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MINOLTA

The essentials of imaging

www.minolta.com



DiMAGE X20

E INSTRUCTION MANUAL

BEFORE YOU BEGIN

Thank you for purchasing this Minolta product. Please take the time to read through this instruction manual so you can enjoy all the features of your new digital camera.

Check the packing list before using this product. If any items are missing, immediately contact your camera dealer.

Minolta DiMAGE X20 digital camera

AA-size alkaline batteries

Neck strap NS-DG 500

SD Memory Card

AV cable AVC-200

USB cable USB-500

DiMAGE Viewer CD-ROM

DiMAGE Viewer manual

Camera manual

Warranty card

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FOR PROPER AND SAFE USE

Read and understand all warnings and cautions before using this product.

WARNING

Using batteries improperly can cause them to leak harmful solutions, overheat, or explode which may damage property or cause personal injury. Do not ignore the following warnings.

- Only use the batteries specified in this instruction manual.
- Do not install the batteries with the polarity (+/-) reversed.
- Do not use batteries which show wear or damage.
- Do not expose batteries to fire, high temperatures, water, or moisture.
- Do not attempt to short or disassemble batteries.
- Do not store batteries near or in metallic products.
- Do not mix batteries of different types, brands, ages, or charge levels.
- Do not charge lithium batteries.
- When recharging rechargeable batteries, only use the recommended charger.
- Do not use leaking batteries. If fluid from the batteries enters your eye, immediately rinse the eye with plenty of fresh water and contact a doctor. If fluid from the batteries makes contact with your skin or clothing, wash the area thoroughly with water.
- Tape over battery contacts to avoid short-circuiting during disposal; always follow local regulations for battery disposal.

- Use only the specified AC adapter within the voltage range indicated on the adapter unit. An inappropriate adapter or current may cause damage or injury through fire or electric shock.
- Do not disassemble this product. Electric shock may cause injury if a high voltage circuit inside the product is touched.
- Immediately remove the batteries or unplug the AC adapter and discontinue use if the camera is dropped or subjected to an impact in which the interior, especially the flash unit, is exposed. The flash has a high voltage circuit which may cause an electric shock resulting in injury. The continued use of a damaged product or part may cause injuries or fire.
- Keep batteries or small parts that could be swallowed away from infants. Contact a doctor immediately if an object is swallowed.
- Store this product out of reach of children. Be careful when around children not to harm them with the product or parts.
- Do not fire the flash directly into the eyes. It may damage eyesight.
- Do not fire the flash at vehicle operators. It may cause a distraction or temporary blindness which may lead to an accident.
- Do not use the monitor while operating a vehicle or walking. It may result in injury or an accident.

- Do not use this product in a humid environment, or operate this product with wet hands. If liquid enters the product, immediately remove the batteries or unplug the AC adapter and discontinue use. The continued use of a product exposed to liquids may cause damage or injury through fire or electric shock.
- Do not use the product near inflammable gases or liquids such as gasoline, benzine, or paint thinner. Do not use inflammable products such as alcohol, benzine, or paint thinner to clean the product. The use of inflammable cleaners and solvents may cause an explosion or fire.
- When unplugging the AC adapter, do not pull on the power cord. Hold the adapter unit when removing it from an outlet.
- Do not damage, twist, modify, heat, or place heavy objects on the AC adapter cord. A damaged cord may cause damage or injury through fire or electric shock.
- If the product emits a strange odor, heat, or smoke, discontinue use. Immediately remove the batteries taking care not to burn yourself as the batteries become hot with use. The continued use of a damaged product or part may cause injuries or fire.
- Take the product to a Minolta Service Facility when repairs are required.
- Handling the cord on this product will expose you to lead, a chemical known to the States of California to cause cancer, and birth defects or other reproductive harm. Wash hands after handling.

CAUTION

- Do not use or store the product in a hot or humid environment such as the glove compartment or trunk of a car. It may damage the product and batteries which may result in burns or injuries caused by heat, fire, explosion, or leaking battery fluid.
- If batteries are leaking, discontinue use of the product.
- The camera temperature rises with extended periods of use. Care should be taken to avoid burns.
- Burns may result if the memory card or batteries are removed immediately after extended periods of use. Turn the camera off and wait for it to cool.
- Do not fire the flash while it is in contact with people or objects. The flash unit discharges a large amount of energy which may cause burns.
- Do not apply pressure to the LCD monitor. A damaged monitor may cause injury, and the liquid from the monitor may cause inflammation. If liquid from the monitor makes contact with skin, wash the area with fresh water. If liquid from the monitor comes in contact with the eyes, immediately rinse the eyes with plenty of water and contact a doctor.
- When using the AC adapter, insert the plug securely into the electrical outlet.
- Do not use if the AC adapter cord is damaged.
- Do not cover the AC adapter. A fire may result.
- Do not obstruct access to the AC adapter; this can hinder the unplugging of the unit in emergencies.
- Unplug the AC adapter when cleaning or when the product is not in use.

The following marks may be found on the product:



This mark on your camera certifies that this camera meets the requirements of the EU (European Union) concerning interference causing equipment regulations. CE stands for *Conformité Européenne* (European Conformity).

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Digital Camera: DiMAGE X20



Tested To Comply
With FCC Standards

FOR HOME OR OFFICE USE

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. Changes or modifications not approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for

a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to 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.

Tested by the Minolta Corporation 101 Williams Drive, Ramsey, New Jersey 07446, U.S.A.

Do not remove the ferrite cores from the cables.

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The getting up and running section covers how to prepare the camera for use. It contains important information about power supplies and memory cards. The basic operation of this camera is covered in the recording - basic operation section between pages 22 and 29, and the playback - basic operation section between pages 30 and 33. Read the data-transfer mode section in its entirety before connecting the camera to a computer.

Many of the features of this camera are controlled with menus. The menu navigation sections concisely describe how to change menu settings. Descriptions of the settings immediately follow the navigation sections.

The appendix contains a troubleshooting section to help answer questions about the operation of the camera. Information covering camera care and storage is also provided. Please store this manual in a safe place.

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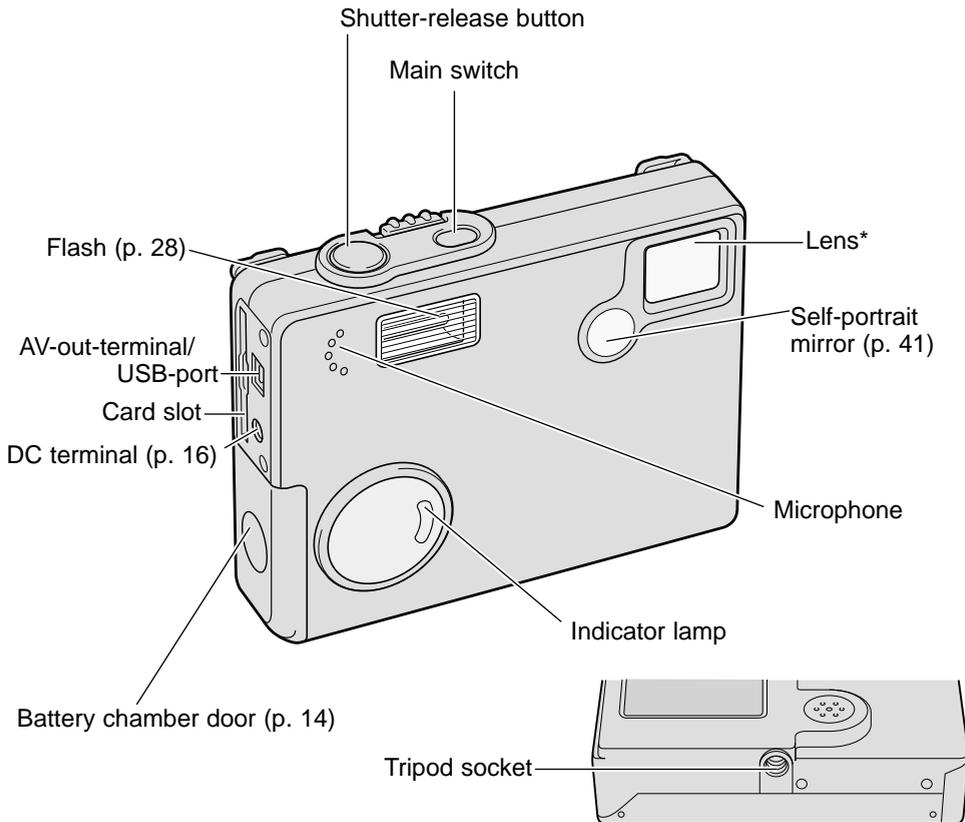
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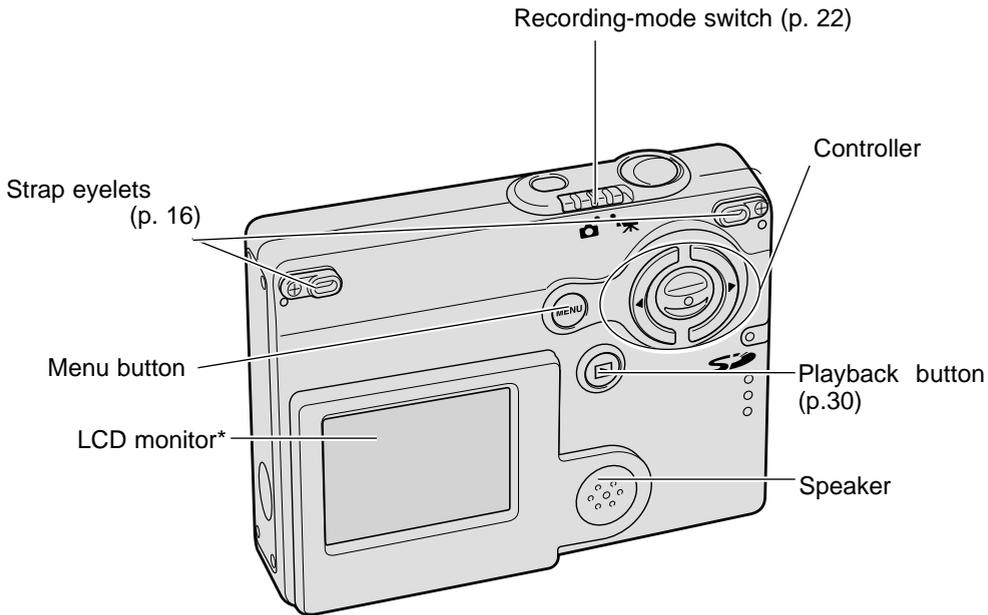
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NAMES OF PARTS

