INSTRUCTION MANUAL

Dual Camera

VPC-PD1EX
VPC-PD2
VPC-PD1GX
VPC-PD1PX
VPC-PD1TA

Important note
This manual explains how to safely operate the VPC-PD1EX, VPC-PD2, VPC-PD1GX, VPC-PD1PX and VPC-PD1TA. 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.
Warning
TO PREVENT THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE

FOR AMERICAN USERS
The following advisory is included in accordance with the laws of the State of California (USA):

WARNING:
This product contains chemicals, including lead, known to the State of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.

- This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Declaration of Conformity
Model number: VPC-PD2
Trade Name: SANYO
Responsible party: SANYO North America Corporation
Address: 21605 Plummer Street, Chatsworth, California 91311
Telephone No.: (818) 998-7322

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
1) this device may not cause harmful interference, and
2) this device must accept any interference received, including interference that may cause undesired operation.
■ FOR CANADIAN USERS
  • This Class B digital apparatus complies with Canadian ICES-003.

■ FOR EU USERS
The symbol mark and recycling systems described below apply to EU countries and do not apply to countries in other areas of the world. Your SANYO product is designed and manufactured with high quality materials and components which can be recycled and/or reused. The symbol mark means that electrical and electronic equipment, batteries and accumulators, at their end-of-life, should be disposed of separately from your household waste.

Note:
If a chemical symbol is printed beneath the symbol mark, this chemical symbol means that the battery or accumulator contains a heavy metal at a certain concentration. This will be indicated as follows: Hg: mercury, Cd: cadmium, Pb: lead
In the European Union there are separate collection systems for used electrical and electronic equipment, batteries and accumulators. Please, dispose of them correctly at your local community waste collection/recycling centre. Please, help us to conserve the environment we live in!

![Waste Symbol]

SANYO Sales & Marketing Europe GmbH
Stahlgruberring 4, D-81829 München, Germany

SANYO Electric Co., Ltd.
1-1, Sanyo-cho, Daito City, Osaka 574-8534, Japan

■ FOR RUSSIAN USERS
This product is certified by an official certification company which is authorized by the Russian Federation.

AR46
HOW TO READ THIS MANUAL

Symbols used in this manual

HINT       Points giving some extended instructions or special points to pay attention to.

CAUTION    Points that require special attention.

(page xx)  Refer to the page indicated for detailed information.
Installing the battery pack and card

Install the card and the supplied battery pack.

- The card is not an included accessory. Please purchase a commercially sold card.
- The camera has an internal memory, which means that you can record and save the recorded data even if no card is installed.

<To close>
Charging the battery pack

1. Press the ON/OFF button to turn off the camera.
   • It is not possible to charge the battery pack while the camera is on.

2. Use the dedicated USB interface cable (supplied) to connect the camera to a computer.

3. Turn on the computer.
   • Charging begins.
   • During charging, the multi-indicator is lit red.
   • When charging is completed, the indicator turns off.
   • The charging time is approx. 180 minutes.

Multi-indicator

Camera on/off switch
• OFF

Push

To USB terminal

Supplied dedicated USB interface cable

Computer power switch
• ON

To USB connector on the computer
CAUTION
During charging...
- Do not turn on the camera while the battery pack is charging. It is not possible to charge the battery pack while the camera is on.
- Do not turn off the computer while the battery pack is charging. It is not possible to charge the battery pack while the computer is off.
- With certain computers, it may be possible to charge the battery pack even when the computer is turned off.

Insert and pull out the cable and USB plug carefully
- When connecting the cables, make sure that the 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 terminal or the camera.
- If excessive force is used to pull the USB plug, it may damage the cable and/or connector.
Shooting

1  Press the ON/OFF button for at least 1 second to turn the camera on.
   • If the screen to set the date and time appears, press the [ \(/\) ] button to cancel it. 
   For how to set the date and time, see page 14.

2  Record.
   To record a video clip:
   • Press the [ ] button to begin recording a video clip.
   • Press the [ ] button again to end the recording.
   To take a photo:
   • Press the [ ] button.
   • A still image is captured.
Playback

1 Press the REC/PLAY button.
   • The display changes to the Playback Screen.

2 Select the image to play back.
   • Use the arrow keys to move the orange frame to the image you wish to play back.
   • The image information for the framed image is shown in the bottom part of the monitor.

3 Press the SET button.
   • The file you selected is played back.
   <To return to the recording mode>
   • Press the REC/PLAY button.
Deleting files

1 On the screen in step 2, move the orange frame to the file you wish to delete, and press the [_production] button.

2 Select “DELETE SINGLE”, and press the SET button.
   • If you press [left] or [right], the screen to delete a different file will appear.

3 When you are finished deleting files, press the [_production] button.

When you are finished using the camera...
Press the ON/OFF button for at least 1 second to turn the camera off.
Copy data from your camera to the computer

Connect your camera to a computer, and copy the desired data to the computer.

1. **Turn on the computer, and use the supplied dedicated USB interface cable to connect your camera to the computer.**
   - Connect the cable between the camera’s USB terminal and the computer’s USB connector.

