Important Usage Instructions

**CAUTION:**
- Danger of explosion if the wrong type of batteries are attached. Use only the same type of batteries.
- Do not dispose batteries or product to excessive heat such as the inside of a car under direct sunlight, fire, etc.

**Important Warning**

The Mains plug is used as the disconnect device. The Mains plug shall remain readily operable to disconnect the plug in case of an accident.

**CAUTION:**
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

**WARNING:**
- To reduce the risk of electric shock, do not remove cover of important operating and maintenance (servicing) instructions in the literature accompanying the product.

**CAUTION:**
- To prevent electric shock, match wide blade of plug to wide slot, fully insert.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point, within an equilateral triangle, is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

**IMPORTANT SAFETY INSTRUCTIONS**

In these safety instructions the word “product” refers to the Canon HD Camcorder VIXIA HF M30 A / VIXIA HF M31 A / VIXIA HF M300 A and all its accessories.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

**WARNING!**
- To reduce the risk of fire or electric shock, do not expose this product to rain or moisture.
- To reduce the risk of electric shock and to reduce annoying interference, use the recommended accessories only.

**COPYRIGHT WARNING:** Unauthorized recording of copyrighted materials may infringe on the rights of copyright owners and be contrary to copyright laws.

HD Camcorder, VIXIA HF M30 A / VIXIA HF M31 A / VIXIA HF M300 A systems

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.

Note: This equipment has been tested and found to comply with the limits for 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.

Use of shielded cable is required to comply with class B limits in Subpart B of Part 15 of FCC Rules. Do not make any changes or modifications to the equipment unless otherwise specified in the manual. If such changes or modifications should be made, you could be required to stop operation of the equipment.

To reduce the risk of electric shock, do not remove cover (or back). No user-serviceable parts inside. Refer servicing to qualified service personnel.

HD Camcorder, VIXIA HF M30 A / VIXIA HF M31 A / VIXIA HF M300 A systems

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.

Note: This equipment has been tested and found to comply with the limits for 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.

Use of shielded cable is required to comply with class B limits in Subpart B of Part 15 of FCC Rules. Do not make any changes or modifications to the equipment unless otherwise specified in the manual. If such changes or modifications should be made, you could be required to stop operation of the equipment.

To reduce the risk of electric shock, do not remove cover (or back). No user-serviceable parts inside. Refer servicing to qualified service personnel.
21 Placing or Moving — Do not place on an unstable cart, stand, tripod, bracket or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product.
A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

22 Power Sources — The CA-570 Compact Power Adapter should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. Regarding other power sources such as battery power, refer to instructions in this manual.

23 Polarization — The CA-570 Compact Power Adapter is equipped with a polarized 2-prong plug (a plug having one blade wider than the other). The 2-prong polarized plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, by reversing the plug. If the plug still fails to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

24 Power Cord Protection — Power cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to plugs and the point from which the cords extend.

25 Outdoor Antenna Grounding — If an outdoor antenna is connected to the product, be sure the antenna is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI / NFPA No. 70—1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See figure 1.

26 Lightning — For added protection of this product during a lightning storm, or when it is left unattended and unused for long periods of time, disconnect it from the wall outlet and unplug the power cord. This will prevent damage to the product due to lightning and power-line surges.

27 Overloading — Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock. Be careful not to spill liquid of any kind onto the product.

28 Objects and Liquid Entry — Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Be careful not to spill liquid of any kind onto the product.

29 Servicing — Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

30 Damage Requiring Service — Disconnect this product from the wall outlet and all power sources including battery, and refer servicing to qualified service personnel under the following conditions:
   a. If the power-supply cord or plug is damaged.
   b. If any liquid has been spilled onto, or objects have fallen into, the product.
   c. If the product has been exposed to rain or water.
   d. If the product does not operate normally when you follow the operating instructions. Improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
   e. If the product has been dropped or the cabinet has been damaged.
   f. If the product exhibits a distinct change in performance. This indicates a need for service.

31 Replacement Parts — When replacement parts are required, be sure the service technician uses replacement parts that are specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

32 Safety Check — Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in safe operating order.

33 Heat — The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

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• “YouTube” is a trademark of Google Inc.
• Other names and products not mentioned above may be trademarks or registered trademarks of their respective companies.
• This device incorporates software technology licensed from Microsoft.

Exciting Features and New Functions

High-Definition Video

Your camcorder’s full high-definition image sensor (Full HD CMOS) captures video at a resolution of 1,920 x 1,080 pixels. Videos are then recorded in the memory in high definition, using AVCHD specifications.

With your new HD camcorder, capturing the special moments in your life with amazing image quality and in lifelike vibrant colors is easy and fun!

Dual Flash Memory

You can record in the built-in memory or on commercially available memory cards (137).

Relay Recording

The built-in memory almost full? Use the memory card slot to keep on recording videos without interruption (138).
Smart AUTO (43)

Smart AUTO automatically selects the best scene mode for the scene you want to shoot. You get spectacular recordings every time without worrying about settings.

Video Snapshot (68)

Shoot or capture short scenes and arrange them into a video clip set to your favorite background music.

Face Detection (66)

The camcorder automatically detects people’s faces and adjusts the focus and other settings accordingly for beautiful results.

Image Stabilization

Dynamic IS (64) compensates for camcorder shake when you shoot video while walking. Powered IS (65) will produce stable shots when you zoom in on distant subjects (full telephoto).

Enjoying your Recordings on Other Devices

Connect the camcorder to an HDTV (124)

Connect the camcorder to the optional DW-100 DVD burner (131, 135)

AVCHD discs

Photo DVDs

AVCHD-compatible HDTVs and digital recorders with an SD memory card slot

Use an Eye-Fi card (145) to wirelessly upload recordings to your computer or a video sharing Web site.

Save or upload to the Web.

Use the supplied software ImageMixer 3 SE (128, 141).

Convert your HD movies, in the camcorder itself, to standard definition files (136, 142).

Standard Definition

High Definition

Standard DVDs

AVCHD discs containing scenes recorded in MXP mode cannot be created with the optional DW-100 DVD burner. Use the supplied software ImageMixer 3 SE to back up such scenes.

Refer to the instruction manual of the device. Depending on the device used, correct playback may not be possible even if the device is AVCHD-compatible. In such case, play back the recordings on the memory card using the camcorder.

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About this Manual
Thank you for purchasing the Canon VIXIA HF M31 / VIXIA HF M30 / VIXIA HF M300. Please read this manual carefully before you use the camcorder and retain it for future reference. Should your camcorder fail to operate correctly, refer to Troubleshooting (168).

Conventions Used in this Manual
• IMPORTANT: Precautions related to the camcorder’s operation.
• NOTES: Additional topics that complement the basic operating procedures.
• POINTS TO CHECK: Restrictions or requirements regarding the function described.
• : Reference page number within this manual.

To complete some operations you will need to refer also to other instruction manuals. This will be indicated with the following icons:

Refer to the instruction manual of the optional DW-100 DVD Burner.

Refer to the ‘Photo Applications’ Instruction Manual, included as a PDF file in the supplied Camcorder Supplemental Disc.

Text that applies only to the model(s) shown in the icon.

The following terms are used in this manual:

“Scene” refers to one movie unit from the point you press the button to start recording until you press again to pause the recording.

The photos included in this manual are simulated pictures taken with a still camera. Unless indicated otherwise, illustrations and menu icons refer to the.
For example, a “button” frame.

Brackets [ ] are used to refer to control buttons and menu options you will touch on the screen and to other onscreen messages and displays.

Brackets ( ) are used to abbreviate menu selections. For a detailed explanation on how to use the menus, refer to the appendix Menu Options Lists (32). For a concise summary of all available menu options and settings, refer to the appendix Menu Options Lists (347).

The following CD-ROMs and software are supplied with the camcorder:

- **PIXELA Application - Disc 1** CD-ROM* and “PIXELA Applications” Instruction Manual
  - ImageMixer 3 SE Video Tools – Software for managing, editing, and transferring movies and music files you can use as background music.
  - ImageMixer 3 SE Transfer Utilities – Software for saving and transferring movies and music files you can use as background music.
  - ImageMixer 3 SE Video Tools – Software for managing, editing, and playing back movies.
  - Detailed instruction manual of the camcorder (this PDF file).
  - Photo Applications – Software for saving, managing, and printing photos.
  - Music files that can be used as background music during playback**.

* The CD-ROM includes the instruction manual of the software (on PDF file).

** These music files are for exclusive use with the supplied software ImageMixer 3 SE. The disc cannot be played back on CD players. For more details, refer to “ImageMixer 3 SE Software Guide” on the PIXELA Application Disc 1 CD-ROM.

Names of Parts

**Left side view**

1. DISP (onscreen display) button (42)
2. BATT. INFO button (167)
3. (camera/play) button (31)
4. Speaker (51)
5. Memory card slot cover
6. Memory card slot (38)
7. MIC terminal (85)
8. AV OUT terminal (121, 123)/ (headphones) terminal (83)
9. BATTERY RELEASE switch (24)
10. ACCESS indicator (42, 58, 104)
11. Strap mount (27)
12. COMPONENT OUT terminal (121, 123)
13. USB terminal (121, 124)
14. HDMI OUT terminal (121, 122)
15. Grip belt (27)
16. Flash (107)
17. Flash
18. "B" (camera/play) button
19. DISP (onscreen display) button
20. BATT. INFO button
21. Speaker
22. Memory card slot cover
23. Memory card slot
24. MIC terminal
25. AV OUT terminal
26. BATTERY RELEASE switch
27. ACCESS indicator
28. Strap mount
29. COMPONENT OUT terminal
30. USB terminal
31. HDMI OUT terminal
32. Grip belt
33. Flash
34. Flash
35. "B" (camera/play) button
36. DISP (onscreen display) button
37. BATT. INFO button
38. Speaker
39. Memory card slot cover
40. Memory card slot
41. MIC terminal
42. AV OUT terminal
43. BATTERY RELEASE switch
44. ACCESS indicator
45. Strap mount
46. COMPONENT OUT terminal
47. USB terminal
48. HDMI OUT terminal
49. Grip belt
50. Flash
51. "B" (camera/play) button
52. DISP (onscreen display) button
53. BATT. INFO button
54. Speaker
55. Memory card slot cover
56. Memory card slot
57. MIC terminal
58. AV OUT terminal
59. BATTERY RELEASE switch
60. ACCESS indicator
61. Strap mount
62. COMPONENT OUT terminal
63. USB terminal
64. HDMI OUT terminal
65. Grip belt
66. Flash
67. Flash
68. "B" (camera/play) button
69. DISP (onscreen display) button
70. BATT. INFO button
71. Speaker
72. Memory card slot cover
73. Memory card slot
74. MIC terminal
75. AV OUT terminal
76. BATTERY RELEASE switch
77. ACCESS indicator
78. Strap mount
79. COMPONENT OUT terminal
80. USB terminal
81. HDMI OUT terminal
82. Grip belt
83. Flash
84. Flash
85. "B" (camera/play) button
86. DISP (onscreen display) button
87. BATT. INFO button
88. Speaker
89. Memory card slot cover
90. Memory card slot
91. MIC terminal
92. AV OUT terminal
93. BATTERY RELEASE switch
94. ACCESS indicator
95. Strap mount
96. COMPONENT OUT terminal
97. USB terminal
98. HDMI OUT terminal
99. Grip belt
100. Flash
101. Flash
102. "B" (camera/play) button
103. DISP (onscreen display) button
104. BATT. INFO button
105. Speaker
106. Memory card slot cover
107. Memory card slot
108. MIC terminal
109. AV OUT terminal
110. BATTERY RELEASE switch
111. ACCESS indicator
112. Strap mount
113. COMPONENT OUT terminal
114. USB terminal
115. HDMI OUT terminal
116. Grip belt
117. Flash
118. Flash
119. "B" (camera/play) button
120. DISP (onscreen display) button
121. BATT. INFO button
122. Speaker
123. Memory card slot cover
124. Memory card slot
125. MIC terminal
126. AV OUT terminal
127. BATTERY RELEASE switch
128. ACCESS indicator
129. Strap mount
130. COMPONENT OUT terminal
131. USB terminal
132. HDMI OUT terminal
133. Grip belt
134. Flash
135. Flash
136. "B" (camera/play) button
137. DISP (onscreen display) button
138. BATT. INFO button
139. Speaker
140. Memory card slot cover
141. Memory card slot
142. MIC terminal
143. AV OUT terminal
144. BATTERY RELEASE switch
145. ACCESS indicator
146. Strap mount
147. COMPONENT OUT terminal
148. USB terminal
149. HDMI OUT terminal
150. Grip belt
151. Flash
152. Flash
153. "B" (camera/play) button
154. DISP (onscreen display) button
155. BATT. INFO button
156. Speaker
157. Memory card slot cover
158. Memory card slot
159. MIC terminal
160. AV OUT terminal
161. BATTERY RELEASE switch
162. ACCESS indicator
163. Strap mount
164. COMPONENT OUT terminal
165. USB terminal
166. HDMI OUT terminal
167. Grip belt
168. Flash
169. Flash
170. "B" (camera/play) button
171. DISP (onscreen display) button
172. BATT. INFO button
173. Speaker
174. Memory card slot cover
175. Memory card slot
176. MIC terminal
177. AV OUT terminal
178. BATTERY RELEASE switch
179. ACCESS indicator
180. Strap mount
181. COMPONENT OUT terminal
182. USB terminal
183. HDMI OUT terminal
184. Grip belt
185. Flash
186. Flash
187. "B" (camera/play) button
188. DISP (onscreen display) button
189. BATT. INFO button
190. Speaker
191. Memory card slot cover
192. Memory card slot
193. MIC terminal
194. AV OUT terminal
195. BATTERY RELEASE switch
196. ACCESS indicator
197. Strap mount
198. COMPONENT OUT terminal
199. USB terminal
200. HDMI OUT terminal
201. Grip belt
202. Flash
203. Flash
204. "B" (camera/play) button
205. DISP (onscreen display) button
206. BATT. INFO button
207. Speaker
208. Memory card slot cover
209. Memory card slot
210. MIC terminal
211. AV OUT terminal
212. BATTERY RELEASE switch
213. ACCESS indicator
214. Strap mount
215. COMPONENT OUT terminal
216. USB terminal
217. HDMI OUT terminal
218. Grip belt
219. Flash
220. Flash
221. "B" (camera/play) button

**Right side view**

1. DISP (onscreen display) button
2. BATT. INFO button
3. (camera/play) button
4. Speaker
5. Memory card slot cover
6. Memory card slot
7. MIC terminal
8. AV OUT terminal
9. (headphones) terminal
10. BATTERY RELEASE switch
11. ACCESS indicator
12. Strap mount
13. COMPONENT OUT terminal
14. USB terminal
15. HDMI OUT terminal
16. Grip belt
17. Flash
18. Flash
19. "B" (camera/play) button

**Front view**

1. DISP (onscreen display) button
2. BATT. INFO button
3. (camera/play) button
4. Speaker
5. Memory card slot cover
6. Memory card slot
7. MIC terminal
8. AV OUT terminal
9. (headphones) terminal
10. BATTERY RELEASE switch
11. ACCESS indicator
12. Strap mount
13. COMPONENT OUT terminal
14. USB terminal
15. HDMI OUT terminal
16. Grip belt
17. Flash
18. Flash
19. "B" (camera/play) button

**Supplied Accessories and CD-ROMs**

The following accessories are supplied with the camcorder:

- **CA-570 Compact Power Adapter** (incl. power cord)
- **BP-808 Battery Pack**
- **WL-D89 Wireless Controller** (incl. CR2025 lithium button battery)
- **STV-250N Stereo Video Cable**
- **CTC-100/S Component Cable**
- **IFC-300PBC USB Cable**
- **Quick Guide**
Preparations

This chapter describes basic operations, such as using the touch panel, navigating the menus, and first time settings to help you learn more about your camcorder.

Getting Started

Charging the Battery Pack

The camcorder can be powered with a battery pack or directly using the compact power adapter. Charge the battery pack before use. For approximate charging times and recording/playback times with a fully charged battery pack, refer to Charging Times (195) and Recording and Playback Times (195).

1 Connect the power cord to the compact power adapter.
2 Plug the power cord into a power outlet.
3 Connect the compact power adapter to the camcorder's DC IN terminal.
4 Attach the battery pack to the camcorder.

Press the battery pack softly into the battery attachment unit and slide it up until it clicks in place.

5 Charging will start when the camcorder is turned off.
   • If the camcorder was on, the green ON/OFF (CHG) indicator will go out when you turn off the camcorder. After a moment, important data is updated in the memory. Be sure to wait until the green ON/OFF (CHG) indicator goes out.
   • We recommend charging the battery pack in temperatures between 10 °C and 30 °C (50 °F and 86 °F). Outside the temperature range of 0 °C to 40 °C (32 °F to 104 °F), charging will not start.
   • Do not connect to the camcorder's DC IN terminal or to the compact power adapter any electrical equipment that is not expressly recommended for use with this camcorder.

To remove the battery pack

1 Slide BATTERY RELEASE in the direction of the arrow and hold it pressed down.
2 Slide the battery pack down and then pull it out.

IMPORTANT
• Turn off the camcorder before connecting or disconnecting the compact power adapter. After pressing [POWER] to turn off the camcorder, important data is updated in the memory. Be sure to wait until the green ON/OFF (CHG) indicator goes out.
• We recommend charging the battery pack in temperatures between 10 °C and 30 °C (50 °F and 86 °F). Outside the temperature range of 0 °C to 40 °C (32 °F to 104 °F), charging will not start.
• Do not connect to the camcorder's DC IN terminal or to the compact power adapter any electrical equipment that is not expressly recommended for use with this camcorder.
• To prevent equipment breakdowns and excessive heating, do not connect the supplied compact power adapter to voltage converters for overseas travels or special power sources such as those on aircraft and ships, DC-AC inverters, etc.

**NOTES**

• The battery pack will be charged only when the camcorder is off.
• If remaining battery time is an issue, you can power the camcorder using the compact power adapter so the battery pack will not be consumed.
• Charged battery packs continue to discharge naturally. Therefore, charge them on the day of use, or the day before, to ensure a full charge.
• We recommend that you prepare battery packs to last 2 to 3 times longer than you think you might need.
• USA and Canada only: The Lithium ion/polymer battery that powers the product is recyclable. Please call 1-800-8-BATTERY for information on how to recycle this battery.

---

**Preparations**

**Preparing the Accessories**

**Wireless Controller**

First, insert the supplied CR2025 lithium button battery into the wireless controller.

1. Press the tab in the direction of the arrow and pull out the battery holder.
2. Place the lithium button battery with the + side facing up.
3. Insert the battery holder.

**To use the wireless controller**

Point the wireless controller at the camcorder’s remote sensor when you press the buttons.
You can rotate the LCD panel 180 degrees to use the wireless controller from the front of the camcorder.

**NOTES**

• The wireless controller may not work properly when the remote sensor is situated under strong light sources or direct sunlight.

---

**Grip Belt and Straps**

**Fasten the grip belt.**

Adjust the grip belt so that you can reach the zoom lever with your index finger, and the [START/STOP] button with your thumb.

**To remove the grip belt**

1. Lift the padded handgrip’s flap and detach the strap from the Velcro pad.
2. Pull the strap to remove it first from the front bracket on the camcorder, then to unthread it from the handgrip and finally to remove it from the rear bracket on the camcorder.

---

**To attach an optional wrist strap**

Pass the attaching end of the wrist strap through the rear bracket on the camcorder, thread the wrist strap through the loop and fasten.
You can also attach the wrist strap to the strap mount on the grip belt to use both for extra convenience and protection.

**To attach an optional shoulder strap**

Pass the ends of the shoulder strap through the strap mount on the grip belt and adjust the length of the strap.

---

**Adjusting the Position and Brightness of the LCD Screen**

**Rotating the LCD Panel**

Open the LCD panel 90 degrees.
• You can rotate the panel 90 degrees downward.
• You can rotate the panel 180 degrees toward the lens. Rotating the LCD panel 180 degrees can be useful in the following cases:
  - To include yourself in the picture when recording with the self timer.
  - To allow the camcorder to be operated with the wireless controller from the front.
Operating Modes

Recording

When recording video or photos, the camcorder’s operating mode is determined by the position of the mode switch and the onscreen control buttons.

<table>
<thead>
<tr>
<th>Operating mode</th>
<th>Mode switch</th>
<th>Onscreen icon</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Shot</td>
<td></td>
<td></td>
<td>Record video and take photos easily, letting the camcorder take care of all the settings – Great for beginners or if you just prefer not to bother with detailed camcorder settings.</td>
</tr>
<tr>
<td>Flexible recording</td>
<td>[FUNC.]</td>
<td></td>
<td>Use one of the dedicated recording modes to enjoy full access to the menus and advanced functions and change the camcorder’s settings to your preference.</td>
</tr>
</tbody>
</table>

Playback

Press the camera/play button [Playback] to switch the camcorder between camera (recording) mode and playback mode. The playback mode you switch into depends on the initial recording mode. You can press [Playback] when the camcorder is off to turn it on directly in playback mode.

Basic Operation of the Camcorder

Using the Touch Screen

The control buttons and menu items that appear on the touch screen change dynamically depending on the operating mode and the task you are performing. With the intuitive touch screen interface you have all the controls at your fingertips.

Touch

Touch a menu item to select it, or a control button to perform the corresponding action. For some functions, such as Touch & Track (48) and face detection (68), you can touch a subject that appears on the touch screen to select it and have the camcorder choose the optimal settings.

Drag

Swipe your finger up and down or left and right across the screen to scroll menus, to browse through index screen pages or to adjust slider controls (for example, to adjust the volume).

NOTES

• The camcorder uses a pressure-sensitive touch screen. Press firmly when using touch operations.
• In the following cases, you may not be able to perform touch operations correctly.
  - Operating the touch screen with wet or gloved hands or using your fingerprints or other hard-tipped objects such as ballpoint pens.
  - Applying excessive force or forcefully scratching the touch screen.
  - Attaching commercially available screen protectors or adhesive film onto the touch screen’s surface.

Operating modes:

- Smart AUTO function (46)
- Touch 
- Touch & Track (68)
- Touch & Track (48)
- Drag

Using the Menus

Many of the camcorder’s functions can be adjusted from the FUNC. panel and the setup menus. In [Mode] mode, however, menus cannot be accessed and, except in a few cases, most menu settings will return to their default values.

For details about the available menu options and settings, refer to the appendix Menu Options Lists (147).