* This camera is a sophisticated optical instrument. Care should be taken to keep these surfaces clean. Please read the care and storage instructions in the back of this manual (p. 107).





GETTING UP AND RUNNING

INSERTING THE BATTERIES

This digital camera uses two AA-size alkaline batteries or NI-MH batteries. AA-size NI-MH batteries are recommended because of longer life. Performance varies with the brand of battery. When using NI-MH batteries, fully recharge them with a battery charger suitable for complex electronic equipment. Please consult your vendor about an appropriate charger. Before using the battery, read the safety warnings on pages 3 and 6 of this manual. When replacing the battery, the camera should be turned off.

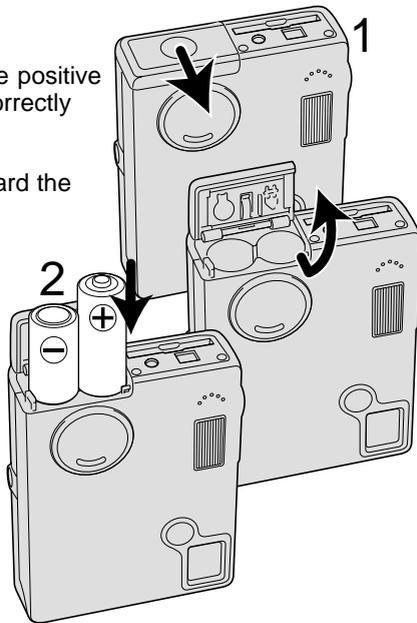
Slide the battery-chamber door toward the front of the camera to release the safety catch (1). Open the door.

Insert the AA batteries as shown; make sure the positive and negative battery terminals are oriented correctly (2).

Close the battery-chamber door and slide it toward the back of the camera to engage the safety catch.

After installing the battery, the set-time/date message may appear on the monitor. The clock and calendar is set in the section 3 of the setup menu (p. 20). An internal battery protects the clock, calendar, and memory settings for approximately 1 hour if the battery has been fully charged before being removed.

Carbon-zinc, nickel zinc battery and AA lithium battery can not be used for this camera.



BATTERY-CONDITION INDICATOR

This camera is equipped with an automatic battery-condition indicator displayed on the LCD monitor. The icon will change from white to red when battery power is low.



Full-battery icon - the battery is fully charged. This icon is displayed when the camera is on.



Half-full-battery icon - the battery is partially charged. This icon is displayed when the camera is turned on. The LCD monitor will turn off when the flash is charging.



Low-battery warning - battery power is very low. The battery should be replaced as soon as possible. This warning automatically appears and remains on the monitor until the battery is recharged. If the power level falls below this level when the camera is on, the battery-exhausted message will appear just before the camera shuts down.

If power is insufficient for camera operation, LCD monitor will be blank and the shutter will not release. Change the batteries.

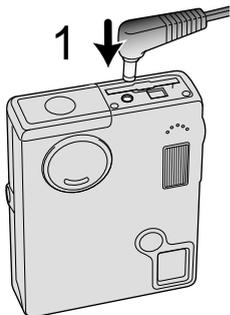
AUTO POWER OFF

To conserve battery power, the camera will shut down if an operation is not made within three minutes. To restore power, press the main switch. The length of the auto-power-off period can be changed in the section 2 of the setup menu (p. 87). When the camera is connected to a computer, the auto-power-off period is set to ten minutes and cannot be changed.

AC ADAPTER (SOLD SEPARATELY)



Always turn off the camera before changing between power supplies.



The AC-6L Adapter allows the camera to be powered from a household outlet. The AC adapter is recommended when the camera is interfaced with a computer or during periods of heavy use.

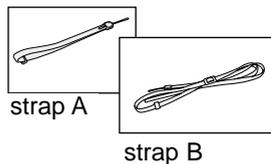
Insert the mini plug of the AC adapter into the DC terminal (1).

Insert the AC adapter plug into an electrical outlet.

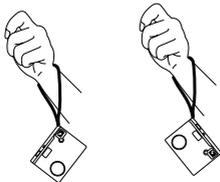
ATTACHING THE STRAP

Always keep the strap in the event that the camera is accidentally dropped.

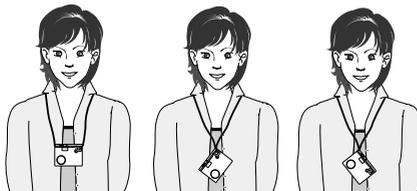
Two types of straps are included with this camera as shown; Strap A alone can be used as a wrist strap. Straps A and B combined can be used as a neck strap.



Using strap A



Using both straps A and B

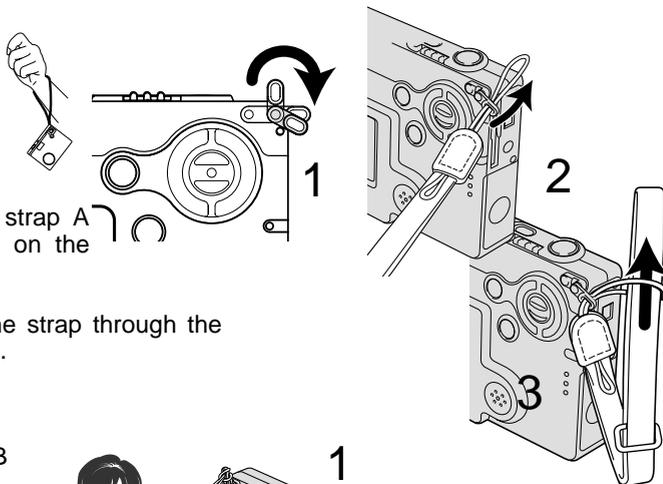


Using strap A

Turn the strap eyelet so that the strap A can pass through it.(1)

Pass the small loop of strap A through the strap eyelet on the camera body (2).

Pass the other end of the strap through the small loop and tighten (3).



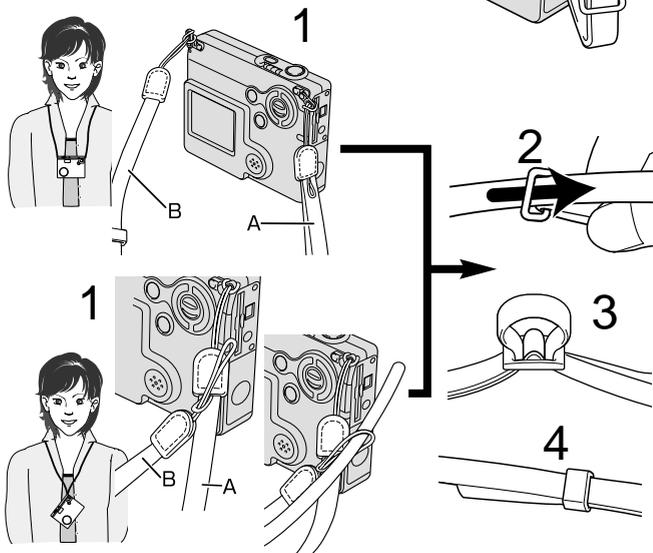
Using both straps A and B

Pass the small loop of strap B through the other strap eyelet or the loop of strap A (1).

Pass the end of strap B through the link of the strap A (2).

Pass the tip of strap B through the buckle and pull to tighten (3).

Slide the holder ring over the tip (4).