   ![Diagram showing camera and computer connections](image)

   - **Camera on/off switch**
     - OFF
   - Push
   - To USB terminal
   - Supplied dedicated USB interface cable
   - To USB connector on the computer
   - Computer power switch
     - ON

   **<Insert and pull out the cable and USB plug carefully>**
   - When connecting the cables, make sure that the 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 terminal or the camera.
   - If excessive force is used to pull the USB plug, it may damage the cable and/or connector.
2 Turn on the camera (page 11).
   • The USB Connection Screen appears on the camera’s monitor.

3 Select “CARD READER”, and press the SET button.
   • The window for automatic playback of XACTI_INT (internal memory) and XACTI (card) opens.
   • If the Access Menu appears, click the Access Menu [EXIT] button.

4 In the automatic playback window, click [Open folder and display files].
   • To copy files from the internal memory: Click on the XACTI_INT [Open folder and display files].
   • To copy files from the card: Click on the XACTI [Open folder and display files].

5 Copy data from your camera to a computer.
   • Copy files to a computer.

CAUTION
For VPC-PD1EX
   • It is not possible to copy files from the computer side (a hard disk, etc.) to the camera’s internal memory or installed card.
Uploading camera files to a file-sharing website

- Your camera’s internal memory contains the Xacti Simple Uploader application with which you can upload camera files to a file-sharing website.
- For information on how to use Xacti Simple Uploader, please refer to the Xacti Simple Uploader user’s manual, which can be obtained from the SANYO website.

<How to launch Xacti Simple Uploader>
1. Connect your camera to a computer.
2. Turn on the computer and the camera.
3. On the USB Connection Screen, select “CARD READER”, and press the SET button.
   - The window for automatic playback of XACTI_INT (internal memory) and XACTI (card) opens, and the Access Menu appears.
   - If the Access Menu does not appear, double-click "Autorun.Exe" in XACTI_INT.
4. In the Access Menu, click on [Install Xacti Simple Uploader].
   - The Xacti Simple Uploader installation begins.
   - Follow the instructions of the installation wizard to complete the installation.

<How to obtain the manual>
- On the Xacti Simple Uploader screen, click the [?] icon.
### Software operating environment

<table>
<thead>
<tr>
<th></th>
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<th>for Mac OS</th>
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</thead>
<tbody>
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<td>Windows®7</td>
<td>Mac OS X 10.3.9</td>
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<td>with standard USB</td>
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<tr>
<td>port</td>
<td>USB port</td>
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</tr>
<tr>
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<td></td>
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</tr>
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<td>Celeron, Pentium4 1GHz or faster</td>
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<td>Core Duo, Core 2 Duo or faster</td>
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<tr>
<td>Others</td>
<td>.NET Framework 3.5 SP1 or later</td>
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</table>

*1 In some cases, images may not show correctly on your computer, depending on your computer's operating environment.

*2 It is necessary that your computer be connected to the Internet. To upload images, please establish an account with a file-sharing service (YouTube, for example).

*3 Pre-installed model only.

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Mac OS is a trademark of Apple Inc., registered in the U.S. and other countries.
SDXC is a trademark of SD-3C, LLC. All trademarks mentioned are the properties of their respective owners.
Dismounting the camera

CAUTION
• To disconnect your camera, be sure to follow the procedure below. Failure to follow this procedure may cause faulty operation of your computer or corrupt the files in your camera.

1 Left-click on the icon for safely removing hardware in the task tray.
   • A list appears showing the devices connected to the computer's USB connector.

2 Left-click on the camera drive.
   • The camera can now be disconnected.
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CHECKING THE INCLUDED ACCESSORIES

- Li-ion battery pack: 1

- Dedicated USB interface cable (page v, x): 1

- SAFETY MANUAL
  (safety precautions booklet)
  Please read this booklet carefully before using the camera.

- QUICK GUIDE

- Obtaining the PDF instruction manual and cautions
How to use the accessories

- **Handstrap (Please purchase a commercially available handstrap.)**
  - To avoid dropping the camera, it is recommended that you attach a handstrap.
ABOUT THE CARD

Media cards that can be used with this camera
The type of card that can be inserted into and used with this camera is:
- SD Memory Card
- SDHC Memory Card
- SDXC Memory Card

What “card” means in this manual
- In this manual, SD Memory Cards, SDHC Memory Cards and SDXC Memory Cards that can be used in this camera are referred to as “card”.
PARTS NAMES

Front

- Speaker
- Flash
- Microphone
- Lens
- LED
- Slot cover

Bottom

- Tripod stand hole
- Connector lever
- Strap holder
Rear

- Multi-indicator
- Monitor
- SET button
- [ ] button (Photo shooting button)
- REC/PLAY button
- [ ] button (Video recording button)
- Arrow keys
- [ ][ ] button
- ON/OFF button
ABOUT THE BATTERY AND THE CARD

About recharging
Recharging takes place only when the camera is turned off, or when the power save function or the sleep function has been activated. Recharging does not take place when the camera is in the recording mode or playback mode.