Operating modes:

The FUNC. Panel and Edit Panel

In [Mode] and [Mode] mode, the FUNC. panel shows a convenient overview of frequently used shooting functions. Touch [FUNC.] to access the FUNC. panel and then touch the function you want to set or adjust. You may need to drag your finger up and down along the scroll bar to find the control button of the desired function.
In [ ] and [ ] mode, touch [Edit] to display a similar panel containing the various operations that are available after selecting one or more scenes or photos (for example, deleting, adding scenes to the playlist, protecting photos, etc.). Touch the control button of the desired operation.

Example of the Edit panel in [ ] mode

Touch the control button of the desired operation

<table>
<thead>
<tr>
<th>Operating modes:</th>
<th>[FUNC.]*</th>
<th>[MENU]</th>
<th>[Language]*</th>
</tr>
</thead>
</table>

NOTES
- A small font size is used in menu screens so you can see the options currently selected. You can enlarge the font size by setting [ ] to [ A Large] but only the icons of the currently selected options will appear on the screen.

The Setup Menus

1. [ ] or [ ] mode only: Touch [FUNC.]
2. Touch [MENU] to open the setup menus. You can also press [MENU] on the wireless controller to open the setup menus.
3. Touch the tab of the desired menu.
4. Drag your finger up and down along the scroll bar to bring the setting you want to change into the orange selection bar. Menu items not available appear grayed out.
5. When the desired menu item is in the orange bar, touch inside the frame on the right.
6. Touch the desired option and touch [ ] .
   You can touch [ ] to close the menu at any time.

NOTES
- A small font size is used in menu screens so you can see the options currently selected. You can enlarge the font size by setting [ ] to [ A Large] but only the icons of the currently selected options will appear on the screen.

First Time Settings

Setting the Date and Time

You will need to set the date and time of the camcorder before you can start using it. The [Date/Time] screen will appear automatically when the camcorder’s clock is not set. When the [Date/Time] screen appears, the year will be selected.

1. Touch a field you want to change (year, month, day, hours or minutes).
2. Touch [ ] or [ ] to change the field as necessary.
3. Set the correct date and time by changing all the fields in the same way.
4. Touch [Y.M.D], [M.D,Y] or [D.M.Y] to select the date format you prefer.
5. Touch [24H] to use 24-hour clock or leave this control unchecked to use 12-hour clock (AM/PM).
6. Touch [OK] to start the clock and close the setup screen.

NOTES
- When you do not use the camcorder for about 3 months, the built-in rechargeable lithium battery may discharge completely and the date and time setting may be lost. In such case, recharge the built-in lithium battery [ ] and set the time zone, date and time again.
- To change the date and time later on (not during the initial setup), open the [Date/Time] screen from the setup menus:
  [FUNC.]* [MENU] [ ] [Date/Time]

PREPARATIONS

Changing the Language

The default language of the camcorder is English. You can set it to one of 22 other languages.

Operating modes: [ ]

[FUNC.]* [MENU] [ ] [Language] Desired language [ ]

* Only when performing the procedure in a recording mode.

Changing the Time Zone

Change the time zone to match your location. The default setting is New York.

Operating modes: [ ]

[FUNC.]* [MENU] [ ] [Time Zone/DST]

* Only when performing the procedure in a recording mode.

NOTES
- Some control buttons, such as [ZOOM], [FUNC.] or [MENU], will appear in English regardless of the language selected.
Using a Memory Card

Memory Cards Compatible for Use with the Camcorder

You can use commercially available SDHC (SD high capacity) memory cards and SD memory cards with this camcorder. However, depending on the memory card, you may not be able to record movies. Refer to the table below.

As of October 2009, the movie recording function has been tested using SD/SDHC memory cards made by Panasonic, Toshiba and SanDisk.

<table>
<thead>
<tr>
<th>Memory card</th>
<th>Capacity</th>
<th>SD Speed Class</th>
<th>Recording movies</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD memory cards</td>
<td>64 MB or less</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>128 MB or more</td>
<td>–</td>
<td>*</td>
</tr>
<tr>
<td>SDHC memory cards</td>
<td>Over 2 GB</td>
<td>Class 4, 6, 10</td>
<td>●</td>
</tr>
</tbody>
</table>

* Depending on the memory card used, it may not be possible to record movies.

About the SD Speed Class:
The SD Speed Class is a standard that indicates the minimum guaranteed data transfer speed of SD/SDHC memory cards. When you buy a new memory card, look for the Speed Class logo on the package.

We recommend using memory cards rated Speed Class 4, 6 or 10.

Eye-Fi Cards

This product is not guaranteed to support Eye-Fi card functions (including wireless transfer). In case of an issue with an Eye-Fi card, please check with the card manufacturer.

Also note that an approval is required to use Eye-Fi cards in many countries or regions. Without approval, use of the card is not permitted. If it is unclear whether the card has been approved for use in the area, please check with the card manufacturer.

To remove the memory card

Push the memory card once to release it. When the memory card springs out, pull it all the way out.

IMPORTANT

- Memory cards have front and back sides that are not interchangeable. Inserting a memory card facing the wrong direction can cause a malfunction of the camcorder. Be sure to insert the memory card as described in step 3.

Selecting the Memory for the Recordings

You can select to record movies in the built-in memory or on a memory card. The built-in memory is the default memory for recording both.

Operating modes:  

POINTS TO CHECK

- Be sure you understand the information provided in Eye-Fi Cards (p. 37) before using an Eye-Fi card.

[FUNCTION] [MENU] [Rec Media for Movies] or [Rec Media for Photos] (built-in memory) [FUNC.] (memory card) [OK]

* When selecting the memory, you can check the approximate available recording time/number of photos, based on currently used settings.

NOTES

[MEMO]

Select to record movies in the built-in memory if you later want to convert the movies to standard definition in order to upload them to the Web or to create standard DVDs.

Relay Recording of Movies

You can activate the relay recording if the built-in memory becomes full while recording movies, the recording will continue uninterrupted on the memory card.

Operating modes:  

1 Insert a memory card that contains no video recordings into the camcorder.

2 Activate the relay recording.

[FUNCTION] [MENU] [Rec Media for Movies] [Rec] (Relay Recording) [OK] [X]

* The approximate available recording time will now reflect the combined space in the built-in memory and on the memory card.

Initializing the Built-in Memory (only) or Memory Card

Initialize memory cards when you use them with this camcorder for the first time. You can also initialize a memory card or the built-in memory (only) to permanently delete all the recordings it contains.

At the time of purchase, the built-in memory comes pre-initialized and contains music files for use as background music during playback.

Operating modes:  

1 Power the camcorder using the compact power adapter.

Do not disconnect the power source or turn off the camcorder until the initialization is completed.

2 Initialize the memory.

[FUNCTION] [MENU] [Complete Initialization] [OK] [X]

[FUNCTION] [MENU] [Complete Initialization] [Yes] [OK] [X]

NOTES

- Any of the following actions will deactivate the relay recording function:
  - Turning off the camcorder.
  - Opening the memory card slot cover.
  - Changing the position of the mode switch.
  - Changing the camcorder’s operating mode.
  - Selecting the memory card as the memory for recording movies.
When you have finished recording

1. Make sure that the ACCESS indicator is off.
2. Turn off the camcorder.
3. Close the LCD panel.

About Dual Shot

- Only the following functions are available in \( \) mode.
  - Zoom (48).
  - Quick Start (47).
  - Video snapshot (68).
  - Advanced image stabilization modes (64) to shoot video while walking or to stabilize the shot while zooming in on faraway subjects (telephoto).
  - Face detection (66) to get beautiful shots of people every time, tracking the subject even if the person moves.
  - Touch & Track (68) to track other moving subjects, keeping them in focus and using the best settings to record them.

About the Smart AUTO mode

When shooting in \( \) mode, the camcorder will automatically detect certain characteristics of the subject, background, lighting conditions, etc. It will then adjust various settings (focus, exposure, color, image stabilization, image quality, among others), selecting the best settings for the scene you want to shoot. The Smart AUTO mode icon will change to one of the following icons.

### Dual Shot Mode

This chapter covers how to easily record video and photos in the all-automatic Dual Shot mode, and how to use basic shooting functions like zoom and Quick Start. To enjoy full access to menus and more advanced functions, refer to the relevant chapters for video (58) and photos (104).

#### Basic Recording

**Shooting Video and Taking Photos in Dual Shot Mode**

**Operating modes:**

- \[ \]
- \[ \]
- \[ \]
- \[ \]
- \[ \]

1. Set the mode switch to \( \).
2. Turn on the camcorder.

- \[ \] By default, movies and photos are recorded in the built-in memory. You can select the memory that will be used to record movies and photos (38).
- Please read the IMPORTANT section (44) before using an Eye-Fi card.

**To record video**

Press \( \) to begin recording.

Press \( \) again to pause the recording.

**To take photos**

1. Press \( \) halfway. Once the focus is automatically adjusted, \( \) will turn green and one or more AF frames will appear.
2. Press \( \) fully. The ACCESS indicator will flash as the photo is being recorded.

---

**Smart AUTO icons**

<table>
<thead>
<tr>
<th>Background (color of the icon)</th>
<th>Bright (green)</th>
<th>Blue skies (light blue)</th>
<th>Vivid colors (green/orange)</th>
<th>Sunsets (orange)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject ↓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People (stationary)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People (moving)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjects other than people, such as landscapes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Close objects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The icon in parentheses appears under backlight conditions.

<table>
<thead>
<tr>
<th>Background (color of the icon)</th>
<th>Dark (dark blue)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject ↓</td>
<td></td>
</tr>
<tr>
<td>People (stationary)</td>
<td></td>
</tr>
<tr>
<td>People (moving)</td>
<td></td>
</tr>
<tr>
<td>Subjects other than people, such as landscapes</td>
<td></td>
</tr>
<tr>
<td>Close objects</td>
<td></td>
</tr>
</tbody>
</table>

**IMPORTANT**

- Observe the following precautions while the ACCESS indicator is on or flashing. Failing to do so may result in permanent data loss or damage to the memory.
  - Do not open the memory card slot cover.
  - Do not disconnect the power source or turn off the camcorder.
  - Do not change the camcorder’s operating mode.
• Be sure to save your recordings regularly (126), especially after making important recordings. Canon shall not be liable for any loss or corruption of data.

• When recording photos on an Eye-Fi card, photos will be uploaded automatically if you are within the range of a configured network. Always verify that Eye-Fi cards have been approved in the country/region of use. See also Using an Eye-Fi card (146).

**NOTES**

• About the Power Save mode: If you turn off the camcorder on the Camera menu: All settings OR Func. panel: [Power Saving Mode] OR [Auto Power Off] is set to [On], the camcorder will shut off automatically to save power when it is powered by a battery pack and is left without any operation for 5 minutes. Press [Power] to turn on the camcorder.

• When recording in bright places, it may be difficult to use the LCD screen. In such cases, you can turn on the LCD backlight (299) or adjust the brightness of the LCD screen with the LCD Brightness setting.

• When taking photos:
  - If the subject is not suitable for autofocus, turns yellow. Set the camcorder to 
    - mode and adjust the focus manually (74).
  - When the subject is too bright, [Overexp.] will flash on the screen. In such cases, use the optional H336ND filter.

• Under certain conditions, the Smart AUTO icon that appears on the screen may not match the actual scene. Especially when shooting against orange or blue backgrounds, the Sunset or one of the Blue Skies icons may appear and the colors may not look natural. In such cases, we recommend recording in M manual mode (58, 104).

• In mode, menus cannot be accessed but the following settings can be changed in advance, before setting the mode switch to 
  - (w/tracking) menu: [AF mode], [Auto Slow Shutter], [POWERED IS Button].
  - (f/ or f) menu: [Video Snapshot Length], [Rec Media for Movies], [Recording Mode], [Rec Media for Photos], [Photo Size/Quality], [Simultaneous Recording].
  - (f) menu: All settings.

* CLass B only.

**Dual Shot Mode**

2 Touch the zoom controls to operate the zoom.

Touch anywhere within the (wide angle) area to zoom out or anywhere within the (telephoto) area to zoom in. Touch closer to the center for a slow zoom (Speed 1); touch closer to the icons for faster zooms (Speed 3).

3 Touch [X] to hide the zoom controls.

**NOTES**

• Keep at least 1 m (3.3 ft.) away from the subject. At full wide angle, you can focus on a subject as close as 1 cm (0.39 in.).

• In or modes, you can also set (w/tracking) or (f/ or f) menu: [Zoom Speed] to one of three constant speeds (3 is the fastest, 1 the slowest).

• When [Zoom Speed] is set to (Variable):
  - When you use the (w/tracking) and (telephoto) buttons on the wireless controller, the zoom speed will be constant at (Speed 3).
  - The zoom speed will be faster in record pause mode than when actually recording, except when pre-recording (65) is activated.

• See Specifications (202) for notes about this function when the recording program is set to [Underwater] or [Surface].

**Quick Start Function**

When you close the LCD panel with the camcorder on, the camcorder enters the standby mode. In standby mode the camcorder consumes only about 1/3 the power used when recording, saving energy when you are using a battery pack. Additionally, when you open the LCD panel, the camcorder is ready to start recording in approximately 1 second*, allowing you to record the subject right away.

* The actual time required varies depending on the shooting conditions.

**Operating modes:**

1 With the camcorder on and in a recording mode, close the LCD panel.

A beep will sound and the green ON/OFF (CHG) indicator will change to orange to indicate the camcorder entered standby mode.

**Zooming**

**Operating modes:**

There are three ways you can zoom in and out: using the zoom lever on the camcorder, using the zoom buttons on the wireless controller or using the zoom controls on the touch screen.

In addition to the 15x optical zoom, in mode, you can turn on the 300x digital zoom with the Digital Zoom setting.

* When [Image Stabilizer] (Func. panel) is set to Dynamic, you can use the advanced zoom to magnify the image up to 18x.

**Using the Zoom Lever or Wireless Controller**

Move the zoom lever toward (wide angle) to zoom out. Move it toward (telephoto) to zoom in.

• By default, the zoom lever operates at a variable speed – press gently for a slow zoom; press harder for faster zooms.

• You can also use the zoom buttons on the wireless controller.

**Using the Touch Screen’s Zoom Controls**

1 Display the zoom controls on the touch screen.

![ ]

* Not necessary in mode.

• The zoom controls appear on the left side of the screen.
Basic Playback

Playing Back the Video

Operating modes: 

1 Press .
You can also press and hold on the wireless controller for more than 2 seconds to switch between shooting and playback mode.

2 Open the [Original] index screen, if it is not displayed.

3 Look for the scene you want to play back.
Move the zoom lever toward W to show 15 scenes per page; move it toward T to show 6 scenes per page.

4 Touch the desired scene to play it back.
• Playback will start from the scene selected and continue until the end of the last scene in the index screen.
• Touch the screen during playback to display the playback controls.

During playback pause:

1 Resume playback,
2 Slow playback backward*.
3 Slow playback forward*.
* Touch several times to increase the playback speed to approximately 5x → 15x → 60x the normal speed. During fast playback, touch anywhere on the screen to return to normal playback.

IMPORTANT
• Observe the following precautions while the ACCESS indicator is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.
  - Do not disconnect the power source or turn off the camcorder.
  - Do not change the camcorder’s operating mode.
• You may not be able to play back with this camcorder movies recorded on a memory card using another device.

NOTES
• Depending on the recording conditions, you may notice brief stops in video or sound playback between scenes.
• During fast/slow playback, you may notice some anomalies (blocky video artifacts, banding, etc.) in the playback picture.
• The speed indicated on the screen is approximate.
• Slow reverse playback will lock the same as continuous frame reverse.

The Index Selection Screen: Selecting the Content to Play Back

From the index selection screen you can select the content you want to play back (original scenes, playlist, or photos, for example).

Operating modes: 

In any index screen, touch .
During single photo view, touch the screen once to display the controls then touch to open the [Photos] index screen.
Narrowing Down the Scenes Shown in the Index Screen

From the [Original] index screen, you can narrow down the scenes shown, leaving only scenes that were recorded on a specific date or only those scenes in which people’s faces were detected.

Operating modes: Operating modes:

Showing Only Scenes That Contain People’s Faces

This will narrow down the scenes shown in the [Original] index screen, leaving only scenes that were recorded using face detection and in which people’s faces were detected.

1 Open the [Original] index screen, if it is not displayed.

2 Narrow down the scenes shown.

**[All Scenes]** → **[Scenes with Faces]**

- **[Scenes with Faces]** appears instead of [All Scenes]. To show all scenes again, touch [All Scenes] and then [All Scenes].

Showing Only Scenes Recorded on a Specific Date

This will narrow down the scenes shown in the [Original] or [Video Snapshot] → [Original] index screen, leaving only those scenes that were recorded on the date you choose.

1 Open the [Original] or [Video Snapshot] → [Original] index screen.

2 Open the calendar screen.

- Dates that contain scenes (that is, movies were recorded on that date) appear in black against a silver background. Dates without recordings appear grayed out.
- Touch [All Scenes] or [Scenes by Date] to jump to the previous/next calendar month that contains recordings.

3 Touch the desired date.

The selected date appears instead of [All Scenes]. To show all scenes again, touch [Scenes by Date] (the date displayed on the screen) and then [All Scenes].

**NOTES**

- You can change on what day to start the week for the calendar display with the [Calendar Start Day] setting.

Deleting Scenes

You can delete those scenes that you are not interested in keeping. Deleting scenes allows you also to free up space on the memory. See also Deleting Scenes from the Playlist (59).

Operating modes:

1 Open the index screen that contains the scenes you want to delete.

- [Original] or [Video Snapshot] → [Original] index screen: To delete all the scenes recorded on a specific date, narrow down the scenes shown to scenes recorded on that date (55).

2 Touch [Scene Selection] to open the scene selection screen.
3 Touch on the individual scenes you want to delete.
• A checkmark ✓ will appear on scenes selected. Touch a selected scene again to remove the checkmark.
• To select all the scenes at once: Touch [Select All] instead of touching individual scenes. (Remove in advance any checkmarks from scenes you may have selected individually.)
4 Delete the scenes.

* Touch [Stop] to interrupt the operation while it is in progress. Some scenes may be deleted nevertheless.

**NOTES**
• Be careful when deleting original recordings. Once deleted, original scenes cannot be recovered.
• Save copies of important scenes before deleting them (128).
• Observe the following precautions while the ACCESS indicator is on or flashing (while scenes are being deleted).
   - Do not open the memory card slot cover.
   - Do not disconnect the power source or turn off the camcorder.
   - Do not change the camcorder’s operating mode.

**NOTES**
• Deleting a scene from the original index screen also deletes that scene from the playlist.
• To delete all movies and make all recordable space available again you may prefer to initialize the memory (40).

**Operating modes:**
- [ ]
- [ ]
- [ ]
- [ ]

**Selecting the Video Quality (Recording Mode)**

The camcorder offers 5 recording modes. Changing the recording mode will change the recording time available on the memory. Select MXP or FXP mode for better movie quality; select LP mode for longer recording times. The following table gives approximate recording times.

<table>
<thead>
<tr>
<th>Recording mode</th>
<th>MXP1</th>
<th>FXP2</th>
<th>XP+</th>
<th>SP+</th>
<th>LP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>20 min.</td>
<td>30 min.</td>
<td>40 min.</td>
<td>1 hr.</td>
<td>1 hr.</td>
</tr>
<tr>
<td>4 GB Memory card</td>
<td>25 min.</td>
<td>35 min.</td>
<td>45 min.</td>
<td>1 hr.</td>
<td>1 hr.</td>
</tr>
<tr>
<td>8 GB Memory card/ Built-in memory2</td>
<td>40 min.</td>
<td>1 hr.</td>
<td>1 hr.</td>
<td>25 min.</td>
<td>2 hr.</td>
</tr>
<tr>
<td>16 GB Memory card</td>
<td>1 hr.</td>
<td>2 hr.</td>
<td>5 min.</td>
<td>2 hr.</td>
<td>2 hr.</td>
</tr>
<tr>
<td>32 GB Memory card/ Built-in memory2</td>
<td>2 hr.</td>
<td>4 hr.</td>
<td>10 min.</td>
<td>4 hr.</td>
<td>45 min.</td>
</tr>
</tbody>
</table>

1 Recorded in 1,920 x 1,080 resolution. Movies recorded using other recording modes are recorded in 1,440 x 1,080 resolution.
2 At the time of purchase, the built-in memory contains about 75 MB of music files.

**IMPORTANT**
• Observe the following precautions while the ACCESS indicator is on or flashing. Failing to do so may result in permanent data loss or damage to the memory.
   - Do not open the memory card slot cover.
   - Do not disconnect the power source or turn off the camcorder.
   - Do not change the camcorder’s operating mode.

• Be sure to save your recordings regularly (128), especially after making important recordings. Canon shall not be liable for any loss or corruption of data.

**Advanced Functions**

**Shooting Video in M Manual Mode**

When the mode switch is set to M (Manual mode), you can enjoy full access to the menus and manually adjust the exposure, focus, white balance and many more of the camcorder’s settings to your preference. Even in [ ] mode, though, the camcorder can help you with the settings. For example, by using Special Scene recording programs (38).

**Operating modes:**
- [ ]
- [ ]
- [ ]
- [ ]

1 Set the mode switch to M.
2 Turn on the camcorder.

**[ ]** By default, movies are recorded in the built-in memory. You can select the memory that will be used to record movies (38).
3 Press [START/STOP] to begin recording.

**[ ]** Press [START/STOP] again to pause the recording.

**NOTES**
• Scenes recorded in MXP mode cannot be saved onto AVCHD discs using the optional DW-100 DVD Burner. Use the supplied software ImageMixer 3 SE to back up such scenes.
• The camcorder retains the last setting used even if you set the camcorder to [ ] mode.

**Special Scene Recording Programs**

Recording in a very bright ski resort or capturing the full colors of a sunset or a fireworks display becomes as easy as selecting a Special Scene recording program.

**Operating modes:**
- [ ]
- [ ]
- [ ]
- [ ]

**Options (Default value)**

[ ] The camcorder uses a large aperture, to achieve a sharp focus on the subject while blurring the background.