INSTALLING AND REMOVING A MEMORY CARD



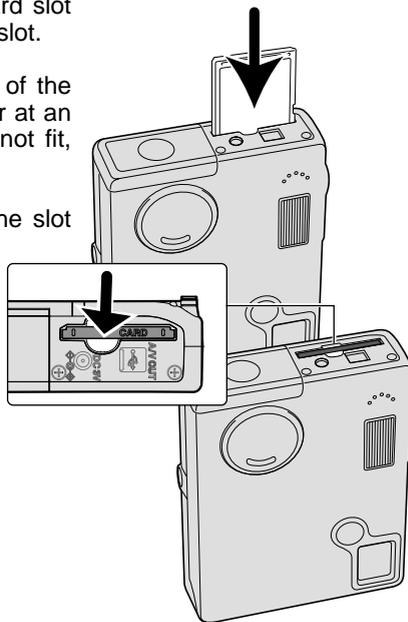
Always turn off the camera and confirm the flash/access lamp is not orange and blinking before changing the memory card, otherwise the card may be damaged, and data lost.

An SD (Secure Digital) Memory card or MultiMediaCard must be inserted for the camera to operate. If a card has not been inserted, a no-card warning will appear on the LCD monitor; the shutter can still be released and a single image can be captured (p. 58).

Insert the memory card all the way into the card slot and then release. The card should catch in the slot.

Insert the card so the face is toward the front of the camera. Always push the card in straight, never at an angle. Never force the card. If the card does not fit, check that it is orientated correctly.

To eject a memory card, press the card into the slot and release. The card can now be pulled out.

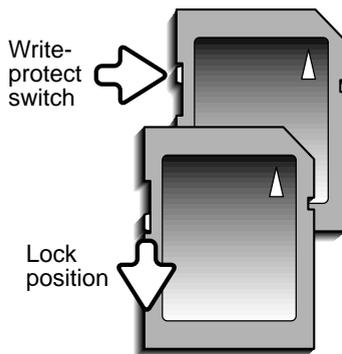


ABOUT MEMORY CARDS

The response time during recording and playback is longer with MultiMediaCards compared with SD Memory Cards. This is not a defect, but rather due to the specifications of the cards. When using large capacity cards, some operations like deletion may take longer.

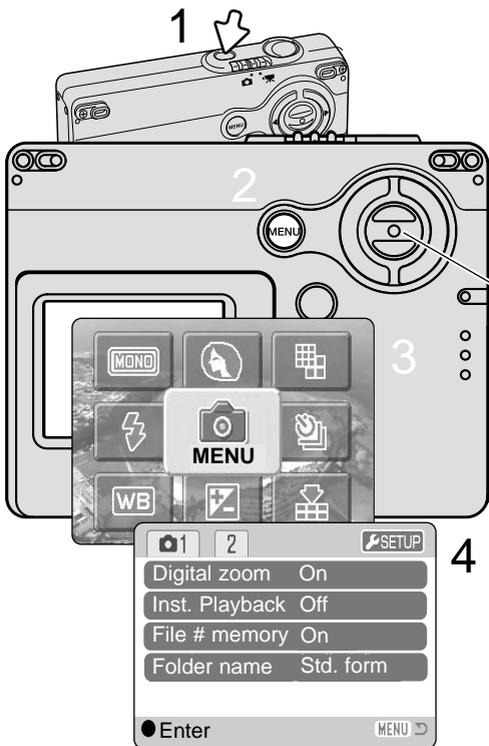
The SD Memory Card has a write-protect switch to prevent image data from being deleted. By sliding the switch to the bottom of the card, the data will be protected. However, when the card is protected, images cannot be recorded. If an attempt is made to record or delete an image with the camera, the card-locked message will appear and the LED lamps near the card slot will turn red and blink quickly. For memory card care and store see page 110.

If the unable-to-use-card message appears, the inserted card in the camera may need to be formatted. A card used in another camera may also have to be formatted before being used. A card can be formatted in the section 1 of the setup menu (p. 84). When a card is formatted, all the data on the card is permanently erased.



SETTING THE DATE AND TIME

After initially inserting a memory card and charging the battery, the camera's clock and calendar must be set on the setup menu. When images are recorded, the image data is saved with the date and time of recording. Depending on the region, the menu language may also have to be set. To change the language, see the camera notes on the following page.



Turn the camera on by pressing the main switch near the shutter-release button (1).



Press the menu button to display the main menu on the LCD monitor (2).

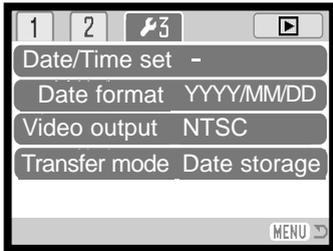
Controller

Press the central button of the controller while the main menu is displayed on the LCD monitor to open the recording-mode menu (3).



In the recording-mode menu, the setup icon is located on the top-right corner. Highlight the setup icon with the right key of the controller and press the center of the controller to open the setup menu (4).

Navigating the setup menu is simple. The four-way keys of the controller move the cursor and change settings on the menu. Pressing the center of the controller selects menu options and sets adjustments.



Use the right key to highlight section 3 at the top of the menu.



Use the down key to highlight the date/time-set menu option.



Press the right key. "Enter" will appear on the right side of the menu.



Press the central button to display the date/time setting screen.

Setup menu: section 3



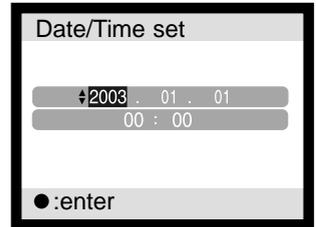
Use the left and right keys to select the item to be changed.



Use up and down keys to adjust the item.



Press the central button to set the clock and calendar. The setup menu will be displayed.



Date/Time setting screen

Camera notes

For customers in certain areas, the menu language must also be set. Highlight the language option in the section 1 of the setup menu. Press the right key to display the language settings. Using the up/down keys, highlight the desired language. Press the central button to set the highlighted language; the setup menu will be displayed in the selected language.

RECORDING MODE - BASIC OPERATION

This section covers basic recording operation. To prepare the camera for use, read pages 14 through 21.

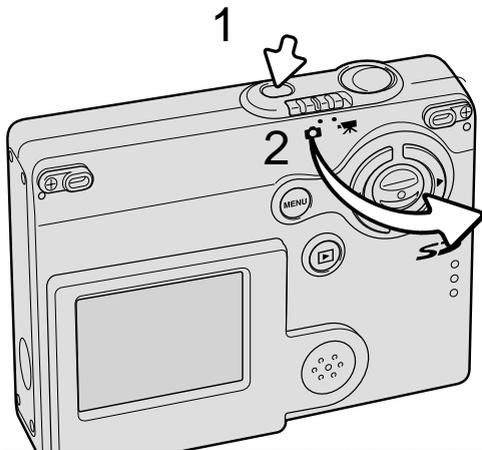
HANDLING THE CAMERA

While using LCD monitor, grip the camera firmly with your right hand while supporting the camera body with your left. Keep your elbows at your side and your feet shoulder-width apart to hold the camera steadily.

When taking vertical pictures, hold the camera so that the flash is above the lens with the shutter-release button to the top. Take care not to cover the lens with your fingers or the strap.



SETTING THE CAMERA TO RECORD IMAGES



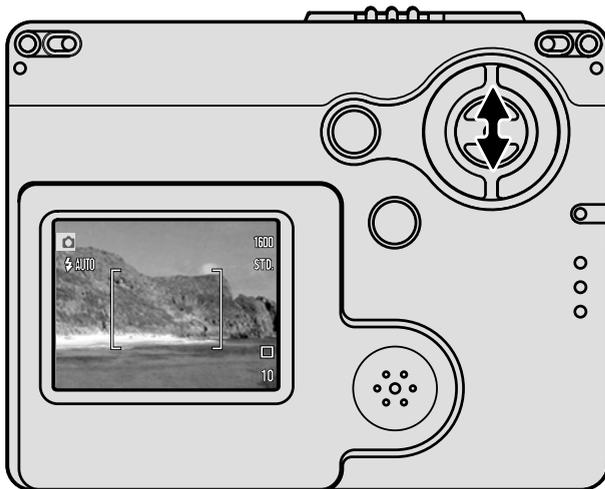
Turn the camera on by pressing the main switch near the shutter-release button (1).



Slide the recording-mode switch to recording-mode. It is the default setting.

USING THE ZOOM LENS

This camera is equipped with a unique 4.8 - 14.4mm zoom lens. This is equivalent to a 37 to 111mm lens on a 35mm camera. The lens is operated by the controller at the back of the camera. The effect of the optical zoom is visible on the LCD monitor.



To zoom in on the subject, push the up key (T) of the controller.

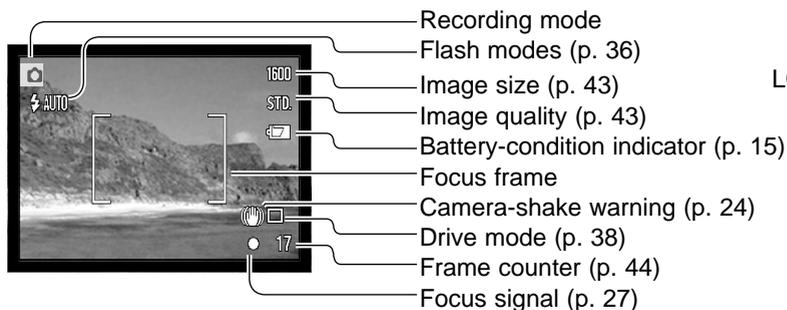
To zoom out, push the down key (W) of the controller.