CAUTION
Do not charge the battery pack immediately after the camera has been in continuous use for a long time
• The battery pack becomes hot when the camera is used continuously for a long time. If you attempt to charge the battery pack in this state, the multi-indicator may flash red and it may not be possible to charge the battery pack. Wait until the battery pack has cooled down before attempting to charge it.

Does the battery pack appear swollen?
• The lithium-ion battery used in this camera may expand slightly when stored in a hot environment or repeatedly used, but this is not a safety hazard. However, a battery that is difficult to insert because it has become swollen may then be impossible to extract from the battery compartment. In this case, please discontinue its use and replace it with a new battery.

Do not use the battery with the outer covering or label removed
• Doing so may result in malfunction.

HINT
About the internal backup battery
• This camera’s internal battery serves to maintain the date and time settings, as well as the shooting settings. The backup battery will be fully charged when the battery pack is kept in the camera continuously for about 2 days. In the fully charged state, the backup battery will maintain the camera settings for about 7 days.

When not using the camera for a long time, remove the battery pack
• A small amount of power is still used even if the camera is turned off, and it is therefore recommended that the battery pack be removed from the camera if it is not going to be used for a long time. Note that when the battery pack is removed for a long period, the time and date settings may be cleared. Before using your camera again, be sure to confirm that the camera settings are correct.
HINT

Recharging when connected to the USB terminal
- The battery can be recharged while the camera is connected to a computer.
- Note, however, that the time it takes to recharge will differ depending on the camera's operating condition.
- Connect the dedicated USB interface cable to the USB connector on your computer. Do not connect it to the USB connector on the monitor or the keyboard, or to the USB hub.
- If the camera is not going to be used for an extended period of time, please disconnect the dedicated USB interface cable from the camera.

About the temperature alert icon

During camera use, if the temperature of the battery or inside the camera (excluding the battery) rises, a temperature alert icon will appear as described below.

- When the battery or internal camera (excluding battery) temperature rises during use
  - During camera use, if the temperature of the battery or inside the camera (excluding the battery) rises, a icon lights on the monitor. It is still possible to record and playback even when the icon is lit; however it is advised that you discontinue use as soon as possible and turn the camera off.
  - If the temperature rises further, the icon will start to flash, and the camera will turn off automatically. The camera cannot be turned on until the temperature has dropped (or as long as the icon remains flashing). Please wait until the temperature has dropped before resuming use.
  - During video recording, a countdown indicator will show the time starting about 15 seconds before shutdown. When the indicator shows 0 seconds, recording stops.
  - If the camera is turned off while the temperature is high (that is, while the icon is flashing), it cannot be turned on again until the temperature has dropped (or as long as the icon remains flashing).
To format a card

1 Insert the card in the camera, and press the ON/OFF button (pages iv and 11).

2 Press and hold the [1/2] button for at least 1 second.

3 Select “FORMAT” and press the SET button.
   • The Format Screen appears. Follow the instructions on the screen to format the card.

Shooting without a card installed

• When a card is installed, images are recorded to and played back from the card. When no card is installed, images are recorded to and played back from the camera’s internal memory. When the camera is turned on with no card installed, the internal memory icon  is shown on the monitor to let you know that the images you capture will be saved to the camera’s internal memory.
TURNING THE CAMERA ON AND OFF

Turning on the camera

1. Press the ON/OFF button for at least 1 second.

Turning off the camera

1. Press the ON/OFF button for at least 1 second.
   • The camera turns off.

HINT
To adjust the operation sounds
• If you turn on the camera by pressing the ON/OFF button while holding down the [▲] arrow key, the screen to change the operation sounds will appear.
Turning on the camera when the power save (sleep) mode is active

In order to preserve battery pack power, the power save (sleep) function will automatically turn off the camera after about 2 minutes of no use during shooting, or about 2 minutes of no use during playback.

- When the power save mode is active, you can restore the power by any of the following methods:
  - Press the ON/OFF button.
  - Press the SET button.
CAUTION
If the ☑? icon appears...

- When a picture is taken, the date and time it was captured are recorded with it. If the date and time settings have not been completed (page 14), the date and time cannot be recorded with the captured images. For this reason, immediately after the camera is turned on, the “Set date and time” reminder briefly appears, after which the ☑? icon is shown on the Recording Screen. To have the date and time recorded with the images, please complete this setting before capturing images.

<Caution>

- Due to the characteristics of the camera, the outer surface may become warm during use, but this does not indicate a malfunction.
- If the camera starts to feel uncomfortably hot during use, you might temporarily discontinue use until it cools down, or try holding it in your other hand for a while.

Please use a tripod or other support when using the camera for a long time.
DATE AND TIME SETTING

When the camera is first turned on after purchase, the Clock Set Screen appears. Proceed from step 4 to set the date and time.

1 Press the ON/OFF button to turn on the camera.

2 Press and hold the [(schedule)/[envelope]] button for at least 1 second.
   • The Setup Menu appears.

3 Use the [up] and [down] arrow keys to select “CLOCK SET”, and press the SET button.
   • The Clock Set Screen appears.

4 Set the date and time.
   • To select the desired setting: Press the [left] and [right] arrow keys.
   • To change the assigned value: Press the [up] and [down] arrow keys.