**Approximate recording times**

<table>
<thead>
<tr>
<th>Recording mode</th>
<th>MXP1</th>
<th>FXP2</th>
<th>XP+</th>
<th>SP+</th>
<th>LP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>20 min.</td>
<td>30 min.</td>
<td>40 min.</td>
<td>1 hr.</td>
<td>1 hr.</td>
</tr>
<tr>
<td>4 GB Memory card</td>
<td>25 min.</td>
<td>35 min.</td>
<td>45 min.</td>
<td>1 hr.</td>
<td>1 hr.</td>
</tr>
<tr>
<td>8 GB Memory card/ Built-in memory</td>
<td>40 min.</td>
<td>1 hr.</td>
<td>1 hr.</td>
<td>25 min.</td>
<td>2 hr.</td>
</tr>
<tr>
<td>16 GB Memory card</td>
<td>1 hr.</td>
<td>2 hr.</td>
<td>5 min.</td>
<td>2 hr.</td>
<td>2 hr.</td>
</tr>
<tr>
<td>32 GB Memory card/ Built-in memory</td>
<td>2 hr.</td>
<td>4 hr.</td>
<td>10 min.</td>
<td>4 hr.</td>
<td>45 min.</td>
</tr>
</tbody>
</table>

1 Recorded in 1,920 x 1,080 resolution. Movies recorded using other recording modes are recorded in 1,440 x 1,080 resolution.
2 At the time of purchase, the built-in memory contains about 75 MB of music files.
of the 24p Cinema Mode.

- Use the [ FUNC. ] menu to change the recording program between [ PF24 ] and [ PF24 ] to get the enhanced effect of the 24p Cinema Mode.

To set the [ Cine Mode ] recording program

- [ FUNC. ] [ Rec. Programs ] [ Cine Mode ]

Cinema Mode: Giving a Cinematic Look to your Recordings

Give your recordings a cinematic look by using the [ Cine Mode ] recording program. Combine this recording program with the 24 fps progressive frame rate [ PF24 ] to get the enhanced effect of the 24p Cinema Mode.

Operating modes:

To change the frame rate

Advanced Image Stabilization

The image stabilizer reduces camcorder blur (blur due to the camcorder moving) so you can get nice, stable shots. Select the image stabilization mode according to the shooting conditions.

Operating modes:

In [ mode:

Options * Default value in [ mode 

* In [ mode, if you change the IS mode to one of these settings, you may notice a slight change in the field of view while zooming in close to the telephoto end.
Powered IS

When shooting video, you can use Powered IS to make the image stabilization even more powerful. Powered IS is most effective when you are stationary and zooming in on far subjects using high zoom ratios (the more you approach the telephoto end). Holding the LCD panel with your left hand will add to the stability of the shot.

Press and hold [POWERED IS] as long as you want to activate Powered IS.
- **Appears** in yellow, while Powered IS is activated.
- You can change the operation of the [POWERED IS] button (long press or toggle on/off) with the [FUNC.] > [POWERED IS Button] setting.

**NOTES**
- If the degree of camcorder shake is too high, the image stabilizer may not be able to fully compensate.
- Powered IS is not available in [Select View] mode.
- For surveying and following shots, when you pan the camcorder from side to side or tilt it up and down, we recommend setting the IS mode to [Dynamic] or [Standard].

Pre-Recording

The camcorder will start recording 3 seconds before you press [START/STOP], ensuring you do not miss important shooting opportunities. This is especially useful when it is difficult to predict when to start recording.

Operating modes: 

1. Activate the pre-recording function.

   ![Pre REC] > [FUNC.] > [ ] Pre REC > [ ] On > [ ]

   - **Appears**.
   - Repeat, selecting [Off], to turn off pre-recording.

2. Press [START/STOP].

   The scene recorded in the memory will start 3 seconds before [START/STOP] was pressed.

**NOTES**
- While pre-recording is activated, the camcorder will not emit any notification sounds.
- The camcorder will not record the full 3 seconds prior to pressing [START/STOP]. If the button was pressed within 3 seconds of having turned on pre-recording or having finished the previous recording.
- Any of the following actions will deactivate the pre-recording function.
  - Leaving the camcorder without any operation for 5 minutes.
  - Pressing [REC] or [VIDEO SNAP].
  - Changing the position of the mode switch.
  - Changing the camcorder’s operating mode.
  - Setting the camcorder to standby mode.
  - Changing any of the setup menu settings or changing the following settings in the FUNC. panel: [Rec. Programs], [White Balance], [AGC Limit], [Digital Effect] or [Image Stabilizer].

Face Detection

The camcorder automatically detects people’s faces and uses this information to select the optimal settings for beautiful videos and photos.

Operating modes: 

1. Select a recording program other than [Night Scene], [Low Light], [Fireworks] or [Underwater].

   By default, face detection is activated. If the function was turned off, perform the following procedure to turn it on.

   ![FUNC.] > [MENU] > [ ] / / / > [Face Detection & Tracking] > [ ] On > [ ]

2. To select the main subject

   If there is more than one person in the picture, the camcorder will automatically select one person it determines is the main subject. The main subject is indicated by a white face detection frame and the camcorder will optimize the settings for that person. Other faces will have gray frames.

   Touch a different face on the touch screen to optimize the camcorder’s settings for that person.

**NOTES**
- The camcorder may mistakenly detect the faces of non-human subjects. In such case, turn face detection off.
- In certain cases, faces may not be detected correctly. Typical examples include:
  - Faces extremely small, large, dark or bright in relation to the overall picture.
  - Faces turned to the side, at a diagonal or partially hidden.
  - Face detection cannot be used when the shutter speed used is slower than 1/30 (1/24 if the frame rate is set to PF24) or when the digital zoom is activated at more than 60x zoom (dark blue area on the zoom bar).
  - When face detection is activated, the slowest shutter speed used by the camcorder is 1/30 (1/24 if the frame rate is set to PF24).

Touch & Track

When recording people, face detection [66] will track the main subject and keep it always in focus. But also when recording other moving subjects such as your pet, a moving vehicle or people not facing the camera directly, you can use Touch & Track to keep your subject in focus at all times.

Operating modes: 

1. Make sure face detection is activated [66].

2. Point the camcorder at a moving subject and touch the subject on the touch screen.
   - A white double frame will appear around the subject and track it as it moves.
   - Touch [Cancel] to remove the frame and cancel the tracking.

**NOTES**
- In certain cases, Touch & Track may not be able to track the subject. Typical examples include:
  - Subjects extremely small or large in relation to the overall picture.
  - Subjects too similar to the background.
  - Subjects lacking sufficient contrast.
  - Fast moving subjects.
  - When shooting indoors with insufficient lighting.

Video Snapshot

Record a series of short scenes or capture short scenes from a movie you have previously recorded. Play your video snapshot scenes set to your favorite music (68) to create your own fun music video. You will be surprised how by changing the background music, you can give your scenes an entirely new feel.

Operating modes: 

1. Recording Video Snapshot Scenes

   Apartments: 

   ![FUNCTIONS] > [ ] Video > [ ]
1 Press [VIDEO SNAP].
   • A blue border appears on the screen.
   • Press [VIDEO SNAP] again to return to normal video recording mode.

2 Press [START/STOP].
   • By default, the camcorder records for about 4 seconds (the blue frame serves as a visual progress bar) and then automatically returns to record pause mode. You can change the length of video snapshot scenes with the [Video Snapshot Length] setting.
   • When the camcorder stops recording, the screen will momentarily turn black as if a camera shutter had released.
   • In index screens, video snapshot scenes are indicated with the [ ] mark.

   NOTES
   • Changing the camcorder’s operating mode will deactivate the video snapshot mode.

Digital Effects

Operating modes:

[FUNC.] [Digital Effects] [Desired fader/effect*] [X]

* You can preview the digital effect on the screen.

• The icon of the selected digital effect appears in green. Effects are applied immediately.

Options (* Default value)

[P Programmed AE] The camcorder automatically adjusts the aperture and shutter speed to obtain the optimal exposure for the subject.

[Tv Shutter-Pri. AE] Set the shutter speed value. The camcorder automatically sets the appropriate aperture value.

[A]v Aperture-Pri. AE] Set the aperture value. The camcorder automatically sets the appropriate shutter speed.

NOTES

• [Tv Shutter-Pri. AE]:
  - On screen only the denominator is displayed — [Tv 250] indicates a shutter speed of 1/250 second, etc.
  - In [Av] mode, when the frame rate is set to [PF24], the shutter speeds available will be the following: 1/6, 1/12, 1/24, 1/48, 1/90, 1/180, 1/250, 1/500, 1/1000 and 1/2000.
  - When recording in dark surroundings, you can obtain a brighter picture by using slow shutter speeds; however, image quality may not be as good and autofocus may not work well.
  - The image may flicker when recording with fast shutter speeds.

• Recording movies under fluorescent lights: If the screen starts to flicker, select [Tv Shutter-Priority AE] and set the shutter speed to 1/100.

• [Av Aperture-Priority AE]: The actual range of values available for selection will vary depending on the initial zoom position.

• When setting a numeric value (aperture or shutter speed), the number displayed will flash if the aperture value or shutter speed is not appropriate for the recording conditions. In such case, select a different value.

• During exposure lock, the aperture value/shutter speed cannot be changed. Set the aperture value or shutter speed before manually adjusting the exposure.

To fade in/out

Press [START/STOP] in record pause mode ([II]) to start recording with a fade in. Press [START/STOP] while recording ( ) to fade out and pause the recording.

Options (* Default value)

[Off]* Select this setting when you do not intend to use the digital effects.

[Sepia]* Records movies and photos in sepia tones for an “old” look.

[Int. Black & White]* Records movies and photos in black and white.

[Int. Fade Trigger/Once], [Int. Fade Trigger/Always], [Wipe/Once], [Wipe/Always] Select one of the faders to begin or end a scene with a fade from or to a black screen. You can choose to activate the fader only once, or every time you press [START/STOP] to begin or end a scene.

* Only these digital effects are available in mode.

NOTES

• When you apply a fader, not only the picture but also the sound will fade in or out. When you apply an effect, the sound will be recorded normally.

• Faders cannot be used when recording video snapshot scenes or when pre-recording is activated.

Manually Setting the Shutter Speed or Aperture

[P Programmed AE] is the default automatic exposure (AE) recording program; using it, you can change functions like the white balance or image effects. Select one of the other AE recording programs to control the shutter speed or aperture.

Operating modes:

[FUNC.] [Rec. Programs] [Tv Shutter-Pri. AE] or [Av Aperture-Pri. AE] Drag your finger left and right along the dial to set the desired shutter speed (Tv) or aperture value (Av) [X]

Options (* Default value)

Shutter Speed and Aperture Value Guidelines

With slower shutter speed you can add a nice motion blur and sense of movement.

With faster shutter speeds you can “freeze the action” for powerful images of moving subjects.

[ ] mode

<table>
<thead>
<tr>
<th>Shutter Speed</th>
<th>Aperture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2000</td>
<td>F8.0</td>
</tr>
<tr>
<td>1/1000</td>
<td>F6.7</td>
</tr>
<tr>
<td>1/500</td>
<td>F5.6</td>
</tr>
<tr>
<td>1/30</td>
<td>F4.0</td>
</tr>
<tr>
<td>1/15</td>
<td>F2.8</td>
</tr>
<tr>
<td>1/8</td>
<td>F2.4</td>
</tr>
<tr>
<td>1/4</td>
<td>F2.0</td>
</tr>
</tbody>
</table>

Low-light situations
Most ordinary conditions
Fast moving subjects or shooting from a moving car or train
Indoor sports
Outdoor sports on sunny days

With small aperture values only the subject is in focus and the background is softly blurred. Great for portraits or to isolate a single object.

With large aperture values every part of the image is clearly in focus. Good for landscapes and architectural shots.

More light
Less light
Shallow
Deep

Lens aperture
Depth of Field
Operating modes: [ ] [ ] [ ] [ ] [ ] [ ]

POINTS TO CHECK

• Select a recording program other than [ ] (Fireworks).

1 Open the exposure adjustment screen.

[ FUNC. ] [ Exposure ]

2 Touch a subject that appears inside the [ ] frame.
   • The Touch AE mark ([•]) will flash and the exposure will be adjusted automatically so the area you touched will be correctly exposed. You have the option to further adjust the exposure manually as necessary.
   • You can touch [ ] instead to adjust the exposure manually without activating the Touch AE function.
   • The manual adjustment dial appears and the adjustment value is set at 0.
   • Touch [ ] again to return the camcorder to automatic exposure.

3 Drag your finger up and down along the dial to set the exposure adjustment value.
   The adjustment range may vary depending on the initial brightness of the image, and some values may be grayed out.

4 Touch [ ] to lock the exposure at the selected value.
   During exposure lock, [ ] and the selected exposure adjustment value will appear on the screen.

POINTS TO CHECK

• Adjust the zoom before you start the procedure.

1 Open the manual focus screen.

[ FUNC. ] [ Focus ]

2 Touch a subject that appears inside the [ ] frame.
   • The Touch AF mark ([•]) will flash and the focusing distance will be adjusted automatically. You have the option to further adjust the focus manually as necessary.
   • You can touch [ ] instead to adjust the focus manually without activating the Touch AF function.
   • The manual focus controls and the current focusing distance appear.
   • Touch [ ] again to return the camcorder to autofocus.

3 Touch and hold [ ] or [ ] to adjust the focus.
   • The center of the screen will be magnified to help you focus more easily. You can also turn off this function with the [ ] [ Distance Units ] setting.
   • The focusing distance displayed will change as you adjust the focus.
   • You can change the units used for the distance display with the [ ] [ Distance Units ] setting.
   • If you wish to focus on faraway subjects such as mountains or fireworks, touch and hold [ ] until the focusing distance changes to [∞].

4 Touch [ ] to lock the focus at the selected distance.
   During manual focus, [ ] will appear on the screen.

NOTES

• While the optional Wide-converter or Tele-converter is attached, the focusing distance displayed will be incorrect.

White Balance

The white balance function helps you to accurately reproduce colors under different lighting conditions so that white objects will always look truly white in your recordings.

Operating modes: [ ] [ ] [ ] [ ]

POINTS TO CHECK

• Select a recording program other than the Special Scene recording programs.

[ FUNC. ] [ WB White Balance ] [ Desired option? ] [ ]

* When you select [ ] (Custom WB), Set the custom white balance with the following procedure before touching [ ].

To set the custom white balance

Point the camcorder at a white object, so it fills the whole screen, and touch [ Set WB ].

When the adjustment is completed, [ ] stops flashing and disappears. The camcorder will retain the custom white balance even if you turn it off.

Options (* Default value)

[ Automatic ] The camcorder automatically sets the white balance for natural looking colors.
[ Daylight ] To record outdoors on a bright day.
[ Shade ] To record in shaded places.
[ Cloudy ] To record on a cloudy day.
[ Fluorescent ] To record under warm white, cool white or warm-white-type (3-wavelength) fluorescent lighting.
[ Fluorescent H ] To record under daylight or daylight-type (5-wavelength) fluorescent lighting.
[ Tungsten ] To record under tungsten and tungsten-type (3-wavelength) fluorescent lighting.
[ Custom WB ] Use the custom white balance setting to make white subjects appear white under colored lighting.
• Depending on the type of fluorescent light, optimal color balance may still be better than with [Automatic].
• Custom white balance may provide better results in the following cases:
  - Changing lighting conditions
  - Close-ups
  - Subjects in a single color (sky, sea or forest)
  - Under mercury lamps and certain types of fluorescent lights
  - Depending on the light source,

Image Effects
You can use the image effects to change the color saturation and contrast to record movies and photos with special color effects.

Operating modes: 

POINTS TO CHECK
• Select a recording program other than the Special Scene recording programs.

[FUNC.] > [MENU] > [ ]/ [Image Effects] > Desired option* 

* When you select [Custom Effect], set the custom image effect with the following procedure before touching [X].

To set the custom image effect
1 Touch [+1], [+1] or [0] to set the desired [Color Depth] level.
2 Touch [±] or [±] to select [Sharpness], [Contrast] and [Brightness] and adjust their levels the same way.

Options
- [Shr Off]: Records with no image enhancing effects.
- [Vid Vivid]: Emphasizes the contrast and color saturation.
- [Nt Neutral]: Tones down the contrast and color saturation.
- [Lw Low Sharpening]: Records subjects with softened outlines.
- [Sft Soft Skin Detail]: Softens the details in the skin tone area for a more complimentary appearance. To obtain the best effect, use this setting when recording a person in close-up. Note that areas similar to the skin color may lack in detail.
- [Custom Effect]: Allows you to adjust the color depth, brightness, contrast, and sharpness of the image.

Mini Video Light
You can turn on the mini video light to shoot video or take photos in dark places.

Operating modes: 

POINTS TO CHECK
• Select a recording program other than [ Underwater] or [Surface].

[FUNC.] > [ Video Light] > [On] > [X]

• appears on the screen.
• Repeat, selecting [Off], to turn off the mini video light.

Audio Recording Level
You can adjust the audio recording level of the built-in or an external microphone. You can display the audio level indicator while recording.

Operating modes: 

POINTS TO CHECK
• Select a recording program other than [ Underwater] or [Surface].

Manual Adjustment of the Audio Recording Level
1 Open the manual audio recording level adjustment screen.

[FUNC.] > [Mic. Level] > [Manual]

• The audio level indicator and current audio recording level will appear on the screen.
• Touch [Automatic] to return the camcorder to automatic audio recording levels.
Using Headphones

Use headphones for playback or to check the audio level while recording. The headphones are connected to the AV OUT/● terminal, which is used for both the headphones and the audio/video output. Before connecting the headphones, follow the procedure below to change the function of the terminal from AV output to ● (headphones) output.

Operating modes: [ ] [ ] [ ]

* Headphones can be used also in [ ] mode but the function of the terminal cannot be changed in this mode. Change the setting in advance in one of the other operating modes.

To display the audio level indicator

- Touch and hold [ ● ] or [ ● ] to adjust the audio recording level as necessary.
- As a guideline, adjust the audio recording level so that the audio level meter will go to the right of the -12 dB mark (yellow area) only occasionally.
- Touch [ ● ] to lock the audio recording level at the current level.

To adjust the volume during playback

- In [ ] mode, and in [ ] mode during slideshow playback, adjust the headphones volume the same way you adjust the speaker's volume (51).

### Using the Mini Advanced Shoe

Using the mini advanced shoe, you can attach to the camcorder a range of optional accessories to expand its functionality. For details about optional accessories available for use with your camcorder, refer to Accessories (193). For details about how to attach and use the accessories, refer also to the instruction manual of the accessory used.

1. Retract the mini advanced shoe cover in the direction of the arrow.
2. Attach the optional accessory to the mini advanced shoe.

   When a compatible accessory is attached to the mini advanced shoe, "● appears on the screen.

   Example: Attaching an optional DM-100 Directional Stereo Microphone.

### Using an External Microphone

When recording, even in quiet surroundings, the built-in microphone may produce noise from the camcorder's internal machinery. For such cases, we recommend using an external microphone.

Using the SM-V1 Surround Microphone or DM-100 Directional Stereo Microphone

Using the SM-V1 you can add a sense of depth and presence to your recordings with 5.1ch surround sound. Using the DM-100 you can accurately record audio coming directly from the direction you are recording.

Operating modes: [ ] [ ] [ ] [ ]

Attach the optional SM-V1 Surround Microphone or DM-100 Directional Stereo Microphone to the mini advanced shoe. Refer to Using the Mini Advanced Shoe (83). "● appears. For details about using the optional external microphone, refer to the instruction manual of the accessory used.
Using other microphones

You can also use commercially available microphones. Connect the external microphone to the MIC terminal. Use commercially available condenser microphones with their own power supply. You can connect almost any stereo microphone with a 3.5 mm plug but audio recording levels may vary.

NOTES

• When using the optional SM-V1 Surround Microphone, change the microphone’s directionality mode with the [ ] [Surround Mic Directionality] setting.
• Playing back recordings made with the optional SM-V1 Surround Microphone: You can enjoy 5.1ch surround sound playback on HDTVs compatible with 5.1ch surround sound connected to the camcorder using an HDMI cable. Audio output from the AV OUT/terminal (including headphone output) will be converted to 2ch stereo. The camcorder’s built-in speaker is monaural.
• When an external microphone is connected to the camcorder, [ ] [Wind Screen] will be set automatically.
• If the audio level is too high and the sound gets distorted, adjust the audio recording level manually (80) or activate the microphone attenuator with the [ ] [Microphone Attenuator] setting.

Using a Zoom Remote Controller

By attaching the optional RA-V1 Remote Control Adapter to the mini advanced shoe, you can use the optional ZR-2000 or ZR-1000 Zoom Remote Controller. Doing so will allow you to use certain functions while viewing the picture on an external monitor without touching the camcorder. This is particularly useful while the camcorder is mounted on a tripod and you want to ensure maximum stability of a shot.

Operating modes: 

Selecting the Playback Starting Point

If you have a very long scene, you may want to start playing back the scene from a certain point. You can use the movie timeline to break the scene to segments at fixed time intervals ranging from 6 seconds to 6 minutes. If you recorded movies using face detection (66), you can display the scene divided into segments every time the camcorder registered a change in the main subject of the scene.

Operating modes: 

2. Open the scene’s [Timeline] screen.
3. Touch the desired frame in the timeline ruler to start playing back the scene from that point.

To change the interval between frames

To display changes in the scene’s main subject

• The timeline ruler will show frames taken from the scene every time the main subject detected by the camcorder changed.

NOTES

• For a single scene, up to 100 changes in main subject will appear in the [Timeline] screen when [ ] [Faces] is selected.
Playing Back Scenes Set to Background Music

You can play back video snapshot scenes, scenes in the playlist and photo slideshows set to background music (instead of the original sound). You can use one of the supplied music tracks or connect an external audio player to use your favorite songs as background music.

Operating modes: 

Using One of the Supplied Music Tracks as Background Music

The supplied Camcorder Supplemental Disc contains 3 music tracks you can use as background music. (***113***). The music files come pre-installed in the built-in memory.

POINTS TO CHECK

• To play back scenes or a slideshow of photos recorded on the memory card, you will need to transfer the music tracks to the memory card in advance. For details, refer to the ‘ImageMixer 3 SE Software Guide’ (PDF file).

1 Open the [Playlist], [Video Snapshot] → [Original]/[Playlist] or [Photos] index screen.

2 Open the music track selection screen.

- 

* Touch [Off] to play back the scenes with the sound recorded originally or to play back the photo slideshow without any music.

2 Activate the external audio input.

- 

3 Connect the external player to the camcorder’s MIC terminal.

4 Adjust the audio input as necessary.

- Start the music playback on the external player and adjust its volume according to the onscreen indications. When the audio input is in the correct range, stop the music playback and touch [X] on the camcorder.

- Touch [External Audio Link] to link the video playback to the start/end of the music from the external player.

