

Nikon

D5100

DIGITAL CAMERA

D5100

User's Manual



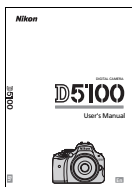
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Product Documentation

Thank you for your purchase of a Nikon single-lens reflex (SLR) digital camera. The documentation for this product consists of a *User's Manual* (this booklet) and a *Reference Manual* (pdf). To get the most from your camera, please be sure to read all instructions thoroughly and keep them where they will be read by all those who use the product.

For information on basic camera operations, see the *User's Manual* (this booklet).



For complete product information, see the *Reference Manual* (available on the supplied reference CD).



The *Reference Manual* can be viewed using Adobe Reader or Adobe Acrobat Reader 5.0 or later, available for free download from the Adobe website.

- 1 Start the computer and insert the reference CD.
- 2 Double-click the CD (**Nikon D5100**) icon in Computer or My Computer (Windows) or on the desktop (Macintosh).
- 3 Double-click the **INDEX.pdf** icon to display a language selection screen and click a language to display the *Reference Manual*.

Additional information on camera menus and other topics can be found using the camera's on-board help system as described on page 8 of this guide.

Symbols and Conventions

To make it easier to find the information you need, the following symbols and conventions are used:



This icon marks cautions; information that should be read before use to prevent damage to the camera.



This icon marks notes; information that should be read before using the camera.



This icon marks references to other pages in this manual.

Digitutor

"Digitutor", a series of "watch and learn" manuals in movie form, is available from the following website: http://www.nikondigitutor.com/index_eng.html

For Your Safety

Before using the camera for the first time, read the safety instructions in "For Your Safety" (ii–vi).

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For Your Safety

To prevent damage to your Nikon product or injury to yourself or to others, read the following safety precautions in their entirety before using this equipment. Keep these safety instructions where all those who use the product will read them.

The consequences that could result from failure to observe the precautions listed in this section are indicated by the following symbol:



This icon marks warnings. To prevent possible injury, read all warnings before using this Nikon product.

■ WARNINGS

⚠ Keep the sun out of the frame

Keep the sun well out of the frame when shooting backlit subjects. Sunlight focused into the camera when the sun is in or close to the frame could cause a fire.

⚠ Do not look at the sun through the viewfinder

Viewing the sun or other strong light source through the viewfinder could cause permanent visual impairment.

⚠ Using the viewfinder diopter control

When operating the viewfinder diopter control with your eye to the viewfinder, care should be taken not to put your finger in your eye accidentally.

⚠ Turn off immediately in the event of malfunction

Should you notice smoke or an unusual smell coming from the equipment or AC adapter (available separately), unplug the AC adapter and remove the battery immediately, taking care to avoid burns. Continued operation could result in injury. After removing the battery, take the equipment to a Nikon-authorized service center for inspection.

⚠ Do not use in the presence of flammable gas

Do not use electronic equipment in the presence of flammable gas, as this could result in explosion or fire.

⚠ Keep out of reach of children

Failure to observe this precaution could result in injury.

⚠ Do not disassemble

Touching the product's internal parts could result in injury. In the event of malfunction, the product should be repaired only by a qualified technician. Should the product break open as the result of a fall or other accident, remove the battery and/or AC adapter and then take the product to a Nikon-authorized service center for inspection.

⚠ Do not place the strap around the neck of an infant or child

Placing the camera strap around the neck of an infant or child could result in strangulation.

⚠ Observe caution when using the flash

- Using the camera with the flash in close contact with the skin or other objects could cause burns.
- Using the flash close to the subject's eyes could cause temporary visual impairment. Particular care should be observed when photographing infants, when the flash should be no less than one meter (39 in.) from the subject.

⚠ Avoid contact with liquid crystal

Should the monitor break, care should be taken to avoid injury due to broken glass and to prevent the liquid crystal from the monitor touching the skin or entering the eyes or mouth.

⚠ Observe proper precautions when handling batteries

Batteries may leak or explode if improperly handled. Observe the following precautions when handling batteries for use in this product:

- Use only batteries approved for use in this equipment.
- Do not short or disassemble the battery.
- Be sure the product is off before replacing the battery. If you are using an AC adapter, be sure it is unplugged.
- Do not attempt to insert the battery upside down or backwards.
- Do not expose the battery to flame or to excessive heat.
- Do not immerse in or expose to water.
- Replace the terminal cover when transporting the battery. Do not transport or store the battery with metal objects such as necklaces or hairpins.
- Batteries are prone to leakage when fully discharged. To avoid damage to the product, be sure to remove the battery when no charge remains.
- When the battery is not in use, attach the terminal cover and store in a cool, dry place.
- The battery may be hot immediately after use or when the product has been used on battery power for an extended period. Before removing the battery turn the camera off and allow the battery to cool.
- Discontinue use immediately should you notice any changes in the battery, such as discoloration or deformation.

⚠ Use appropriate cables

When connecting cables to the input and output jacks, use only the cables provided or sold by Nikon for the purpose to maintain compliance with product regulations.

⚠ CD-ROMs

CD-ROMs containing software or manuals should not be played back on audio CD equipment. Playing CD-ROMs on an audio CD player could cause hearing loss or damage the equipment.

⚠ Observe proper precautions when handling the charger

- Keep dry. Failure to observe this precaution could result in fire or electric shock.
- Do not short the charger terminals. Failure to observe this precaution could result in overheating and damage to the charger.
- Dust on or near the metal parts of the plug should be removed with a dry cloth. Continued use could result in fire.
- Do not go near the charger during thunderstorms. Failure to observe this precaution could result in electric shock.
- Do not handle the plug or charger with wet hands. Failure to observe this precaution could result in electric shock.
- Do not use with travel converters or adapters designed to convert from one voltage to another or with DC-to-AC inverters. Failure to observe this precaution could damage the product or cause overheating or fire.

Notices

- No part of the manuals included with this product may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form, by any means, without Nikon's prior written permission.
- Nikon reserves the right to change the specifications of the hardware and software described in these manuals at any time and without prior notice.
- Nikon will not be held liable for any damages resulting from the use of this product.
- While every effort has been made to ensure that the information in these manuals is accurate and complete, we would appreciate it were you to bring any errors or omissions to the attention of the Nikon representative in your area (address provided separately).

Notices for Customers in the U.S.A.

The Battery Charger

IMPORTANT SAFETY INSTRUCTIONS—SAVE THESE INSTRUCTIONS DANGER—TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, CAREFULLY FOLLOW THESE INSTRUCTIONS

For connection to a supply not in the U.S.A., use an attachment plug adapter of the proper configuration for the power outlet if needed. This power unit is intended to be correctly oriented in a vertical or floor mount position.

Federal Communications Commission (FCC) Radio Frequency Interference Statement

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.



Nikon
D5100

CAUTIONS

Modifications

The FCC requires the user be notified that any changes or modifications made to this device that are not expressly approved by Nikon Corporation may void the user's authority to operate the equipment.