5 Press the SET button.
   • Assign the desired value to each setting.

6 Press the [schedule]/[envelope] button.
   • The date and time settings are completed, and you are returned to the Setup Menu.
HINT
- Under normal conditions, while the battery pack is being replaced, an internal battery will maintain the date and time settings. However, there is a small chance the settings may be lost (the backup will last for about 7 days). It is recommended to check that the date and time settings are still correct after replacing the battery pack and before shooting or recording of any type (follow step 1).

To correct the date and time settings
1. Turn on the camera.
2. Press and hold the [ carpenter's square] button for at least 1 second.
3. Select “CLOCK SET” and press the SET button.
   - The screen to set the date and time appears.
   - The current date and time settings are shown.
4. Select the line you wish to change, and make the correction.
ACCESSING THE SETUP MENU SCREEN

1. Turn on the camera (page 11).

2. Press and hold the [Menu] button for at least 1 second.
   - The Setup Menu appears.
   - To cancel the Setup Menu, press the [Menu] button.
3 Press [▲] or [▼] to select the item you wish to change, and press the SET button.
   - The Setting Screen for the selected item appears.
   - To return to the Setup Menu, press the [❖/❖] button.

<Setting Screen>
VIDEO CLIP RECORDING

1 Turn on the camera (page 11).

2 Press the [ ] button.
   • Recording begins.
   • It is not necessary to keep the [ ] button pressed while recording.
   • When the remaining recording time available for the currently recording clip becomes little, a countdown of the remaining recording time appears on the display.

3 End the recording.
   • Press the [ ] button again to stop recording.
HINT

To change the video settings

1. With the Recording Screen displayed, press the [▶] arrow key.
   - The screen to change the video settings appears.
   - To return to the Recording Screen without changing the settings, press the [_secs/start] button.

2. Use the [◄] and [▶] arrow keys to select a setting, and press the SET button.
   - The video settings are changed, and you are returned to the recording screen.
SHOOTING SINGLE SHOTS

Capture a still image (single-shot).

1 Turn on the camera (page 11).

2 Press the [ ] button.
   ① Press the [ ] button halfway.
       • The autofocus operates, and the image is focused (focus lock).
   ② Continue to gently press the [ ] button all the way.
       • The shutter releases and the image is captured.
       • You can view the captured image on the monitor by keeping the [ ] button depressed when you capture the image.
To change the photo settings

1. With the recording screen displayed, press the [▲] arrow key.
   • The screen to change the photo settings appears.
   • To return to the recording screen without changing the settings, press the [Lens] button.

2. Use the [◀] and [▶] arrow keys to select a setting, and press the SET button.
   • The photo settings are changed, and you are returned to the recording screen.

To change the flash operation

1. While the Recording Screen is shown, press the [Lens] button.
   • The screen to select the flash operation appears.
   • To return to the Recording Screen without changing the setting, press the [Lens] button.

2. Use the [◀] and [▶] arrow keys to select the desired setting, and press the SET button.
   • The flash operation setting is modified, and you are returned to the Recording Screen.

HINT
Did the Setup Menu appear?
• The Setup Menu appears when the [Lens] button is kept pressed for at least 1 second.
• Press the [Lens] button to cancel the Setup Menu, and then briefly press the [Lens] button again.
HINT

What is the camera focusing on?

- A target mark on the monitor shows the area the camera is focusing on.
- The camera automatically determines the correct focus by measuring from 9 different focus points within the shooting area. If the target mark is at a position that is different from the point you wish to focus on, you can refocus, for example, by changing the shooting angle.
- The large target mark appears when the camera focuses on a wide area in the center of the screen.

If the camera shake icon appears...

- During still image shooting, if the shutter speed is slow and the possibility that the image may be blurred due to camera shake becomes high, the camera shake icon may appear on the monitor. In this case, use a tripod to stabilize the camera when shooting.

Does it seem to take a long time to save images?

- When shooting in dimly lit conditions, it may take some time to save the data to the card.
SHOOT A STILL IMAGE WHILE RECORDING A VIDEO CLIP

You can capture a still image (a single-shot) while recording a video clip.

1 Turn on the camera (page 11).

2 Press the [ ] button.

3 When you see a scene you’d like to capture as a still image, press the [ ] button.

4 Press the [ ] button to end the video clip recording.

HINT
- When the remaining video recording time becomes approximately 30 seconds, it will no longer be possible to capture a still image while recording a video clip. The exact remaining recording time at which this occurs will differ depending on the subject and on the recording size, as well as on the video clip recording mode. If you intend to capture a still image while recording a video clip, it is suggested that you take note of the remaining video recording time.
About the recording size of still images

- The size of a still image captured during video clip recording depends on the video clip recording size.

<table>
<thead>
<tr>
<th>Video clip recording size setting</th>
<th>Still image recording size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full HD</td>
<td>1920 × 1080 pixel</td>
</tr>
<tr>
<td>HD-HD</td>
<td>1280 × 720 pixel</td>
</tr>
<tr>
<td>HD-HQ</td>
<td>1280 × 720 pixel</td>
</tr>
<tr>
<td>720p HQ</td>
<td>640 × 480 pixel</td>
</tr>
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</table>
MACRO-PHOTOGRAPHY (ZOOM)

1 Point the camera lens at the subject.

2 Press [▲] or [▼].
   [▲]: Zoom in on the subject.
   [▼]: Zoom out.
   • When the zoom switch is pushed, the zoom bar appears on the monitor.

