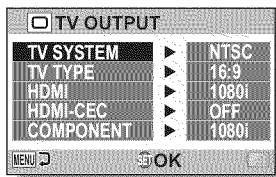**NTSC:** Outputs NTSC video signals.
PAL: Outputs PAL video signals.

<If "TV TYPE" is selected>

4:3: Use this setting when a TV having an aspect ratio of 4:3 is connected.
16:9: Use this setting when a TV having an aspect ratio of 16:9 is connected.

<If "HDMI" is selected>

AUTO: The output signal is automatically set to match the mode in which the video clip was recorded.
1080p: Choose this setting if the video was recorded in the [Full-HR] or [Full-SHQ] mode.
720p: Choose this setting if the video clip was recorded in the [HD-SHQ] mode.
1080i: Choose this setting if the video clip was recorded in the [Full-HD] mode.
480p: Choose this setting if the video clip was recorded in the [TV-SHQ] mode.

• Does not work with 480i connector.

<If "HDMI-CEC" is selected>

ON: Sets the HDMI-CEC function to "ON".
OFF: Sets the HDMI-CEC function to "OFF".

<If "COMPONENT" is selected>

1080p: Choose this setting if the video was recorded in the [Full-HR] or [Full-SHQ] mode. (Also, choose this setting if your TV is equipped with a 1080p connector.)
720p: Choose this setting if the video clip was recorded in the [HD-SHQ] mode. (Also, choose this setting if your TV is equipped with a 720p connector.)
1080i: Choose this setting if the video clip was recorded in the [Full-HD] mode. (Also, choose this setting if your TV is equipped with a 1080i connector.)
480p: Choose this setting if the video clip was recorded in the [TV-SHQ] mode. (Also, choose this setting if your TV is equipped with a 480p connector.)

• Does not work with 480i connector.
• Select the setting that matches the mode in which the video clip was recorded. However, your TV may not support the recorded mode, so please refer to the specifications for the TV type indicated in parentheses.

133 English

3 Toggle the SET button up or down to select the desired parameter.

4 Press the SET button.

5 Press the MENU button.
  • This completes the TV output setting.

HINT
About the HDMI-CEC function
  • This is a system control function by which, through an HDMI cable, a control signal is output to electronic devices and the operation of multiple devices is coordinated.
  • The HDMI-CEC function will operate correctly only when the camera is connected to a SANYO TV that incorporates the HDMI-CEC function.
  • When the HDMI-CEC function is used, your TV's remote control unit can be used to operate the camera playback; however, it does not work to turn the camera ON. In addition, in the playback mode, the camera's power save function is disabled.
  • For information concerning connecting and operation, please see your TV's instruction manual.
  (As of May 2008, SANYO TVs that incorcorporate the HDMI-CEC function have not been released.)

OPTION SETTINGS

INTRODUCTION TO THE OPTION SETTING MENU

Relation between "TV TYPE" setting and TV display

The tables below show the video signal that is output when the "TV TYPE" setting is changed. However, note that for some TVs that have an auto-detect function, the output may not conform to the table, or the TV display may not change at all.

"TV TYPE" setting	TV type to be connected	Image file to be displayed	TV display
4:3	4:3	Still image (4:3)	
		Video clip in SD mode	
		Video clip in HD mode	

"TV TYPE" setting	TV type to be connected	Image file to be displayed	TV display
16:9	16:9	Still image (4:3)	
		Video clip in SD mode	
		Video clip in HD mode	

CAUTION

If the TV display is not correct…

- If the appearance of the image on the TV monitor is not correct, you can either change the camera's "TV TYPE" setting, or change the screen size setting on your TV. To change the screen size setting on your TV, please refer to the instruction manual for your TV.

The aspect ratio of the output still image does not change to 16:9?

- The still image output will be 4:3 for images captured in a 4:3 still image mode.

INTRODUCTION TO THE OPTION SETTING MENU

File No. continued setting

If a newly formatted card is used, the file name (image number) of the captured image automatically begins from 0001. If the card is subsequently reformatted, or if a different reformatted card is used, the file names again begin from 0001. This is because the file number continued function is set to "OFF", and consequently it results in more than one card containing images with the same numbers. By setting the file number continued function to "ON", even if the card is reformatted or the card is replaced with another card, the consecutive numbering of file names continues from the last number recorded by the camera.

<File number continued function "OFF">

	File name (image number)
Card A	0001, 0002......0012, 0013

Replace card

Card B	0001, 0002......0012, 0013

<File number continued function "ON">

	File name (image number)
Card A	0001, 0002......0012, 0013

Replace card

Card B	0014, 0015....... 0025, 0026

- If Card B already has files in it when it replaces Card A, file names are assigned as follows.

  When the highest file number on Card B (before replacing) is lower than the highest file number on Card A: the file name of the next recorded image continues from last file name recorded on Card A.

Card A	0001, 0002 ..... 0012, 0013

Replace card

Card B	0001, 0002, 0014, 0015 ..... 0025, 0026

Previously recorded files
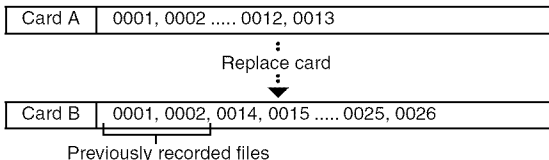
  When the highest file number on Card B (before replacing) is higher than the highest file number on Card A: the file name of the next recorded image continues from last file name recorded on Card B.

Card A	0001, 0002 ..... 0012, 0013

Replace card

Card B	0020, 0021, 0022, 0023 ..... 0025, 0026

Previously recorded files
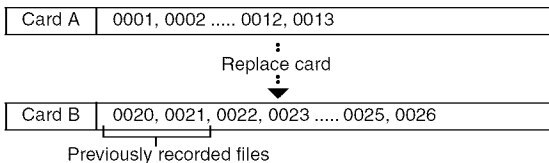
HINT
- Until the file number continued function is turned "OFF", consecutive file names are assigned. It is recommended that the file number continued function be returned to "OFF" at the end of each photography session.

OPTION SETTINGS

INTRODUCTION TO THE OPTION SETTING MENU

Formatting (initializing)

A card must be formatted with this camera:
- After purchasing, when used for the first time, or
- If it was formatted using a personal computer or another digital camera.

The card cannot be formatted if the lock switch is set to the "LOCK" position. Proceed with the format procedure after setting the lock switch to the unlocked position.

CAUTION

Caution during formatting
- Do not turn off the power to the camera or eject the card during formatting.

Formatting erases the data
- When a card is formatted, all data recorded on the card is erased. Protected data (pages 55 and 104) is also erased, so before formatting a card, any data you want to keep should be copied to your personal computer's hard disk or other storage medium.

Caution regarding disposing/transferring the card (recovering data from a reformatted card)
- If a card is reformatted or the data is erased from the card using the camera or a computer, the card's control data may be merely modified and the data itself may not be completely erased from the card.
- In some cases it may be possible to recover the data from a reformatted card using special software for that purpose. However, if the camera is used to execute a full format, it will be impossible to recover the data even by the use of data recovery software.
- If you are disposing of a card, it is recommended that you physically destroy it. If you are transferring the card to someone else to use, it is recommended that you use the camera's full format function to reformat the card, or use commercially available software for erasing card data. Managing data is the responsibility of the user.