Interface Cables

Use the interface cables sold or provided by Nikon for your equipment. Using other interface cables may exceed the limits of Class B Part 15 of the FCC rules.

Notice for Customers in the State of California

WARNING: Handling the cord on this product may expose you to lead, a chemical known to the State of California to cause birth defects or other reproductive harm. *Wash hands after handling.*

Nikon Inc., 1300 Walt Whitman Road, Melville, New York
11747-3064, U.S.A.
Tel.: 631-547-4200

Notice for Customers in Canada

CAUTION

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

ATTENTION

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

Notices for Customers in Europe

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

This symbol indicates that this product is to be collected separately.



The following apply only to users in European countries:

- This product is designated for separate collection at an appropriate collection point. Do not dispose of as household waste.
- For more information, contact the retailer or the local authorities in charge of waste management.

This symbol on the battery indicates that the battery is to be collected separately.



The following apply only to users in European countries:

- All batteries, whether marked with this symbol or not, are designated for separate collection at an appropriate collection point. Do not dispose of as household waste.
- For more information, contact the retailer or the local authorities in charge of waste management.

Disposing of Data Storage Devices

Please note that deleting images or formatting memory cards or other data storage devices does not completely erase the original image data. Deleted files can sometimes be recovered from discarded storage devices using commercially available software, potentially resulting in the malicious use of personal image data. Ensuring the privacy of such data is the user's responsibility.

Before discarding a data storage device or transferring ownership to another person, erase all data using commercial deletion software, or format the device and then completely refill it with images containing no private information (for example, pictures of empty sky). Be sure to also replace any pictures selected for preset manual white balance. Care should be taken to avoid injury when physically destroying data storage devices.

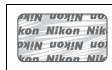
AVC Patent Portfolio License

THIS PRODUCT IS LICENSED UNDER THE AVC PATENT PORTFOLIO LICENSE FOR THE PERSONAL AND NON-COMMERCIAL USE OF A CONSUMER TO (i) ENCODE VIDEO IN COMPLIANCE WITH THE AVC STANDARD ("AVC VIDEO") AND/OR (ii) DECODE AVC VIDEO THAT WAS ENCODED BY A CONSUMER ENGAGED IN A PERSONAL AND NON-COMMERCIAL ACTIVITY AND/OR WAS OBTAINED FROM A VIDEO PROVIDER LICENSED TO PROVIDE AVC VIDEO. NO LICENSE IS GRANTED OR SHALL BE IMPLIED FOR ANY OTHER USE. ADDITIONAL INFORMATION MAY BE OBTAINED FROM MPEG LA, L.L.C. See <http://www.mpegla.com>

Use Only Nikon Brand Electronic Accessories

Nikon cameras are designed to the highest standards and include complex electronic circuitry. Only Nikon brand electronic accessories (including chargers, batteries, AC adapters, and flash accessories) certified by Nikon specifically for use with this Nikon digital camera are engineered and proven to operate within the operational and safety requirements of this electronic circuitry.

The use of non-Nikon electronic accessories could damage the camera and may void your Nikon warranty. The use of third-party rechargeable Li-ion batteries not bearing the Nikon holographic seal shown at right could interfere with normal operation of the camera or result in the batteries overheating, igniting, rupturing, or leaking.



For more information about Nikon brand accessories, contact a local authorized Nikon dealer.

Notice Concerning Prohibition of Copying or Reproduction

Note that simply being in possession of material that has been digitally copied or reproduced by means of a scanner, digital camera, or other device may be punishable by law.

• Items prohibited by law from being copied or reproduced

Do not copy or reproduce paper money, coins, securities, government bonds, or local government bonds, even if such copies or reproductions are stamped "Sample."

The copying or reproduction of paper money, coins, or securities which are circulated in a foreign country is prohibited.

Unless the prior permission of the government has been obtained, the copying or reproduction of unused postage stamps or post cards issued by the government is prohibited.

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The government has issued cautions on copies or reproductions of securities issued by private companies (shares, bills, checks, gift certificates, etc.), commuter passes, or coupon tickets, except when a minimum of necessary copies are to be provided for business use by a company. Also, do not copy or reproduce passports issued by the government, licenses issued by public agencies and private groups, ID cards, and tickets, such as passes and meal coupons.

• Comply with copyright notices

The copying or reproduction of copyrighted creative works such as books, music, paintings, woodcuts, prints, maps, drawings, movies, and photographs is governed by national and international copyright laws. Do not use this product for the purpose of making illegal copies or to infringe copyright laws.

Use Only Nikon Brand Accessories

Only Nikon brand accessories certified by Nikon specifically for use with your Nikon digital camera are engineered and proven to operate within its operational and safety requirements. THE USE OF NON-NIKON ACCESSORIES COULD DAMAGE YOUR CAMERA AND MAY VOID YOUR NIKON WARRANTY.

Servicing the Camera and Accessories

The camera is a precision device and requires regular servicing. Nikon recommends that the camera be inspected by the original retailer or a Nikon-authorized service representative once every one to two years, and that it be serviced once every three to five years (note that fees apply to these services). Frequent inspection and servicing are particularly recommended if the camera is used professionally. Any accessories regularly used with the camera, such as lenses or optional flash units, should be included when the camera is inspected or serviced.

Before Taking Important Pictures

Before taking pictures on important occasions (such as at weddings or before taking the camera on a trip), take a test shot to ensure that the camera is functioning normally. Nikon will not be held liable for damages or lost profits that may result from product malfunction.

Camera Settings

The explanations in this manual assume that default settings are used.

Life-Long Learning

As part of Nikon's "Life-Long Learning" commitment to ongoing product support and education, continually-updated information is available on-line at the following sites:

- **For users in the U.S.A.:** <http://www.nikonusa.com/>
- **For users in Europe and Africa:** <http://www.europe-nikon.com/support/>
- **For users in Asia, Oceania, and the Middle East:** <http://www.nikon-asia.com/>

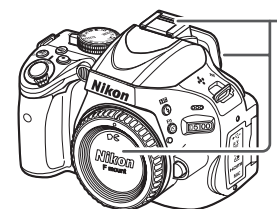
Visit these sites to keep up-to-date with the latest product information, tips, answers to frequently-asked questions (FAQs), and general advice on digital imaging and photography. Additional information may be available from the Nikon representative in your area. See the following URL for contact information: <http://imaging.nikon.com/>



Introduction

Package Contents

Confirm that the package contains the following items:



☐ D5100 digital camera



☐ BS-1 accessory shoe cover



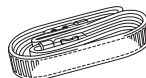
☐ DK-20 rubber eyecup



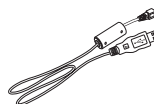
☐ BF-1B body cap



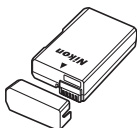
☐ DK-5 eyepiece cap



☐ AN-DC3 strap



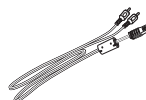
☐ UC-E6 USB cable



☐ EN-EL14 rechargeable Li-ion battery (with terminal cover)