Playback with the video/slideshow linked to the external audio

5 Start the music playback on the external player.

- Playback will start from the first scene or photo in the index screen.
- When the external audio input stops, the video playback will pause. When the external audio input is restored, video playback will resume automatically.
- When you play back the slideshow linked to the external audio, the photos will be displayed continuously until the music stops. When the external audio input stops, the slideshow will stop as well.

Playback with the video not linked to the external audio

5 Back in the index screen, touch a scene to start the video playback.

In [ ] mode, touch a photo to go to single photo view and continue with the slideshow procedure (113).

6 Start the music playback on the external player.

IMPORTANT

• If you use copyrighted songs and music tracks in your video creations, remember that music under copyright may not be used without permission from the copyright holder, except for cases permitted under applicable laws, such as for personal use. Make sure to follow applicable laws when using music files.

Using an External Audio Player for Background Music

Use your favorite songs as background music by connecting an external player.

POINTS TO CHECK

• You will need a commercially available audio cable with at least one mini-stereo plug (to connect to the MIC terminal on the camcorder); the other end will depend on external player used.

1 Open the [Playlist], [Video Snapshot] → [Original]/[Playlist] or [Photos] index screen.

NOTES

• You can also add to the playlist just the video snapshot scenes you want to watch and arrange their playback order.
• Initializing a memory card will permanently erase any music files you may have transferred to the card. (***113***). The music files that come pre-installed in the built-in memory will be restored after it is initialized.)
  - Windows users: Use the supplied software ImageMixer 3 SE to transfer music files from the supplied Camcorder Supplemental Disc to a memory card after it is initialized. For details, refer to the ‘ImageMixer 3 SE Software Guide’ (PDF file).
  - Mac OS users: Use Finder to transfer music files from the [MUSIC] folder on the supplied Camcorder Supplemental Disc to a memory card after it is initialized. Refer to About the music files (103) for the folder structure of the memory card.
• Transfer music files to the memory card that contains the recordings you want to play back with background music.
• About video playback linked to the external player:
  - In some cases, the video playback may not be correctly linked to the external player. For example, if the volume of external player is too low or if the audio signal contains a lot of noise, etc.,
  - When you connect the MIC terminal to the audio outputs on the external player and cannot adjust the strength of the signal, the camcorder will automatically decrease the volume of the external player when the audio signal is too loud.
Onscreen Displays and Data Code

You can turn most onscreen displays on or off.

Operating modes:

Repeatedly press [DISPLAY] to turn the onscreen displays on/off in the following sequence:

- [mode]:
  • All displays on
  • Most displays off
- [mode]:
  • All displays on
  • Only data code on
  • All displays off

Pressing [DISPLAY] will turn off most of the icons and displays that appear automatically but will not remove onscreen displays that were turned on manually (for example, onscreen markers or the audio level meter).

1 Touch the screen to display the playback controls.
2 All displays off
3 All displays on
4 Only data code on

1 Pressing [DISPLAY] will turn off most of the icons and displays that appear automatically but will not remove onscreen displays that were turned on manually (for example, onscreen markers or the audio level meter).
2 Touch the screen to display the playback controls.

About the Data Code

With every scene or photo recorded, the camcorder keeps a data code (date/time of recording, information about the camera setup, etc.). In [ ] mode, this information is displayed within the Exif information panel while the playback controls are displayed on the screen; in [ ] mode, you can select the information to be displayed with the [ ] [Data Code] setting.

Playlist and Scene Operations

Editing the Playlist: Adding, Deleting, Moving and Playing Back

Create a playlist to play back only the scenes you prefer and in the order of your choice. You can play back the scenes in the playlist using your favorite song as background music (99).

Operating modes:

Adding Scenes to the Playlist

1 Open the [Original] or [Video Snapshot] -> [Original] index screen.
2 Touch [ ] to open the scene selection screen.
3 Touch on the individual scenes you want to add to the playlist.
   • A checkmark ✓ will appear on scenes selected. Touch a selected scene again to remove the checkmark.
   • To select all the scenes at once: Touch [Select All] instead of touching individual scenes. (Remove in advance any checkmarks from scenes you may have selected individually)
4 Add the scenes to the playlist.
   [ ] [Add to Playlist] [Yes] [OK]
   • [ ] Scenes are added to the playlist on the same memory they are recorded on.

NOTES

• Deleting or moving scenes in the playlist will not affect the original recordings.
• Scenes that were edited using the supplied software ImageMixer 3 SE were then written back to the camcorder cannot be added to the playlist.

Capturing Photos and Video Snapshot Scenes from a Movie

You can capture video snapshot scenes, single photos or a series of continuous photos from a previously recorded scene. For example, you may want to print photos from video recorded at a party or create a small video clip using video snapshot scenes from the highlights of an event.

Operating modes:

Capturing a Video Snapshot Scene

1 Open the index screen that contains the scene from which you want to capture the video snapshot scene.
2 Play back the desired scene.
3 Press [START/STOP] to capture the video snapshot scene.
   The camcorder captures the video snapshot scene for about 4 seconds (the blue frame serves as a visual progress bar), and then enters playback pause mode. You can change the length of video snapshot scene you capture with the [ ] [Video Snapshot Length] setting.
4 Touch [ ] to return to the index screen.
NOTES
• A video snapshot scene can be captured only during playback; it cannot be captured during playback pause mode.
• [ImageMixer 3 SE] The captured video snapshot scene is saved to the same memory that contains the source scene.
• Video snapshot scenes cannot be captured from any of the following types of scenes.
  - Scenes that were divided toward the end of the scene.
  - Scenes that were edited using the supplied software ImageMixer 3 SE and were then written back to the camcorder.
• When the source scene is itself a video snapshot scene, you may not be able to capture a video snapshot scene depending on the length of the source scene and the length currently selected for video snapshot scenes.
• When you start capturing a video snapshot scene less than 1 second from the end of the scene, the video snapshot scene will be captured starting from the beginning of the following scene.
• During the playback of video snapshot scenes captured from a previously recorded movie, you may notice some anomalies in the picture/sound at the point where the playback switches to a new scene.

Capturing Photos
You can capture a single photo or a series of photos. The size of the captured photos will be \([1920\times 1080]\) and cannot be changed, but you can select the photo quality. Please read the IMPORTANT section (98) before using an Eye-Fi card.

Operating modes:

To select the photo capture settings

1. Open the [Original] index screen.

2. Select the scene you want to divide and touch it to start playing it back.
3. Pause the playback at the point where you want to divide the scene.
4. Open the scene division screen.

$\leftarrow \text{[Edit]} \Rightarrow \text{[Divide]}$

5. Bring the scene to a precise point, if necessary.
   • During playback pause: Touch $\leftarrow \Rightarrow$ to play back the scene. Touch $\Rightarrow$ or $\leftarrow \Rightarrow$ to jump a frame backward/forward.
   • During playback: Touch $\leftarrow \Rightarrow$ to pause the playback. Touch $\leftarrow$ or $\Rightarrow$ for fast playback backward/forward.

6. Divide the scene.

$\leftarrow \Rightarrow \text{[Divide]} \Rightarrow \text{[Yes]}$

• The video from the division point to the end of the scene will appear as a new scene in the index screen.

NOTES
• When advancing/reversing frames while dividing the scenes, the interval between frames is about 0.5 seconds.
• If the scene cannot be divided at the point where you paused the playback, advance/reverse a frame and then divide the scene.
• In the division point of a scene that was divided, you may notice some anomalies in the picture/sound at the point where the scene was cut.
• The following scenes cannot be divided:
  - Video snapshot scenes and other scenes that are too short (less than 3 seconds).
  - Scenes that were edited using the supplied software ImageMixer 3 SE and were then written back to the memory.
• Scenes cannot be divided within 1 second from the beginning or the end of the scene.

To capture the photos
1. Play back the scene from which you want to capture the photo.
2. Pause the playback at the point you want to capture.
4. Touch \(\square\) to return to the index screen.

IMPORTANT
• When capturing photos on an Eye-Fi card, photos will be uploaded automatically if you are within the range of a configured network. Always verify that Eye-Fi cards have been approved in the country/region of use. See also Using an Eye-Fi card (148).

NOTES
• The data code of the photos will reflect the date and time of recording of the original scene.
• Photos captured from a scene with a lot of fast movement may be blurred.
• [PHOTO] Photos will be recorded on the memory selected for recording photos.
• [Photo Sequence] Up to 100 photos can be captured at a time.
  - The photo sequence capture will stop when the end of the scene is reached (playback will pause at the beginning of the following scene).
  - Photos will be captured at intervals of \(1/30\) second \(1/24\) second, if the scene was recorded at a frame rate of \(24\) frames per second.

Dividing Scenes
You can divide scenes (original scenes only) in order to leave out the best parts and later cut out the rest.

Operating modes:

Photos
Refer to this chapter for details on taking photos (advanced shooting functions), viewing photos and printing them. For details about basic photo shooting, refer to Dual Shot Mode (42).

Basic Playback

Viewing Photos

1. Press \(2\).
2. Open the [Photos] index screen, if it is not displayed.

3. Look for the photo you want to play back.

Move the zoom lever toward \(W\) to show 15 photos per page; move it toward \(T\) to show 6 photos per page.

Images for Dark Reading
4 Touch the photo you wish to view.
   • The photo is displayed in single photo view.
   • Drag your finger left/right to browse through the photos one by one.

To return to the index screen from single photo view
1 Touch the screen to display the playback controls.
2 Touch [ ].

Photo Jump Function
When you have recorded a large number of photos, you can jump easily through the photos using the scroll bar.
1 Touch the screen to display the playback controls.
2 Jump through the photos using the scroll bar.

3 Touch on the individual photos you want to delete.
   • A checkmark √ will appear on photos selected. Touch a selected photo again to remove the checkmark.
   • To select all the photos at once: Touch [Select All] instead of touching individual photos. (Remove in advance any checkmarks from photos you may have selected individually.)

4 Delete the photos.
   [Edit] ➔ [Delete] ➔ [Yes]* ➔ [OK]

* Touch [Stop] to interrupt the operation while it is in progress. Some photos will be deleted nevertheless.

IMPORTANT
• Be careful when deleting photos. Deleted photos cannot be recovered.
• Protected photos cannot be deleted.

Deleting Photos
You can delete those photos that you are not interested in keeping.

Operating modes:

Deleting a Single Photo
1 In single photo view, select the photo you want to delete.
2 Touch the screen to display the playback controls.
3 Delete the photo.
   [Edit] ➔ [Delete] ➔ [Pass] ➔ [Yes]

4 Drag your finger left/right to select another photo to delete or touch [X].

Deleting Photos from the Index Screen
1 Open the [Photos] index screen.
   [Select] ➔ [Photos]
2 Touch [ ] to open the photo selection screen.

Additional Functions

Taking Photos in M Manual Mode

Operating modes:

1 Set the mode switch to M.
2 Turn on the camcorder.
   • By default, photos are recorded in the built-in memory.
   You can select the memory that will be used to record photos (38).
   • Please read the IMPORTANT section before using an Eye-Fi card.
3 Touch [ ] to switch to mode.
4 Press PHOTO halfway.
   Once the focus is automatically adjusted, [ ] will turn green and one or more AF frames will appear.
5 Press PHOTO fully.
   The ACCESS indicator will flash as the photo is being recorded.

IMPORTANT
• Observe the following precautions while the ACCESS indicator is on or flashing. Failing to do so may result in permanent data loss.
   - Do not open the memory card slot cover.
   - Do not disconnect the power source or turn off the camcorder.
   - Do not change the camcorder’s operating mode.
• The following image files may not be displayed correctly.
   - Images not recorded with this camcorder.
   - Images edited on or uploaded from a computer.
   - Images whose file names have been changed.
• If the subject is not suitable for autofocus, \( \bigcirc \) turns yellow. Adjust the focus manually (Click 74).
• When the subject is too bright, \( \text{[Overexp.]} \) will flash on the screen. In such case, use the optional FS-H3TU ND filter.

Deleting a Photo Right After Recording It
You can delete a photo you have just recorded while reviewing it within the time set for the [ ] (Photo Review Time) option.

Operating modes: 
While reviewing the photo immediately after recording:

- \( \bigcirc \) [Yes]

NOTES
• If you press \( \text{[ESP]} \) during the photo review time, the photo will continue to be displayed indefinitely. Press \( \text{PHOTO} \) halfway to return to normal shooting mode.

Selecting Photo Size and Quality
Photos are recorded as JPG files. As a general rule, select a larger photo size for higher quality. Select the \([\text{[W]} \ 2304x1296]\) size for photos with an aspect ratio of 16:9.

Operating modes: 

- \( \text{[FUNC.]} \) \( \text{[MENU]} \) \( \text{[ }] \) \( \text{[Photo Quality/Size]} \) \( \text{[ ]} \) \( \text{[Desired photo quality]} \) (top row)
- \( \text{[ ]} \) \( \text{[Desired photo size]} \) (bottom row) \( \text{[X]} \)

\* The number displayed on the right corner indicates the approximate number of photos that can be recorded with the current quality/size setting.

Approximate number of photos available on a 1 GB memory card

<table>
<thead>
<tr>
<th>Memory card</th>
<th>Photo quality</th>
<th>Photo size</th>
<th>No. of photos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo size</td>
<td>UL 2100x1575*</td>
<td>420</td>
<td>630</td>
</tr>
<tr>
<td></td>
<td>LW 2304x1296</td>
<td>465</td>
<td>700</td>
</tr>
<tr>
<td></td>
<td>M 1600x1200</td>
<td>720</td>
<td>1,075</td>
</tr>
<tr>
<td></td>
<td>MW 1920x1080^</td>
<td>670</td>
<td>1,000</td>
</tr>
<tr>
<td></td>
<td>S 640x480</td>
<td>4,395</td>
<td>6,350</td>
</tr>
<tr>
<td></td>
<td>SW 848x480</td>
<td>3,360</td>
<td>4,760</td>
</tr>
</tbody>
</table>

\* This size is only available for capturing photos from a movie. (Click 96).
\* This size is only available for simultaneous recording in \( \text{[ ]} \) mode or \( \text{[ ]} \) mode.
\* Approximate number of photos that can actually be recorded on the memory card. (The maximum number of remaining photos displayed on the screen is 9999.)

2 Press \( \text{PHOTO} \), first halfway to activate the autofocus and then fully to record the photo.
Depending on the setting selected and shooting conditions, the flash will fire.

Options (Default value)
- \( \text{[Automatic]} \) The flash fires automatically according to the brightness of the subject.
- \( \text{[Red-Eye Auto]} \) The flash fires automatically according to the brightness of the subject. The assist lamp lights up to reduce the red-eye effect.
- \( \text{[Flash On]} \) The flash always fires.
- \( \text{[Flash Off]} \) The flash does not fire.

Using the VFL-2 Video Flash Light
You can use the optional VFL-2 Video Flash Light as an external flash when its POWER switch is set to \( \text{ON} \). The procedure for setting the external flash is the same as for the built-in flash. Attach the optional VFL-2 Video Flash Light to the mini advanced shoe.
Refer to Using the Mini Advanced Shoe (Click B3). \( \text{[Flashes]} \) appears when you turn on the video flash light (Click 4 ON). For details about using the video flash light, refer to the instruction manual of the VFL-2.

NOTES
• The flash will not fire in the following cases:
  - When the flash mode is set to \( \text{[Automatic]} \) or \( \text{[Red-Eye Auto]} \) and you manually adjust the exposure.
  - During auto exposure bracketing.
  - When the flash mode is set to \( \text{[Night Scene]} \) and the recording program is set to \( \text{[ ]} \).
  - When using an optional video light.
Operating modes:

- Photo quality will be higher when photos are recorded in \( \text{Drive Mode} \) or \( \text{Drive Mode: Continuous Shooting and Exposure Bracketing} \).

- When recording photos on an Eye-Fi card, photos will be uploaded while recording, or in record pause mode.

- Press \( \text{AF-Assist Lamp} \) to \( \text{Off} \) so the assist lamp is not activated.

- The camcorder may not be able to focus even if the AF-assist lamp is on.

- When the recording program is set to \( \text{Underwater} \) or \( \text{Surface} \), \( \text{AF-Assist Lamp} \) is automatically set to \( \text{Off} \).

- The practical range of the flash is approx. 1 to 2 m (3.3 to 6.6 ft.). The practical range with the VFL-2 attached is approx. 1 to 4 m (3.3 to 13.1 ft.). In any case, the actual range will depend on the recording conditions.

- The range of the flash decreases in continuous shooting mode.

- For red-eye reduction to be effective, the subject needs to look at the assist lamp. The degree of reduction depends on the distance and on each individual.

- The flash mode cannot be selected when the exposure is locked.

- We recommend not using the flash while the optional Wide-converter or Tele-converter is attached; its shadow can appear on the screen.

- If you do not intend to use simultaneous recording, set \( \text{Options} \) to \( \text{Default value} \).

- The camcorder records 3 photos using 3 different exposures (dark, normal, light in 1/2 EV steps), allowing you to choose the photo you like the best.

- Continuous shooting speeds are approximate and vary depending on recording conditions and subjects.

- Auto Exposure Bracketing

- Slideshow

- Light Metering Mode

- Slideshow

- Slideshow

- Slideshow

- Slideshow

- Slideshow

- Slideshow

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- Slideshow
Slideshow set to a music track
1. Move the zoom lever toward T. The music playback starts. Photos are magnified up to 5 times. [MENU] [Slideshow Transition] [Slideshow Transition]

3. To cancel the magnification, move the zoom lever toward W.

Slideshow not linked to the external audio
1. Touch [Edit] [Rotate] [Protect] [Protect] [Protect] [OK]

Operating modes:

- Single photo view, select the photo you want to rotate.
- Touch the screen to display the playback controls.
- Rotate the photo.

Rotating Photos
You can rotate photos 90 degrees to change their orientation.

Operating modes:

- In single photo view, select the photo you want to rotate.
- Touch the screen to display the playback controls.
- Rotate the photo.

Histogram Display
In single photo view, you can display the histogram and the icons of all the functions used at the time of recording (Exif information panel). The histogram will be displayed also immediately after taking a photo. Use the histogram as a reference to verify the correct exposure of the photo.

Operating modes:

- In [Off] mode, the histogram will be displayed while a photo is reviewed immediately after having taken the photo.

Touch the screen to display the playback controls.

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The histogram and Exif information panel are displayed as well. Press [OFF] to hide the histogram and Exif information panel.

The area to the right of the histogram represents highlights and the left side represents shadows. A photo whose histogram skews to the right is relatively bright; while one whose histogram peaks to the left, is relatively dark.

Protecting Photos
You can protect photos from accidental erasure.

Operating modes:

Protecting Single Photos
1. In single photo view, select the photo you want to protect.
2. Touch the screen to display the playback controls.
3. Protect the photo.

- Touch [Protect] to protect photos.
- Touch [Remove Protection] to remove the protection from the selected photos.

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IMPORTANT
- Initializing the memory will permanently erase all recordings, including protected photos.

You can also use the following functions...

The following functions and features of the camcorder can be used either for shooting video or for taking photos. The way to set and use them was already explained in detail, so we refer you to the relevant page in the “Video” section.

- Zoom (46)
- Quick Start (47)
- Recording programs (60, 70)
- Face detection (68)
- Touch & Track (68)
- Digital effects (69)
- Manual exposure adjustment (73)
- Manual focus adjustment (74)
- White balance (76)
- Image effects (77)
- Mini video light (78)
- Self timer (79)
Printing Photos

Printing Photos (Direct Print)

The camcorder can be connected to any PictBridge-compatible printer. You can mark in advance the photos you want to print and set the desired number of copies as a print order (119).

Canon printers: SELPHY printers of the CP, DS and ES series and PIXMA printers carrying the PictBridge logo.

Operating modes: 

Connecting the Camcorder to the Printer

1. In single photo view, select a photo you want to print.
2. Turn on the printer.
3. Connect the camcorder to the printer using the supplied USB cable.
   - Connection 
   - If the device selection screen appears, touch [Computer/Printer].
   - If the device selection screen appears, touch [Computer/Printer].


IMPORTANT

• If continues to flash (for more than 1 minute) or if does not appear, the camcorder is not correctly connected to the printer. In such case, disconnect the USB cable and turn off the camcorder and the printer. After a short while, turn them on again, set the camcorder to mode and restore the connection.
• During the following operations, even if you connect a printer to the camcorder it will not be recognized.
   - Deleting all photos
   - Removing all print orders

NOTES

• will appear for photos that cannot be printed.
• We recommend powering the camcorder using the compact power adapter.

Print errors

If an error occurs while printing, an error message (for example, [No paper!]) will appear on the camcorder’s screen. Solve the problem referring to the error message list (119).

• Canon’s PictBridge-compatible printers: If printing does not resume automatically after you solved the problem, touch [Continue] to resume printing. If that option is not available, touch [Stop] and then restart printing from the beginning.

• Other printers or if the error still persists with a Canon printer: If printing does not resume automatically, disconnect the USB cable and turn off the camcorder. After a short while, turn on the camcorder and restore the USB connection.

Print Orders

You can mark in advance photos you want to print from those recorded on the memory card, and set the desired number of copies as a print order. Later, you can easily print out the print orders by inserting the memory card into the SD memory card slot of DPOF-compatible printers or self-serviced digital photo kiosks. You can set print orders for up to 998 photos.

Operating modes: 

Marking Single Photos with Print Orders

1. In single photo view, select the photo you want to mark with a print order.
   - Check that you are viewing photos recorded on the memory card.
   - appears next to the photo number.
2. Touch the screen to display the playback controls.
3. Mark the photo with a print order.
   - For best performance when connecting the camcorder to a PictBridge-compatible printer, we recommend keeping the number of photos in the memory to no more than 100 photos.

Printing a Single Photo

With the camcorder correctly connected to the printer and the photo you want to print displayed in single photo view:

• If you have no intention to use the optional DW-100 DVD Burner, you can set [USB Connection Type] to [Computer/Printer] so the device type selection screen does not appear every time you connect the camcorder to a printer.
• For best performance when connecting the camcorder to a PictBridge-compatible printer, we recommend keeping the number of photos in the memory to no more than 100 photos.

Printing a Single Photo

With the camcorder correctly connected to the printer and the photo you want to print displayed in single photo view:

• Refer also to the printer’s instruction manual.