CHECKING THE REMAINING CARD MEMORY

You can check how many images can be captured and how much recording time is available on the card. For a table showing the maximum number of images and recording time for specific cards, please see "Possible No. of Images/Possible Shooting Time/Possible Recording Time" on page 180.

Checking the remaining number of images and video recording time

1 **Set the camera to the playback mode (page 41).**

- The remaining number of images appears in the upper left of the monitor.
- The remaining video recording time appears in the upper right of the monitor.
- The remaining number of images and video recording time will differ depending on the resolution and compression settings.

Remaining number of images

Remaining video recording time

362

00:05:08
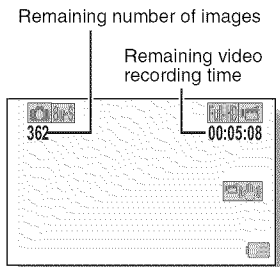
CHECKING THE REMAINING CARD MEMORY

For audio recordings

1 **Set the camera to the audio recording mode (page 86).**
  - The remaining audio recording time is shown.

Remaining time

```
368                    07:47:54
```
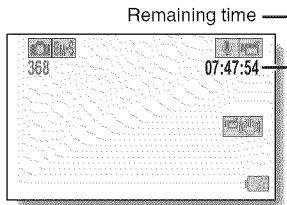
HINT
- When the remaining number of images or the remaining video recording time is "0", you cannot capture any more images. To capture more images, either install a new card, or save the images to a computer and then delete them (page 79) from the card.
- When the remaining number of images or the remaining video recording time is "0", it may be possible to capture a few more images by selecting a different image quality setting (pages 60, 85 and 89).

CHECKING THE REMAINING BATTERY PACK CHARGE

When using the battery pack, the remaining battery pack charge can be checked on the monitor. Make sure to check this indicator before capturing an image. For an indication of the possible length of time for battery pack operation, see page 179.

1 Display the Recording Menu or Playback Menu (page 44).

- The battery pack remaining charge indicator appears in the lower right corner of the monitor.
- Due to the battery pack characteristics, when the ambient temperature is low, 🔲 may appear early for an incorrect indication of the remaining charge.
Also, depending on the conditions of use of the camera or the ambient conditions (temperature, etc.), the indicated remaining charge may change. Therefore, this indication can only be used as a general approximation of the remaining charge.

Battery pack remaining charge indicator

Remaining battery time indication

<Recording Screen>

OPTION SETTINGS

CHECKING THE REMAINING BATTERY PACK CHARGE

Battery pack remaining charge indicator	Battery remaining charge
▨	Approx. full.
▨	Sufficient power for recording and playback.
▨	Power is low.
▯	It will soon be impossible to capture or play back images.
▯	If this icon flashes when the [◉] button or [🎥] button is pressed, images cannot be captured. Recharge the battery pack.

• The approximate remaining battery time indication appears on the monitor. Please use this as a reference to estimate the remaining recording and/or playback time.

HINT
• Battery life may differ even among battery packs of the same type.
• Depending on the usage of the camera (such as the number of times the flash is used, the use of the monitor, etc.) or the ambient temperature (temperatures below 10 °C [50°F]), the number of images that can be saved on a fully charged battery pack will vary greatly.
• It is recommended that you prepare an extra battery pack(s) when taking pictures at a wedding or while traveling, for example, so you don't miss capturing images of important moments due to the battery pack power running out. The same is recommended for taking photos in cold environments. (In a ski area, for example, the battery pack can be kept warm in your pocket until ready to use.)

143 English

CONNECTING TO A STANDARD VIDEO INPUT TERMINAL

About image output: The image output destination differs depending on the connection cable.

Connection cable	Image output destination	Recording mode		Playback mode
		Standby	Recording	
Dedicated S-AV interface cable	Camera monitor	NTSC: × PAL: ○	○	×
	TV	NTSC: ○ PAL: ×	×	○
Dedicated component cable	Camera monitor	×	○	×
	TV	○	×	○
HDMI cable	Camera monitor	×	○	×
	TV	○	×	○

○: Images are output   ×: Images are not output

Supplied dedicated S-AV interface cable

Not connected*

To COMPONENT/
AV terminal

Set the input to "VIDEO".

White plug: To Audio Input (L) terminal
Red plug: To Audio Input (R) terminal
Yellow plug: To Video Input terminal
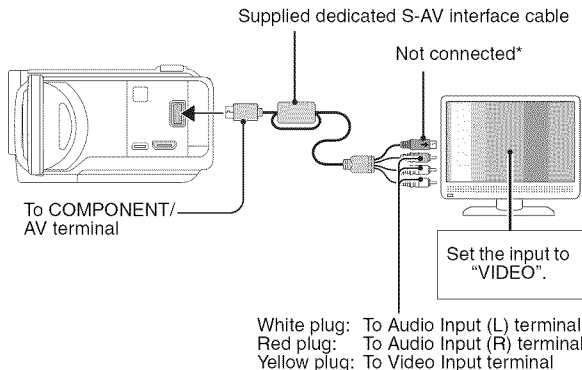
* When connected, the images are not produced normally on the TV monitor.

English **144**

ENJOY HIGHER IMAGE QUALITY

Connect to the S-VIDEO terminal
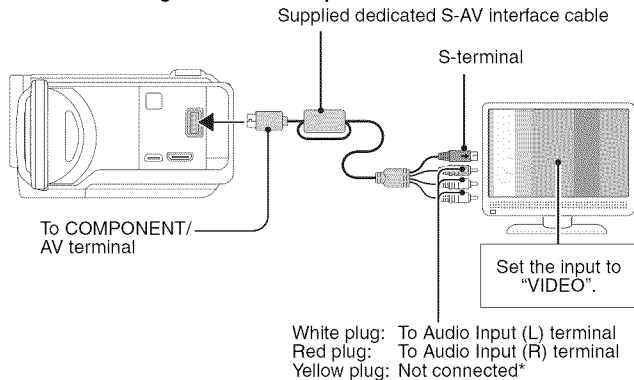
<When connecting to an S-VIDEO input terminal>

Supplied dedicated S-AV interface cable

S-terminal

To COMPONENT/
AV terminal

Set the input to
"VIDEO".

White plug: To Audio Input (L) terminal
Red plug: To Audio Input (R) terminal
Yellow plug: Not connected*

* When connected, the images are not produced normally on the TV
  monitor.

If your TV has a 480p/720p/1080i/1080p input terminal, you can enjoy the high video quality of component output from your camera.

Supplied dedicated component cable

White plug:
To Audio Input (L) terminal
Red plug:
To Audio Input (R) terminal

To COMPONENT/
AV terminal

Set the input to
"VIDEO".

To 480p/720p/1080i/1080p
input terminals
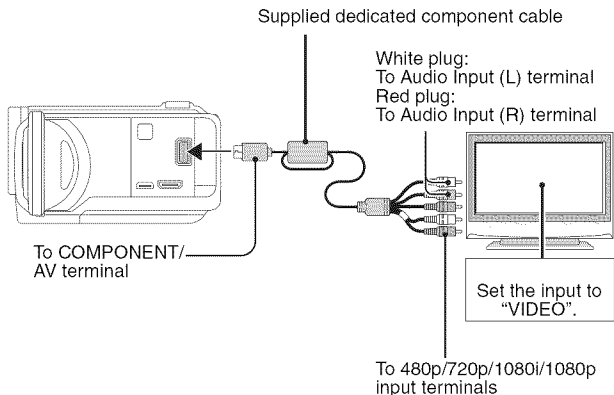
NOTE

If your TV does not have 480p/720p/1080i/1080p video input capability
• The images will not appear on the TV.
Camera Menu Screen and TV Menu Screen
• The Menu Screen appears only on the TV monitor, so please operate the camera while looking at the TV monitor.
Insert and pull out the cable carefully
• When connecting the cables, make sure that the cable plugs are correctly oriented and that they match the shapes of the terminal sockets on the devices. Push the plugs in straight when connecting them. If undue force is used to connect a cable, it may permanently damage the connector pins in the terminal socket.
• Do not use excessive force when connecting and disconnecting cables.