☐ MH-24 battery charger (plug adapter supplied in countries or regions where required; shape depends on country of sale)



☐ EG-CP14 audio/video (A/V) cable

☐ ViewNX 2 CD

☐ Reference CD

☐ User's Manual (this booklet)

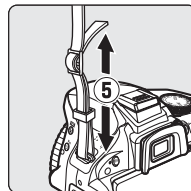
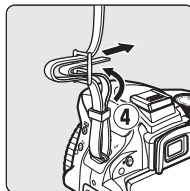
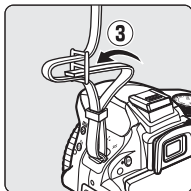
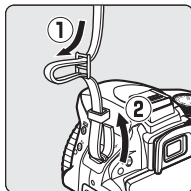
☐ Warranty

☐ Quick Start Guide

Purchasers of the lens kit option should confirm that the package also includes a lens. Memory cards are sold separately.

Attaching the Strap

Attach the strap securely to the two eyelets on the camera body.

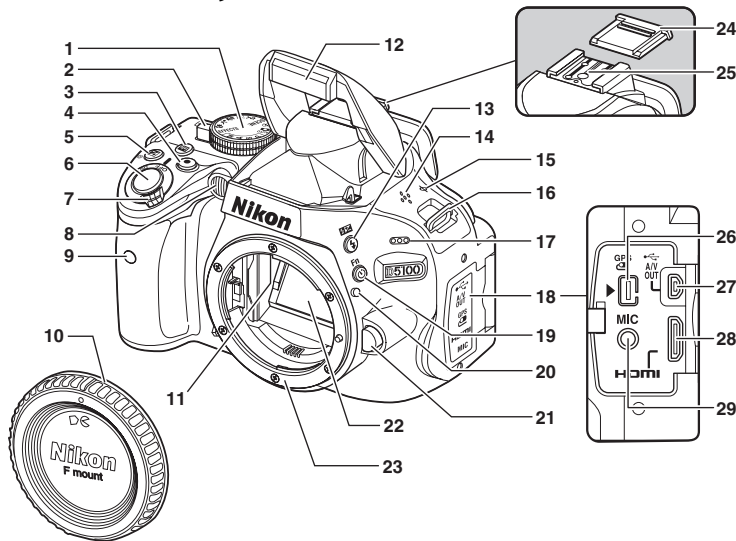


Getting to Know the Camera

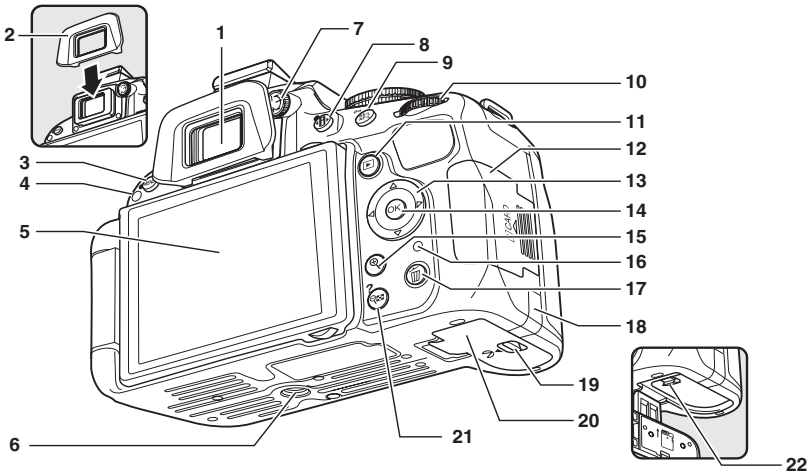
Take a few moments to familiarize yourself with camera controls and displays. You may find it helpful to bookmark this section and refer to it as you read through the rest of the manual.



The Camera Body



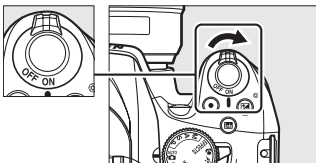
1	Mode dial.....	4	10	Body cap	1, 16	21	Lens release button	16
2	Live view switch	44, 51	11	CPU contacts.....	65	22	Mirror	
3	Info (information) button....	6, 48	12	Built-in flash.....	20, 37	23	Lens mount	
4	Movie-record button.....	51	13	Flash mode button.....	39	24	Accessory shoe cover	
5	Exposure compensation button		13	Flash compensation button		25	Accessory shoe (for optional flash units)	
	Aperture button.....	43	14	Speaker		26	Accessory terminal	67
	Flash compensation button		15	Focal plane mark (—)		27	USB and A/V connector	
6	Shutter-release button ...	18–19	16	Eyelet for camera strap	1	28	HDMI mini-pin connector	
7	Power switch	3	17	Microphone	51, 53	29	Connector for external microphone.....	67
8	AF-assist illuminator		18	Connector cover				
	Self-timer lamp.....	30	19	Self-timer button.....	31			
	Red-eye reduction lamp	39		Fn (function) button				
9	Infrared receiver (front)	30	20	Mounting mark	13			



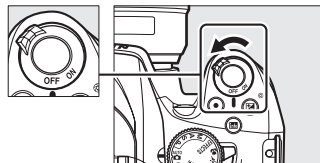
1 Viewfinder eyepiece.....31	9 $\overline{\text{AE-L/AF-L}}$ (AE-L/AF-L) button 51	18 Power connector cover for optional power connector
2 Rubber eyecup31	ON (protect) button	optimal power connector
3 MENU (menu) button8	10 Command dial 23, 43, 55	19 Battery-chamber cover latch
Two-button reset button	11 $\square$ (playback) button 26	20 Battery-chamber cover
4 Infrared receiver (rear).....30	12 Memory card slot cover 13	21 Q (thumbnail/playback zoom out) button..... 27
5 Monitor 5, 14	13 Multi selector8	? (help) button 8
Viewing settings6	14 OK (OK) button.....8	22 Battery latch 12, 15
Live view48	15 Q (playback zoom in) button..... 27	
Full-frame playback26	16 Memory card access lamp 13, 19, 44	
6 Tripod socket	17 trash (delete) button	
7 Diopter adjustment control15	Deleting pictures during playback..... 27	
8 info (information edit) button6		
Two-button reset button		

The Power Switch

Rotate the power switch as shown to turn the camera on.



Rotate the power switch as shown to turn the camera off.



The Mode Dial

The camera offers a choice of the following shooting modes:

Auto Modes (📖 18)

Select these modes for simple, point-and-shoot photography.

-  **Auto**
-  **Auto (flash off)**

P, S, A, and M Modes (📖 43)

Select these modes for full control over camera settings.