The digital-zoom function can increase the power of the lens. The digital zoom is activated in the section 1 of the recording-mode menu (p. 55).

Shooting tips

The zoom lens not only affects how large the subject is in the picture, but it also influences the depth of field and perspective. Depth of field is the area between the closest object in focus and the furthest object in focus. As the lens zooms in to the telephoto position, the depth of field becomes shallower, separating the subject from the background. Many portraits are taken with telephoto lenses. Zooming the lens out to the wide-angle position makes both the foreground and background appear sharper. Usually landscape photographs take advantage of the large depth of field of wide-angle lenses. Wide-angle lenses also create a strong perspective which gives a sense of depth in the image. Telephoto lenses compress the space between the subject and background and create a weak perspective.

LCD MONITOR DISPLAY - BASIC



LCD monitor



CAMERA-SHAKE WARNING



If the shutter speed falls below the point where the camera can be hand held safely, the camera-shake warning indicator will appear on the monitor. Camera shake is slight blurring caused by subtle hand motion and is more pronounced at the telephoto position of the lens than at the wide-angle position. Although the warning appears, the shutter can still be released. If the warning appears, place the camera on a tripod or use the built-in flash.



BASIC RECORDING OPERATION



Turn the camera on and slide the recording-mode switch to the recording position.



Place the subject within the focus frame on the LCD monitor.

- The focus-lock function (p. 26) can be used with off-center subjects.



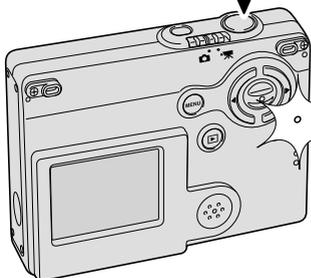
Press the shutter-release button partway down (1) to lock the focus and exposure.

- The focus signals (p. 27) on the monitor will confirm that the image is in focus. If the monitor focus signal is red, the camera was unable to focus on the subject. Repeat the previous steps until the focus signal is white.



Press the shutter-release button all the way down (2) to take the picture.

- After the shutter releases, the flash/access lamp next to the card slot will turn orange and blink indicating image data is being written to the memory card. Never remove a memory card while data is being transferred.
- The image can be previewed after it is captured by continuing to hold down the shutter-release button. Instant playback also can be used (p. 56).



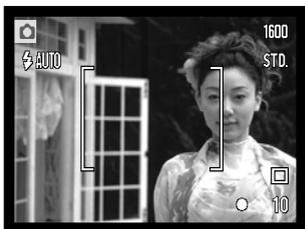
FOCUS LOCK

The focus-lock function is used when you want to compose the image with the subject off-center and outside the focus frame. Focus lock may also be used when a special focusing situation prevents the camera from focusing on the subject. This function is controlled with the shutter-release button.



Place the subject within the monitor focus frame. Press and hold the shutter-release button partway down to lock the focus.

- The focus signal on the monitor will indicate if the focus is locked.



Without lifting your finger from the shutter-release button, recompose the subject within the image area. Press the shutter-release button all the way down to take the picture.

FOCUS RANGE

The focus range is 10cm (0.3ft.) to infinity. The LCD monitor can be used to frame the subject.

FOCUS SIGNALS

This digital camera has a quick, accurate autofocus system. The focus signal in the lower right corner of the LCD monitor indicates the focus status. The shutter can be released regardless if the camera can focus on the subject or not.



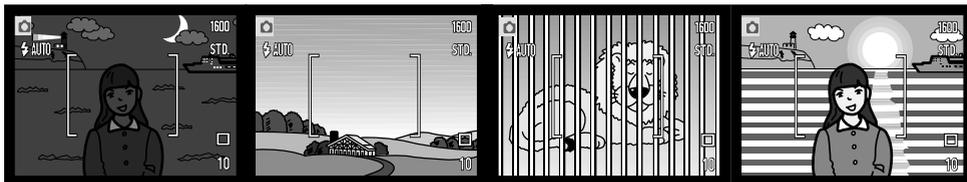
Focus signal

Focus confirmed - the LCD monitor focus signal is white.
Focus is locked.

Cannot focus - the LCD monitor focus signal is red.

SPECIAL FOCUSING SITUATIONS

The camera may not be able to focus in certain situations. In these situations the focus-lock function (p. 26) can be used to focus on another object at the same distance as your main subject, and then the image can be recomposed to take the picture.



The subject is too dark.

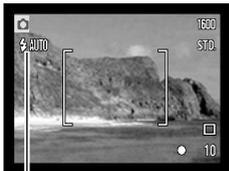
The subject in the focus frame is low in contrast.

Two subjects at different distances overlap in the focus frame.

The subject is near a very bright object or area.

FLASH SIGNALS

The flash mode indicator of the LCD monitor indicates the flash status, when the shutter-release button is pressed partway down. While the flash is charging, the shutter cannot be released.



Flash mode indicator

Flash charging - Flash mode indicator is red.
Focus is locked.

Flash ready - Flash mode indicator is white.

When the LCD monitor displays live image only, a red flash mode indicator will appear on the LCD monitor to indicate the flash is charging, when the shutter-release button is pressed partway down.

When the LCD monitor is off or turns off because of the too low battery, the flash/access lamp next to the card slot will indicate the status of the flash, when the shutter-release button is pressed partway down. When the lamp is red and blinks quickly, the flash is charging.

When the subject distance is closer than 20 cm (0.66 ft.) at the wide-angle setting, exposure may not be achieved evenly because of the parallax between the lens and flash. Recommend to use flash cancel in this case, see page 37.

FLASH RANGE - AUTOMATIC OPERATION

The camera automatically controls the flash output. For well-exposed images, the subject must be within the flash range. Because of the optical system, the flash range is not the same at the lens' wide-angle position as it is at the telephoto position. The flash ranged can be changed with camera sensitivity (ISO), see page 51.

Wide-angle position

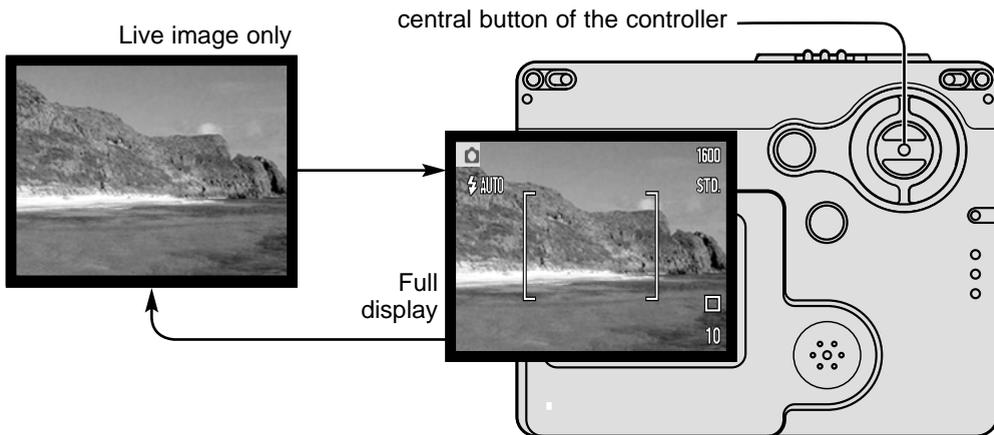
0.10m ~ 3.6m (0.3 ft. ~ 11.8 ft.)

Telephoto position

0.10m ~ 2.7m (0.3 ft. ~ 8.9 ft.)

LCD MONITOR DISPLAY - RECORDING MODE

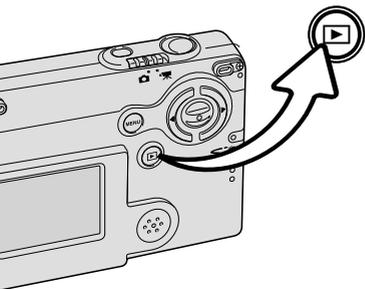
Pressing and holding the central button of the controller switches the LCD monitor display between full display and live image only.



The battery-condition and date-imprinting indicators can appear on the live image only display. When auto reset is active, the LCD monitor will be reset to the full display when the camera is turned off.