CONNECTING TO A TV

English **146**

ENJOY HIGHER IMAGE QUALITY

Connecting to the HDMI terminal

Mini HDMI cable
(optional)

To HDMI terminal

To HDMI terminal on the TV

Set the input to
"HDMI".
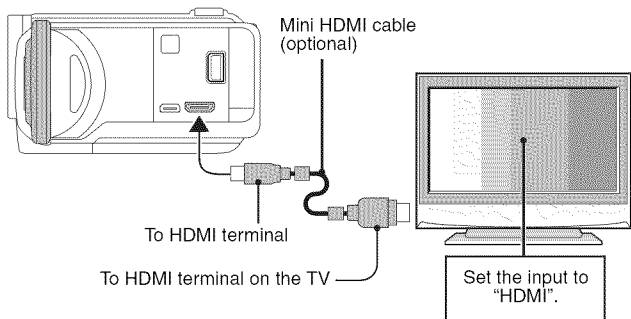
To reduce spurious radiation

• Please affix the cores (included)

<Camera end>

<TV end>

Core (large)

Core (small)

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

HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE

PLAYING BACK ON A TV

- After connecting the camera to the television, switch the TV input to the terminal to which the camera is connected.
- When the camera is connected to a TV, no image appears on the camera's monitor.
- The playback method is the same as when viewing images on the camera's monitor.
  Audio playback: see page 88
- The remote control unit can be used for playback (page 72).
- The same playback procedure as when playing back with the camera is used to play back audio recordings as well.
- Use the TV controls to adjust the playback volume. The camera's controls will not work to adjust the volume.

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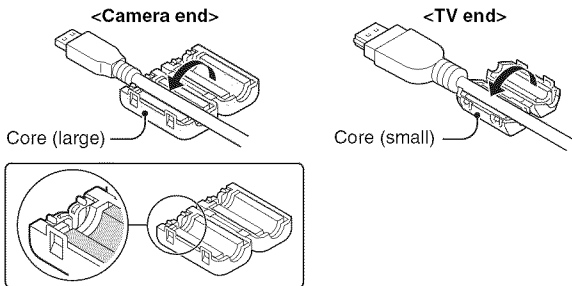- Do not use excessive force when connecting and disconnecting cables.

HINT
About the display when the "PAL" TV system is selected (page 132) and the supplied S-AV interface cable is used to connect the camera to the TV
During recording: The image appears on the monitor only; it does not appear on the TV.
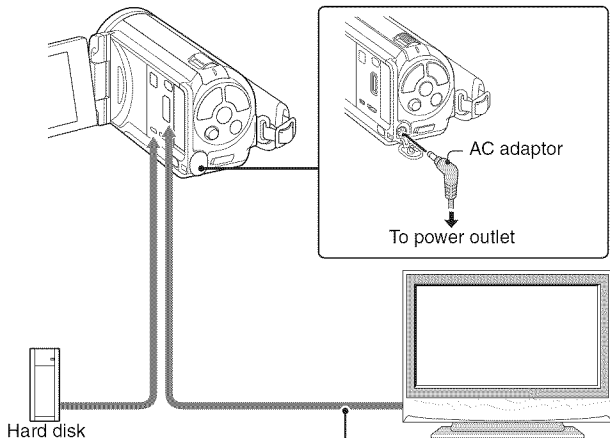During playback: The image appears on the TV only; it does not appear on the monitor.

Xacti Library

Connect all the devices.
• Please make sure that the camera and all devices are turned OFF before proceeding.
For detailed information about using Xacti Library, please see the separate Xacti Library Instruction Manual.

AC adaptor

To power outlet

Hard disk

Use the USB cable and the dedicated USB converter cable included with your camera to connect the hard disk to the camera.

Use the cable included with your camera to connect a TV to the camera.

CAUTION
Caution when disconnecting cables
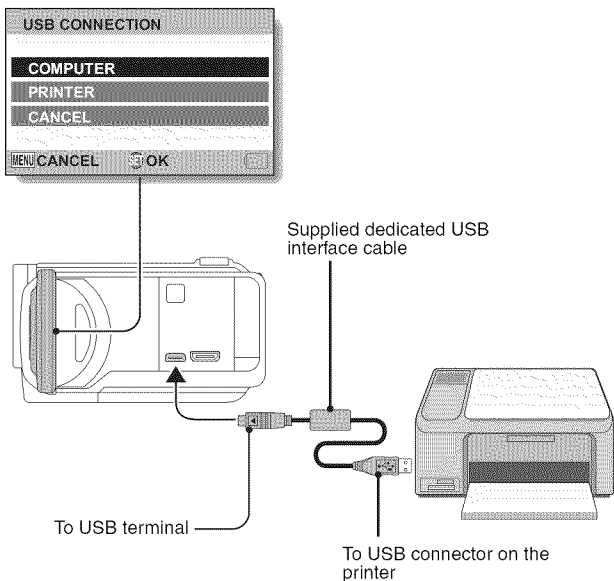• When using the Xacti Library, do not disconnect the USB cable. If the USB cable is disconnected while accessing the media, not only may the stored files be damaged, but it may also become necessary to reformat the media, and in doing so, lose all the data.
• Be sure to turn off the camera before disconnecting it. By turning off the camera, you will be able to safely disconnect the drive.

PRINTING

Your camera supports the PictBridge function. By connecting the camera directly to a PictBridge-enabled printer, the camera's monitor can be used to select images and initiate printing (PictBridge printing).

1 **Open the monitor unit to turn on the camera, and turn on the printer.**

2 **Use the supplied dedicated USB interface cable to connect the camera to the printer.**

USB CONNECTION

COMPUTER
PRINTER
CANCEL

MENU CANCEL ☐OK

Supplied dedicated USB interface cable
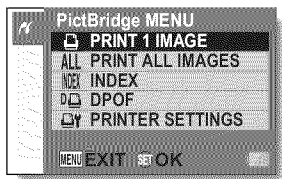
To USB terminal

To USB connector on the printer

PRINTING

3 Select "PRINTER", and press the SET button.

4 **The PictBridge printing mode is activated.**
  • The camera switches to the PictBridge printing mode, and the PictBridge Menu Screen appears.

PictBridge MENU

▢ PRINT 1 IMAGE
ALL PRINT ALL IMAGES
▦ INDEX
▢⊡ DPOF
▢♦ PRINTER SETTINGS

MENU EXIT SET OK

5 Select the desired type of printing, and press the SET button.
PRINT 1 IMAGE: Select the still images you wish to print.
PRINT ALL IMAGES: Print all the still images in the card.
INDEX: Print all the still images in the card as thumbnail images, many images per print.
DPOF: Print images according to the print order settings.
PRINTER SETTINGS: Print images according to settings specified by the camera, such as paper size, type, size, layout, printing quality, etc.