- **P**—**Programmed auto**
- **S**—**Shutter-priority auto**
- **A**—**Aperture-priority auto**
- **M**—**Manual**

Special Effects Modes

Use special effects during shooting.

- | | |
|--|---|
| <ul style="list-style-type: none">•  Night vision (📖 56)•  Color sketch (📖 56, 58)•  Miniature effect (📖 56, 58) | <ul style="list-style-type: none">•  Selective color (📖 57, 59)•  Silhouette (📖 57)•  High key (📖 57)•  Low key (📖 57) |
|--|---|

Scene Modes

The camera automatically optimizes settings to suit the scene selected with the mode dial. Match your selection to the scene being photographed.

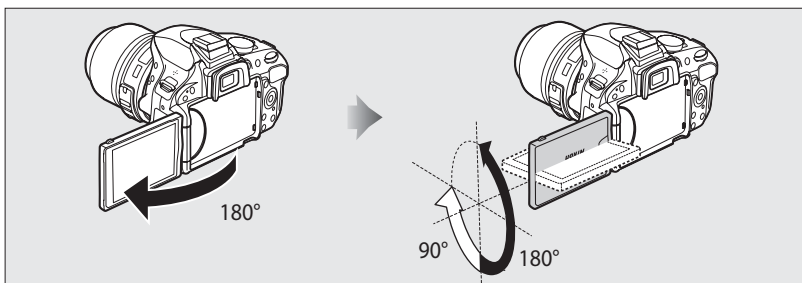
- | | |
|--|--|
| <ul style="list-style-type: none">•  Portrait (📖 21)•  Landscape (📖 21)•  Child (📖 22) | <ul style="list-style-type: none">•  Sports (📖 22)•  Close up (📖 22)• SCENE:Other scenes (📖 23) |
|--|--|

Scene Auto Selector (Live View)

Selecting live view in  or  mode enables automatic scene selection (“scene auto selector”; 📖 49) when autofocus is used.

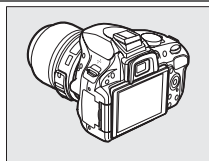
The Monitor

The monitor can be angled and rotated as shown below.



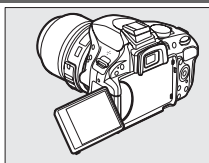
Normal use

Fold the monitor against the camera face out. This position is recommended for normal photography.



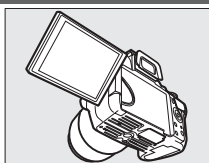
Low-angle shots

Frame live view shots with the camera close to the ground.



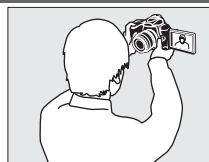
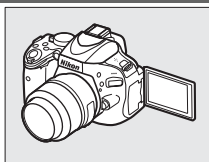
High-angle shots

Frame live view shots while holding the camera over your head.



Self-portraits

Use for self-portraits in live view. The monitor shows a mirror image of what will appear in the final picture.



✔ Using the Monitor

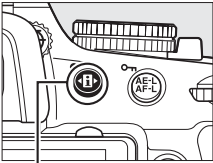
Rotate the monitor gently within the limits shown. *Do not use force.* Failure to observe these precautions could damage the connection between the monitor and the camera body. To protect the monitor when the camera is not in use, fold it back face down against the camera body.

✔ See Also

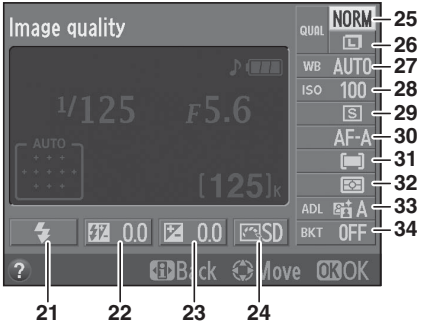
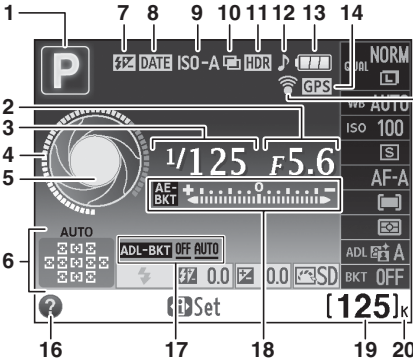
See “Framing Photographs in the Monitor” for information on framing photographs in the monitor (□ 44).

The Information Display

Camera settings can be viewed and adjusted in the information display. Press the **Fi** button once to view settings, and again to make changes to settings. Highlight items using the multi selector and press **OK** to view options for the highlighted item.

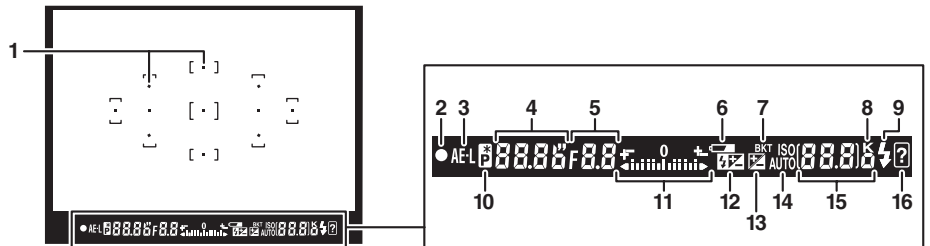
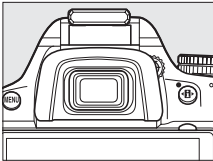


Fi button



1 Shooting mode	11 HDR indicator	21 Flash mode 38
2 Aperture (f-number) 43	12 "Beep" indicator	22 Flash compensation
3 Shutter speed 43	13 Battery indicator 17	23 Exposure compensation
4 Shutter-speed display	14 GPS connection indicator	24 Picture Control
5 Aperture display	15 Eye-Fi connection indicator	25 Image quality 35
6 Auto-area AF indicator 34	16 Help icon.....72	26 Image size 36
3D-tracking indicator..... 34	17 ADL bracketing amount	27 White balance
Focus point	18 Exposure indicator	28 ISO sensitivity..... 40
7 Manual flash indicator	Exposure compensation	29 Release mode..... 28
Flash compensation indicator	indicator	30 Focus mode32, 45
for optional flash units	Bracketing progress indicator	31 AF-area mode34, 46
8 Print date indicator	19 Number of exposures	32 Metering
9 Auto ISO sensitivity indicator	remaining 17	33 Active D-Lighting
10 Multiple exposure indicator	White balance recording	34 Bracketing increment
	indicator	
	Capture mode indicator	
	20 "K" (appears when memory	
	remains for over 1,000	
	exposures)..... 17	

The Viewfinder



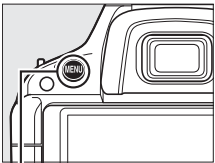
1	Focus points	12	Flash compensation indicator
2	Focus indicator	13	Exposure compensation indicator
3	Autoexposure (AE) lock indicator	14	Auto ISO sensitivity indicator
4	Shutter speed	15	Number of exposures remaining
5	Aperture (f-number)		Number of shots remaining before memory
6	Battery indicator		buffer fills
7	Bracketing indicator		White balance recording indicator
8	"K" (appears when memory remains for over		Exposure compensation value
	1,000 exposures)		Flash compensation value
9	Flash-ready indicator		Capture mode indicator
10	Flexible program indicator		ISO sensitivity
11	Exposure indicator	16	Warning indicator
	Exposure compensation display		
	Electronic rangefinder		

☒ **The Viewfinder**

The response time and brightness of the viewfinder display may vary with temperature.