3 Take the picture.
   For video clip recording, see page 18.
   For shooting single shots, see page 20.
SHOOTING WITH THE SELF-TIMER

1. While the Recording Screen is shown, press and hold the SET button for at least 1 second.
   • The screen to select the self-timer operation appears.
   • To return to the Recording Screen without changing the setting, press the [SET] button.

2. Use the [◄] and [►] arrow keys to select the desired setting, and press the SET button.
   • The self-timer operation setting is modified, and you are returned to 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.

When [x] 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.
• The LED next to the front lens begins blinking when the shutter button is pressed. About 4 seconds before the shutter opens, the LED begins to blink rapidly.
PLAYING BACK VIDEO CLIPS AND STILL IMAGES

1 Press the REC/PLAY button.
   • The display changes to the Playback Screen.

2 Select the image to play back.
   • Use the arrow keys to move the orange frame to the image you wish to play back.
   • The image information for the framed image is shown in the bottom part of the monitor.

3 Press the SET button.
   • The file you selected is played back.
   <To return to the recording mode>
   • Press the REC/PLAY button.

HINT
Slideshow playback
• In step 3, if you press the SET button for about 1 second or more, a slideshow playback will start.
• The slideshow playback will stop when any button is pressed.
## Video clip playback operation

<table>
<thead>
<tr>
<th>To do this...</th>
<th>Do this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal forward playback</td>
<td>Press the SET button.</td>
</tr>
<tr>
<td>Stop playback</td>
<td>During playback, press [▼].</td>
</tr>
<tr>
<td>Pause</td>
<td>During playback, press the SET button.</td>
</tr>
<tr>
<td><strong>To play back one image at a time</strong></td>
<td><strong>Forward playback</strong>&lt;br&gt;After pausing playback, press [►].</td>
</tr>
<tr>
<td>(single-frame step)</td>
<td><strong>Reverse playback</strong>&lt;br&gt;After pausing playback, press [◄].</td>
</tr>
<tr>
<td><strong>Slow playback</strong></td>
<td><strong>Forward playback</strong>&lt;br&gt;After pausing playback, press and hold [►].</td>
</tr>
<tr>
<td><strong>Reverse playback</strong></td>
<td>After pausing playback, press and hold [◄].</td>
</tr>
<tr>
<td><strong>To accelerate playback</strong></td>
<td><strong>Forward playback</strong>&lt;br&gt;During forward playback, press [►].&lt;br&gt;• The playback speed changes each time [►] is pressed, as follows:&lt;br&gt;Normal playback → 2x → 5x → 10x → 15x&lt;br&gt;Press [◄] to resume normal playback speed.</td>
</tr>
<tr>
<td><strong>Reverse playback</strong></td>
<td>During forward playback, press [◄].&lt;br&gt;• The playback speed changes each time [◄] is pressed, as follows:&lt;br&gt;15x ← 10x ← 5x ← 2x&lt;br&gt;Press [►] to resume normal playback speed.</td>
</tr>
<tr>
<td>Return to normal playback speed</td>
<td>Press the SET button.</td>
</tr>
<tr>
<td>Adjusting the volume</td>
<td><strong>Louder:</strong> During playback, press [ ].&lt;br&gt;<strong>Softer:</strong> During playback, press [ ].</td>
</tr>
</tbody>
</table>

### HINT

**If the icon appears on the playback Screen...**

- The icon appears when playing back a file that was saved in segments.
How to save one frame from a video clip as a still image

1 Play back the video clip. Pause the playback at the point you wish to “snap” a photo.

2 Press the [ ] button.

HINT
The file size for a video clip is very large
• Therefore, be aware that if the video clip is uploaded to a computer to be played back, the computer may not be able to play back the video fast enough, making it appear jerky. (The video will always be displayed properly on the camera monitor or a television.)
• Depending on the card, recording may end even before the possible recording time indicated.
CAUTION

During video clip playback, the sound of a motor is audible...
- During recording, the sound of the optical zoom movement or autofocus movement was recorded. This is not a malfunction.

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

By connecting the camera to a TV, you can play back the recorded files on the TV.

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.

About image output: The image output destination differs depending on the camera status.

<table>
<thead>
<tr>
<th>Connection cable</th>
<th>Image output destination</th>
<th>Recording mode</th>
<th>Playback mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDMI cable*</td>
<td>Camera monitor</td>
<td>○</td>
<td>×</td>
</tr>
<tr>
<td></td>
<td>TV</td>
<td>×</td>
<td>○</td>
</tr>
</tbody>
</table>

○: Images are output  ×: Images are not output

* When an HDMI cable is used to connect the camera to a TV, 1080p video mode images are output as 1080i images. Separately sold or commercially available mini-HDMI cable.
**Connecting to the HDMI terminal**

Use a separately sold or commercially available mini-HDMI cable to connect to a TV.