Setting Print Orders from the Index Screen

1. Open the [Photos] index screen.
   - Check that you have selected the tab (memory card).
2. Touch [G] to open the photo selection screen.
3. Touch on the individual photos you want to mark with a print order.
   - A checkmark will appear on photos selected. Touch a selected photo to remove the checkmark.
   - To select all the photos at once: Touch [Select All] instead of touching individual photos. (Remove in advance any checkmarks from photos you may have selected individually.)
4. Mark the photos with print orders.

Options

[One Copy Each] Sets a print order of 1 copy of each of the selected photos.
[Remove Print Orders] Removes all the print orders from the selected photos.

NOTES

• To cancel the print order, set the number of copies to 0.

To change the paper size

Desired paper size

NOTES

• Print setting options and the [Default] paper size vary depending on the printer used. For details, refer to your printer’s instruction manual.

When you have finished printing

Disconnect the USB cable from the camcorder and printer and turn off the camcorder.

To set print orders for photos recorded in the built-in memory, copy the photos to the memory card in advance.

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Photos • 118

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Photos • 119
This chapter explains how to connect your camcorder to an external device such as a TV, VCR, or computer.

**Terminals on the Camcorder**

1. **COMPONENT OUT Terminal**
   - Access: Open the rear terminal cover.
   - The component video terminal is for video only. When using connection 1, do not forget the audio connections using the AV OUT/Terminals.

2. **USB Terminal**
   - Access: Open the side terminal cover.

3. **HDMI OUT Terminal**
   - Access: Open the side terminal cover.
   - The HDMI OUT terminal offers a high-quality digital connection that combines audio and video in a single convenient cable.

4. **AV OUT/ Terminal**
   - Access: Open the LCD panel.
   - Sound from the built-in speaker will be muted while the STV-250N Stereo Video Cable is connected to the camcorder. Adjust the volume on the connected TV.

* When connecting a cable to the camcorder, make sure to align the triangle marks on the cable’s connector and on the camcorder’s terminal.

**Connection Diagrams**

In the following connection diagrams, the left side shows the terminals on the camcorder and the right side shows (for reference only) an example of terminals on a connected device.

### Connection Diagrams

#### HDMI

**Type:** Digital  
**Quality:** High definition  
**Output only**

Connect to a high-definition TV (HDTV) with an HDMI input terminal.

![HDMI Connection Diagram](image)

**About the HDMI™ connection**

The HDMI (High-Definition Multimedia Interface) connection is a convenient all-digital connection using a single cable for both video and audio. When you connect the camcorder to an HDTV equipped with an HDMI terminal, you can enjoy video and audio playback at the highest quality.

- The HDMI OUT terminal on the camcorder is for output only. Do not connect it to an HDMI output terminal on an external device, as this may damage the camcorder.
- While the camcorder is connected to an HDTV using connection 1, there will be no video output from other terminals.
- Correct operation cannot be guaranteed when connecting the camcorder to DVI monitors.
- Depending on the HDTV, correct playback of personal video content may not be possible using connection 1. Try one of the other connections.

#### Component Video

**Type:** Analog  
**Quality:** High Definition  
**Output only**

Connect to a high-definition TV (HDTV) with component video input terminals. Change the following settings on the camcorder:

- (AV/Headphones) to [AV]

![Component Video Connection Diagram](image)

#### Composite Video

**Type:** Analog  
**Quality:** Standard definition  
**Output only**

Connect to a standard TV or a VCR with audio/video input terminals. Change the following settings on the camcorder:

- (AV/Headphones) to [AV]

![Composite Video Connection Diagram](image)

**NOTES**

- To be able to write back scenes and to transfer music files from the computer to the camcorder, power the camcorder using the compact power adapter and only then connect it to the computer using the supplied USB cable.

**Playback on a TV Screen**

Connect the camcorder to a TV to enjoy your recordings with family and friends. Playback on an HDTV using one of the high-definition connections will ensure the best playback quality.

**Operating modes:**

1. Turn off the camcorder and the TV.
2. Connect the camcorder to the TV.
   - Refer to Connection Diagrams (122) and select the most appropriate connection for your TV.
3. Turn on the connected TV.
   - On the TV, select as the video input the same terminal to which you connected the camcorder. Refer to the instruction manual of the connected TV.
4. Turn on the camcorder and set it to or mode.
   - Play back the movies or photos.
Saving and Sharing Your Recordings

HFM13I/130 Copying Recordings to a Memory Card

You can copy your recordings only one-way: from the built-in memory to the memory card. Scenes and photos will be copied from the index screen you selected to the corresponding index screen on the memory card.

Please read the IMPORTANT section (128) before using an Eye-Fi card.

Copying Scenes

Operating modes: 

1 Open the index screen that contains the scenes you want to copy.
   • Check that you have selected the [ ] tab (built-in memory).
   • [Original] or [Video Snapshot] → [Original] index screen: To copy all the scenes recorded on a specific date, narrow down the scenes shown to scenes recorded on that date (58).

2 Touch [ ] to open the scene selection screen.
   When you copy scenes from the [Playlist] index screen (including the playlist of video snapshot scenes), you cannot select individual scenes; instead, the entire playlist will be copied. Skip directly to step 4.

3 Touch on the individual scenes you want to copy.
   • A checkmark ✓ will appear on scenes selected. Touch a selected scene again to remove the checkmark.
   • To select all the scenes at once: Touch [Select All] instead of touching individual scenes. (Remove in advance any checkmarks from scenes you may have selected individually.)

4 Copy the scenes.

* Touch [Stop] to interrupt the operation while it is in progress.

Copying a Single Photo

Operating modes: 

1 In single photo view, select the photo you want to copy.
   Check that you are viewing photos recorded in the built-in memory. ( appears next to the photo number.)

2 Touch the screen to display the playback controls.

3 Copy the photo.

4 Drag your finger left/right to select another photo to copy or touch [X].

Copying Photos from the Index Screen

Operating modes: 

1 Open the [Photos] index screen.
   Check that you have selected the [ ] tab (built-in memory).

2 Touch [ ] to open the photo selection screen.

3 Touch on the individual photos you want to copy.
   • A checkmark ✓ will appear on photos selected. Touch a selected photo again to remove the checkmark.
   • To select all the photos at once: Touch [Select All] instead of touching individual photos. (Remove in advance any checkmarks from photos you may have selected individually.)

4 Copy the photos.

* Touch [Stop] to interrupt the operation while it is in progress.

NOTES

• To correctly play back movies recorded with x.v.Color (156) on an HDTV compatible with this standard, additional settings may be required on the connected HDTV. Refer to the TV's instruction manual.
• We recommend powering the camcorder using the compact power adapter.
• Connection [ ]: When you play back your 16:9 movies on standard TV sets with a 4:3 aspect ratio, the TV set will switch automatically to wide-screen mode if it is compatible with the Video ID-1 system. Otherwise, change the aspect ratio of the TV manually.
Using the software
See "ImageMixer 3 SE Software Guide" (PDF file on the Transfer Utilities CD-ROM).

Saving Photos
With the supplied software Photo Applications you can save photos to your computer, and easily organize and edit them.

Installation
Install the software before you connect the camcorder to the computer for the first time. See also the relevant sections in the 'Photo Applications' Instruction Manual (PDF file).
Install the Photo Applications module on the supplied Camcorder Supplemental Disc.
[PHOTO] Refer to Installing Photo Application.

First-time connection to a computer running Windows
Windows users only: The first time you connect the camcorder to the computer, you also need to select the CameraWindow auto-launch setting.
[PHOTO] Refer to Starting CameraWindow.

Using the software
1 Power the camcorder using the compact power adapter.
2 Set the camcorder to Video Snapshot mode, in single photo view.
3 Connect the camcorder to the computer using the supplied USB cable.
   • Connection ( ) Refer to Connection Diagrams (124).
   • If the device type selection screen appears, touch [Computer/ Printer].
4 Save the photos onto the computer.
   [PHOTO] Refer to Downloading Still Images to the Computer.

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• If you connect the camcorder to the computer while it is set to Video Snapshot mode, the process of creating scene thumbnails will start automatically.
• If your intention was to save photos to the computer, you can touch [Skip] to stop the process and use the computer's Safely Remove Hardware function (Windows) or Eject function (Mac OS) to end the connection to the camcorder. Disconnect the USB cable, set the camcorder to Video Snapshot mode and restore the connection.

Saving Movies onto High-Definition Discs (AVCHD/Blu-ray Discs)
You can save your video recordings in high definition by creating AVCHD or Blu-ray discs in your computer using the supplied software ImageMixer 3 SE.

Installation
See "PIXELA Applications" Installation Guide.

Using the software
See "ImageMixer 3 SE Software Guide" (PDF file on the Transfer Utilities CD-ROM).

Even without a computer, you can save your video recordings in high definition by creating AVCHD discs using the optional DW-100 DVD Burner. Refer to this section along with the relevant sections in the instruction manual of the DW-100.

Operating modes: [ ] [ ] [ ]

Preparations on the Camcorder
1 Power the camcorder using the compact power adapter.
2 Open the [Original], [Playlist] or [Video Snapshot] ➔ [Original]/[Playlist] index screen.

AVCHD discs created with the optional DW-100 DVD Burner cannot contain scenes recorded in MXP mode. If you have recorded scenes in MXP mode, add to the playlist in advance only those scenes recorded in other recording modes and create the disc from the [Playlist] index screen.

Connecting to the DW-100 DVD Burner and Creating AVCHD Discs
1 Turn on the DW-100 DVD Burner.
   [External Connections 130] Refer to Creating DVDs.
2 Connect the camcorder to the DVD Burner using the supplied USB cable.
   • Connection ( ) Refer to Connection Diagrams (124) and DW-100 ➔ Connections.
   • If the device type selection screen appears, touch [DVD Burner].
   • When the connection is completed, [No disc] will be displayed.
3 Insert a brand new disc into the DW-100 DVD Burner.
   • Use the OPEN/CLOSE button on the DVD Burner to open and close the disc tray.
   • After the disc is recognized, an information screen will display the type of DVD you are creating and the estimated time and number of discs it will require (based on the disc you inserted).
   • If you inserted a DVD-FW disc that already contains data, [The disc already contains data.] will be displayed. To overwrite the data (erasing the previous content of the disc), touch [OK] ➔ [Yes].
4 Press the start button on the DVD Burner.
   • A progress bar will be displayed on the screen.
   • After pressing the start button (while the disc is being written) the operation cannot be canceled.
When the last disc is finalized, [Task completed] will be displayed.
Take out the disc and close the disc tray.

When the data requires multiple discs
After a disc is finalized, it will be ejected automatically and a message will appear. Insert the next disc and close the disc tray.

To create an additional copy of the same disc
After the operation is finished, insert a brand new disc, close the disc tray and repeat the operation.

**IMPORTANT**
- AVCHD discs created with the optional DW-100 DVD Burner cannot contain scenes recorded in MXP mode. Use the supplied software ImageMixer 3 SE to save such scenes.
- When the camcorder is connected to the DVD Burner, do not open the memory card slot cover and do not remove the memory card.
- Observe the following precautions while the ACCESS indicator on the camcorder is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.
  - Do not disconnect the USB cable.
  - Do not disconnect the compact power adapter or turn off the camcorder or the DVD Burner.
- For important information on handling your discs, refer to the instruction manual of the DW-100.

**NOTES**
- If a scene does not fit entirely in one disc, it may be divided and continue on the next disc.
- When the camcorder contains a large number of scenes to be saved on discs, it may take a long time for the connection to the DVD Burner (step 2 above) to be completed. For best performance, we recommend limiting the number of scenes to be saved to 500 or fewer scenes. (With 500 scenes, it will take approximately 3 minutes to complete the connection.)

6 Select the scene you want to play back and touch it to start playing it back.

**IMPORTANT**
- While the camcorder is connected to the DVD Burner, do not open the memory card slot cover and do not remove the memory card.

**NOTES**
- Only AVCHD discs created with the DW-100 DVD Burner can be played back using the DVD Burner.
- The camcorder’s menus cannot be accessed while the camcorder is connected to the DVD Burner.
- With the exception of fast playback at 60x speed, special playback modes (31-49) can be used also for disc playback.

### Saving Movies onto Standard-Definition Discs (DVD)
You can convert your high-definition video recordings into standard definition and save them onto standard DVDs. These are ideal for sharing your videos with family and friends since, unlike AVCHD or Blu-ray discs, standard DVDs can be played back on most DVD players and computers’ DVD drives.

You can convert the scenes to standard definition in the camcorder and then use the supplied software ImageMixer 3 SE to save the converted scenes and burn them onto DVDs in your computer.

**Installation**
See ‘PIXELA Applications’ Installation Guide.

**Using the software**

Even without a computer, you can convert your video recordings into standard definition scenes and create DVDs using the optional DW-100 DVD Burner. Refer to this section along with the relevant sections in the instruction manual of the DW-100.

---

### Playing back AVCHD discs created with the DW-100 DVD Burner

**Playing Back AVCHD Discs Using the DW-100 DVD Burner**
You can use the optional DW-100 DVD Burner and the camcorder also to play back high-definition (AVCHD) discs on a TV. This is very convenient, for example to play back your discs even in a location where an AVCHD-compatible DVD player is not available.

**Operating modes:**

1. Connect the camcorder to the TV.
   Refer to Connection Diagrams (122). Select connection 1 or 3 to enjoy high-definition playback.
2. Turn on the camcorder and set it to [TV] mode.
3. Connect the camcorder to the DVD Burner using the supplied USB cable.
   - Connection 1, Refer to Connection Diagrams (122) and DW-100 Connections.
4. Insert the disc you want to play back into the DVD Burner.
   - Use the OPEN/CLOSE button on the DVD Burner to open and close the disc tray.
5. The recording date and time will always be displayed on the converted disc.

**Converting Scenes into Standard Definition**

1. Power the camcorder using the compact power adapter.
2. Make sure there is a memory card in the camcorder with sufficient available space.
3. Open the [Original] or [Playlist] index screen: To convert all scenes recorded on a specific date, narrow down the scenes shown to scenes recorded on that date (55).
4. Touch [ ] to open the scene selection screen.
   When you convert scenes from the [Playlist] index screen (including the playlist of video snapshot scenes), you cannot select individual scenes; instead, the entire playlist will be converted. Skip directly to step 6.
5. Touch on the individual scenes you want to convert.
   - A checkmark ‘✓’ will appear on scenes selected. Touch a selected scene again to remove the checkmark.
   - To select all the scenes at once: Touch [Select All] instead of touching individual scenes. (Remove in advance any checkmarks from scenes you may have selected individually.)
6. Touch [Edit] ➔ [Convert HD to SD (DVD)] to open the HD to SD conversion screen.
   - If a copyright notice appears, read it carefully and touch [OK] if you agree.
   - Touch [ ] to change the conversion settings as described below.
7. Touch [Yes] ➔ [OK].
   Touch [ ] to interrupt the operation while it is in progress.

**To embed the recording date and time**
The recording date and time will always be displayed on the converted scene.

---

**Notes:**
- Do not insert a disc into an incompatible device, as you may not be able to eject the disc.
When the camcorder contains a large number of scenes to be saved on DVD, the time required to convert scenes is approximately equal to the total playback time of the converted scenes. In most cases this is still faster than converting the scenes in the computer so we recommend you convert scenes in the camcorder.

Connecting to the Computer and Creating DVD Discs

1. Power the camcorder using the compact power adapter.
2. Open the [For DVD Burning] index screen on the memory card.
3. Connect the camcorder to the computer using the supplied USB cable.

To play back standard-definition DVDs

Standard-definition DVDs are created using DVD-Video specifications. Play back these DVDs using standard DVD players.

NOTES
- When the camcorder contains a large number of scenes to be saved on discs, it may take a long time for the connection to the DVD Burner (132, step 2) to be completed. For best performance, we recommend limiting the number of scenes to be saved to 500 or fewer.
- Standard-definition DVDs cannot be played back using the DW-100 DVD Burner.

Saving Photos on Photo DVDs

Using the optional DW-100 DVD Burner you can save your photos on a Photo DVD. The Photo DVD will contain all your photos as JPG files as well as a slideshow of all the photos, each displayed for about 3 seconds, with the selected background music (129) instead of the original sound.

4. Click [Disc writing] and continue the operation on the computer following the software’s indications.

To play back Photo DVDs

Photo DVDs are created using DVD-Video specifications. Play back these DVDs using standard DVD players. If you computer has a DVD drive, you can play back the slideshow as a DVD and you can also access individual photos as JPG files.

NOTES
- Photo DVDs cannot be played back using the DW-100 DVD Burner.
- When creating Photo DVDs from a memory card, if the memory card contains SD scenes in the [For Web Upload] index screen, the image files of the scene thumbnails will be saved on the DVD as well.

Copying Recordings to an External Video Recorder

In High Definition

Connect the camcorder to AVCHD-compatible digital video recorders to make perfect copies of your movies in high definition. If the external digital video recorder has an SD memory card slot, you can use the memory card to copy your movies without connecting the camcorder. Details will vary depending on the device used so be sure to refer to the instruction manual of the digital video recorder.

In Standard Definition

You can copy your movies by connecting the camcorder to a VCR or a digital video recorder with analog audio/video inputs. Video output will be in standard definition, although the original scenes are in high definition.

Connecting

Connect the camcorder to the VCR using Connection 3. Refer to Connection Diagrams (123).
2 Turn on the camcorder and set it to  mode.
   Verify that  (AV/Headphones) is set to  AV.
3 Camcorder: Locate the scene you wish to copy and pause the playback shortly just before the desired scene.
4 Camcorder: Resume playback.
   By default, onscreen displays will be embedded in the output video signal. You can change the displays by repeatedly pressing  (89).
5 External device: Start recording when the scene you wish to copy appears; stop recording when it ends.
6 Camcorder: Stop playback.

**NOTES**
- We recommend powering the camcorder using the compact power adapter.

### Uploading Movies to Video Sharing Web Sites
You can convert your high-definition video recordings into standard definition in order to upload them to your favorite video sharing Web site.
If you are using an Eye-Fi card, after converting your video recordings into standard definition, you can upload your movies wirelessly, directly from the camcorder. Refer to Eye-Fi’s homepage for the latest information on compatible Web sites.
You can complete the conversion to standard definition in the camcorder and then use the supplied software ImageMixer 3 SE to upload your videos to the Web.

**Installation**
See ‘PIXELA Applications’ Installation Guide.

**Using the software**

### Converting Scenes into Standard Definition
1 Power the camcorder using the compact power adapter.
2 Make sure there is a memory card in the camcorder with sufficient available space.
3 Open the (Original), (Playlist) or [Video Snapshot] → (Original)/ (Playlist) index screen.
   - Check that you have selected the (tab (built-in memory).
   - If (Original) or [Video Snapshot] → (Original) index screen: To convert all the scenes recorded on a specific date, narrow down the scenes shown to scenes recorded on that date (89).
4 Touch 5 to open the scene selection screen.
   When you convert scenes from the (Playlist) index screen (including the playlist of video snapshot scenes), you cannot select individual scenes; instead, the entire playlist will be converted. Skip directly to step 6.
5 Touch on the individual scenes you want to convert.
   - A checkmark ✓ will appear on scenes selected. Touch a selected scene again to remove the checkmark.
   - To select all the scenes at once: Touch  [Select All] instead of touching individual scenes. (Remove in advance any checkmarks from scenes you may have selected individually.)
6 Press  and touch [Yes].
   - If a copyright notice appears, read it carefully and touch [OK] if you agree.
   - Before touching [Yes], you can touch  to change the conversion settings as described below.
   - Touch  to interrupt the operation while it is in progress.

7 When the conversion is completed, a confirmation screen will appear.
   Connect the camcorder to the computer at this point (144) to continue uploading the converted scenes to the Web or touch [End Without Connecting] to connect to the computer later.

**To embed the recording date and time**
The recording date and time will always be displayed on the converted scene.

- ![embed date/time](image)

**To select the bit rate**
Using a higher bit rate will result in better video quality for the converted scenes, while a lower bit rate will result in smaller file sizes and faster uploads.

- ![bit rate](image)

**To convert only part of a scene**
Instead of steps 4 and 5 above, touch on the scene you want to convert to start playing it back; Pause the playback at the point where you want the conversion to begin and continue with step 6.

**NOTES**
- When converting scenes in the [Playlist] or [Video Snapshot] → (Original)/ [Playlist] index screen:
  - The scenes are converted with the selected background music (89) instead of the original sound.
Appendix: Menu Options Lists

Menu items not available appear grayed out. For details about how to select an item, refer to Using the Menus (143). For details about each function, see the reference page. Menu options without a reference page are explained after the tables. Underlined menu options indicate default values.

**FUNC. Panel**

**FUNC. Panel - Recording Modes**

<table>
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<tr>
<th>Control Button</th>
<th>Setting options/Function</th>
<th></th>
<th></th>
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</thead>
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<td>[MENU]</td>
<td>Opens the menu</td>
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<td></td>
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<tr>
<td>[Rec Programs]</td>
<td>[Programmed AE], [TV Shutter-Pri. AE], [AV Aperture-Pri. AE]</td>
<td></td>
<td></td>
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<tr>
<td>( Cinem Mode</td>
<td></td>
<td></td>
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<tr>
<td>( Portrait), ( Sports), ( Night Scene), ( Snow, ( Beach, ( Sun., ( Water, ( Fireworks, ( Surface,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( White Balance</td>
<td>[ Automatic], [ Daylight], [ Shade], [ Cloud], [ Fluorescent], [ Fluorescent H], [ Custom WB]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( Mic Level</td>
<td>[ Automatic], [ Manual], [ Audio Level Indicator]: Toggle on/off</td>
<td></td>
<td></td>
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</table>

**External Connections**

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External Connections • 145

Additional Information

This chapter contains troubleshooting advice, screen messages, handling and maintenance tips, and other information.

**Using an Eye-Fi Card**

- This product is not guaranteed to support Eye-Fi card functions (including wireless transfer). In case of an issue with an Eye-Fi card, please check with the card manufacturer. Also note that an approval is required to use Eye-Fi cards in many countries or regions. Without approval, use of the card is not permitted. If it is unclear whether the card has been approved for use in the area, please check with the card manufacturer.
- Do not use Eye-Fi cards on airplanes and in other places where wireless communication is forbidden. Remove the Eye-Fi card from the camcorder beforehand.

**NOTES**

- Depending on the amount of data to be uploaded and the network’s wireless connection conditions, it can take some time to upload video files. If the wireless connection is too weak, the wireless upload may fail and the video files will be registered as incomplete uploads.
- About power saving:
  - Wireless communication drains the power of the battery pack faster than usual. We recommend powering the camcorder using the compact power adapter.
  - While files are being uploaded wirelessly, the camcorder’s automatic power off function will be disabled.
- While recording audio with an external microphone, the interference caused by wireless communications may result in noise being picked up and recorded with the sound. We recommend turning off the wireless communication while recording.