Camera Menus

Most shooting, playback, and setup options can be accessed from the camera menus. To view the menus, press the **MENU** button.

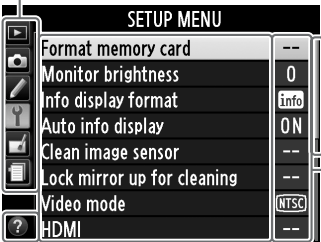


MENU button

Tabs

Choose from the following menus:

- ▶: **Playback** (book 10)
- 📷: **Shooting** (book 10)
- 🔧: **Custom Settings** (book 11)
- 🔧: **Setup** (book 11)
- 🔧: **Retouch** (book 11)
- 📄/📄: **Recent settings or My Menu** (book 11)



Slider shows position in current menu.

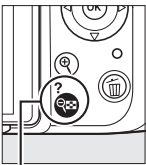
Current settings are shown by icons.

Menu options

Options in current menu.



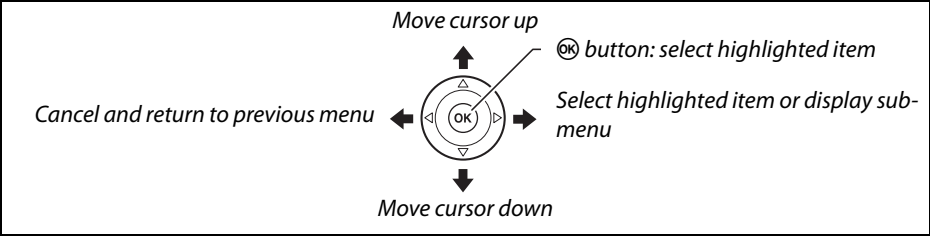
If a **?** icon is displayed at the bottom left corner of the monitor, help can be displayed by pressing the **?** (🔍) button. Press **▲** or **▼** to scroll through the display. Press **?** (🔍) again to return to the menus.



? (🔍) button

Using Camera Menus

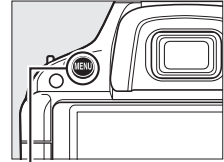
The multi selector and **OK** button are used to navigate the camera menus.



Follow the steps below to navigate the menus.

1 Display the menus.

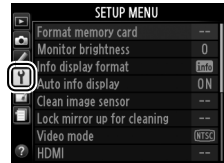
Press the **MENU** button to display the menus.



MENU button

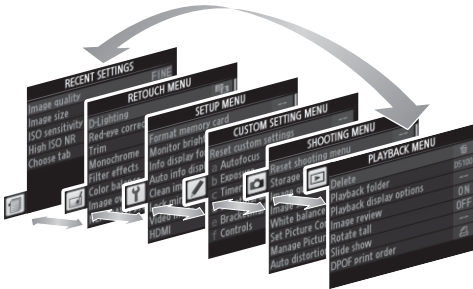
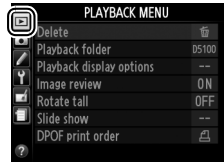
2 Highlight the icon for the current menu.

Press **◀** to highlight the icon for the current menu.



3 Select a menu.

Press **▲** or **▼** to select the desired menu.



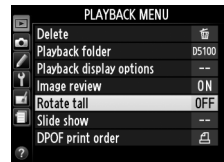
4 Position the cursor in the selected menu.

Press **▶** to position the cursor in the selected menu.



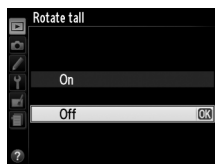
5 Highlight a menu item.

Press **▲** or **▼** to highlight a menu item.



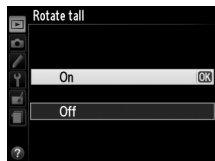
6 Display options.

Press ► to display options for the selected menu item.



7 Highlight an option.

Press ▲ or ▼ to highlight an option.



8 Select the highlighted item.

Press OK to select the highlighted item. To exit without making a selection, press the MENU button.



Note the following:

- Menu items that are displayed in gray are not currently available.
- While pressing ► generally has the same effect as pressing OK, there are some cases in which selection can only be made by pressing OK.
- To exit the menus and return to shooting mode, press the shutter-release button halfway (19).

■ ■ ► Playback Menu Options

Delete	Image review	Slide show
Playback folder	Rotate tall	DPOF print order
Playback display options		

■ ■ 📷 Shooting Menu Options

Reset shooting menu	Manage Picture Control	High ISO NR
Storage folder	Auto distortion control	ISO sensitivity settings
Image quality	Color space	Release mode
Image size	Active D-Lighting	Multiple exposure
White balance	HDR (high dynamic range)	Movie settings
Set Picture Control	Long exposure NR	Interval timer shooting

■ ■ Custom Settings

Reset custom settings
Autofocus
a1: AF-C priority selection
a2: Built-in AF-assist illuminator
a3: Rangefinder
Exposure
b1: EV steps for exposure cntrl.

Timers/AE lock
c1: Shutter-release button AE-L
c2: Auto off timers
c3: Self-timer
c4: Remote on duration
Shooting/display
d1: Beep
d2: ISO display
d3: File number sequence
d4: Exposure delay mode
d5: Print date

Bracketing/flash
e1: Flash cntrl for built-in flash
e2: Auto bracketing set
Controls
f1: Assign  /Fn button
f2: Assign AE-L/AF-L button
f3: Reverse dial rotation
f4: Slot empty release lock
f5: Reverse indicators



■ ■ Setup Menu Options

Format memory card
Monitor brightness
Info display format
Auto info display
Clean image sensor
Lock mirror up for cleaning
Video mode

HDMI
Flicker reduction
Time zone and date
Language
Image comment
Auto image rotation
Image Dust Off ref photo

GPS
Eye-Fi upload*
Firmware version

* Only available when compatible Eye-Fi memory card is inserted.