151 English

HINT

To cancel printing
① **During printing, toggle the SET button down.**
  · The confirmation screen to cancel printing appears.
② **Select "CANCEL" and press the SET button.**
  · If "EXIT" is selected and the SET button is pressed, printing resumes.

About printing all the images
• Printing is not possible if there are more than 999 images in the card.
• Delete unwanted images before printing.

About DPOF printing
• DPOF printing is not possible if your printer is not DPOF-compatible.

About the printer settings
• The printer setting parameters shown on the Printer Settings Screen will differ depending on the printer that is connected.
• To use printer values that do not appear on your camera's Printer Settings Screen, select "🖦".
• If a function set by the camera is not available in the printer, the camera's printer setting will automatically change to "🖦".

CAUTION

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

Caution when connecting a printer
• If the power to the printer is turned off while it is connected, the camera may not operate correctly. If the camera does not operate correctly, disconnect the USB interface cable, turn off the camera, and then reconnect the cable.
• During PictBridge printing, the camera's button operation response is slower.
• If the camera is powered by the battery pack for printing, make sure that the remaining battery charge is sufficient.

CONNECTING TO A PRINTER

COMMONLY ASKED QUESTIONS

If you have a question about the camera operation, you might find the answer in this compilation of commonly asked questions.

	Question	Answer	Action
Power	Why doesn't the power turn on?	Due to cold temperatures, the battery pack temporarily lost its power.	Place the camera in your pocket to warm it up before using it.
	Why is the battery pack consumed so quickly even after it was fully recharged?	The ambient temperature is very low.	Keep the battery pack in an environment of 10 to 40 °C (50 to 104°F).
	Why doesn't recharging end?	The battery pack life has expired.	Replace with a new battery pack. If this is not effective, consult your dealer.
	Why does the ⌁⌂⌁ icon appear?	The remaining battery pack power is low.	Use the supplied AC adaptor, or replace the battery pack with a fully charged one.
Shooting	Why does the multi-indicator flash red?	A recorded file is being saved on the card.	Not a malfunction. Wait until the multi-indicator turns off.
	Why doesn't the flash operate?	The camera has determined that the image is bright enough and the flash is not necessary.	Not a malfunction. Capture the image; the camera will determine when the flash is necessary.

	Question	Answer	Action
Shooting	Are the settings retained even after the camera is turned off?	—	All settings except the self-timer and the exposure compensation are retained even after the camera is turned off.
	Which resolution setting should I use?	—	Select the resolution setting according to the intended use. [12M], [8M-H], [8M-S], [6M], [8M], [4M]: Appropriate for printing letter-size or larger, and for printing a close-up of part of a photo (trimming). [2M], [2M]: For printing standard photo (photo service) sizes. [0.9M], [0.3M]: For photos displayed on a web page, or sent as e-mail attachments.

APPENDICES

COMMONLY ASKED QUESTIONS

	Question	Answer	Action
Shooting	What is the difference between the digital zoom and the optical zoom?	—	Because shooting with the optical zoom uses the optics of a physical lens, you can shoot without losing minute details in the image. The digital zoom, on the other hand, works by magnifying a portion of the image that hits the image sensor and may produce a coarser image.
	How can I get the distant view into focus?	—	Set the scene select function to the landscape 🏔 mode when photographing. Or, set the focus range setting to manual focus [MF], and set the distance to ∞.

	Question	Answer	Action
Monitor	When used in cold weather, why does the image seem to leave traces as it moves?	Condition due to the monitor characteristics.	Not a malfunction. Spots that appear in the monitor only appear in the monitor and will not be recorded with the images.
	Why does the displayed image contain some red, blue and green dots, or why are black spots visible?		
Viewing images	Why is the image too bright?	The subject was too bright.	When capturing an image, devise a way to compensate for a bright subject, for example, by changing the shooting angle.
	Why is the image out of focus?	The focus is not locked properly.	Hold the camera correctly and slowly press the [📷] button halfway to lock the focus. Then press the [📷] button all the way to capture the image.
	Why is a part of the image missing?	The image was captured at close range.	When capturing an image at close range, compose the image using the monitor.

COMMONLY ASKED QUESTIONS

	Question	Answer	Action
Viewing images	Why is there no image (? is shown)?	This may happen when trying to play back images stored on a card from a different digital camera.	Play back images that were recorded on a card using this camera.
	Why is the playback image distorted?	If the subject moves or the camera is moved during recording, a distorted image may sometimes occur.	Not a malfunction. This is a characteristic of the CMOS sensor.
	Why isn't the magnified image clear?	Due to the characteristics of the camera, magnified images appear less clear.	Not a malfunction.
	Why isn't the captured image clear?	The image was captured using the digital zoom.	Not a malfunction.
	Can I play back image and sound files that I edited using my computer?	—	We cannot guarantee the accurate playback of files that have been edited using a computer.
	Why is there a motor-like sound during video clip playback?	The sound of the camera's mechanical action was recorded.	Not a malfunction.

	Question	Answer	Action
Connecting to a TV	Why is there no sound?	The volume on the TV is set to the minimum.	Adjust the volume on the TV.
	What is the difference among the normal video (composite video) output, S-video output and component/HDMI output?	—	Normal video (composite video) output: Combines Y (luminance) signal and chrominance signal and outputs the combined signal. S-video output: Outputs the Y signal and chrominance signal separately. Component/HDMI signal: Outputs the Y signal, B-Y signal and R-Y signal separately. The picture quality becomes increasingly higher, in order from normal video output, to S-video output, to component output, to HDMI output.
	Can the dedicated S-AV interface cable and the dedicated component cable be connected at the same time and output the image?	—	You cannot output the image when both cables are connected at the same time. Connect only one of the cables.

COMMONLY ASKED QUESTIONS

	Question	Answer	Action
Printing	Why does a message appear during PictBridge printing?	There is a problem with the printer.	Please refer to the instruction manual for your printer.
Misc.	The "Cannot edit video clips with unlike settings" message appears.	You have attempted to join video clips having different resolutions or frame rates.	Select video clips that have the same resolution or frame rate.
	Why is a noise heard from a nearby TV or radio during battery recharging?	Electromagnetic waves are emitted from the AC adaptor.	Move the AC adaptor further away from the TV or radio when recharging the battery pack.
	Why does the "Insufficient memory remaining" message appear?	There is no more available memory on the card.	Delete unnecessary files, or use a card that has more memory available.
	Why does the "Card is protected" message appear?	The lock switch on the card is in the locked (protect) position.	Move the lock switch to the unlocked position.
	Why can't the camera be operated?	A temporary internal circuitry problem may be the cause.	Remove the AC adaptor and the battery pack from the camera, wait a few minutes, then reinstall the battery pack and try again.

Question	Answer	Action
Misc.	A problem such as inability to record or play back occurs.	The card contains files that were saved using a device other than this camera.	After saving your files to a different medium, format the card.
	Can I use my camera abroad?	—	When the camera is connected to a TV, you can switch the camera's video output to NTSC or PAL. If you have questions about accessories etc., please consult with a dealer near you for advice.
	Why does the "System error" message appear?	A problem has occurred within the camera or card.	Check the following items: ① Remove the card and then install it again. ② Remove the battery pack and then install it again. ③ Install a different card. If "System error" still appears after performing the above steps, then take the camera to the dealer for service.

APPENDICES

TROUBLESHOOTING

Before taking your camera to the repair shop, check the following table for a possible solution to the problem.