* This menu option will appear only when using an Eye-Fi card.

- If the LOCK switch on the Eye-Fi card is set to prevent writing, you will not be able to turn the wireless communication on/off and the status icon will change to . To use wireless communication make sure the switch on the Eye-Fi card is not in the LOCK position.
- While using an Eye-Fi Card, the ACCESS indicator may flash from time to time.

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[Edit] Panel - ( Single Photo View ) Mode

Control Button | Target Scenes/Function | Index Screen | Single Photo View
--- | --- | --- | ---
Copy ( | [Selected Scenes] | | 127
[All Scenes] | | | 102
(This Scene) (from the Timeline screen) | | | 115
(Original scenes) | | | 119
(Digital Zoom) | | | 114

Setup Menus

Camera Setup

| Menu Item | Setting options | | |
--- | --- | --- | ---
(Digital Zoom) | Off, 60x, 300x | | |
(Zoom Speed) | Auto Variable, Speed 3, Speed 2, Speed 1 | | |
(AF Mode) | [ Instant AF ], [ Normal AF ] | | |
(AF-Assist Lamp) | Off, Automatic | | |
(Focus Priority) | [ Auto AF, Center Frame ], Off | | |
(Focus Assistance) | Off, Center Frame | | |
(Face Detection & Tracking) | Off, Center Frame | | |
(Auto Backlight Correction) | Off, On | | |
(Auto Slow Shutter) | Off, On | | |
(Image Effects) | Off, Vivid, Neutral, Low Sharpness, Soft Skin Detail, Custom Effect | | |
(Wind Screen) | Off, Automatic | | |
(Microphone Attenuator) | Off, On | | |
(Surround Mic Directionality)* | Surround, Slide, Shotgun | | |
(Onscreen Markers) | Off, [ Level (White), Level (Gray), Grid (White), Grid (Gray) ] | | |
(Power Button) | | | 65

* Option available only when the optional SM-V1 Surround Microphone is attached to the camcorder after having updated the camcorder’s firmware using the memory card supplied with the SM-V1.

Additional Information • 150 • Additional Information

[Digital Zoom]: Determines the operation of the digital zoom. The color of the indicator indicates the zoom.

- When activated, the camcorder will switch automatically to digital zoom when you zoom in beyond the optical zoom range.
- With the digital zoom the image is digitally processed, so the image resolution will deteriorate the more you zoom in.

[AF Mode]: Select how fast the autofocus will operate.

- With [ Instant AF ] the autofocus adjusts quickly to a new subject. This is convenient for example when changing the focus from a near subject to a far subject in the background, or when recording moving subjects.
- When the optional Wide-converter or Tele-converter is attached to the camcorder, it may partially obstruct the Instant AF sensor. Set the AF mode to [ Normal AF ].
- When the recording program is set to [ Underwater] or [ Surface], the AF mode is automatically set to [ Normal AF ].

[Focus Priority]: When the focus priority is activated, the camcorder records a photo only after the focus has been adjusted automatically. You can also select which AF frames to use.

- When the recording program is set to [ Fireworks], focus priority is automatically set to [ Off ].
- When focus priority is activated, if face detection (66) is also activated, the camcorder will focus on the face of the main subject (white face-detection frame) when one is detected.

[Focus Assistance]: When focus assistance is activated, the image at the center of the screen is magnified to help you focus manually (74).
• Using focus assistance will not affect the recordings. It will be cancelled automatically after 4 seconds or when you start recording.

[Auto Slow Shutter]: The camcorder automatically uses slow shutter speeds to obtain brighter recordings in places with insufficient lighting.
• Minimum shutter speed used: 1/30, 1/12 when the frame rate is set to [PF24], 1/15 when it is set to [PF30].
• The auto slow shutter cannot be activated when the recording program is set to [Programmed AE], but the setting will not change even if you set the camcorder to [Off] mode.
• If a trailing afterimage appears, set the slow shutter to [Off].
• If you (camcorder shake warning) appears, we recommend stabilizing the camcorder, for example, by mounting it on a tripod.
• When the recording program is set to [Underwater] or [Surface], the auto slow shutter is automatically set to [Off].

[Wind Screen]: The camcorder automatically reduces the background sound of wind when recording outdoors.
• Some low-frequency sounds will be suppressed along with the sound of wind. When recording in surroundings unaffected by wind or if you want to record low-frequency sounds, we recommend setting the wind screen to [Off] mode.

[Microphone Attenuator]: Helps prevent audio distortions due to high audio recording levels.
• Set the microphone attenuator to [Off] when the audio recording level is > 80 dB on the onscreen markers. When the microphone attenuator is activated, AT appears on the screen.
• When the recording program is set to [Underwater] or [Surface], the microphone attenuator is automatically set to [Off].

[Surround Mic Directionality]: Sets the directionality mode of the optional SM-V1 Surround Microphone. ([Surround]: Records 5.1 ch surround sound. [Zoom]: Records 5.1 ch audio channels. Additionally, the audio is linked to the zoom position. The larger the subject appears on the screen, the louder the sound will be as well. [Shotgun]: Records monaural audio with a highly directional setting that is most sensitive to sound coming directly from the front of the camcorder/microphone.)

[Onscreen Markers]: You can display a grid or a horizontal line at the center of the screen. Use the markers as a reference to make sure your subject is framed correctly (vertically and/or horizontally).
• Using the onscreen markers will not affect the recordings.

[POWERED IS Button]: Determines the operation mode of the POWERED IS button.
• Press and Hold: Powered IS will be activated while you hold the button pressed down.
• Toggle On/Off: Each press of the button will turn the Powered IS function on and off.

**Recording & Connections Setup**

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<tr>
<td>[Video Snapshot Length]</td>
<td>[3 sec], [4 sec], [5 sec], [8 sec]</td>
</tr>
<tr>
<td>[Rec Media for Movies]</td>
<td>[Memory card], [Built-in memory]</td>
</tr>
<tr>
<td>[Recording Mode]</td>
<td>[MPEG: High Quality Standard 24 Mbps], [MPEG: High Quality 17 Mbps], [AVCHD: High Quality 12 Mbps], [SP: Standard Play 7 Mbps], [LP: Long Play 5 Mbps]</td>
</tr>
<tr>
<td>[Frame Rate]</td>
<td>[PF30], [PF24], [PF16]</td>
</tr>
<tr>
<td>[Rec Media for Photos]</td>
<td>[Memory card], [Built-in memory]</td>
</tr>
<tr>
<td>[Simultaneous Recording]</td>
<td>[Off], [Built-in memory], [Memory card]</td>
</tr>
</tbody>
</table>

**Additional Information**

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<th>Menu item</th>
<th>Setting options</th>
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<tr>
<td>[Photo Quality/Size]</td>
<td>[Auto Rotate], [Continuous], [Reset]</td>
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<tr>
<td>[Photo Capture from Video]</td>
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</tr>
<tr>
<td>[Photo Capture Quality]</td>
<td>[Super Fine / 1920x1080], [Fine / 1920x1080], [Normal / 1920x1080]</td>
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<tr>
<td>[Memory Info]</td>
<td>[Built-in memory], [Memory card]</td>
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<td>[x.v.Color]</td>
<td>[Off], [On]</td>
</tr>
<tr>
<td>[Photo Review Time]</td>
<td>[0 sec], [2 sec], [4 sec], [6 sec], [8 sec], [10 sec]</td>
</tr>
<tr>
<td>[Photo Numbering]</td>
<td>[Reset], [Continuous], [Single]</td>
</tr>
<tr>
<td>[USB Connection Type]</td>
<td>[Computer/Printer], [Computer/TV], [Computer/AV Set], [Computer/PC], [Computer/HD Set]</td>
</tr>
<tr>
<td>[Add Recordings to Disc]</td>
<td>[All Scenes], [Remaining Scenes]</td>
</tr>
<tr>
<td>[Paper Settings]</td>
<td>[Default], [13 x 13 cm], [17 x 13 cm], [10 x 14.8 cm], [Credit Card], [4 x 6 in], [5 x 7 in], [5 x 11 in], [A3], [A4], [A4], [4 x 11 in]</td>
</tr>
<tr>
<td>[Frame Rate]</td>
<td>[PF30]: 30 frames per second, progressive. Use this frame rate to easily edit your recordings, for example, to post them on the Web. [PF24]: 24 frames per second, progressive. Using this frame rate will give your recordings a cinematic look. When combined with the [Cine Mode] recording program (63), the cinematic look will be enhanced.</td>
</tr>
</tbody>
</table>

**Memory Info**: Displays a screen where you can verify how much of the built-in memory (only) or the memory card is currently in use (total recording time and total number of photos) and how much space remains available for recording.
• Estimated figures about available movie recording time and available number of photos are approximate and based on the recording mode and photo quality/size settings currently in use.
• In the information screen of a memory card you can also check its Speed Class.

**Underwater**: The [Total space] shown for the built-in memory indicates actually usable space. It may be slightly smaller than the nominal built-in memory capacity listed in the Specifications.

**x.v.Color**: Uses a color space with an extended gamut to achieve deeper colors, closer to real life.
• Use this function to record video only when you intend to play back your recordings on an HDTV compatible with x.v.Color, connected to the camcorder using an HDMI cable. If recordings made with x.v.Color are played back on a non-compatible TV, colors may not be reproduced correctly.

**Auto Rotate**: Photos that were recorded in portrait orientation (by turning the camcorder on its side), will be rotated automatically and displayed correctly during playback.

**Photo Review Time**: Selects the time to display a photo after it has been recorded.
• The review time can only be set when the drive mode is set to [Single].

**Photo Numbering**: Select the photo numbering method to be used on a new memory card. Photos are automatically assigned consecutive numbers from 01 to 9999, and stored in folders containing up to 100 photos. Folders are numbered from 101 to 999.
• [Reset]: Photo numbers will restart from 101-0101 every time you insert a new memory card.
• [Continuous]: Photo numbers will continue from the number following that of the last photo recorded with the camcorder.
• If the memory card you insert already contains a photo with a larger number, a new photo will be assigned a number one higher than that of the last photo on the memory card.
• We recommend using the [Continuous] setting.
• The photo number indicates the name and location of the file on the memory card. For example, the file name of a photo numbered 101-0107 is "IMG_0107.JPG", stored under the folder "DCIM101CANON".

**USB Connection Type**: Select the connection protocol to use when connecting the camcorder to an external device using the supplied USB cable.

- DVD Burner: To connect exclusively to the optional DW-100 DVD Burner.
- Computer/Printer: To connect to a computer, printer or similar USB peripheral.
- Connect and Set: To make the selection from a screen that appears at the time of the connection to the external device.

### Playback Setup

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<th>②</th>
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</thead>
<tbody>
<tr>
<td>[Select Music]</td>
<td>[Off] [On]</td>
<td></td>
<td></td>
<td>①</td>
</tr>
<tr>
<td>[External Audio Input]</td>
<td>[Off] [On] [On] [Off]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Data Code]</td>
<td>[Date] [Time] [Date, Time] [Camera Data]</td>
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<td></td>
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</tr>
<tr>
<td>[Slide Show Transition]</td>
<td>[Off] [On] [Dissolve]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[TV Type]</td>
<td>[Normal TV] [Wide TV]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Option available only from the [Playlist] or [Video Snapshot] index screen.
2 Option not available when the camcorder is connected to an HDTV using an HDMI cable.

### Data Code

- Displays the date and/or time when the scene was recorded.
- Camera Data: Displays the aperture (f-stop) and shutter speed used when recording the scene.

### TV Type

- When you connect the camcorder to a TV using the supplied STV-250N Stereo Video Cable, select the setting according to the type of TV in order to display the picture in full and in the correct aspect ratio.
- **Normal TV**: TV sets with 4:3 aspect ratio.
- **Wide TV**: TV sets with 16:9 aspect ratio.

---

### System Setup

**Menu item**

<table>
<thead>
<tr>
<th>Setting options</th>
<th>①</th>
<th>②</th>
<th>③</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>[Font Size]</strong></td>
<td>[A Large] [L Small]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>[Output Onscreen Displays]</strong></td>
<td>[On] [Off]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>[Language]</strong></td>
<td>[English] [Español] [Français] [Italiano]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>[LCD Brightness]</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>[LCD Screen Dimmer]</strong></td>
<td>[On] [Off]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>[All/Headphones]</strong></td>
<td>[On] [Off]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>[Volume]</strong></td>
<td>Speaker: [51] [52]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>[Power Saving Mode]</strong></td>
<td>[Auto Power Off] [Quick Start (Standby)]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Option not available when the camcorder is connected to an HDTV using an HDMI cable.
2 Option only available when using an Eye-Fi card.

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### Additional Information

- **System Setup**: Changes the size of the font for the menu and other screens.
- **Output Onscreen Displays**: When set to [On], the camcorder’s onscreen displays will appear also on the screen of a TV or monitor connected to the camcorder.
- **LCD Brightness**: Adjusts the brightness of the LCD screen.
- **LCD Screen Dimmer**: When set to [On], the LCD screen is dimmed. Doing so is ideal when using the camcorder in locations where the LCD's illumination could become a nuisance to others. Hold the [BEEP] pressed down for about 2 seconds to restore the LCD screen to its previous brightness setting.
- **Notification Sounds**: A beep will accompany some operations like turning on the camcorder, the self-timer countdown, etc.
- **Wireless Remote Control**: Allows the camcorder to be operated with the wireless controller.
- **Power Saving Mode**: Controls the camcorder’s automatic power off settings.
- **Power Off**: In order to save power when the camcorder is powered by a battery pack, it will automatically shut off if left without any operation for 5 minutes.
- **Eye-Fi Communication**: When you close the LCD panel in a recording mode and the length of time after which the camcorder will end the standby mode and shut off automatically.
Appendix: Onscreen Icons and Displays

- **Correct operation of the HDMI-CEC function cannot be guaranteed**
- The remote control of the TV can only be used to play back movies or playback using the remote control of the TV.
- Depending on the TV set, additional settings may be required on the TV.
- 

[Calendar Start Day]: Select the day on which the week in the calendar screen (55).

[Battery Info]: Displays a screen where you can verify the battery charge (as a percentage) and the remaining recording time (or playback time (mode)).

[Control for HDMI]: Activates the HDMI-CEC (Consumer Electronics Control) function. When you connect the camcorder to an HDTV compatible with HDMI-CEC using an HDMI cable, you can control the camcorder’s playback using the remote control of the TV.
- If set to [On], when the camcorder is connected to a compatible HDTV using an HDMI cable, the video input on the TV will automatically be set to the camcorder’s video input. Then, you can use the up/down/ left/right buttons and the OK or SET button on the TV’s remote control to play back your recordings.
- Depending on the TV set, additional settings may be required on the TV itself to activate the HDMI-CEC function. Refer to the TV’s instruction manual.
- Correct operation of the HDMI-CEC function cannot be guaranteed even when connecting the camcorder to compatible TV sets. If you cannot use the remote control of the TV, set [Control for HDMI] to [Off] and operate the camcorder directly or use the camcorder’s wireless controller.
- The remote control of the TV can only be used to play back movies or photos ( or mode only). If the camcorder is connected to the TV while it is set to a recording mode, depending on the TV used, turning off the TV will automatically turn off the camcorder even if it is recording at the time.
- We recommend not connecting more than 3 HDMI-CEC compatible devices at a time.

[HDMI Status]: Displays a screen where you can verify the standard of the output signal from the HDMI OUT terminal.

[Distance Units]: Selects the units to use for the focusing distance display during manual focus.

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**Recording Movies (in Dual Shot mode)**

1. Smart AUTO mode (43)
2. Onscreen zoom controls (46)
3. Operating mode (31)
4. In record pause mode: Total number of scenes
5. Memory operation (167)
6. Remaining battery time (167)
7. Zoom (46)
8. Recording mode (59)
9. Control button: Start/Stop recording
10. Face detection frame (66)
11. Touch & Track frame (68)

---

**Recording Movies (in Manual mode)**

1. Control button: Open the FUNC. panel (32)
2. Recording program (60, 63, 70)
3. LMF Instant AF (152), LMF Manual focus (74)
4. Manual exposure (73)
5. ASC (automatic gain) limit (74)
6. White balance (76)
7. Image effect (77)
8. Control button: Last function used (Zoom in this case)
9. Relay recording (hours : minutes : seconds)
10. Pre-recording (66)
11. Image stabilizer (64)
12. PF24 progressive frame rate (63, 167)
13. Remaining recording time On the memory card
14. [In the built-in memory] (39) [Relay recording] only.
15.  [x.v.Color (156)]
16. Face detection (66)
17. Photo quality/size (simultaneous recording) (110)
18. Wind screen off (153)
19. Microphone attenuator (153)
20. Audio level indicator (69)
21. Digital effect (69)
22. Level marker (154)
23. Remote sensor off (160)
24. Mini advanced shoe (83)
25. Headphone output (82)
26. Mini video light (78)
27. Control button: Switch to photo recording (104)

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**Appendix:** Additional Information
When the camcorder is off, press 

- When is displayed in red, replace the battery pack with a fully charged one.
- Depending on the conditions under which the camcorder and the battery pack are
  used, the remaining recording/playback time of the battery pack is displayed, in minutes, next to the icon.
- When is displayed in red, replace the battery pack with a fully charged one.
- When you attach an empty battery pack, the power may turn off without displaying 
- The first time you use a battery pack, fully charge it and then use the camcorder until
  the battery pack is completely exhausted. Doing so will ensure that the remaining
  recording time will be displayed accurately.
- Depending on the conditions under which the camcorder and the battery pack are
  used, the actual battery charge may not be indicated accurately.
- When the camcorder is off, press (BATT INFO) to display the charge status of a
  battery pack. The Intelligent System will display the charge status (as a percentage)
  and the remaining recording time (in minutes) for 5 seconds. If the battery pack is
  exhausted, the battery information may not be displayed.
- PF24 progressive frame rate
  Select the PF24 progressive frame rate (63) to give your recordings a cinematic
  look. You can combine this frame rate with the Cinemode recording program to
  enhance the effect.
- Remaining recording time
  When there is no more free space on the memory, (End) (built-in memory,
  during playback only) or (End) (memory card) will be displayed and the recording will
  stop.
- Number of available photos
  When viewing the photos, the display will always be in green.
- Depending on the recording conditions, the number of available photos displayed may
  not decrease even after a recording has been made, or may decrease by 2 photos at once.

Troubleshooting

If you have a problem with your camcorder, refer to this section. Sometimes what you think is a malfunction of the camcorder may have the simplest of solutions – please read the “CHECK THIS FIRST” box before going on to the more detailed problems and solutions. Consult your dealer or a Canon Service Center if the problem persists.

CHECK THIS FIRST

Power supply
- Is the battery charged? Is the compact power adapter correctly connected to the camcorder? (23)

Recording
- Did you turn the camcorder on and correctly set it to a recording mode? (42, 58, 104) If you are recording on a memory card, is one correctly inserted into the camcorder? (38)

Playback
- Did you turn the camcorder on and correctly set it to playback mode? (49, 100) If you are playing back recordings from a memory card, is one correctly inserted into the camcorder? (38) Does it contain any recordings?

Other
- Does the camcorder make a rattling sound? The internal lens fixture can move when the camcorder is turned off or in a playback mode. This is not a malfunction.

Power source

The camcorder will not turn on or it turns off by itself.
- The battery pack is exhausted. Replace or charge the battery pack.
- Remove the battery pack and reattach it correctly.
- When the recording program is set to [Underwater] or [Surface], the camcorder may turn off automatically if it becomes too hot. Turn off the camcorder and let it cool down.

Cannot charge the battery pack.
- Make sure the camcorder is off as charging can start.
- The temperature of the battery pack is outside the charging range. If the battery pack’s temperature is below 0 °C (32 °F), warm it before charging it; if it is above 40 °C (104 °F), let the battery pack cool down before charging it.
- Charge the battery pack in temperatures between 0 °C and 40 °C (32 °F and 104 °F).
- The battery pack is faulty. Replace the battery pack.
- The camcorder cannot communicate with the battery pack attached. Such battery packs cannot be charged using this camcorder.
- A noise can be heard from the compact power adapter.
- A faint sound can be heard while the compact power adapter is connected to a power outlet.
- This is not a malfunction.

The battery pack is exhausted extremely quickly even at normal temperatures.
- The battery may have reached the end of its battery life. Buy a new battery pack.

### Recording

Pressing [START/STOP] will not start recording.
- You cannot record while the camcorder is writing previous recordings onto the memory (while the ACCESS indicator is on or flashing). Wait until the camcorder has finished.
- The memory is full or it already contains the maximum number of scenes (3,999 scenes).
- Delete some recordings (55, 102) or initialize the memory (40) to free some space.

The point where [START/STOP] was pressed does not match the beginning/end of the recording.
- There is a slight interval between pressing [START/STOP] and the actual start/end of recording. This is not a malfunction.

The camcorder will not focus.
- Autofocus does not work on the subject. Focus manually (74).
- The lens or Instant AF sensor is dirty. Clean the lens or sensor with a soft lens-cleaning cloth (191). Never use tissue paper to clean the lens.

When a subject flashes across in front of the lens, the image appears slightly bent.
- This is a phenomenon typical of CMOS image sensors. When a subject crosses very quickly in front of the camcorder, the image may seem slightly warped. This is not a malfunction.

Changing the operating mode between recording (■) record pause (■■■) playback (■) takes longer than usual.
- When the memory contains a large number of scenes, some operations may take longer than usual. Save your recordings (128) and initialize the memory (40).

Motions or photos cannot be recorded properly.
- This may occur as motions and photos are recorded/deleted over time. Save your recordings (128) and initialize the memory (40).

Cannot record a photo in (■) mode.
- You cannot take photos in this mode if # appears on the screen.
- The photos are not being taken properly. The memory card is damaged. Use a different memory card.
- Simultaneous Recording] is set to [Off] (110), or if either the digital zoom (152) or a digital effect (69) is activated.

### Additional Information

When playing scenes/slideshow linked to external audio, the video playback is not correctly linked to the external player.
- The volume of external player may be too low. Try increasing the volume of the external player.

Cannot divide scenes.
- You cannot divide scenes recorded or edited using another device.
- The memory is full. Delete some recordings (55, 102) or initialize the memory (40) to free some space.

ERROR flash appears.
- Cannot copy scenes/photos
  - You may not be able to copy scenes/photos recorded or edited using another device.