PLAYBACK - BASIC OPERATION

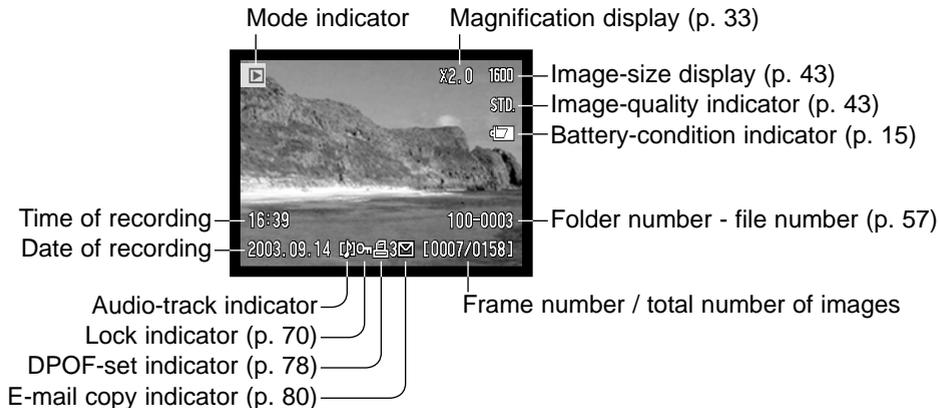
Images can be viewed in the playback mode. This section covers the basic operation in the playback mode. The playback mode has additional functions, see page 62.



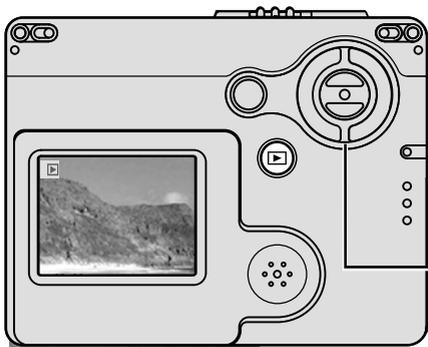
To view images from the playback mode, press the playback button.

To return to the recording mode, press the playback button again or operate the recording mode switch.

SINGLE-FRAME PLAYBACK DISPLAY



VIEWING IMAGES



In the playback mode, use the left/right keys of the controller to scroll through the images on the memory card. The images can be scrolled faster by holding the left/right keys.

Controller

DELETING SINGLE IMAGES

To delete a displayed image, use the main menu of the recording-mode. Press the menu button to display the main menu on the LCD monitor, then use the controller to select the delete icon.



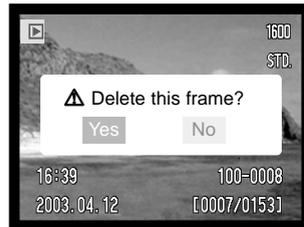
Press the central button of the controller and a confirmation screen will appear.



Use the left/right keys to highlight "YES." "NO" will cancel the operation.

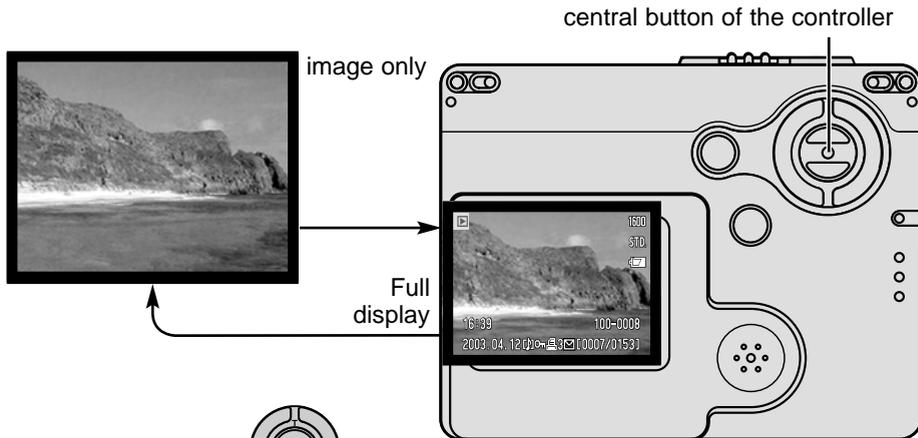


Press the center button of the controller to delete the file.



LCD MONITOR DISPLAY - PLAYBACK MODE

Pressing and holding the central button of the controller switches LCD monitor display between full display and image only.



Index playback

Index display can be shown with the down key being held until the display is changed.

In index playback, the left/right of the controller move the yellow border around the index thumbnails. To scroll the index thumbnails faster, keep pressing left/right of the controller. When the image is highlighted with the border, the date of recording, audio-track indicator, the lock and printing status, e-mail copy indicator and the frame number of the image are displayed at the bottom of the screen. The accompanying audio track of the highlighted image can be played by pressing the center button of the controller. When the up key is pressed and held, the highlighted image will be displayed in the single-frame playback mode.

ENLARGED PLAYBACK

In single-frame playback, a still image can be enlarged by up to 6X in 0.2X increments.



With the image to be magnified displayed, press the up key of the controller to activate the enlarged playback mode. The degree of magnification is displayed on the LCD monitor.



Pressing the up key increases the image magnification. Pressing the down key decreases the image magnification.



Holding the central button of the controller switches between showing the full display and image only.



To scroll the image, press the center button of the controller. Pressing the center button switches between the enlarged-playback and scroll screens.



Use the left/right and up/down keys of the controller to scroll the image.



To exit the enlarged playback mode, press the menu button.



The locator indicator in the top right corner of the monitor shows the area of the image being displayed.

RECORDING - ADVANCED OPERATION

LCD MONITOR DISPLAY - ADVANCED

Microphone indicator

Portrait (p. 47)

Toning (p. 46)

Digital zoom (p. 55)

Image size (p. 43)

Image quality (p. 43)

Focus frame

Drive mode (p. 38)

Frame counter (p. 44)

Date-imprinting indicator (p. 54)

Focus signal (p. 27)

Exposure compensation

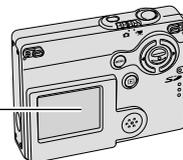
Camera-sensitivity display (p. 51)

White balance (p. 42)

Flash modes (p. 36)



LCD monitor



MAIN MENU NAVIGATION - RECORDING-MODE

When the menu button is pressed, the main menu appears on the LCD monitor and the basic menu options can be set. The following eight menu options are available in the main menu.



- 1.flash mode (p.36)
- 2.drive mode (p.38)
- 3.white balance (p.42)
- 4.image size (p.43)
- 5.image quality (p.43)
- 6.exposure compensation (p.45)
- 7.toning (p.46)
- 8.portrait (p.47)



To activate the main menu of the recording mode, press the menu button.



Use the controller to highlight the desired menu options.



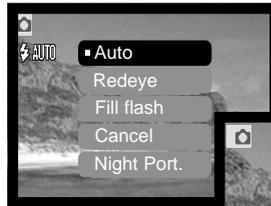
Press the central button to go into the selected options.



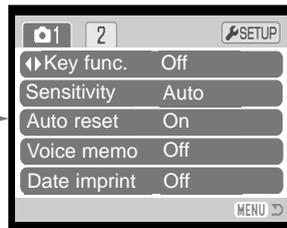
Press the up and down keys until the desired setting is selected. Pressing the menu button goes back to recording-mode.



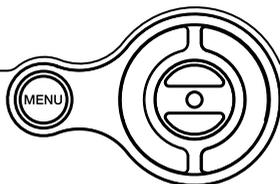
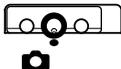
Press the central button of the controller to adjust the selected settings.



Selecting the menu icon while in the main menu leads to recording-mode menu where further options can be set. To navigate the menu, see page 43.

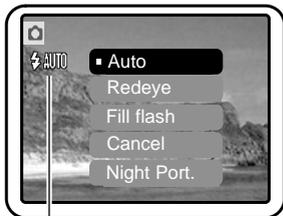


FLASH MODES



The flash can be used when taking still images. The flash mode is selected in the main menu of the recording mode (P.34). The active flash mode is displayed in the top left corner of the LCD monitor. When the camera is turned off and auto reset (p. 52) is active, the flash mode is reset to autoflash with red-eye reduction if this mode was last set, if not the mode

will be reset to autoflash. While the flash is charging, flash mode indicator on the LCD monitor turns red with the shutter-release button pressed partway down and the shutter cannot be released.



When the subject distance is closer than 20cm (0.66 ft.) at the wide-angle setting, image may not be evenly exposed because of the parallax between lens and flash. In these situations flash cancel is recommended.

| | |
|---|----------------------------------|
|  AUTO | Autoflash |
|  AUTO | Autoflash with red-eye reduction |
|  | Fill-flash |
|  | Flash cancel |
|   | Night portrait |

Autoflash - the flash fires automatically in low-light and backlit conditions.

Red-eye reduction - the flash fires multiple bursts before the main flash burst to reduce red-eye; an effect caused by light reflected from the retina. Use in low-light conditions when taking photographs of people or animals, the pre-flashes contract the pupils of the subject's eyes.

Fill-flash - the flash fires with each exposure regardless of the amount of ambient light. Fill-flash can be used to reduce harsh shadows caused by strong direct light or sunshine.

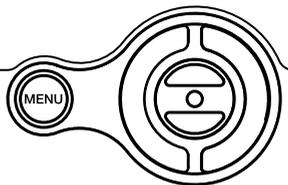
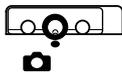


Flash cancel - the flash will not fire. Use flash cancel when flash photography is prohibited, natural light is desired to illuminate the subject, or the subject is beyond the flash range. The camera-shake warning may appear when flash cancel is selected (p. 24).