■ ■ Retouch Menu Options

D-Lighting
Red-eye correction
Trim
Monochrome
Filter effects
Color balance
Image overlay

NEF (RAW) processing
Resize
Quick retouch
Straighten
Distortion control
Fisheye
Color outline

Color sketch
Perspective control
Miniature effect
Selective color
Edit movie

■ ■ Recent Settings/ My Menu (Defaults to Recent Settings)

For More Information

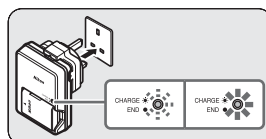
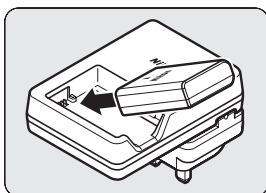
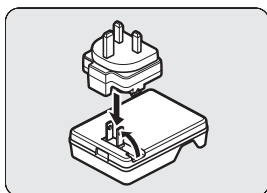
Information on individual menu options is available using the camera's on-board help ( 8) and in the *Reference Manual* on the supplied reference CD (for information on viewing the *Reference Manual*, see the inside front cover of this booklet).

First Steps

Always turn the camera off before inserting or removing batteries or memory cards.

1 Charge the battery.

If a plug adapter is supplied, raise the wall plug and connect the plug adapter as shown below at left, making sure the plug is fully inserted. Insert the battery and plug the charger in. An exhausted battery will fully charge in about an hour and thirty minutes.



*Battery Charging
charging complete*

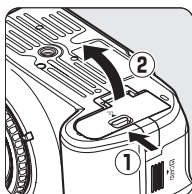
☒ Charging the Battery

Read and follow the warnings and cautions on pages ii–iii and 69–71 of this manual.

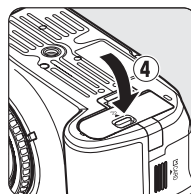
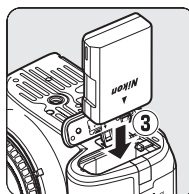
Charge the battery indoors at ambient temperatures of 5–35 °C (41–95 °F). Do not use the battery at ambient temperatures below 0 °C/32 °F or above 40 °C/104 °F; failure to observe this precaution could damage the battery or impair its performance. Capacity may be reduced and charging times may increase at battery temperatures from 0 °C/32 °F to 15 °C/59 °F and from 45 °C/113 °F to 60 °C/140 °F. The battery will not charge if its temperature is below 0 °C (32 °F) or above 60 °C (140 °F). If the **CHARGE** lamp flickers during charging, confirm that the temperature is in the correct range and then unplug the charger and remove and reinsert the battery. If the problem persists, cease use immediately and take battery and charger to your retailer or a Nikon-authorized service representative.

2 Insert the battery.

Check to be sure the battery is in the correct orientation.

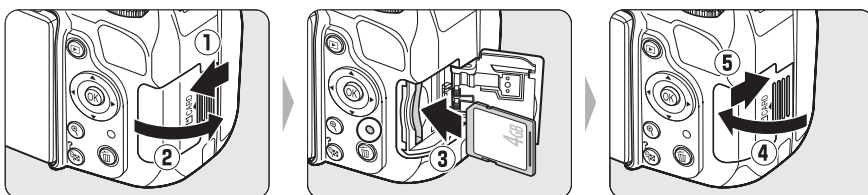


*Use battery to press
orange battery
latch to one side.
Latch clicks into
place when battery
is fully inserted.*



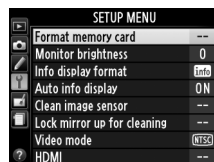
3 Insert a memory card (available separately).

Check to be sure the card is in the correct orientation.



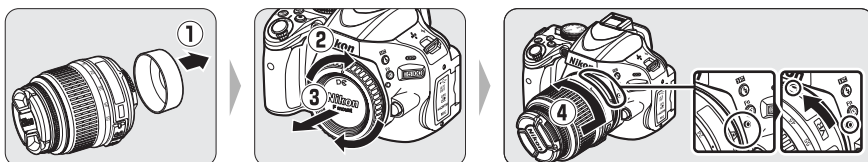
Formatting Memory Cards

If this is the first time the memory card will be used in the camera or if the card has been formatted in another device, select **Format memory card** in the setup menu and follow the on-screen instructions to format the card (□ 11). *Note that this permanently deletes any data the card may contain.* Be sure to copy any photographs and other data you wish to keep to a computer before proceeding.



4 Attach a lens.

Be careful to prevent dust from entering the camera when the lens or body cap is removed.



Keeping marks aligned, position lens on camera, then rotate until lens clicks into place.

Autofocus is available with AF-S lenses. The lens kit option includes an AF-S lens; for information on other lenses that can be used with the D5100, see page 65.

If the lens has a vibration reduction (VR) switch, select **ON** to reduce the effects of vibration.

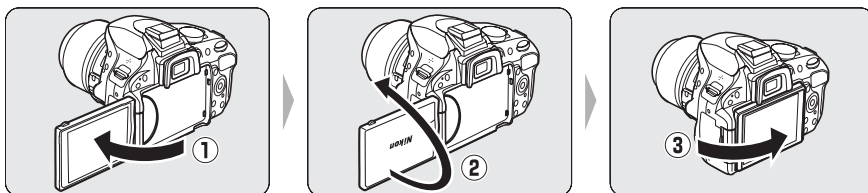


CPU Lenses with Aperture Rings

In the case of CPU lenses equipped with an aperture ring (□ 65), lock aperture at the minimum setting (highest f-number).

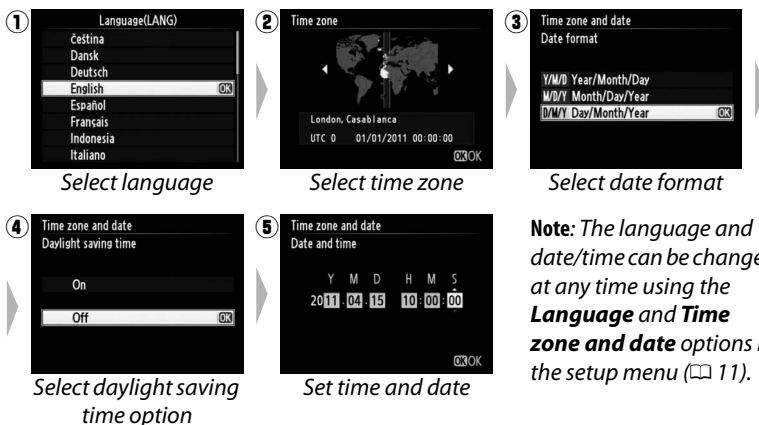
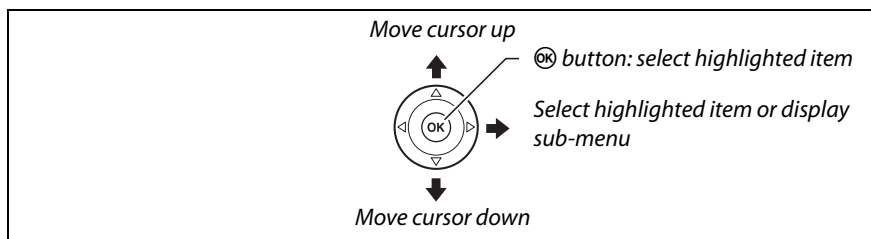
5 Open the monitor.