Cannot mark individual scenes/photos in the index screen with a checkmark.
- You cannot select more than 100 scenes/photos individually. Reduce the number of selected scenes/photos or use the [Select All] option.

### Indicators and Onscreen Displays

- Appears in red.
  - Battery pack is exhausted. Replace or charge the battery pack.
  
- Appears on the screen.
  - The camcorder cannot communicate with the battery pack attached so the remaining battery time cannot be displayed.

- Appears in red.
  - A memory card error occurred. Turn off the camcorder. Remove and reinsert the memory card. Initialize the memory card if the display does not change back to normal.

- Appears on the screen.
  - The camcorder has become hot while in the [Underwater] or [Surface] recording program. Turn off the camcorder and let it cool down.

### Playback

Cannot add scenes to the playlist.
- The playlist can contain a maximum of 999 scenes. If the playlist includes scenes recorded in MXP or FXP mode, the maximum number of scenes in the playlist may be less than 999.
- You may not be able to add to the playlist scenes recorded or edited using another device.
- The memory is full. Delete some recordings (55, 102) or initialize the memory (40) to free some space.

Cannot move scenes in the playlist.
- The memory is full. Delete some recordings (55, 102) or initialize the memory (40) to free some space.

Cannot delete a scene.
- You may not be able to delete scenes recorded or edited using another device.

Deleting scenes takes longer than usual.
- When the memory contains a large number of scenes, some operations may take longer than usual. Save your recordings (128) and initialize the memory (40).

Cannot delete a photo.
- The photo is protected. Remove the protection (115).

Cannot capture a video snapshot scene from a movie.
- You cannot capture video snapshot scenes from scenes recorded or edited using another device.
- The memory is full. Delete some recordings (55, 102) or initialize the memory (40) to free some space.

When playing back scenes/slideshow with background music, the music track is not played back correctly.
- This can occur when you transfer the music files to a memory after repeatedly recording and deleting scenes (fragmented memory). Save your recordings (128) and initialize the memory (40). Then, transfer the music files first and then write the video files back to the memory.
- Music tracks will not play back correctly if the connection was interrupted while transferring the music files. Delete the music tracks and transfer the music files again.
- The transfer rate of the memory card used is too slow. Use a recommended memory card (37).

### Additional Information

The red ON/OFF (CHG) indicator flashes very slowly (one flash at 2-second intervals).
- The temperature of the battery pack is outside the charging range. If the battery pack’s temperature is below 0 °C (32 °F), warm it before charging it. If it is above 40 °C (104 °F), let the battery pack cool down before charging it.
- Charge the battery pack in temperatures between 0 °C and 40 °C (32 °F and 104 °F).
- The battery pack is damaged. Use a different battery pack.

appears on the screen.
- The LOCK switch on the Eye-Fi card is set to prevent accidental erasure. Change the position of the LOCK switch.
- An error occurred when trying to read data from an Eye-Fi card. Turn the camcorder off then on again. If the icon appears often, there might be a problem with the Eye-Fi card. Contact the card manufacturer’s customer care.

### Picture and Sound

The screen appears too dark.
- The LCD screen was dimmed. Hold [EXP] pressed down for 2 seconds to restore the LCD screen to its previous brightness setting.

Screen displays turn on and off repeatedly.
- The battery pack is exhausted. Replace or charge the battery pack.
- Remove the battery pack and restart it correctly.

Abnormal characters appear on the screen and the camcorder does not operate properly.
- Disconnect the power source and reconnect it after a short time. If the problem still persists, use the [Reset All Settings] menu option to reset all the camcorder’s settings to default values.

Video noise appears on screen.
- Keep a distance between the camcorder and devices that emit strong electromagnetic fields (plasma TVs, cellular phones, etc.).

Horizontal bands appear on the screen.
- This is a phenomenon typical of CMOS image sensors when recording under some types of fluorescent, mercury or sodium lamps. To reduce the symptoms, set the recording program to [Programmed AE] or [Shutter-Pri. AE] (70). This is not a malfunction.

Noise can be heard along with the recorded sound.
- When recording sound with an external microphone, the interference caused by wireless communications may be picked up and recorded as noise. We recommend turning off the wireless communication while recording (146).
Sound is distorted or is recorded at lower levels.
- When recording near loud sounds (such as fireworks, shows or concerts), sound may become distorted or it may not be recorded at the actual levels. Activate the microphone attenuator (153) or adjust the audio recording level manually (80).

The picture is displayed correctly but there is no sound from the built-in speaker.
- Speaker volume is turned off. Adjust the volume.
- If the STV-250N Stereo Video Cable is connected to the camcorder, disconnect it.
- The AV terminal is set to headphone output. Set [ ] (AV/Headphones) to [AV].

Memory Card and Accessories

Cannot insert the memory card.
- The memory card was not facing the correct direction. Turn the memory card over and insert it.

Cannot record on the memory card.
- The memory card is full. Delete some recordings (56, 102) to free some space or replace the memory card.
- Initialize the memory card (40) when you use it with the camcorder for the first time.
- The LOCK switch on the memory card is set to prevent accidental erase. Change the position of the LOCK switch.
- A compatible memory card must be used to be able to record movies on a memory card (37).
- The folder and file numbers have reached their maximum value. Set [ ] (Photo Numbering) to [Reset] and insert a new memory card.

The wireless controller will not work.
- Set [ ] (Wireless Remote Control) to [On].
- Replace the battery of the wireless controller.

Cannot upload files wirelessly using an Eye-Fi card.
- [Eye-Fi Communication] is set to [Off] (37). Change the setting to [On].
- Opening the LCD panel may help when the wireless connection is not strong enough.
- If certain conditions occur while uploading files, such as the camcorder becoming too hot or the wireless connection getting too weak, the camcorder may stop the wireless upload (182). Turn off the camcorder and let it cool down or move to a location with a stronger wireless signal.
- Contact the card manufacturer’s customer care.

After connecting the camcorder to a printer, the message (Busy) continues to appear on the screen
- Disconnect the USB cable and restore the connection after a short while.

Photos are not correctly printed
- You may not be able to print correctly, using a PictBridge-compatible printer, photos whose file names have been changed or that were recorded, created, edited or changed using another device.

Cannot save photos on my computer
- When the memory contains too many photos (Windows – 2,500 photos or more, Macintosh – 1,000 photos or more), you may not be able to transfer photos to a computer. Try using a card reader to transfer the photos on the memory card. Use only: To transfer the photos in the built-in memory, copy them to the memory card in advance (126).

The camcorder does not recognize the DV-100 DVD Burner even though it is connected correctly.
- The AV terminal is set to headphone output. Set it to [AV].
- Reconnect the camcorder to an HDTV using the CTC-100/S Component Cable, make sure to connect also the audio connections using the white and red plugs of the STV-250N Stereo Video Cable.

The camcorder is using the optional HTC-100 HDMI Cable, but there is no picture or sound from the HDTV.
- Disconnect the HTC-100 HDMI Cable and then restore the connection or turn the camcorder off and then on again.
- Disconnect the HTC-100 HDMI cable and turn off the camcorder and the TV. After a short while turn them on again and restore the connection.
- Disconnect the wireless connection getting too weak, the camcorder may stop the wireless upload (182). Turn off the camcorder and let it cool down or move to a location with a stronger wireless signal.
- Contact the card manufacturer’s customer care.

Connections with External Devices

Video noise appears on the TV screen.
- When using the camcorder in a room where a TV is located, keep a distance between the compact power adapter and the power or antenna cables of the TV.

Playback looks fine on the camcorder but there is no image on the TV screen.
- The video input on the TV is not set to the video terminal to which you connected the camcorder. Select the correct video input.
- When using the camcorder to an HDTV using the CTC-100/S Component Cable, make sure to connect also the audio connections using the white and red plugs of the STV-250N Stereo Video Cable.

The computer does not recognize the built-in memory even though the camcorder is connected correctly.
- The AV terminal is set to [DVD Burner]. Set it to [Computer/Printer] or [Connect and Set].
- Disconnect the USB cable and turn off the camcorder. After a short while, turn it on again and restore the connection.
- Disconnect the USB cable to a different USB port on the computer.
- The camcorder will not be correctly recognized if you connected the USB cable to the computer while the camcorder was deleting all the photos. Disconnect the USB cable and restore the connection once the operation is completed.

The printer is not working even though the camcorder and printer are connected correctly.
- Disconnect the USB cable and turn off the printer. After a short while turn it on again and restore the connection.
- Connect to a PictBridge-compatible printer if the memory contains 2,500 photos or more.

After connecting the camcorder to a printer, the message (Busy) continues to appear on the screen
- Disconnect the USB cable and restore the connection after a short while.

Photos are not correctly printed
- You may not be able to print correctly, using a PictBridge-compatible printer, photos whose file names have been changed or that were recorded, created, edited or changed using another device.

Cannot access the built-in memory
- There is a problem with the built-in memory. Contact a Canon Service Center.

Cannot communicate with the battery pack. Continue using this battery pack?
- You attached a battery pack that is not recommended by Canon for use with this camcorder.
- If you are using a battery pack recommended by Canon for use with this camcorder, there may be a problem with the battery pack or battery pack. Consult a Canon Service Center.

Cannot convert
- Cannot access the memory card. Check the memory card and make sure it is inserted correctly.
- You inserted a MultiMedia Card (MMC) into the camcorder. Use a recommended memory card (37).
- There was an error creating the file name. Set [ ] (Photo Numbering) to [Reset] and initialize the memory card or delete all the photos (102) and all the scenes in the [For Web Upload] and [For DVD Burning] index screens (56, 80).

Cannot copy
- The total size of the scenes you selected to copy exceeds the available space on the memory card. Delete some recordings on the memory card (56, 102) or reduce the number of scenes to copy.
- The memory card already contains the maximum number of scenes (3,999 scenes). Delete some scenes (56) to free some space.

Cannot divide the scene. Initialize only using the camcorder.
- The scene could not be divided because the camcorder’s internal scene management data log is full. Save your recordings (126) and initialize the memory (40). Write back the backup files and try dividing the scene again.

Cannot edit
- Could not move a scene in the playlist. Delete some scenes from the playlist (95).

Cannot enter standby mode now
- The camcorder cannot enter standby mode if the remaining battery charge is too low. Charge or replace the battery pack (23).

Cannot play back
- There is a problem with the memory. If this message appears often without apparent reason, contact a Canon Service Center.
Cannot record movies on this memory card - Initialize only using the camcorder.

Cannot play the movies on this memory card - Initialize only using the camcorder.

Memory card is full.

Mem. Card - Unable to recognize the data - Attempt recovering the data?
- There is a problem with the file system that prevents accessing the selected memory. Initialize the memory card with this camcorder (40).
- The LOCK switch on the memory card is set to prevent accidental erasure. Change the position of the LOCK switch.
- This message will appear the next time you turn on the camcorder if power supply was accidentally interrupted while the camcorder was writing on the memory card and later the position of the card’s LOCK switch was changed to prevent erasure. Change the position of the LOCK switch.

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Additional Information - 179

Error writing on the memory card. Data may be recovered if the memory card has not been removed. Attempt recovering the data?
- You cannot capture video snapshot scenes from scenes recorded or edited using another device.
- There is a problem with the memory card. Save your recordings (128) and initialize the built-in memory using the [Complete Initialization] option (40).

File name error
- There is a problem with the memory card. Save your recordings (128) and initialize the built-in memory using the [Complete Initialization] option (40). If the problem persists, use a different memory card.

Cannot record movies in the built-in memory Initialize only using the camcorder
- The camcorder’s built-in memory was initialized using a computer. Initialize the built-in memory with this camcorder (40).

Cannot record movies on this memory card
- Movies cannot be recorded on a memory card that cannot be initialized.

Cannot record movies on this memory card Initialize only using the camcorder
- The memory card in the camcorder was initialized using a computer. Initialize the memory card with this camcorder (40).

Cannot write data with this connection. To write data to the camcorder, connect the compact power adapter then reconnect the camcorder and computer.
- Scenes cannot be divided when the playlist already contains 999 scenes. Delete some scenes from the playlist (95). If the problem persists, use a different memory card.

Could not add the scene(s) to the playlist
- One or more scenes could not be added to the playlist. The playlist can contain a maximum of 999 scenes. If the playlist includes scenes recorded in MPE or FXP mode, the maximum number of scenes in the playlist may be less than 999. Delete some scenes from the playlist (95).

Do not connect the USB cable or the power source until you safely end the connection from the computer. Cannot write data with this connection. To write data to the camcorder, connect the compact power adapter then reconnect the camcorder and computer.
- The camcorder cannot be operated while it is not being powered by the compact power adapter and is connected to a computer with the supplied USB cable. In addition, scenes cannot be written back and music files cannot be transferred to the camcorder. To avoid corrupting the data in the camcorder’s memory, use the computer’s Safely Remove Hardware function to end the connection and disconnect the USB cable before using the camcorder.
- To be able to write back scenes and to transfer music files to the camcorder, use the computer’s Safely Remove Hardware function to end the connection, disconnect the USB cable, power the camcorder using the compact power adapter and only then connect it to the computer again.

Do not disconnect the USB cable or the power source until you safely end the connection from the computer. Cannot write data with this connection. To write data to the camcorder, connect the compact power adapter then reconnect the camcorder and computer.
- When the camcorder is in the [ mode and is connected to the computer with the supplied USB cable, the camcorder cannot be operated. Disconnecting the USB cable or power source while this message appears may result in permanent loss of the recordings in the camcorder.
- Use the computer’s Safely Remove Hardware function to end the connection and disconnect the USB cable before using the camcorder.
- To be able to write back scenes and to transfer music files to the camcorder, power the camcorder using the compact power adapter and only then connect it to the computer using the supplied USB cable.

Need to recover files from the memory card. Change the position of the LOCK switch on the memory card.
- A number of scenes have the same recording date but different file control information. This can occur for example when you edit photos and write the files back to the camcorder. Select a number to display the corresponding group of scenes.

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Change the battery pack
- Battery pack is exhausted. Replace or charge the battery pack.

Check the memory card
- Cannot access the memory card. Check the memory card and make sure it is inserted correctly.
- A memory card error occurred. The camcorder cannot record or display the image. Try removing and reinserting the memory card, or use a different memory card.
- You inserted a MultiMediaCard (MMC) into the camcorder. Use a recommended memory card (37).
- If after the message disappears, the status display remains blank, perform the following: Turn off the camcorder, remove and reinsert the memory card. If it is not resolved, turn the camcorder back on and resume recording/playback. If the problem persists, save your recordings (128) and initialize the memory card (40).
Some photos could not be deleted
- Protected photos (PW) cannot be deleted. Remove the protection (115).

Some scenes could not be added to the playlist.
- You may not be able to add to the playlist scenes recorded using another device.
- The playlist can contain a maximum of 999 scenes. If the playlist includes scenes recorded in MXP or FXP mode, the maximum number of scenes in the playlist may be less than 999. Delete some scenes from the playlist (96).

Additional Information
- Some scenes could not be converted
  - Among the scenes selected for conversion to SD there are scenes recorded with another device using 24p frame rate. When converting scenes to SD, leave out scenes recorded using another device.

Some scenes could not be deleted
- Movies that were protected/edited with other devices cannot be deleted with this camcorder.

Additional Information
- Some scenes were recorded using another device and cannot be copied.
- Scenes that were not recorded with this camcorder cannot be copied to the playlist.

Task in progress. Do not disconnect the power source.
- The camcorder is updating the memory. Wait until the operation ends and do not disconnect the compact power adapter or remove the battery pack.

The camcorder is set to photo mode
- You pressed the START/STOP button while recording photos (P mode). Set the camcorder to (C) or (M) mode to record movies.

The lens cover is not fully open. Turn the camcorder off, then on again.
- The lens cover did not open fully. Turn the camcorder off, then on again. If this does not solve the problem, consult a Canon Service Center.

This memory card contains scenes. Delete all scenes to use relay recording.
- Save your movies (128) if necessary, and delete all the movies from the memory card (68).

This photo cannot be displayed
- You may not be able to display photos taken with other devices or image files created or edited on a computer.

This photo cannot be deleted
- Protected photos (PW) cannot be deleted. Remove the protection (115).

This scene was recorded using another device and cannot be added to the playlist.
- Scenes that were not recorded with this camcorder cannot be added to the playlist.

Additional Information
- This scene was recorded using another device and cannot be copied.
- Scenes that were not recorded with this camcorder cannot be copied to the memory card.

Connect the compact power adapter
- The camcorder is powered by the battery pack. Connect the compact power adapter to the camcorder.

Disc access failure. Check the disc.
- There was an error when reading the disc or attempting to write onto it.
- This message can appear also if condensation has formed (191). Wait until the DVD burner dries completely before resuming use.
- The disc may be dirty or not correctly loaded. Try removing the disc and reinserting it after cleaning the recording surface with a clean, soft cloth. If the problem persists, replace with a different disc.

Error reading the data
- Check that the USB cable was not accidentally disconnected.

No disc
- Insert a disc into the DVD Burner.
- This message can appear also if condensation has formed (191). Wait until the DVD burner dries completely before resuming use.

No photos
- There are no photos to add to the disc.

No scenes
- There are no scenes to add to the disc.

No scenes left to add
- There are no scenes that have not already been added to discs created previously.

Operation canceled
- The USB cable was disconnected and the operation was canceled. Check the USB connection. The scenes selected to be written on the disc include scenes recorded in MXP mode. Add to the playlist in advance only those scenes recorded in other recording modes and create the disc from the [Playlist] index screen.

Unable to recover data
- Could not recover a corrupted file. Save your recordings (128) and initialize the memory using the [Complete Initialization] option (40).

Direct Print Related Messages

Data transfer error
- Cancel printing, disconnect the USB cable and turn off the printer. After a while, turn the printer back on and reconnect the USB cable.
- You attempted to print from a memory card that contains a large number of photos. Reduce the number of photos.

To record video on this memory card, it is recommended to use only the XP+/SP/LP recording modes.
- Movies may not be recorded correctly on this memory card if the recording mode is set to MXP or FXP mode (59).

To use this function change the camcorder’s mode from (C) to (M)
- You pressed a button that cannot be used in (C) mode. Set the mode switch to (M) to set the camcorder to flexible recording mode.

Too many photos. Disconnect the USB cable.
- Disconnect the USB cable. Try using a memory card reader or decrease the number of photos on the memory card to fewer than 2,500 photos (printers, Windows computers), or 1,000 photos (Macintosh computers).
- If a dialog box appeared on the computer screen, close it. Disconnect the USB cable, and restore the connection after a short while.

USB error
- Total play time is too long
  - The playlist cannot be converted when its total playback time exceeds 2 hours and 30 minutes. Reduce the number of scenes in the playlist.

Unable to recognize the data
- You transferred data to the camcorder recorded in a different television system (PAL or SECAM). Play back the recordings with the device originally used to record them.

Unable to recover data
- Could not recover a corrupted file. Save your recordings (128) and initialize the memory using the [Complete Initialization] option (40).

Messages Related to the Optional DW-100 DVD Burner

If an error message appears while the camcorder is connected to the optional DW-100 DVD Burner, refer to the following section and also to the instruction manual of the DVD Burner.

Cannot read the disc. Check the disc.
- During disc recording mode, this message can appear when a commercially available DVD disc (a DVD disc containing movies, software, etc) or an 8 cm mini DVD disc is inserted.
- Replace with a brand new disc.
- During disc playback mode, this message can appear when a commercially available DVD disc or a brand new DVD disc is inserted. Replace with an AVCHD disc created with the DVD Burner.

Close the memory card slot cover
- The memory card slot cover is open. Close the cover after correctly inserting the memory card (34).

File error
- You attempted to print a photo that was recorded with another camcorder, has a different compression, or was edited on a computer.

Hardware error
- Cancel printing. Turn off the printer and turn it back on.
- Check the printer status.
- Ink tank errors have occurred. Replace the ink tank.

Ink absorber full
- Touch [Continue] to resume printing. Consult a Canon Service Center (refer to the list included with the printer) to replace the ink absorber.

Ink error
- The ink level cannot be detected correctly or the ink cartridge is out of ink. Replace the ink cartridge.

Low ink level
- The ink cartridge needs to be replaced soon. Touch [Continue] to interrupt printing.

No ink
- The ink cartridge is not inserted or is out of ink. Replace the ink cartridge.

No paper
- Paper is not correctly inserted or there is no paper.

Paper error
- There is a problem with the paper. The paper is not correctly loaded or the paper size is wrong.
- If the paper output tray is closed, open it to print.

Paper jam
- The paper jammed during printing. Touch [Stop] to cancel printing. After removing the paper, set some paper again and retry printing.

Paper lever error
- Paper lever error occurred. Adjust the paper selection lever to the proper position.

Print head not installed
- No print head is installed in the printer or the print head is defective.

Printer cover open
- Close the printer cover securely.

Printer error
- A malfunction has occurred that may require repairs. (Canon PDM printers: the printer’s green power lamp and orange error lamp flash alternately)
- Disconnect the USB cable and turn off the printer. Unplug the printer’s power cord from the power outlet and contact the appropriate customer support center or service center.
Charge and discharge all your battery packs fully at least once a year.

To extend the battery life of the battery pack, discharge it completely.

If you cannot solve the problem even after consulting this list and the printer's instruction manual, refer to the printer's instruction manual.

DANGER!

• Do not try to disassemble or modify it.
• Do not expose the battery pack to temperature higher than 60 °C (140 °F). Do not leave it near a heater or inside a car in hot weather.
• Do not try to disassemble or modify it.
• Do not drop it or subject it to shocks.
• Do not get it wet.
• Dirty terminals may cause a poor contact between the battery pack and the camcorder. Wipe the terminals with a soft cloth.

Battery Pack

Treat the battery pack with care.
• Keep it away from fire (or it might explode).
• Do not expose the battery pack to temperature higher than 60 °C (140 °F). Do not leave it near a heater or inside a car in hot weather.
• Do not try to disassemble or modify it.
• Do not drop it or subject it to shocks.
• Do not get it wet.
• Dirty terminals may cause a poor contact between the battery pack and the camcorder. Wipe the terminals with a soft cloth.

Remaining battery time

If the remaining battery time displayed is not correct, charge the battery pack fully. Still, the correct time may not be displayed if a fully charged battery pack is used continuously in high temperatures or it is left unused for long periods of time. Also, the correct remaining time may not be displayed, depending on the battery life. Use the time shown on the screen as an approximation.