- **Mini HDMI cable** (VCP-HDMI02)
- **To HDMI terminal**
- **Set the input to [HDMI]**
- **To HDMI terminal on the TV**
PLAYING BACK ON A TV

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

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

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why doesn’t the power turn on?</td>
<td>Due to cold temperatures, the battery pack temporarily lost its power.</td>
<td>Place the camera in your pocket to warm it up before using it.</td>
</tr>
<tr>
<td>Why is the battery pack consumed so quickly even after it was fully recharged?</td>
<td>The ambient temperature is very low.</td>
<td>Keep the battery pack in an environment of 10 to 40 °C (50 to 104 °F).</td>
</tr>
<tr>
<td>Why doesn’t recharging end?</td>
<td>The battery pack life has expired.</td>
<td>Replace with a new battery pack. If this is not effective, consult your dealer.</td>
</tr>
<tr>
<td>Why does the icon appear?</td>
<td>The remaining battery pack power is low.</td>
<td>Recharge the battery pack.</td>
</tr>
<tr>
<td>Why does the multi-indicator flash red?</td>
<td>A recorded file is being saved on the card.</td>
<td>Not a malfunction. Wait until the multi-indicator turns off.</td>
</tr>
<tr>
<td>Shooting</td>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td>Are the settings retained even after the camera is turned off?</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Which resolution setting should I use?</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>When used in cold weather, why does the image seem to leave traces as it moves?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Why does the displayed image contain some red, blue and green dots, or why are black spots visible?</td>
<td></td>
</tr>
</tbody>
</table>

**Monitor**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>When used in cold weather, why does the image seem to leave traces as it moves?</td>
<td>Condition due to the monitor characteristics.</td>
<td>Not a malfunction. Spots that appear in the monitor only appear in the monitor and will not be recorded with the images.</td>
</tr>
<tr>
<td>Why does the displayed image contain some red, blue and green dots, or why are black spots visible?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
<td>Action</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Why is the image too bright?</td>
<td>The subject was too bright.</td>
<td>When capturing an image, devise a way to compensate for a bright subject, for example, by changing the shooting angle.</td>
</tr>
<tr>
<td>Why is there no image ([?] is shown)?</td>
<td>This may happen when trying to play back images stored on a card from a different digital camera.</td>
<td>Play back images that were recorded on a card using this camera.</td>
</tr>
<tr>
<td>Why is the playback image distorted?</td>
<td>If the subject moves or the camera is moved during recording, a distorted image may sometimes occur.</td>
<td>Not a malfunction. This is a characteristic of the CMOS sensor.</td>
</tr>
<tr>
<td>Why isn’t the magnified image clear?</td>
<td>Due to the characteristics of the camera, magnified images appear less clear.</td>
<td>Not a malfunction.</td>
</tr>
<tr>
<td>Can I play back image and sound files that I edited using my computer?</td>
<td>—</td>
<td>We cannot guarantee the accurate playback of files that have been edited using a computer.</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
<td>Action</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Viewing images</strong>&lt;br&gt;Why is there a motor-like sound during video clip playback?</td>
<td>The sound of the camera’s mechanical action was recorded.</td>
<td>Not a malfunction.</td>
</tr>
<tr>
<td><strong>Connecting to a TV</strong>&lt;br&gt;Why is there no sound?</td>
<td>The volume on the TV is set to the minimum.</td>
<td>Adjust the volume on the TV.</td>
</tr>
<tr>
<td><strong>Misc.</strong>&lt;br&gt;Why does the “Insufficient card memory” or “Insufficient internal memory” message appear?</td>
<td>There is no more available memory on the card or in the camera’s internal memory.</td>
<td>Delete unnecessary files, or use a card that has more memory available.</td>
</tr>
<tr>
<td>Why does the “Card is protected” message appear?</td>
<td>The lock switch on the card is in the locked (protect) position.</td>
<td>Move the lock switch to the unlocked position.</td>
</tr>
<tr>
<td>Why can’t the camera be operated?</td>
<td>A temporary internal circuitry problem may be the cause.</td>
<td>Remove the battery pack from the camera, wait a few minutes, then reinstall the battery pack and try again.</td>
</tr>
<tr>
<td>A problem such as inability to record or play back occurs.</td>
<td>The card contains files that were saved using a device other than this camera.</td>
<td>After saving your files to a different medium, format the card.</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
<td>Action</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>----------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Can I use my camera abroad?</td>
<td>—</td>
<td>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.</td>
</tr>
</tbody>
</table>
| 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. |
OVERVIEW OF THE SETUP MENU SCREEN

The Setup Menu appears when you press and hold the [_separator] button for at least 1 second while the camera is on. Use the arrow keys to select the desired parameter, and press the SET button to display the setting screen for the specified parameter. The Setup Menu is canceled when the [_separator] button is pressed.
1. **Photo stabilizer**
   - Compensate for camera shake during video clip recording.

2. **OPTICAL ZOOM**
   - Select whether or not to enable the optical zoom during video clip recording.

3. **CLOCK SET setting**
   - Set the camera’s clock.

4. **LANGUAGE setting**
   - Select the language in which the monitor messages are displayed.