Camera

	Problem	Cause	Action	Reference page
Power	No power.	The battery pack is dead.	Recharge the battery pack, or replace with a new battery pack. Or connect the AC adaptor (supplied).	27, 32
		The battery pack has not been inserted correctly.	Reinsert the battery pack, making sure to orient it correctly.	
	A blinking temperature warning icon is [⚠] shown, and the camera does not turn on.	The battery pack is too hot.	Wait for the battery pack to cool down.	34
	The camera turns off by itself.	The power save function is operating.	Turn on the camera again.	36

	Problem	Cause	Action	Reference page
Shooting	An image is not captured when the [🔘] button or [📹] button is pressed.	The power is not turned on.	If the power save function was activated, turn on the camera before shooting. If the camera was turned off, press the ON/OFF button to turn it on.	36
		The maximum number of images that can be captured or the maximum video clip recording time has been reached.	Install a new card.	25
			Delete the images that are not necessary.	79

TROUBLESHOOTING

	Problem	Cause	Action	Reference page
Shooting	The flash does not operate.	The flash off mode is selected.	Set the flash to automatic flash mode or forced flash mode.	46, 66
		The battery pack is dead.	Recharge the battery pack, or replace with a fully charged battery pack. Or connect the AC adaptor (supplied).	30, 32
	The digital zoom does not work.	The still image is set to 12ᴍ.	Set the still image to 8ᴍ-ʜ or lower.	50, 100
		The digital zoom setting is set to "OFF".	Set the digital zoom setting to "ON".	54, 100

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	Problem	Cause	Action	Reference page
Shooting	A warning tone (beep-beep-beep) sounds, and it is not possible to take a picture using the self-timer.	The battery pack is consumed.	Recharge the battery pack, or replace with a fully charged battery pack. Or connect the AC adaptor (supplied).	30, 32
	When zooming in or out, the zoom movement stops momentarily.	The optical zoom has moved to the maximum magnification position.	Not a malfunction. Release the zoom switch, and push it again.	70
	There is noise in the captured image.	The ISO sensitivity setting is too high.	Set the ISO sensitivity to a lower setting.	52, 95
	The ⚠ icon appears, and shooting is not possible.	The camera's internal temperature is high.	Discontinue shooting, and wait for the camera to cool down before using it again.	34
Monitor	No playback image appears.	The camera is not set to the playback mode.	Set the camera to the playback mode.	41, 73

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TROUBLESHOOTING

	Problem	Cause	Action	Reference page
Viewing images	The image is too dark.	The flash was blocked by a finger or other object.	Hold the camera correctly, and make sure the flash is not obstructed.	57
		The subject was too far away.	Capture the image in the range of operation of the flash.	177
		The subject was lit from behind.	Use the forced flash mode.	46, 66
			Use the exposure compensation function.	101
			Use the spot light-measuring mode.	52, 94
		There is not enough light.	Adjust the ISO sensitivity setting.	52, 95

	Problem	Cause	Action	Reference page
Viewing images	The image is too bright.	The forced flash mode is selected.	Select a different flash mode.	46, 66
		The subject was too bright.	Use the exposure compensation function.	101
		The ISO sensitivity setting is incorrect.	Set the ISO sensitivity to [AUTO].	52, 95
	The image is not in focus.	The subject is too close to the camera.	Capture the image with the subject within the photographable range. Select the correct focus setting for your needs.	52, 61, 94
		The focus setting is not correct.		
		The camera moved when the [■] button was pressed. (camera shake)	Hold the camera correctly and slowly press the [■] button halfway to lock the focus. Then press the [■] button all the way to capture the image.	57, 64
		The focus is not locked properly.		
		The lens is dirty.	Clean the lens.	—

TROUBLESHOOTING

	Problem	Cause	Action	Reference page
Viewing images	The colors of the images captured indoors are not correct.	This is due to ambient lighting.	Capture the image using the forced flash mode.	46, 66
		The white balance setting is incorrect.	Set the white balance setting correctly.	54, 96
	A part of the image is missing.	The strap or a finger was blocking the lens.	Hold the camera correctly, and make sure the lens is not obstructed.	57
	"No image" is shown.	There is no file in the installed card.	Play back after capturing images or making audio recordings.	—
	During audio playback, there is no sound.	The playback volume setting on the camera is too low.	Adjust the playback volume.	48, 74, 78

	Problem	Cause	Action	Reference page
Connecting to a TV	There is no color in the image. The image is distorted.	The TV output setting is not correct.	Select the correct TV output setting.	128, 132
		Both the dedicated S-AV interface cable and the dedicated component cable are connected.	Make the correct connection.	145
	No image or sound.	The camera is not correctly connected to the TV.	Follow the instructions to make the connection correctly.	144 to 147
		The TV input is not set correctly.	Set the input on the TV to "VIDEO" or "HDMI".	
	The edge of the image is cut off.	This is a characteristic of the TV.	Not a malfunction.	—
Image editing	You cannot edit or rotate an image.	The protect mode is set.	Cancel the protect mode.	55, 104

TROUBLESHOOTING

	Problem	Cause	Action	Reference page
Charging	The battery pack is not charging.	Correctly insert the battery pack in the charger.	Make sure that the battery pack is correctly oriented when inserting it in the charger.	30
Remote control unit	The remote control unit does not seem to work.	The remote control unit is aimed at the TV (not at the camera's remote control sensor).	Aim the remote control unit at the camera's remote control sensor (within a range of about 15 degrees left or right horizontally from the remote control sensor).	27, 28
		Something is obstructing the space between the remote control unit and the camera's remote control sensor.	Remove or move the obstructing object.	
		The remote control unit battery is consumed.	Replace with a new battery.	
		The remote control unit battery is not correctly inserted.	Take care that the (+) and (−) poles are correctly oriented.	

	Problem	Cause	Action	Reference page
Remote control unit	The remote control unit does not seem to work.	The remote control unit is too far from the camera's remote control sensor.	Operate the remote control unit from a position up to 7 meters (22.97 ft.) away.	27, 28
		The remote control codes for the remote control unit and camera's remote control sensor are different.	Change the remote control code.	29
Misc.	The "No card" message appears.	No card is inserted.	Turn off the power and insert a card.	25
	The "Image is protected" message appears and the file cannot be deleted.	You have attempted to delete a file that is protected from accidental erasure.	Set the protect setting for the file to UNLOCK.	55, 104

APPENDICES

TROUBLESHOOTING

	Problem	Cause	Action	Reference page
Misc.	The audio guide does not sound.	The audio guide setting is set to "OFF".	Set the audio guide setting to "ON".	124
	The recording capacity is less than that indicated in the section "Possible No. of Images/ Possible Shooting Time/ Possible Recording Time" (page 180).	The recording capacity is less than the value specified for the card.	Depending on the card, the capacity may be less than the specified value. Please refer to the instructions that accompanied the card.	—
	The battery pack appears to be swollen.	Normal change occurring with battery use. Even with normal correct use of the lithium-ion battery, it has a tendency to swell as the number of charge and discharge cycles adds up and it gradually approaches the end of its service life.	Not a safety hazard. If the battery quickly becomes depleted, for example, it has reached the end of its service life. Replace it with a new battery pack.	—