Regarding the use of non-Canon battery packs

• For your safety, battery packs that are not genuine Canon battery packs will not be charged even if you attach them to this camcorder or to the optional CG-800 Battery Charger.
• We recommend using genuine Canon battery packs bearing the Intelligent System mark.
• If you attach to the camcorder battery packs that are not genuine Canon battery packs, will appear and the remaining battery time will not be displayed.

Memory Card

We recommend backing up the recordings on the memory card onto your computer. Data may be corrupted or lost due to memory card defects or exposure to static electricity. Canon shall not be liable for lost or corrupted data.
• Do not touch or expose the terminals to dust or dirt.
• Do not use memory cards in places subject to strong magnetic fields.
• Do not leave memory cards in places subject to high humidity and high temperature.
• Do not disassemble, bend, drop, or subject memory cards to shocks and do not expose them to water.
• Check the direction before inserting the memory card. Forcing a memory card into the slot if it is not correctly oriented may damage the memory card or the camcorder.
• Do not attach any labels or stickers on the memory card.

Handling Precautions

Camcorder

Be sure to observe the following precautions to ensure maximum performance.
• Save your recordings periodically. Make sure to transfer your recordings to an external device such as a computer or digital video recorder and save them on a regular basis. This will protect your important recordings in case of damage and create more free space on the memory. Canon shall not be liable for any data loss.
• Do not carry the camcorder by the LCD panel. Be careful when closing the LCD panel. When using a wrist strap, do not allow the camcorder to swing and hit an object.
• Handle the touch screen with care. Do not apply excessive force and do not use ballpoint pens or other hard-tipped tools to operate the touch screen. This may damage the touch screen's surface or the pressure-sensitive layer beneath it.
• Do not attach protective film on the touch screen. The touch screen's operation is based on detecting applied pressure, so you may not be able to correctly operate the touch screen with an additional protective layer.
• Do not leave the camcorder in places subject to high temperatures (like the inside of a car parked under direct sunlight), or high humidity.
• Do not use the camcorder near strong electromagnetic fields such as above TVs, near plasma TVs or mobile phones.
• Do not point the lens at strong light sources. Do not leave the camcorder pointed at a bright subject.
• Do not use or store the camcorder in dusty or sandy places. The camcorder is not waterproof—avoid also water, mud or salt. If any of the above should get into the camcorder it may damage the camcorder and/or the lens.
• Be careful of heat generated by lighting equipment.
• Do not disassemble the camcorder. If the camcorder does not function properly, consult qualified service personnel.
• Handle the camcorder with care. Do not subject the camcorder to shocks or vibration as this may cause damage.

Long-term storage

If you do not intend to use the camcorder for a long time, store it in a place free of dust, in low humidity, and at temperatures not higher than 30 °C (86 °F).

Battery Pack

DANGER!

Treat the battery pack with care.
• Keep it away from fire (or it might explode).
• Do not expose the battery pack to temperature higher than 60 °C (140 °F). Do not leave it near a heater or inside a car in hot weather.
• Do not try to disassemble or modify it.
• Do not drop it or subject it to shocks.
• Do not get it wet.
• Dirty terminals may cause a poor contact between the battery pack and the camcorder. Wipe the terminals with a soft cloth.

Long-term storage

• Store battery packs in a dry place at temperatures no higher than 30 °C (86 °F).
• To extend the battery life of the battery pack, discharge it completely before storing it.
• Charge and discharge all your battery packs fully at least once a year.
• Secure Digital (SD) memory cards have a physical switch to prevent writing on the card so as to avoid the accidental erasure of the card’s content. To write-protect the memory card set the switch to the LOCK position.

Built-in Rechargeable Lithium Battery

The camcorder has a built-in rechargeable lithium battery to keep the date/time and other settings. The built-in lithium battery is recharged while you use the camcorder; however, it will discharge completely if you do not use the camcorder for about 3 months. To recharge the built-in lithium battery: Connect the compact power adapter to the camcorder and leave it connected for 24 hours with the camcorder off.

Lithium Button Battery

WARNING!
• The battery used in this device may present a fire or chemical burn hazard if mishandled.
• Do not disassemble, modify, immerse in water, heat above 100 °C (212 °F) or incinerate the battery.
• Replace with a CR2025 battery made by Panasonic, Hitachi Maxell, Sony, Sanyo, or with Duracell2025. Use of other batteries may present a risk of fire or explosion.
• Do not insert the battery into the mouth. If swallowed, seek medical assistance immediately. The battery case may break and the battery fluids may cause internal injuries.
• Keep the battery out of the reach of children.
• Do not recharge, short-circuit or insert the battery in the wrong direction.
• Dispose of the used battery according to applicable recycling regulations.
• Do not pick up the battery using tweezers or other metal tools, as this will cause a short circuit.

Maintenance/Others

Cleaning

Camcorder Body
• Use a soft, dry cloth to clean the camcorder body. Never use chemically treated cloths or volatile solvents such as paint thinner.

Lens and Instant AF Sensor
• If the lens surface or instant AF sensor is dirty, autofocus may not work properly.
• Remove any dust or dirt particles using a non-aerosol type blower brush.
• Use a clean, soft lens-cleaning cloth to gently wipe the lens. Never use tissue paper.

LCD Touch Screen
• Clean the LCD touch screen using a clean, soft lens-cleaning cloth.
• Condensation may form on the surface of the screen when the temperature changes suddenly. Wipe it with a soft dry cloth.

Condensation

Moving the camcorder rapidly between hot and cold temperatures may cause condensation (water droplets) to form on its internal surfaces. Stop using the camcorder if condensation is detected. Continued use may damage the camcorder.

Condensation may form in the following cases:
• When the camcorder is moved quickly from cold to warm places
• When the camcorder is left in a humid room
• When a cold room is heated rapidly

To avoid condensation
• Do not expose the camcorder to sudden or extreme changes in temperature.

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Using the Camcorder Abroad

Power Sources
You can use the compact power adapter to operate the camcorder and to charge battery packs in any country with power supply between 100 and 240 V AC, 50/60 Hz. Consult a Canon Service Center for information on plug adapters for overseas use.

Playback on a TV Screen
You can only play back your recordings on TVs compatible with the NTSC system. NTSC is used in the following regions/countries:
Americas: All of North America and Central America; most Caribbean islands (except in French territories like Guadeloupe and Martinique); most of South America (except in Argentina, Brazil and Uruguay). Asia: Only in Japan, the Philippines, South Korea, Taiwan and Myanmar. Oceania: US territories (Guam, American Samoa, etc.) and some Pacific islands like Micronesia, Samoa and Tonga.

Disposal
When you delete movies or initialize the memory, only the file allocation table is altered and stored data is not physically erased. Take the necessary precautions when you dispose of the camcorder or memory card, for example by physically damaging it to prevent the leakage of private data.

When condensation is detected
The camcorder automatically shuts off. The precise time required for water droplets to evaporate will vary depending on the location and weather conditions. As a general rule, wait for 2 hours before resuming use of the camcorder.

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Remove the memory card and battery pack. Then, place the camcorder in an airtight plastic bag and let it adjust gradually to temperature changes before removing it from the bag.

For California, USA only: The lithium battery included contains Perchlorate Material – special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate for details.

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Accessories (Availability differs from area to area)

- SS-600/SS-650 Shoulder Strap
- WS-20 Wrist Strap
- WL-D89 Wireless Controller
- CA-570 Compact Power Adapter
- DW-100 DVD Burner
- ZR-1000 Zoom Remote Controller
- ZH-2000 Zoom Remote Controller

Optional accessories not listed below are described in more detail in the following pages.

- IFC-300PCU USB Cable
- Memory card
- DTC-100 D Terminal Cable
- CTC-100 Component Cable
- STV-250N Stereo Video Cable

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CG-800 Battery Charger
Use the battery charger to charge the battery packs. It plugs directly into a power outlet without a cable.

Charging Times
The charging times given in the following table are approximate and vary according to charging conditions and initial charge of the battery pack.

<table>
<thead>
<tr>
<th>Battery pack</th>
<th>BP-808</th>
<th>BP-819</th>
<th>BP-827</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charging conditions</td>
<td>BP-808</td>
<td>BP-819</td>
<td>BP-827</td>
</tr>
<tr>
<td>Using the camcorder</td>
<td>150 min.</td>
<td>260 min.</td>
<td>385 min.</td>
</tr>
<tr>
<td>Using the CG-800 Battery Charger</td>
<td>105 min.</td>
<td>190 min.</td>
<td>260 min.</td>
</tr>
</tbody>
</table>

Recording and Playback Times
Recording and playback times given in the following tables are approximate and vary according to recording mode and charging, recording or playback conditions. The effective usage time of the battery pack may decrease when recording in cold surroundings, when using the brighter playback conditions. The effective usage time of the battery pack may decrease when recording in cold surroundings, when using the brighter playback conditions.

**Using a memory card**

<table>
<thead>
<tr>
<th>Battery pack</th>
<th>Usage time</th>
<th>Recording mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP-808</td>
<td>Recording (maximum) 95 min.</td>
<td>XP+</td>
</tr>
<tr>
<td>BP-819</td>
<td>Recording (typical)* 60 min.</td>
<td>XP</td>
</tr>
<tr>
<td>BP-827</td>
<td>Recording (maximum) 160 min.</td>
<td>165 min.</td>
</tr>
</tbody>
</table>

* Approximate times for recording with repeated operations such as start/stop, zooming, and power on/off.

**TL-H37 Tele-converter**
This Tele-converter lens increases the focal length of the camcorder lens by a factor of 1.5.

- The image stabilizer is not as effective when the Tele-converter is attached.
- The minimum focusing distance at full telephoto with the TL-H37 is 2.3 m (7.5 ft.).
- When the Tele-converter is attached, a shadow may appear in the picture when you use the flash.

**WD-H371 Wide-converter**
This Wide-converter lens decreases focal length by a factor of 0.7, giving you a wide perspective for indoor shots or panoramic views.

- When the Wide-converter is attached, a shadow may appear in the picture when you use the flash.

Optional Accessories
Call or visit your local retailer/dealer for genuine Canon video accessories. You can also obtain genuine accessories for your Canon camcorder by calling: 1-800-828-4040, Canon U.S.A. Information Center.

Use of genuine Canon accessories is recommended.
This product is designed to achieve excellent performance when used with genuine Canon accessories. Canon shall not be liable for any damage to the product and/or accidents such as fire, etc., caused by the malfunction of non-genuine Canon accessories (e.g., a leakage and/or explosion of a battery pack). Please note that this warranty does not apply to repairs arising out of the malfunction of non-genuine Canon accessories, although you may request such repairs on a chargeable basis.

Battery Packs
When you need extra battery packs, select one of the following models:
BP-808, BP-809(B)*, BP-809(S)*, BP-819, or BP-827.
* Please note that the shape/color of this battery does not match the external design of the camcorder.

When you use battery packs bearing the Intelligent System mark, the camcorder will communicate with the battery and display the remaining usage time (accurate to 1 minute). You can only use and charge these battery packs with camcorders and chargers compatible with Intelligent System.
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Product Codes

Provided Accessories
CA-570 Compact Power Adapter 8468A002AA
BP-808 Battery Pack 2740B002AA
WL-DC89 Wireless Controller D83-0790-000
STV-250N Stereo Video Cable 3067A002AA (D82-0590-002)
IFC-300PCU USB Cable 6906A001AA

Optional Accessories
BP-809 Battery Pack 2588B003AA (silver), 2588B004AA (black)
BP-827 Battery Pack 3185B002AA
BP-819 Battery Pack 2589B002AA
BP-829 Battery Pack 3188B002AA
CG-800 Battery Charger 2590B002AA
TL-H37 Tele-converter 8835A001AA
WD-H37 Wide-converter 3187B001AA
FS-H37U Filter Set 3067A002AA (D82-0590-002)
VL-5 Video Light 3574B001AA
TC-H37U Tele-converter 8835A001AA
IFC-300PCU USB Cable 6906A001AA

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Specifications

VIXIA HF M31 / VIXIA HF M30 / VIXIA HF M300 /

System
• Recording System
  Movies: AVCHD  Video compression: MPEG-4 AVC/H.264;
  Audio compression: Dolby Digital 2ch, Dolby Digital 5.1ch*  
  * Only when using the optional DM-100 Directional Microphone.
  Photos: DCF (Design rule for Camera File system), compatible with Exif* Ver. 2.2 and with DPOF  
  Image compression: JPEG (Super Fine, Fine, Normal)  
  * This camcorder supports Exif 2.2 (also called “Exif Print”). Exif Print is a standard for enhancing the  
  communication between camcorders and printers. By connecting to an Exif Print-compliant printer,  
  the camcorder’s image data at the time of shooting is used and optimized, yielding extremely high  
  quality prints.
• Television System
  1080/60i
  * Recordings made with the [PF24], [PF30] frame rate are converted and recorded on the memory as 60i.
• Recording Media
  SD or SDHC (SD High Capacity) memory card (not included)
  - SD or SDHC (SD High Capacity), memory card (not included).

Maximum Recording Time (approximate figures)
32 GB built-in memory:
MXP mode: 2 hr. 55 min.  XP+ mode: 5 hr. 45 min.
SP mode: 9 hr. 35 min.  LP mode: 12 hr. 15 min.
XP mode: 1 hr. 35 min.  LP+ mode: 2 hr. 5 min.
LP mode: 9 hr. 35 min.  XP mode: 1 hr. 35 min.
XP+ mode: 5 hr. 45 min.  LP mode: 3 hr.
Commercially available 16 GB memory card:
MXP mode: 1 hr. 25 min.  XP+ mode: 2 hr. 5 min.
SP mode: 4 hr. 45 min.  LP mode: 6 hr. 5 min.

• Image Sensor
  1/4.3 inch CMOS, approx. 3,890,000 pixels
  Effective pixels: [Dynamic] 15 mode: approx. 2,990,000 (T) / 2,070,000 (W) pixels*  
  Other IS modes: approx. 2,990,000 pixels  
  Photos: M, S  
  Photos: 3,310,000 pixels*  
  [W] (Wide Mode): approx. 2,990,000 pixels  
  * When two values are given, the first indicates the value at full telephoto (T) and the second the value at full wide-angle (W).
• LCD Touch Screen: 2.7 in., wide, TFT color, approx. 211,000 dots, touch operation
• Microphone: Stereo electret condenser microphone

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About the music files
The specifictions of the music files compatible with the camcorder are as follows.

Audio encoding: Linear PCM
Audio sampling: 48 kHz, 16 bits, 2 channels
Minimum length: 1 second

File extension: WAV

The music data is saved in the memory. If the following folder structure is created in the built-in memory:

CANON
  MY_MUSIC
  MUSIC_01.WAV to MUSIC_99.WAV

On the memory card:

CANON
  PRIVATE
  MY_MUSIC
  MUSIC_01.WAV to MUSIC_99.WAV

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CANON CONSUMER DIGITAL VIDEO EQUIPMENT LIMITED WARRANTY FOR THE UNITED STATES

The limited warranty set forth below is given by Canon USA, Inc. ("Canon USA") with respect to Canon Consumer Digital Video Equipment (the "Equipment") purchased in the United States. This limited warranty is only effective upon presentation of your Bill of Sale or other proof of purchase.

The Equipment is warranted under normal, non-commercial use, against defective materials or workmanship as follows:

Parts: Defective parts will be exchanged for new parts or comparable rebuilt parts for a period of one (1) year from the date of original purchase, except for the following which shall be warranted for the periods stated:
- Memory cards: 30 months from the date of original purchase
- Mini video light: 12 months from the date of original purchase
- Mode switch: 12 months from the date of original purchase

Labor: For a period of one (1) year from the date of original purchase, labor will be provided free of charge for the Equipment serviced by the authorized Canon service centers or designated service facilities located in the United States.

Software: For a period of 90 days from the date of original purchase, software programs will be replaced or made available to you free of charge by the Canon service facility for your Equipment.

In order to obtain warranty service, you must contact the authorized Canon retail dealer from whom you purchased the Equipment, or an authorized Canon service facility for your Equipment.

THIS LIMITED WARRANTY IS NULL AND VOID IN THE EVENT THAT ANY REPAIR, ALTERATION, OR SERVICE OF THE EQUIPMENT IS PERFORMED OR ATTEMPTED BY ANY PERSON, FIRM, OR CORPORATION OTHER THAN A AUTHORIZED CANON SERVICE FACILITY.

THIS LIMITED WARRANTY DOES NOT COVER:
- Any consumable part unless it is specifically stated herein.
- Damage or defects caused by accident, neglect, misuse, abnormal use, improper storage, or accident, or failure to follow operating instructions.
- Damage or defects caused by unauthorized alteration, repair, or maintenance.
- Damage or defects caused by transportation or improper packing.
- Damage or defects caused by incorrect handling or storage.
- Damage or defects caused by any act of God.
- Damage or defects caused by any other service.
- Damage or defects caused by the use of unauthorized parts or by service other than by Canon USA or its authorized service centers.
- Damage or defects caused by the use of the Equipment as a backup device or under severe operating conditions.
- Damage or defects caused by the use of the Equipment under conditions other than its intended use.
- Damage or defects caused by any other special, incidental or consequential damages.

Canon USA shall not be liable for any loss of revenue or profits, expense for substitute equipment or service, storage charges, or any other incidental or consequential damages caused by the use, misuse or inability to use the Equipment regardless of the legal theory on which the claim is based, and even if Canon USA has been advised of the possibility of such damages. Nor shall recovery of any kind against Canon USA be greater than the purchase price of the equipment sold by Canon USA and causing the alleged damage. Without limiting the foregoing, you assume all risk and liability for loss, damage or injury to you and your property and to others and their property arising out of, misuse or inability to use the equipment not caused directly by the negligence of Canon USA. Some states do not allow the exclusion of liability for personal injury or death or for consequential damages, so the above limitations may not apply to you.

THIS WARRANTY SHALL NOT EXTEND TO ANYONE OTHER THAN THE ORIGINAL PURCHASER OF THIS EQUIPMENT OR THE PERSON FOR WHOM IT WAS PURCHASED AS A GIFT. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Canon USA, Inc.
The Equipment is warranted under normal, non-commercial, personal use, against defective materials or workmanship as a bill of sale or other proof of purchase for this Equipment to a Canon Service Facility when repairs are required.

Digital Video Equipment (the "Equipment") purchased in Canada. This limited warranty is only effective upon presentation of the limited warranty set forth below is given by Canon Canada Inc. ("Canon Canada") with respect to Canon Consumer Equipment purchased outside Canada.

This warranty does not extend to any person other than the original purchaser of the Equipment or the person for whom it was purchased as a gift and states your exclusive remedy. This warranty does not cover the cabinet (exterior finish) of the Equipment, media, nor does it apply to Equipment purchased outside Canada.

The Equipment is used for commercial, professional or industrial purposes.

The loss or damage to the product results from:

i) accident, natural disaster, mishandling, abuse, neglect, unauthorized product modification or failure to follow instructions contained in the instruction manual;
ii) the use of accessories, attachments, products, supplies or devise with the Equipment that do not conform to Canon specifications or that cause abnormally frequent service problems;
iii) repairs or services performed by any party other than a Canon Service Facility;
iv) defective batteries or any exposure to water, sand or dirt;
v) shipping (claim must be presented to the shipper);
vii) repairs or services performed by any party other than a Canon Service Facility;
vii) repairs or services performed by any party other than a Canon Service Facility;
viii) repairs or services performed by any party other than a Canon Service Facility.

This limited warranty does not cover the cabinet (exterior finish) of the Equipment, media, nor does it apply to Equipment purchased outside Canada.

Except as otherwise required by applicable legislation, this warranty is in lieu of all other warranties, conditions, guarantees or representations, expressed or implied, statutory or otherwise, relative to the Equipment, including implied warranties or conditions of merchantability or fitness for a particular purpose. Canon Canada assumes no liability for special, consequential or incidental damages, loss or corruption of data including, without limitation, data stored on the hard disk drive of the Equipment or loss that may arise, whether on account of negligence or otherwise, from the use, misuse or inability to use the Equipment including loss of profit, revenue, media or data stored on the hard disk drive of the Equipment. Any recovery under this limited warranty shall not exceed the purchase price of the equipment. Canon Canada does not assume any other responsibility or liability for damages, loss or corruption of data including, without limitation, data stored on the hard disk drive of the Equipment or loss that may arise, whether on account of negligence or otherwise, from the use, misuse or inability to use the Equipment including loss of profit, revenue, media or data stored on the hard disk drive of the Equipment. Any recovery under this limited warranty shall not exceed the purchase price of the equipment. Canon Canada does not assume any other responsibility or liability for damages, loss or corruption of data including, without limitation, data stored on the hard disk drive of the Equipment or loss that may arise, whether on account of negligence or otherwise, from the use, misuse or inability to use the Equipment including loss of profit, revenue, media or data stored on the hard disk drive of the Equipment.

If the Equipment contains a hard disk drive, Canon Canada recommends that data stored on that drive be duplicated or backed up to prevent its loss in the event of a failure or other malfunction of such drive.

TO OBTAIN WARRANTY SERVICE

Ship your Equipment to its original condition (box or packaging), properly packaged, fully insured with shipping charges prepaid, together with a copy of your bill of sale or other proof of purchase and a description of the problem to any of the Canon Service Facilities in Canada.

If you plan to take important videos or if the product has not been used for some time, please check all functions with the instruction book before using it.

Canon USA
100 Jamison Road, Jamesburg, NJ 08831 USA
Canon U.S.A., INC., CHICAGO OFFICE
100 Park Blvd., Itasca, IL 60143 USA
Canon U.S.A., INC., LOS ANGELES OFFICE
10955 Alton Parkway, Irvine, CA 92618 USA
Canon U.S.A., INC., HONOLULU OFFICE
210 Ward Avenue, Suite 200, Honolulu, HI 96814 USA
* If you have any questions, call the Canon USA Information Center toll-free at 1-800-828-4040 (USA only).

Canon Canada
6900 Dixie Road, Mississauga, ON L5T 1R7
Canon Canada INC. CALGARY
2628 16th Street NE, Calgary, AB T2E 7K7
Canon Canada INC. MONTREAL
8801 Route Transcanadienne, Saint-Laurent, QC H4S 1Z6
* If you have any questions, call the Canon Canada Information Center toll-free (in Canada only) at 1-800-652-2666.
* Si vous avez des questions, veuillez téléphoner 1-800-On-CANON (1-800-652-2666, sans frais au Canada seulement).

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For support concerning the supplied PIXELA applications, please call PIXELA customer support (details in the 'PIXELA Applications' Installation Guide).

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