Open the monitor as shown. *Do not use force.*



6 Choose a language and set the camera clock.

Turn the camera on. A language-selection dialog will be displayed; use the multi selector and **OK** button to select a language and set the camera clock.



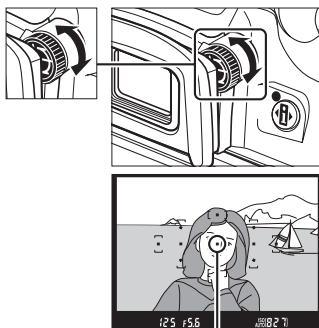
Note: The language and date/time can be changed at any time using the **Language** and **Time zone and date** options in the setup menu (11).

The Camera Clock

The camera clock is less accurate than most watches and household clocks. Check the clock regularly against more accurate time pieces and reset as necessary.

7 Focus the viewfinder.

Rotate the diopter adjustment control until the viewfinder display and focus point are in sharp focus. When operating the control with your eye to the viewfinder, be careful not to put your fingers or fingernails in your eye.



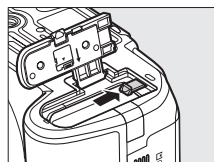
Focus point

Adjusting Viewfinder Focus

If you are unable to focus the viewfinder as described above, select single-servo autofocus (AF-S;  32), single-point AF ();  34), and the center focus point and then frame a high-contrast subject in the center focus point and press the shutter-release button halfway to focus the camera. With the camera in focus, use the diopter adjustment control to bring the subject into clear focus in the viewfinder. If necessary, viewfinder focus can be further adjusted using optional corrective lenses.

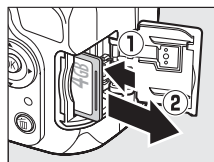
Removing the Battery

To remove the battery, turn the camera off and open the battery-chamber cover. Press the battery latch in the direction shown by the arrow to release the battery and then remove the battery by hand.



Removing Memory Cards

After confirming that the access lamp is off, turn the camera off, open the memory card slot cover, and press the card in to eject it (①). The card can then be removed by hand (②).

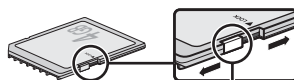


Memory Cards

- Memory cards may be hot after use. Observe due caution when removing memory cards from the camera.
- Do not remove memory cards from the camera, turn the camera off, or remove or disconnect the power source during formatting or while data are being recorded, deleted, or copied to a computer. Failure to observe these precautions could result in loss of data or in damage to the camera or card.
- Do not touch the card terminals with your fingers or metal objects.
- Do not bend, drop, or subject to strong physical shocks.
- Do not apply force to the card casing. Failure to observe this precaution could damage the card.
- Do not expose to water, heat, high levels of humidity, or direct sunlight.

The Write Protect Switch

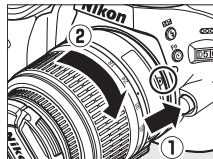
Memory cards are equipped with a write protect switch to prevent accidental loss of data. When this switch is in the “lock” position, the memory card can not be formatted and photos can not be deleted or recorded (a beep will sound if you attempt to release the shutter). To unlock the memory card, slide the switch to the “write” position.



Write-protect switch

Detaching the Lens

Be sure the camera is off when removing or exchanging lenses. To remove the lens, press and hold the lens release button (①) while turning the lens clockwise (②). After removing the lens, replace the lens caps and camera body cap.



Vibration Reduction

Do not turn the camera off or remove the lens while vibration reduction is in effect. If power to the lens is cut while vibration reduction is on, the lens may rattle when shaken. This is not a malfunction, and can be corrected by reattaching the lens and turning the camera on. Vibration reduction is disabled while the built-in flash is charging. When vibration reduction is active, the image in the viewfinder may be blurred after the shutter is released. This does not indicate a malfunction; wait for the image in the viewfinder to stabilize before shooting.



Basic Photography and Playback

Battery Level and Card Capacity

Before shooting, turn the camera on and check the battery level and number of exposures remaining in the information display or viewfinder (if the monitor is off, press the button to view the information display; if the monitor does not turn on, the battery is exhausted and must be recharged).

■ ■ Battery Level

Information display	Viewfinder	Description
	—	Battery fully charged.
	—	Battery partially discharged.
		Low battery. Ready fully-charged spare battery or prepare to charge battery.
		Battery exhausted; shutter release disabled. Charge or exchange battery.



■ ■ Number of Exposures Remaining

The information display and viewfinder show the number of photographs that can be stored on the memory card (values over 1,000 are rounded down to the nearest hundred; e.g., values between 1,200 and 1,299 are shown as 1.2 K). If a warning is displayed stating that there is not enough memory for additional photographs, insert another memory card (13) or delete some photos (26).



Taking Photographs

This section describes how to take photographs in  and  modes, automatic “point-and-shoot” modes in which the majority of settings are controlled by the camera in response to shooting conditions.

1 Turn the camera on.

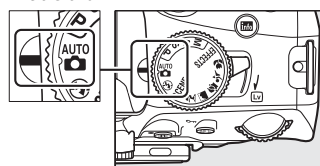
Remove the lens cap and turn the camera on. The information display will appear in the monitor.

2 Select or mode.

To shoot where use of a flash is prohibited, photograph infants, or capture natural lighting under low light conditions, select auto (flash off) mode by rotating the mode dial to .

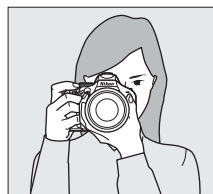
Otherwise, rotate the mode dial to  (auto).

Mode dial



3 Ready the camera.

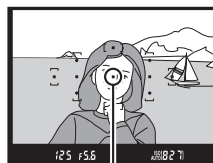
When framing photographs in the viewfinder, hold the handgrip in your right hand and cradle the camera body or lens with your left. Keep your elbows propped lightly against your torso for support and place one foot half a pace ahead of the other to keep your upper body stable.



In  mode, shutter speeds slow when lighting is poor; use of a tripod is recommended.

4 Frame the photograph.

Frame a photograph in the viewfinder with the main subject in at least one of the 11 focus points.



Focus point

5 Press the shutter-release button halfway.

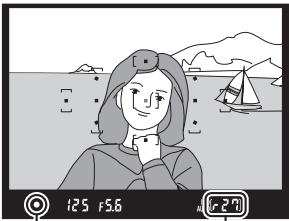
Press the shutter-release button halfway to focus. The camera will select the focus points automatically. If the subject is poorly lit, the flash may pop up and the AF-assist illuminator may light.



6 Check the indicators in the viewfinder.

When the focus operation is complete, the selected focus points will be briefly highlighted, a beep will sound (a beep may not sound if the subject is moving), and the in-focus indicator (●) will appear in the viewfinder.