Scene Select

Setting	Remarks
Sports 🏃	Focus range: Fixed at 🏔. Exposure: Fixed at P .
Portrait 👤	Video setting: If set to ⬛ or ⬛, automatically changes to FullHD .
Landscape 🏞	Focus range: Fixed at 🏔. Face chaser: Fixed at "OFF". Exposure: Fixed at P . Video setting: If set to ⬛ or ⬛, automatically changes to FullHD .
Night view portrait 👤★	Focus range: Fixed at 🏔. Exposure: Fixed at P .
Snow & beach ❄	Video setting: If set to ⬛ or ⬛, changes to FullHD . Still image setting: When sequential shots is active, changes to 8M·S .
Fireworks ⬛	Focus range: Fixed at 🏔. Flash: Fixed at ⚡. ISO sensitivity: Fixed at AUTO. Photo stabilizer: Fixed at "OFF". Face chaser: Fixed at "OFF". Photo wide D-range: Fixed at "OFF". Exposure: Fixed at P . Video setting: If set to ⬛ or ⬛, changes to FullHD . Still image setting: When sequential shots is active, changes to 8M·S .
Lamp* ⬛	Focus range: Fixed at 🏔. Flash: Fixed at ⚡. Still image NR: Fixed at "OFF". Exposure: Fixed at P . Video setting: If set to ⬛ or ⬛, changes to FullHD . Still image setting: When sequential shots is active, changes to 8M·S . ISO sensitivity: Fixed at AUTO.

* In some cases, the shutter speed may decrease to 1/15 sec.

APPENDICES

TROUBLESHOOTING

Filter

Setting	Remarks
Monochrome ◐	Still image mode: 12ᴹ cannot be selected.
Sepia 🖊	

About the scene select function and focus range settings

• The scene select function changes to AUTO when the focus range is set to 🌷.
• Even if you set the focus range to 🌷 or MF, it changes to 🏔 when the scene select function is set to any setting other than AUTO.

SPECIFICATIONS

Camera

Recorded image file format	**Still images:** JPEG format (DCF, DPOF, Exif 2.2 compliant) Note: Designed mainly by the Japan Electronics and Information Technology Industries Association (JEITA), DCF (Design rule for Camera File system) is standard for digital still camera image files to provide interoperability between digital photography devices for the images stored on removable memory cards. However, it is not guaranteed that all devices will support the DCF standard. **Video clips:** Conforms to ISO-standard MPEG-4 AVC/H.264* **Audio:** MPEG-4 audio (AAC compression) 48 kHz sampling rate, 16-bit stereo format
Data storage media	SD Memory Card (accepts a maximum 32 GB SDHC Memory Card)
Image sensor/ camera effective number of pixels	1/2.5-inch (1.0 cm) CMOS sensor Still images: Approx. 8 million pixels Videos (HD mode): Approx. 5.31 million pixels Videos (SD mode): Approx. 2 million pixels

* Video clip files recorded with models VPC-CA65 and VPC-CG65 are in the same H.264 format as this model. However, such files cannot be played back, since they are not compatible due to differences such as the data compression method.

SPECIFICATIONS

Still image shooting mode (recording resolution)	☐12M☐: 4000 × 3000 pixels (approx. 12 million pixels) ☐8M-H☐: 3264 × 2448 pixels (approx. 8 million pixels, low compression) ☐8M-S☐: 3264 × 2448 pixels (approx. 8 million pixels, normal compression) ☐6M☐: 3264 × 1840 pixels (approx. 6 million pixels, 16:9 aspect ratio) ☐2M☐: 1920 × 1080 pixels (approx. 2 million pixels, 16:9 aspect ratio) ☐2M☐: 1600 × 1200 pixels (approx. 2 million pixels) ☐0.9M☐: 1280 × 720 pixels (approx. 900,000 pixels, 16:9 aspect ratio) ☐0.3M☐: 640 × 480 pixels (approx. 300,000 pixels) ☐8M☐: 3264 × 2448 pixels (approx. 8 million pixels, sequential shots) ☐4M☐: 2288 × 1712 pixels (approx. 4 million pixels, sequential shots)
Video clip recording mode (recording resolution)	HD mode ☐Full-HR☐: 1920 × 1080 pixels, 60 fps (60p) ☐Full-HD☐: 1920 × 1080 pixels, 60 field/s (60i) ☐Full-SHQ☐: 1920 × 1080 pixels, 30 fps (30p) ☐HD-SHQ☐: 1280 × 720 pixels, 30 fps (30p) SD mode ☐TV-SHQ☐: 640 × 480 pixels, 30 fps (30p) ☐¼SHR☐: 448 × 336 pixels, 240 fps (High-speed recording) ☐¼UHR☐: 192 × 108 pixels, 600 fps (High-speed recording) • The 60 fps frame rate of this camera is 59.94 fps, the 30 fps frame rate is 29.97 fps, the 240 fps frame rate is 239.76 fps and the 600 fps frame rate is 599.4 fps.
White balance	Full-auto TTL, manual setting possible
Lens	Focal length: f = 5.95 mm to 59.5 mm, Optical 10× zoom Open: F = 2.0 (Wide) to 2.8 (Tele) 9 groups, 12 elements (including four with eight aspheric surfaces) Galvanometer iris Internal ND filter 35 mm film camera conversion Still image shooting: 35.7 mm to 357 mm (10×) Video clip recording: 41.7 mm to 666.9 mm (16× Advanced Zoom)

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Exposure control type	Programmable AE/Shutter speed priority AE/ Aperture priority AE/Manual exposure control Exposure compensation available from the Shooting Setting Screen (0 ±1.8 EV in 0.3 EV steps)
Light-measuring mode	Multi-section measuring, center-weighted measuring, spot measuring
Range	Normal mode: 50 cm (19.69 in.) to infinity Super macro mode: 1 cm (0.39 in.) to 1 m (3.28 ft.) (Wide end only)
Digital zoom	For shooting: 1× to approx. 10× For playback: 1× to 62.5× (varies with resolution)
Shutter speed	Still image shooting mode: 1/2 to 1/1,000 sec. (Maximum approx. 4 seconds when scene select function set to lamp ▦) (During flash: 1/30 to 1/1,000 sec.) Sequential shots mode: 1/15 to 1/1,000 sec. (no flash) Video clip recording mode: 1/30 to 1/10,000 sec. (1/15 sec. max.: when scene select function is set to the lamp ▦ high sensitivity mode)
Sensitivity	Still image shooting (standard output sensitivity*)/ video clip recording mode: Auto (video clip recording: ISO 50 to 800; still image shooting: ISO 50 to 200)/ISO 50, ISO 100, ISO 200, ISO 400, ISO 800, ISO 1600, and ISO 3200 (switchable from Shooting Setting Screen) • Sensitivity measured in compliance with the ISO standard (ISO 12232:2006). • Maximum ISO sensitivity up to 1600 equivalent when Scene Select function is set to ▦. • Recorded at ISO 1600 in the video clip recording mode, even if ISO sensitivity setting is 3200.