Night portrait - for flash portraits at night. The camera automatically balances the flash and background exposures. When taking portraits, ask your subject not to move after the flash burst; the shutter will still be open for the background exposure. The red-eye reduction function is used with night portrait.

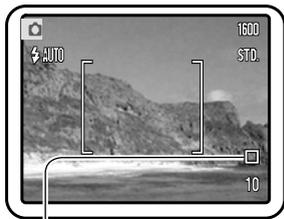


DRIVE MODES



The drive modes control the rate and method images are captured. Indicators indicating the selected drive mode appear on the monitor. The drive mode is selected in the main menu of the recording-mode (p. 34). If auto reset (p.

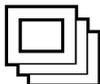
52) is active, the drive mode is reset to single-frame advance when the camera is turned off.



Single-frame advance - to take a single image each time the shutter-release button is pressed. This is the camera's default setting.



Self-timer - to delay the release of the shutter (p. 39). Used for self-portraits.



Continuous advance - to take multiple images when the shutter-release button is pressed and held (p. 40).



Multi frame - to capture a series of nine thumbnails within an image when the shutter-release button is pressed once (p. 41).



Self-portrait - to take a self-portrait using the self-portrait mirror on the front of the camera (p. 41).

Self-timer

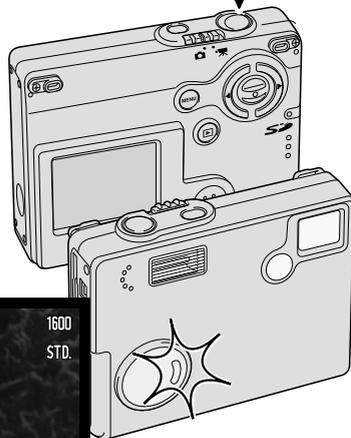
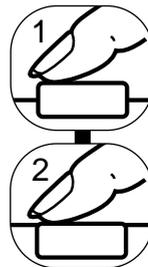


Used for self-portraits, the self-timer will delay the release of the shutter for approximately ten seconds after the shutter-release button is pressed. The self-timer drive mode is selected in the drive mode on the main menu of the recording-mode (p. 34).

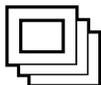
With the camera on a tripod, compose the picture as described in the basic recording operation section (p. 25). Focus lock (p. 26) can be used with off-center subjects. Press the shutter-release button partway down to lock the exposure and focus (1). Press the shutter-release button all the way down to begin the countdown (2). Because focus and exposure are determined when the shutter-release button is pressed, do not stand in front of the camera when taking a self-timer image. Always confirm the focus with the focus signals before beginning the countdown (p. 27).

A countdown timer is displayed on the monitor. During the countdown, the indicator lamp on the front of the camera (3) will start to blink and is accompanied by an audio signal. A few seconds before the exposure, the indicator lamp will blink rapidly. The lamp will glow steadily just before the shutter fires.

To stop the countdown, press the up/down keys of the controller or the menu button. The drive mode will be reset to single-frame advance after the exposure. The audio signal can be turned off in the section 1 of the setup menu (p. 86).

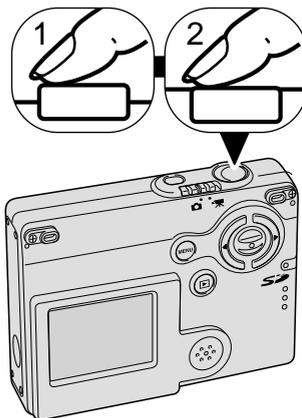


Continuous advance



The continuous-advance drive mode allows a series of images to be captured while holding down the shutter-release button. The number of images that can be captured at one time and the rate of capture depend on the image-quality and image-size setting. With the image-size setting of 1600 X 1200, the maximum rate of capture is 1.5 fps. Continuous advance is selected in the drive mode on the main menu of the recording-mode (p. 34).

Compose the picture as described in the basic recording operation section (p. 25). Press the shutter-release button partway down to lock the exposure and focus for the series (1). Press and hold the shutter-release button all the way down (2) to begin taking pictures. When the shutter-release button is pressed and held, the camera will begin recording images until the maximum number has been taken or the shutter button is released. ShutterFX is disabled (p.87). The built-in flash can be used, but the rate of capture is reduced because the flash must recharge between frames. Date imprinting (p. 54) also reduces the rate of capture. The frame counter is adjusted after the series has been taken while the images are being saved.



The chart lists the maximum number of images that can be captured with different image-quality and image-size combinations.

| Image Quality \ Image Size | 1600 X 1200 | 1280 X 960 | 640 X 480 |
|----------------------------|-------------|------------|-----------|
| Fine | 3 | 3 | 10 |
| Standard | 4 | 5 | 15 |
| Economy | 7 | 10 | 22 |

Multi frame



In multi frame, pressing the shutter release button once captures a series of nine thumbnail images and creates one image. Multi frame can be selected in the drive mode section of the recording-mode main menu (p.34).



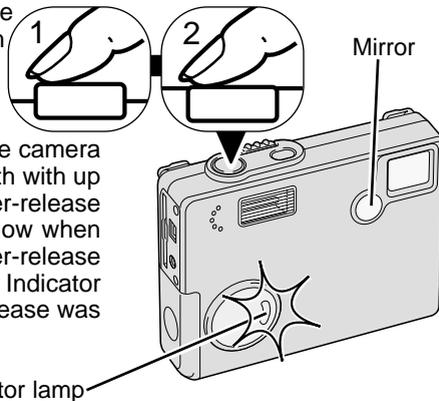
During the exposure, the indicator lamp on the front of the camera glows. Flash is canceled automatically. It is recommended that multi-frame mode is used when there is enough light to get a well-exposed picture. ShutterFX is disabled (p.87).

Self-portrait



Use this mode to take self-portraits using the self-portrait mirror on the front of the camera. The camera adjusts its focus not to exceed 1m/3.3 feet, and its focal length to wide-angle setting automatically.

Self-portrait can be selected in the drive mode section of the recording-mode main menu (p.34).



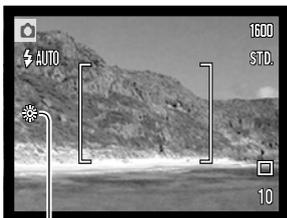
Look at the self-portrait mirror on the front of the camera to confirm the framing (1). Adjust the focal length with up or down keys if it's necessary. Press the shutter-release button partway down, the indicator lamp will glow when the focus is confirmed (2). Press the shutter-release button all the way down to take the picture (3). Indicator lamp will blink after exposure to indicate the release was completed.

indicator lamp

WHITE BALANCE

White balance is the camera's ability to make different types of lighting appear neutral. The effect is similar to selecting daylight or tungsten film, or using color compensating filters in conventional photography. One automatic and four preset white-balance settings are available with still image and movie recording. White balance is set on the main menu of the recording-mode (p. 34) or the main menu of the movie-recording menu (p. 60). When auto reset (p. 52) is active, the white balance will be reset to automatic white balance when the camera is turned off.

The automatic white balance compensates for the color temperature of a scene. In most cases, the auto setting will balance the ambient light and create beautiful images, even under mixed-lighting conditions. When the built-in flash is used, the white balance is set for the color temperature of the flash.



Preset white-balance settings must be set before the image is taken. When one of the preset white-balance settings is selected, an indicator will be displayed on the LCD monitor to indicate the active white-balance setting; the effect is immediately visible on the monitor. To record the ambient light, set the flash mode to flash cancel (p. 36). The built-in flash can be used with preset white-balance, but will create a pinkish or blueish cast with the fluorescent and tungsten settings. The flash is daylight balanced and will produce good results with the daylight and cloudy settings.



Daylight - for outdoor and sunlit subjects.



Cloudy - for overcast outdoor scenes.



Tungsten - for incandescent lighting: household filament light bulbs.



Fluorescent - for fluorescent lighting: office ceiling lights.

IMAGE SIZE AND IMAGE QUALITY

Changing image size affects the number of pixels in each image. The greater the image size, the larger the file size. Choose image size based on the final use of the image - smaller images will be more suitable for web sites whereas larger sizes will produce higher quality prints.

| LCD monitor | Number of pixels (hor. X vert.) |
|-------------|------------------------------------|
| 1600 | 1600 X 1200 |
| 1280 | 1280 X 960 |
| 640 | 640 X 480 |



| | |
|-------|---|
| FINE | Fine - high-quality image. (JPEG) |
| STD. | Standard - the default setting. (JPEG) |
| ECON. | Economy - the smallest file sizes. (JPEG) |

Image quality controls the rate of compression, but has no effect on the number of pixels in the image. The higher the image quality, the lower the rate of compression and the larger the file sizes. If economical use of the memory card is important, use the economy mode. Standard image quality is sufficient for normal usage.

File formats vary with the image quality setting. The fine, standard, and economy settings are formatted as a JPEG file. Fine, standard, and economy files can be recorded as color or monochrome images (p. 46).

Image size and quality must be set before the picture is taken. Changes are displayed on the LCD monitor. Image size and quality must be reset manually. Image size and quality are set in the main menu of the the recording-mode. See page 34.