5. **TV OUTPUT setting**

6. **FORMAT**

7. **Remaining battery power indication**
## 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:**  
ISO standard MPEG-4 AVC/H.264 (.MP4)  
Audio: 48 kHz sampling, 16bit, 2ch, AAC compression |
|-------------------------------|------------------------------------------------|
| Data storage media            | Internal memory: Approx. 80 MB  
SD Memory Card  
SDHC Memory Card (up to 32 GB)  
SDXC Memory Card (up to 64 GB) |
| Image sensor/ camera effective number of pixels | 1/2.33-inch (1.1 cm) CMOS sensor 10.7 mega pixels  
Still images: Approx. 10.0 million pixels  
Videos (HD mode): Approx. 8.3 million pixels  
Videos (SD mode): Approx. 10.0 million pixels |
## Still image shooting mode (recording resolution)

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12M</td>
<td>4000 × 3000 pixels (approx. 12 million pixels)</td>
</tr>
<tr>
<td>10M</td>
<td>3648 × 2736 pixels (approx. 10 million pixels)</td>
</tr>
<tr>
<td>5M</td>
<td>2592 × 1944 pixels (approx. 5 million pixels)</td>
</tr>
<tr>
<td>2M, 2M</td>
<td>1600 × 1200 pixels (approx. 2 million pixels)</td>
</tr>
</tbody>
</table>

## Video clip recording mode (recording resolution)

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-HD</td>
<td>1920 × 1080 pixels, 30 fps (30p)</td>
</tr>
<tr>
<td>HD-HR</td>
<td>1280 × 720 pixels, 60 fps (60p)</td>
</tr>
<tr>
<td>HD-SHD</td>
<td>1280 × 720 pixels, 30 fps (30p)</td>
</tr>
<tr>
<td>TV-SHD</td>
<td>640 × 480 pixels, 30 fps (30p)</td>
</tr>
</tbody>
</table>

- The 60 fps frame rate of this camera is 59.94 fps, and the 30 fps frame rate is 29.97 fps.

## White balance

- Full-auto TTL

## Lens

- Focal length: \( f = 6.3 \text{ mm to } 18.9 \text{ mm} \), Optical 3x zoom
- Open: \( F = 3.1 \text{ (wide) to } 5.9 \text{ (tele)} \)
- 5 groups, 6 elements (4 aspheric elements, 6 aspheric surfaces)
- 35 mm film camera conversion
- Still image shooting: 36 mm to 108 mm (Optical zoom 3x)
- Video clip recording: 37 mm to 111 mm (Optical Zoom 3x)

## Exposure control type

- Programmable AE

## Light-measuring mode

- Multi-section measuring

## Range

- 10 cm (3.94 in.) to infinity

## Digital zoom

- For shooting: 1x to approx. 4x

## Shutter speed

- Still image shooting mode: 1/2 to 1/1,500 sec.
  - (During flash: 1/30 to 1/1,500 sec.)
- Sequential shots mode: 1/15 to 1/1,500 sec. (no flash)
- Video clip recording mode: 1/30 to 1/10,000 sec.

## 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 400)
  - Sensitivity measured in compliance with the ISO standard (ISO 12232:2006).

## Minimum subject illumination

- 14 lux (1/30 sec.)
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image stabilizer</td>
<td>Video: Electronic</td>
</tr>
<tr>
<td></td>
<td>Still image: Multi-calculation electronic</td>
</tr>
<tr>
<td>Monitor</td>
<td>2.0 inch Low-temperature polysilicon</td>
</tr>
<tr>
<td></td>
<td>TFT color screen LCD, Approx. 150,000 dots</td>
</tr>
<tr>
<td>Flash working range</td>
<td>GN = 5.5</td>
</tr>
<tr>
<td></td>
<td>Approx. 50 cm (19.69 in.) to 3.5 m (11.48 ft.) (wide)</td>
</tr>
<tr>
<td></td>
<td>Approx. 60 cm (23.62 in.) to 1.9 m (6.23 ft.) (tele)</td>
</tr>
<tr>
<td>Flash modes</td>
<td>Auto-flash, forced flash, flash off, red-eye reduction</td>
</tr>
<tr>
<td>Focus</td>
<td>Auto (9-point AF)</td>
</tr>
<tr>
<td>Self-timer</td>
<td>Approx. 2-second delay, 10-second delay</td>
</tr>
<tr>
<td>Ambient environment</td>
<td>Temperature 0 to 40 °C (32 to 104°F) (operation)</td>
</tr>
<tr>
<td></td>
<td>−20 to 60 °C (−4 to 140°F) (storage)</td>
</tr>
<tr>
<td></td>
<td>Humidity 30 to 90% (operating, no condensation)</td>
</tr>
<tr>
<td></td>
<td>10 to 90% (storage, no condensation)</td>
</tr>
<tr>
<td>Power supply</td>
<td>Battery pack (supplied)</td>
</tr>
<tr>
<td></td>
<td>Li-ion battery pack (DB-L80) ×1</td>
</tr>
<tr>
<td>Power consumption</td>
<td>3.4 W (When using the Li-ion battery during recording)</td>
</tr>
<tr>
<td>Dimensions (excluding protrusions)</td>
<td>63.1 (W) × 22.0 (D) × 110.8 (H) mm</td>
</tr>
<tr>
<td></td>
<td>2.48 (W) × 0.87 (D) × 4.36 (H) in.</td>
</tr>
<tr>
<td></td>
<td>(Maximum dimensions)</td>
</tr>
<tr>
<td></td>
<td>Volumetric capacity: Approx. 104 cc</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 122 g (4.3 oz.) (including battery pack and card)</td>
</tr>
<tr>
<td></td>
<td>Approx. 105 g (3.7 oz.) (camera only [without battery pack and card])</td>
</tr>
</tbody>
</table>
Camera connectors