SPECIFICATIONS

Minimum subject illumination	6 lux (1/30 sec in the scene select AUTO mode) 2 lux (1/15 sec in the HIGH SENSITIVITY or lamp mode)	
Image stabilizer	Video: Electronic Still image: Multi-calculation electronic	
Monitor	3.0" (7.6 cm) low-temperature polysilicon TFT color wide liquid crystal (transmissive), approx. 230,000 pixels	
Flash working range	GN = 4.0 Approx. 50 cm (19.69 in.) to 4 m (13.12 ft.) (Wide) Approx. 80 cm (31.50 in.) to 2.9 m (9.51 ft.) (Tele)	
Flash modes	Auto-flash, forced flash, flash off	
Focus	TTL-type AF (still image shooting mode: 9-point range finder/spot focus; video clip recording mode: Continuous focus), manual focus (22 steps)	
Self-timer	Approx. 2-second delay, 10-second delay	
Ambient environment	Temperature	0 to 40 °C (32 to 104°F) (operation) 0 to 35 °C (32 to 95°F) (when charging) –20 to 60 °C (–4 to 140°F) (storage)
	Humidity	30 to 90% (operating, no condensation) 10 to 90% (storage, no condensation)
Power supply	Battery pack (supplied)	Li-ion battery pack (DB-L50) ×1
	AC adaptor (supplied)	VAR-G10
Power consumption	4.3 W (When using the Li-ion battery pack during recording)	
Dimensions (excluding protrusions)	53.3 (W) × 105.0 (D) × 57.3 (H) mm 2.10 (W) × 4.13 (D) × 2.26 (H) in. (Maximum dimensions) Volumetric capacity: Approx. 253 cc	
Weight	Approx. 299 g (10.5 oz.) (camera only [without battery pack and card]) Approx. 342 g (12.1 oz.) (including battery pack and card)	

[COMPONENT/ AV] (480p/ 1080i/720p/ 1080p output) terminal	Regrouped jack	
	Audio output	265 mVrms (–9 dBs), 12 kΩ or less, stereo
	Video output	1.0 Vp-p, 75 Ω unbalanced, sync negative, composite video NTSC color TV system/PAL color TV system (switchable from the Option Screen)
	S-video output	Y signal: 1.0 Vp-p, 75 Ω, unbalanced, sync negative C signal: 0.286 Vp-p, 75 Ω, unbalanced NTSC color TV system/PAL color TV system (switchable from the Option Setting Menu)
	For 480p/1080i/720p/1080p video output Y signal: 1.0 Vp-p/75 Ω unbalanced, tri-level sync Pb and Pr signals: 0.7 Vp-p/75 Ω unbalanced	
[USB] terminal	USB 2.0 High Speed PC camera: USB video class	
[HDMI] terminal	Video output Total number of scan lines (effective number of scan lines): 750p (720p)/1125i (1080i)/525p (480p)/1125p (1080p) Audio output: L-PCM 48 kHz sampling	
DC IN (external DC power input) terminal	DC 5 V (for exclusive use with the supplied AC adaptor [VAR-G10])	

APPENDICES

SPECIFICATIONS

Battery life

Shooting	Still image shooting mode	Approx. 420 images: CIPA standard (when a SanDisk 2 GB SD Memory Card is used)
	Video clip recording mode	Approx. 150 minutes: Recorded in [FullHD] mode
Playback		Approx. 380 minutes: Monitor on, continuous playback

- Until battery pack runs out when using a fully charged battery pack at a 25 °C (77°F) ambient temperature.
- The operation time may vary depending on the conditions of the battery pack and the conditions of use. Especially when used at temperatures below 10 °C (50°F), the battery pack operation time is significantly reduced.

Shooting/ recording mode	Resolution setting	SD Memory Card		
		4 GB	8 GB	16 GB
Still image mode	12ᴍ	1,000 images	2,000 images	4,020 images
	8ᴍ-ʜ	1,000 images	2,000 images	4,020 images
	8ᴍ-ꜱ	1,470 images	2,960 images	5,940 images
	6ᴍ	1,960 images	3,950 images	7,920 images
	2ᴍ	5,390 images	10,800 images	21,700 images
	2ᴍ	5,640 images	11,300 images	22,700 images
	0.9ᴍ	10,300 images	20,700 images	41,600 images
	0.3ᴍ	24,800 images	49,800 images	99,800 images
	8ᴹ	1,470 images	2,960 images	5,940 images
	4ᴹ	2,950 images	5,920 images	11,800 images
Video clip mode	Fᴜʟʟ-ʜʀ	21 min. 50 sec.	43 min. 50 sec.	1 hr. 28 min.
	Fᴜʟʟ-ʜᴅ	32 min. 40 sec.	1 hr. 5 min.	2 hr. 11 min.
	Fᴜʟʟ-ꜱʜǪ	43 min. 20 sec.	1 hr. 27 min.	2 hr. 54 min.
	ʜᴅ-ꜱʜǪ	57 min. 30 sec.	1 hr. 50 min.	3 hr. 50 min.
	ᴛᴠ-ꜱʜǪ	2 hr. 45 min.	5 hr. 32 min.	11 hr.
	ᴡᴇ-ꜱʜʀ	1 hr. 4 min.	2 hr. 9 min.	4 hr. 19 min.
	ᴡᴇ-ᴜʜʀ	1 hr. 4 min.	2 hr. 9 min.	4 hr. 19 min.
Audio recording mode	—	64 hr. 50 min.	130 hr.	261 hr.

- If the continuous recording time of a voice memo exceeds about 13 hours, the recorded file is saved once, and then recording continues in a new file. In the video clip recording mode, when the size of the file being recorded exceeds 4 GB, the recorded file is saved once, and then recording continues in a new file. (These 4 GB segments are automatically created. The recording session continues until you stop recording, but video clip or voice memo recording is temporarily interrupted while the file is being saved.)
- The above values apply when an SD Memory Card by SanDisk is used.

APPENDICES

SPECIFICATIONS

- Even with cards of the same capacity, the amount of data that can actually be stored may differ depending on the card brand, etc.
- The continuous shooting time for each video clip will differ depending, for example, on the card capacity, environmental conditions (temperature and shooting conditions, etc.).
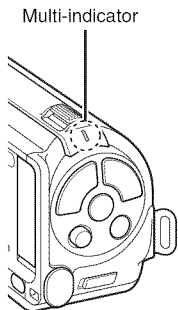
Remote control unit

Part number	BRC-C3
Power supply	Lithium battery (CR2025)
Dimensions	35 (W) × 6.5 (D) × 56.6 (H) mm 1.38 (W) × 0.26 (D) × 2.23 (H) in.
Weight	Approx. 11 g (0.4 oz.) (including battery)

Concerning the multi-indicator

The camera's multi-indicator will light, flash, or be off, depending on the different camera operations.

Multi-indicator

Color	Multi-indicator status		Camera status
Green	Lit		Connected to a computer or printer
	Flashing		Power save mode active
Orange	Lit		Connected to a TV
Red	Lit		Charging
	Flashing	Slow	Battery charge error or rise in internal temperature
		Fast	During self-timer photography
		Very fast	Accessing memory

APPENDICES

SPECIFICATIONS

Supplied AC adaptor

Part number		VAR-G10
Power source		AC 100 V to 240 V, 50/60 Hz
Rated output		DC 5 V, 2.0 A
Ambient environment	Temperature	0 to 40 °C (32 to 104 °F) (operation), –20 to 60 °C (–4 to 140 °F) (storage)
	Humidity	20 to 80% (no condensation)
Dimensions		48.0 (W) × 77.0 (D) × 28.5 (H) mm 1.89 (W) × 3.03 (D) × 1.12 (H) in.
Weight (without power cord)		Approx. 115 g (4.1 oz.)
Power cord rated value	VPC-FH1	AC 125 V, 7 A
	VPC-FH1EX	AC 250 V, 2.5 A
	VPC-FH1GX	Differs depending on the country

- When using the supplied AC adaptor abroad, the power cord may need to be replaced in accordance with local requirements. Please contact your local dealer for details.