If image size or quality are changed, the frame counter will display the approximate number of images that can be recorded at that setting on the installed memory card. One memory card can contain images with differing sizes and qualities. The number of images that can be stored on a memory card is determined by the size of the card and

The Frame Counter and Memory Card Capacity

the file size of the images. The actual file size is determined by the scene; some subjects can be compressed further than others.

| Approximate file sizes. | | | | |
|--|----------|-------------|------------|-----------|
| Quality | Size | 1600 X 1200 | 1280 X 960 | 640 X 480 |
| | Fine | 990KB | 660KB | 210KB |
| | Standard | 520KB | 360KB | 130KB |
| | Economy | 290KB | 210KB | 90KB |
| Approximate number of images that can be stored on a 8 MB memory card. | | | | |
| | Fine | 6 | 10 | 31 |
| | Standard | 12 | 18 | 48 |
| | Economy | 22 | 31 | 68 |

Camera Notes

The frame counter indicates the approximate number of images that can be stored on the memory card at the camera's image quality and size settings. If the settings are changed, the frame counter adjusts accordingly. Because the counter uses approximate file sizes, the actual image taken may not change the counter or may decrease it by more than one. When the frame counter displays zero, it indicates no more images at the image size and quality settings can be captured. Changing those settings may allow more images to be saved to the card.

EXPOSURE COMPENSATION



The camera exposure can be adjusted to make the final picture lighter or darker by as much as $\pm 2\text{Ev}$ in $1/3$ increments with still image and movie recording. The exposure-compensation value will remain in effect until it has been reset. Exposure compensation can be set on the main menu of the recording-mode (p. 34). Exposure compensation can be controlled with left/right key with customizing key function (P.50).

The exposure compensation must be set before the image is captured. When setting the exposure compensation, the amount of compensation is shown next to the exposure-compensation icon on the monitor. When set to any value other than 0.0, the icon will remain on the LCD monitor as a warning.



Use the up/down controller keys to adjust the exposure-compensation value.

The LCD monitor will display the exposure-compensation icon and value. The change in exposure is visible in the monitor image. Exposure compensation is set automatically after five seconds or when another camera button is pressed.

TONING

Color and five tone settings are available with still image and movie recording. Toning controls whether an image is color or black and white as well as sepia color or red tone, blue tone, green tone. The toning can be set in the recording-mode main menu (p.34) or the in the movie recording main menu (p.60). The live image on the monitor will reflect the selected mode. This has no effect on the file size.

When auto reset (P.52) is active, the toning will be reset to color when the camera is turned off. The toning must be set before an image is captured. When setting the toning, an indicator will be displayed on the LCD monitor to indicate the active toning setting; the effect is immediately visible on the monitor.



Color - color

BW **Monochrome** - black & white monochrome image

SEPIA **Sepia** - worm tone monochrome image

MONO R **Red tone** - red monochrome image

MONO B **Blue tone** - blue monochrome image

MONO G **Green tone** - green monochrome image

PORTRAIT

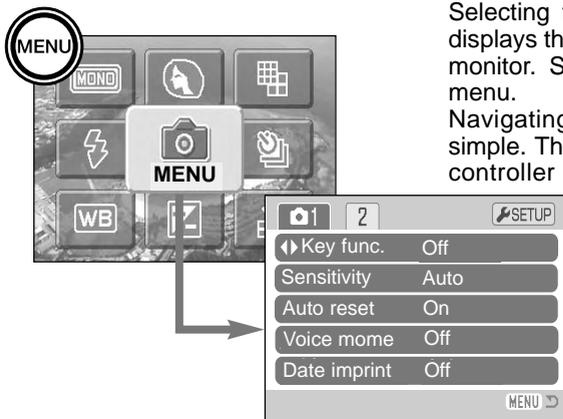
In portrait, digital effects such as full soft-filter or partial over-expose can be used on the subject to get more natural skin tones. By adjusting the tone curve, the true luminosity of objects in the vicinity of the skin can be restored. Fill flash is automatically set to get the effect of the catchlight in the eye. Change the flash mode to flash cancel if it is not necessary.

The indicator will be displayed on the LCD monitor to indicate the portrait mode is active. To cancel the portrait, select the portrait icon on the main menu again. Fill flash is also canceled automatically and reset to the previous setting.

When auto reset is active (p.52), the portrait will be reset to off when the camera is turned off.



NAVIGATING THE RECORDING-MODE MENU



Selecting the menu icon on the main menu displays the recording-mode menu on the LCD monitor. See page 34 to navigate the main menu.

Navigating the recording-mode menu is simple. The left/right and up/down keys of the controller move the cursor and change settings on the menu. Pressing the center button of the controller selects menu options and sets adjustments.



To activate the recording-mode main menu, press the menu button.



With the menu icon selected, press the center button of the controller to go into the recording-mode menu.



The tab 1 at the top of the menu will be highlighted. Use the left/right keys to highlight the appropriate menu tab; the menus will change as the tabs are highlighted.



When the desired menu section is displayed, use the up/down key to scroll through the menu options. Highlight the option whose settings need to be changed.



With the menu option to be changed highlighted, press the right key; the settings will be displayed with the current setting indicated by an arrow. To return to the menu options, press the left key.



Use the zoom lever to highlight the new setting.



Press the center button of the controller to select the highlighted setting.

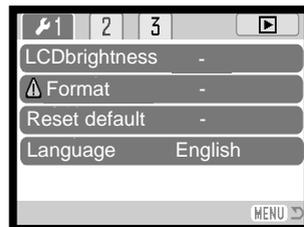
Once a setting has been selected, the cursor will return to the menu options and the new setting will be displayed. Changes can continue to be made. To return to the recording mode, press the menu button.

| 1 | |
|-----------------|---|
| ◀▶ Key func. | Flash mode Exp. comp Drive mode White balance Off |
| Sensitivity | ISO 400 ISO 200 ISO 100 ISO 64 Auto |
| Auto reset | On Off |
| Voice memo | On Off |
| Date imprinting | YYYY/MM/DD MM/DD/hr:min Off |

| 2 | |
|------------------|-----------------------|
| Digital zoom | On Off |
| Instant playback | On Off |
| File # memory | On Off |
| Folder name | Std.form Date form |

SETUP

Pressing the center button of the controller with the SETUP section selected, leads to the setup menu (p.82).

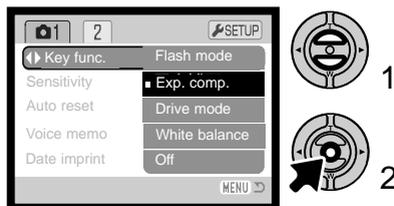


Refer to the following sections for details on the menu options and their settings.

CUSTOMIZING KEY FUNCTIONS

The left/right keys can be assigned for certain functions (flash mode, drive mode, white balance and exposure compensation) in the section 1 of the recording-mode menu. The default setting is off. All of these functions affect the movie-recording mode except for the drive mode and flash mode.

Select the key func. option in section 1 of the recording mode menu. Use the up/down keys to select the function (1). Press the central controller button to set the function (2). The selected function will now be activated when the left/right controller keys are pressed in the recording mode.



Refer to the following sections for information on the drive mode (p. 38), white balance (p. 43), flash mode (P.36), and exposure compensation (p. 45).

Pressing left/right key changes the settings and changes are displayed on the LCD monitor. Changes are set automatically after five seconds or when another camera button is pressed.



CAMERA SENSITIVITY - ISO

Four camera sensitivity settings can be selected with a still image: Auto, 64, 100, 200, 400; the numerical values are based on an ISO equivalent. ISO is the standard used to indicate film sensitivity: the higher the number, the more sensitive the film. Sensitivity can be changed in the section 1 of the recording-mode menu.

The auto setting automatically adjusts the camera sensitivity to the light conditions between ISO 64 and ISO 200. When any other setting than auto is used, "ISO" and the set value will appear on the LCD monitor.

A specific sensitivity setting can be selected. As the ISO value doubles, the camera sensitivity doubles. Like grain in silver-halide film that increases with speed, noise increases with the sensitivity in digital imaging; an ISO setting of 64 will have the least noise and 400 will have the most.