<table>
<thead>
<tr>
<th>USB terminal</th>
<th>Dedicated regrouped jack</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>USB 2.0 High Speed</td>
</tr>
<tr>
<td>mini HDMI terminal</td>
<td>Video output</td>
</tr>
<tr>
<td></td>
<td>Total number of scan lines (effective number of scan lines): 750p (720p)/1125i (1080i)/525p (480p)</td>
</tr>
<tr>
<td></td>
<td>Audio output: L-PCM 48 kHz sampling</td>
</tr>
</tbody>
</table>

Battery life

<table>
<thead>
<tr>
<th>Shooting</th>
<th>Still image shooting mode</th>
<th>Approx. 170 images: CIPA standard (when a SanDisk 2 GB SD Memory Card is used)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Video clip recording mode</td>
<td>Approx. 65 minutes: Recorded in [ ] mode</td>
</tr>
<tr>
<td>Playback</td>
<td></td>
<td>Approx. 240 minutes: Monitor on, continuous playback</td>
</tr>
</tbody>
</table>

- 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.
### Possible No. of Images/Possible Shooting Time/ Possible Recording Time

<table>
<thead>
<tr>
<th>Shooting/recording mode</th>
<th>Resolution setting</th>
<th>Internal Memory</th>
<th>SD Memory Card</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>8 GB</td>
</tr>
<tr>
<td>Still image mode</td>
<td>12M</td>
<td>21 images</td>
<td>2,000 images</td>
</tr>
<tr>
<td></td>
<td>10M</td>
<td>25 images</td>
<td>2,390 images</td>
</tr>
<tr>
<td></td>
<td>5M</td>
<td>50 images</td>
<td>4,690 images</td>
</tr>
<tr>
<td></td>
<td>2M</td>
<td>124 images</td>
<td>11,300 images</td>
</tr>
<tr>
<td></td>
<td>2M</td>
<td>124 images</td>
<td>11,300 images</td>
</tr>
<tr>
<td>Video clip mode</td>
<td>Full-HD</td>
<td>53 sec.</td>
<td>1 hr. 26 min.</td>
</tr>
<tr>
<td></td>
<td>HD-HR</td>
<td>1 min. 8 sec.</td>
<td>1 hr. 52 min.</td>
</tr>
<tr>
<td></td>
<td>HD-STD</td>
<td>1 min. 8 sec.</td>
<td>1 hr. 52 min.</td>
</tr>
<tr>
<td></td>
<td>TV-STD</td>
<td>3 min. 16 sec.</td>
<td>5 hr. 18 min.</td>
</tr>
</tbody>
</table>

- The continuous recording time of a video clip is approximately 30 minutes.
- The above values apply when an SD Memory Card by SanDisk is used.
- 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.).
Concerning the multi-indicator

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

<table>
<thead>
<tr>
<th>Multi-indicator status</th>
<th>Camera status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lit</td>
<td>Connected to a computer</td>
</tr>
<tr>
<td></td>
<td>Charging</td>
</tr>
<tr>
<td>Flashing</td>
<td>Battery charge error or rise in internal temperature</td>
</tr>
<tr>
<td>Slow/Fast</td>
<td>During sleep mode</td>
</tr>
<tr>
<td>Fast</td>
<td>Connected to a computer</td>
</tr>
<tr>
<td></td>
<td>Connected to a TV</td>
</tr>
<tr>
<td>Very fast</td>
<td>Accessing card</td>
</tr>
</tbody>
</table>

Supplied Li-ion battery pack

<table>
<thead>
<tr>
<th>Model number</th>
<th>DB-L80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>3.7 V</td>
</tr>
<tr>
<td>Capacity</td>
<td>700 mAh</td>
</tr>
<tr>
<td>Ambient environment</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>0 to 40 °C (32 to 104 °F) (during use)</td>
</tr>
<tr>
<td></td>
<td>−10 to 30 °C (14 to 86 °F) (storage)</td>
</tr>
<tr>
<td>Humidity</td>
<td>10 to 90% (no condensation)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>39.2 (W) × 5.9 (D) × 31.4 (H) mm</td>
</tr>
<tr>
<td></td>
<td>1.54 (W) × 0.23 (D) × 1.24 (H) in.</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 15 g (0.5 oz.)</td>
</tr>
</tbody>
</table>
Others

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• Sanyo Electric shall not be held responsible for any problems resulting from the use of this camera.
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