Supplied Li-ion battery pack

Model number		DB-L50
Voltage		3.7 V
Capacity		1,900 mAh (Typ.)
Ambient environment	Temperature	0 to 40 °C (32 to 104 °F) (during use) –10 to 30 °C (14 to 86 °F) (storage)
	Humidity	10 to 90% (no condensation)
Dimensions		53.1 (W) × 35.3 (D) × 11.4 (H) mm 2.09 (W) × 1.39 (D) × 0.45 (H) in.
Weight		Approx. 41 g (1.4 oz.)

Others

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- All images and illustrations given in this manual are for explanation purposes and may differ slightly from that of the actual product. Also, actual specifications are subject to change without prior notice and therefore may differ from the contents of this manual.

APPENDICES

SPECIFICATIONS

Before capturing those important shots, be sure to first take a test shot to comfirm that your camera is set up and ready to go

- Sanyo Electric shall not be held responsible for any problems resulting from the use of this camera.
- Sanyo Electric declines all responsibility for damages due to improper use of the camera, failure to adhere to the instructions given in this manual, or repairs or changes done by those other than a technician authorized by the manufacturer.
- Sanyo Electric shall not be held responsible for any damage caused by optional devices or consumable items used with the camera other than those supplied with the camera or those specified by Sanyo Electric.
- As a precaution against losing data in case of a problem with your hard disk that prevents you from accessing your saved files, it's a good practice to regularly make backup copies, on a DVD for example, of the files in the hard disk you are using for the Xacti Library. Sanyo Electric shall not be held responsible for loss of files/data due to failure of your hard disk.
- Sanyo Electric shall not be held responsible for any losses or loss of revenue resulting from the loss of data caused by the malfunction, or the repairing of a malfunction, of the camera.
- The images captured with this camera will differ in quality from pictures taken with a standard film camera.

HINTS FOR TAKING PICTURES

Taking great pictures in difficult surroundings is easier than you might think. By keeping a few points in mind and choosing the correct settings, you can create photos that you'll be proud to display and share.

If images are blurred even when the autofocus is used

Your camera employs an autofocus function. When you snap a picture using the autofocus, the camera automatically adjusts the settings so that the image will be in focus. If you are getting blurred images even when using the autofocus, one or more of the following might be the reason.

■ How the autofocus works

The autofocus is activated when the [📷] button is gently pressed halfway. Press the [📷] button slightly, and the target mark will appear on the monitor to indicate that the autofocus has been activated. Next, continue to gently press the [📷] button all the way to snap the picture. This two-step method is the way to ensure that your photos are perfectly focused.

■ Reasons for unfocused images

① The [📷] button was pressed all the way in one step.
② After the image was focused, the subject moved.
  • Even if camera focuses the subject once, if the distance between the camera and the subject is changed, the subject may become out of focus.
③ The focus setting is not set for the correct distance.
  • If you shoot a close-up subject with the camera set to the normal focus mode, or if you shoot a subject at normal distance with the camera set to the super macro (close-up) mode (pages 52, 61 and 93), the image will not be in focus.

■ Preventing blurred images

① Confirm that the camera is set to the correct focus mode for your subject.
② Hold the camera correctly, and press the [📷] button halfway.
③ Wait for the target mark to appear in the monitor, and holding the camera steady, gently continue to press the [📷] button all the way down.

Following these steps for a gentle but firm pressing of the [📷] button will ensure that you get beautifully focused photos.

HINTS FOR TAKING PICTURES

Photographing a moving subject

Situation: You would like to snap an action shot of a moving child or pet. The autofocus is activated, but because the subject is moving, the image may be blurred. In particular, when the distance between the camera and the subject is changing, it is difficult to lock the focus on the subject. Here are some hints for successfully capturing images of moving subjects.

■ **Reasons for unfocused images**

When the [ ] button is gently pressed halfway, the camera's autofocus works by determining the distance between the camera and the subject. Once the subject is in focus, if it then moves before the picture is snapped, the image may be out of focus. This often happens when you once lock the focus on a subject and then wait for the right moment to snap the picture. And, conversely, a blurred image may result if you press the [ ] button all the way in one step in an attempt to quickly capture an action scene, thus failing to activate the autofocus in time.

■ **Preventing blurred images (How to use the manual focus [page 93])**

In addition to the autofocus, a manual focus mode is also incorporated in your camera. In the autofocus mode, the distance between the camera and the subject is automatically determined when you press the [ ] button halfway. In contrast to this, with the manual focus mode, you manually set the focus by specifying the correct distance between the camera and the subject before taking the picture.

■ **How to photograph a moving subject**

① Set the camera's focus mode to the manual focus. Set the focus distance to the correct distance between the camera and the subject.
② When the subject is at the set focus distance, gently press the [ ] button all the way down.

<Advantage of using the manual focus>

• Images can be quickly captured without waiting for the autofocus to activate.
• Because you are presetting the focus distance, the focus can be more accurate.

<Using the manual focus effectively>

• When photographing a moving subject, press the [ ] button just before the subject reaches the focus distance, and the shutter will be released when the subject is at the correct distance.
• Use manual focus to avoid incorrectly focused images when there is an object between the camera and the subject you wish to focus on.

187 English

Shooting portraits (portrait mode 🔲)

Points:
- Choose a background that doesn't detract from your subject.
- Move in close to your subject.
- Pay attention to lighting and how it affects your subject.

NOTE
- If the background is distracting, it will not show your subject to his best advantage. Move in closer to your subject or zoom in so that the background does not compete with the subject.
- In portrait photography your subject is clearly the central figure, so try techniques that allow the subject to stand out.
- If light is coming from behind your subject (backlit), his face will appear dark. You can get a better picture by using the flash, for example, or changing the exposure compensation setting.

Photographing moving subjects (sports mode 🏃)

Points:
- Match the camera's movement with that of the subject.
- Set the zoom to the Wide end (wide-angle).
- Don't be too hesitant to press the [🔲] button, or you'll miss the action.

NOTE
- Tips to not missing those great action shots: Make sure you're holding the camera correctly. Keep the subject in the lens at all times, moving the camera with him while waiting for the right shot. Move your whole body—not just your arms—with the camera while shooting.
- Blurred images are more likely when the zoom is set to the Tele end than the Wide end. Set the zoom as close as possible to the Wide end.
- Learn to press the [🔲] button quickly yet smoothly the instant your photo chance occurs.

APPENDICES

HINTS FOR TAKING PICTURES

Night photography (night view portrait mode 🔳)

Points:
- Avoid camera shake.
- Increase the ISO sensitivity.

NOTE
- Camera shutter speed during night photography is considerable slower, so there is a much greater chance that your photographed images will be blurry. Stabilize the camera when shooting.
- You can photograph your subject with the night scene in the background by using the flash. Be careful not to shoot too close to the subject, however, or your subject's face will appear too bright.
- After the flash operates, keep the camera and the subjects motionless for about 2 seconds.

Photographing scenery (landscape mode 🔳)

Points:
- Shoot using a high resolution.
- For zoom photography, use the optical zoom.
- Pay attention to picture composition.

NOTE
- When shooting with a wide-angle setting, or if you intend to enlarge the photo, the higher the resolution, the better.
- To zoom in on distant scenery, it's better to use the optical zoom. Using the digital zoom produces a coarser image. Hold the camera securely, keeping your elbows close to your body and making sure the camera is stable. Taking care to stabilize the camera will increase the likelihood of getting a clear photo.
- Don't forget to pay attention to picture composition; note perspective and be aware of how the placement of objects affects the scene.

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