FLASH RANGE AND CAMERA SENSITIVITY

Because of the optical system, the flash range is not the same at the lens' wide-angle position as it is at the telephoto position.

| ISO setting | Flash range (wide angle) | Flash range (telephoto) |
|-------------|--------------------------------|-------------------------------|
| AUTO | 0.10m ~ 3.6m (0.3ft. ~ 11.8ft) | 0.10m ~ 2.7m (0.3ft. ~8.8ft) |
| 64 | 0.10m ~ 2.0m (0.3ft. ~ 6.6ft) | 0.10m ~ 1.5m (0.3ft. ~4.9ft) |
| 100 | 0.10m ~ 2.5m (0.3ft. ~8.2 ft) | 0.10m ~ 1.9m (0.3ft. ~6.2ft) |
| 200 | 0.10m ~ 3.6m (0.3ft. ~11.8 ft) | 0.10m ~ 2.7m (0.3ft. ~8.8ft) |
| 400 | 0.10m ~ 5.1m (0.3ft. ~16.7 ft) | 0.10m ~ 3.8m (0.3ft. ~12.5ft) |

AUTO RESET

When auto reset is active, the following functions return to their program setting when the camera is turned off. Auto reset is initially on. This function can be turned off in the section 1 of the recording-mode menu (p. 48).

| | |
|---|---|
| Flash mode (p. 36) – Auto | The flash mode is reset to autoflash with red eye reduction if autoflash with red eye reduction was last set, if not the mode will be reset to autoflash. See page 36 for information on flash modes. |
| Drive mode (p. 38) – Single-frame advance | |
| White balance (p. 42) – Auto | |
| Camera sensitivity (p. 51) – Auto | |
| Exposure compensation (p. 45) – 0.0 Ev | |
| LCD monitor display (p. 29) – Full | |
| Toning (p. 46) – Color | |
| Portrait (p. 47) – Off | |

Camera Notes

The camera will reset if the battery is removed for an extended period. An internal battery protects the clock, calendar, and camera settings for more than 24 hours if the camera is used for at least 5 minutes before the battery is removed.

VOICE MEMO

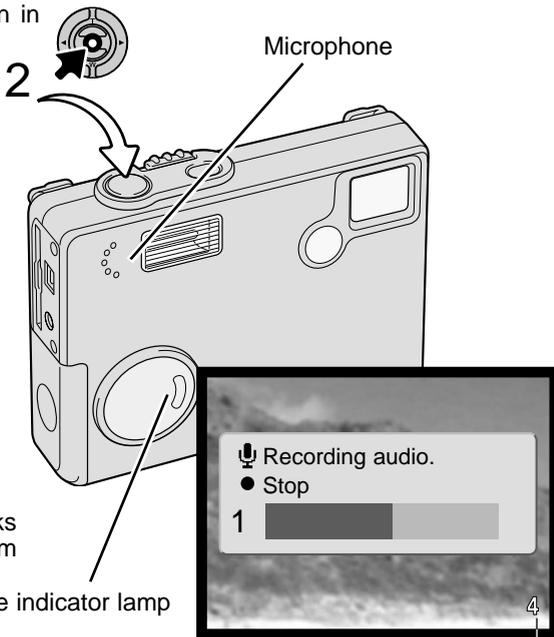


Voice memo allows an audio track up to fifteen seconds to be recorded with a still image. The function is activated in the section 1 of the recording-mode menu (p. 53). When the function is active, the microphone indicator is displayed on the LCD monitor. The voice memo must be set

before taking a picture. It will remain in effect until reset.

After an image is captured, a screen will appear indicating the audio recording has started. A bar graph (1) will display the amount of recording time remaining. During the recording, the indicator lamp glows. To stop the recording, press the shutter-release button or the center button of the controller (2). The recording will automatically stop when the fifteen-second limit has elapsed.

Voice memo is attached to the last image of a continuous-advance series (p. 40). When played back, images with voice-memo audio tracks have a note icon displayed with them (p. 62).



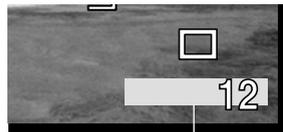
Remaining recording time

Camera Notes

When making audio recordings, be careful not to touch or cover the microphone. The quality of the recording is proportional to the subject to microphone distance. For best results, hold the camera approximately 20cm (8in) from your mouth.

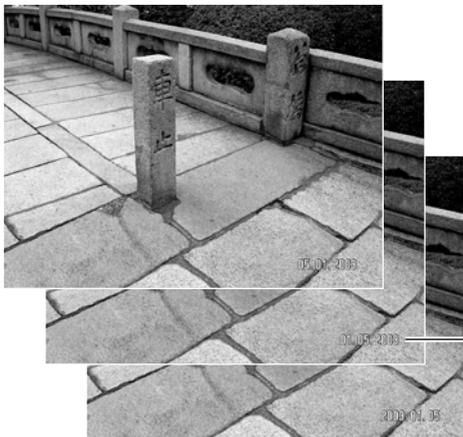
DATE IMPRINTING

The date and time of recording can be printed directly on the image. The imprinting function must be activated before the image is taken. Once activated, the date will continue to be imprinted until the function is reset; a yellow bar is displayed behind the frame counter on the monitor to indicate the imprinting function is active.

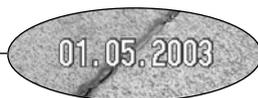


Date-imprinting indicator

Date imprinting is activated with the section 1 of the recording-mode menu (p. 48). Date imprinting has two menu options. The YYYY/MM/DD option prints the date. The MM/DD/hr:min option prints the month, day, and time of recording.



The date and time are imprinted in the lower right corner of the image when viewed horizontally. It is printed directly on the photograph writing over the image information. The date can be imprinted in three formats: year / month / day, month / day / year, and day / month / year. The date and date format are set in section 3 of the setup menu (p. 88).

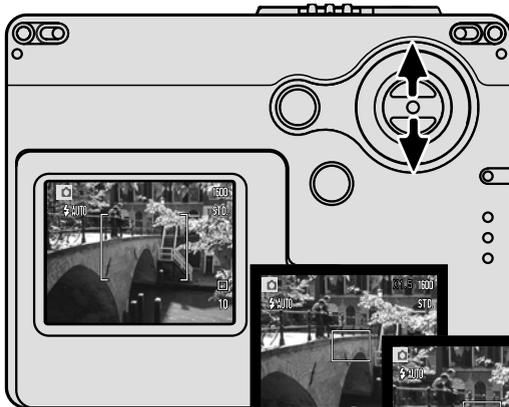


Camera Notes

Every time a still image is recorded, it is stored with an exif tag that contains the date and time of recording as well as shooting information. This information can be viewed with the camera in the playback mode, or on a computer with the DiIMAGE Viewer software.

DIGITAL ZOOM

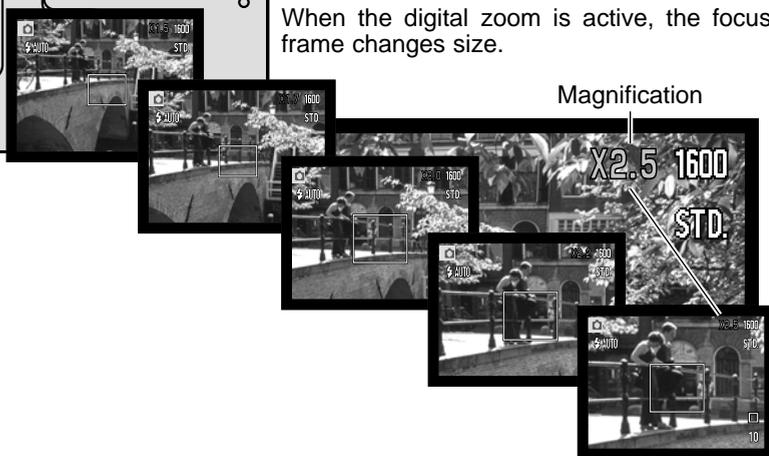
The digital zoom is activated in the section 2 of the recording-mode menu (p. 48). The digital zoom increases the magnification of the greatest telephoto setting of the optical zoom by up to 4X in 0.1X increments. Although the images recorded with the digital zoom are interpolated to the set image size, the quality of the images may not be equal to images taken without the digital zoom; the greater the power of the digital zoom the lower the image quality.



At the maximum telephoto position, press the up key of the controller to engage the digital zoom. The zoom magnification will be displayed in the top right corner of the monitor.

To zoom out, press the down key of the controller.

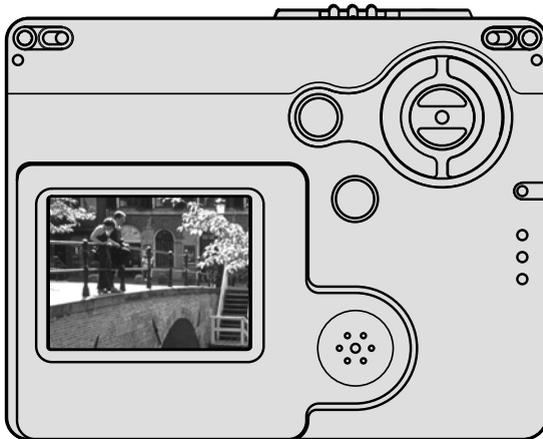
When the digital zoom is active, the focus frame changes size.



INSTANT PLAYBACK

After a still image is captured, it can be displayed on the monitor for two seconds before being saved. Instant playback shows the last frame in the series when used with the continuous-advance drive mode (p. 56).

Instant playback can be activated in the section 2 of the recording-mode menu (p. 48). When used with voice memo, the audio recording will begin after the image is played back.



Camera notes

Images can be previewed immediately after they have been captured regardless if instant playback is active or not. Simply continue to hold down the shutter-release button after taking the picture to display the image on the monitor. Release the shutter button to end the playback. This function is disabled if the continuous advance or the self-timer drive mode is used.