In-focus indicator	Description
●	Subject in focus.
● (blinks)	Camera unable to focus using autofocus. See page 33.



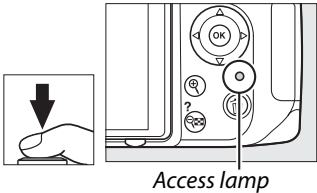
In-focus
indicator

Buffer
capacity

While the shutter-release button is pressed halfway, the number of exposures that can be stored in the memory buffer ("29") will be displayed in the viewfinder.

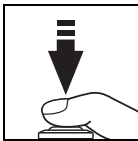
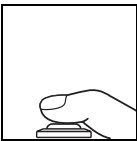
7 Shoot.

Smoothly press the shutter-release button the rest of the way down to release the shutter and record the photograph. The access lamp next to the memory card slot cover will light and the photograph will be displayed in the monitor for a few seconds (the photo will automatically clear from the display when the shutter-release button is pressed halfway). *Do not eject the memory card or remove or disconnect the power source until the lamp has gone out and recording is complete.*

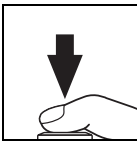


The Shutter-Release Button

The camera has a two-stage shutter-release button. The camera focuses when the shutter-release button is pressed halfway. To take the photograph, press the shutter-release button the rest of the way down.



Focus: press halfway



Shoot: press all the way down

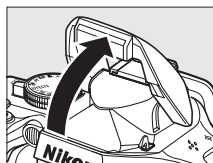
Auto Meter-Off

The viewfinder and information display will turn off if no operations are performed for about 8 seconds (auto meter-off), reducing the drain on the battery. Press the shutter-release button halfway to reactivate the display. The auto meter-off delay can be selected using Custom Setting c2 (**Auto off timers**;  11).

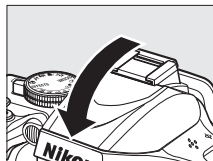


The Built-in Flash

If additional lighting is required for correct exposure in  mode, the built-in flash will pop up automatically when the shutter-release button is pressed halfway. If the flash is raised, photographs can only be taken when the flash-ready indicator () is displayed. If the flash-ready indicator is not displayed, the flash is charging; remove your finger briefly from the shutter-release button and try again.



To save battery power when the flash is not in use, return it to its closed position by pressing it gently downward till the latch clicks into place.



Using a Zoom Lens

Use the zoom ring to zoom in on the subject so that it fills a larger area of the frame, or zoom out to increase the area visible in the final photograph (select longer focal lengths on the lens focal length scale to zoom in, shorter focal lengths to zoom out).

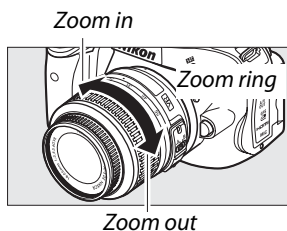


Image Sensor Cleaning

The camera vibrates the low-pass filter covering the image sensor to remove dust when the camera is turned on or off.

Creative Photography (Scene Modes)

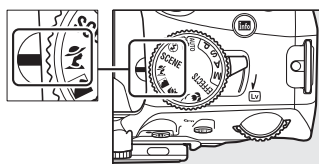
The camera offers a choice of “scene” modes. Choosing a scene mode automatically optimizes settings to suit the selected scene, making creative photography as simple as selecting a mode, framing a picture, and shooting as described on pages 18–20.



The Mode Dial

The following scenes can be selected with the mode dial:

Mode dial



Portrait



Use for portraits with soft, natural-looking skin tones. If the subject is far from the background or a telephoto lens is used, background details will be softened to lend the composition a sense of depth.

Landscape



Use for vivid landscape shots in daylight. The built-in flash and AF-assist illuminator turn off; use of a tripod is recommended to prevent blur when lighting is poor.

Child



Use for snapshots of children. Clothing and background details are vividly rendered, while skin tones remain soft and natural.

Sports



Fast shutter speeds freeze motion for dynamic sports shots in which the main subject stands out clearly. The built-in flash and AF-assist illuminator turn off.

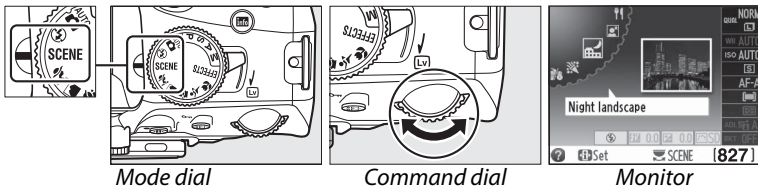
Close up



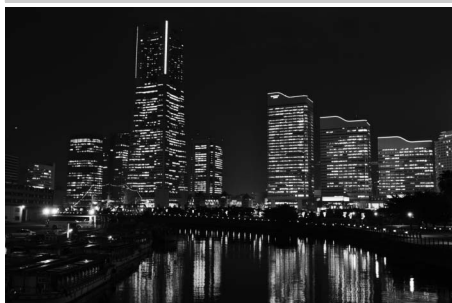
Use for close-up shots of flowers, insects, and other small objects (a macro lens can be used to focus at very close ranges). Use of a tripod is recommended to prevent blur.

Other Scenes

The following scenes can be selected by rotating the mode dial to **SCENE** and rotating the command dial until the desired scene appears in the monitor.

 **Night Portrait**

Use for a natural balance between the main subject and the background in portraits taken under low light. Use of a tripod is recommended to prevent blur.

 Night Landscape

Reduce noise and unnatural colors when photographing night landscapes, including street lighting and neon signs. The built-in flash and AF-assist illuminator turn off; use of a tripod is recommended to prevent blur.

 Party/Indoor

Capture the effects of indoor background lighting. Use for parties and other indoor scenes.

Beach/Snow



Capture the brightness of sunlit expanses of water, snow, or sand. The built-in flash and AF-assist illuminator turn off.

Sunset



Preserves the deep hues seen in sunsets and sunrises. The built-in flash and AF-assist illuminator turn off; use of a tripod is recommended to prevent blur when lighting is poor.

Dusk/Dawn



Preserves the colors seen in the weak natural light before dawn or after sunset. The built-in flash and AF-assist illuminator turn off; use of a tripod is recommended to prevent blur when lighting is poor.

Pet Portrait



Use for portraits of active pets. The AF-assist illuminator turns off.

Candlelight



For photographs taken by candlelight. The built-in flash turns off; use of a tripod is recommended to prevent blur when lighting is poor.



Blossom



Use for fields of flowers, orchards in bloom, and other landscapes featuring expanses of blossoms. The built-in flash turns off; use of a tripod is recommended to prevent blur when lighting is poor.

Autumn Colors



Captures the brilliant reds and yellows in autumn leaves. The built-in flash turns off; use of a tripod is recommended to prevent blur when lighting is poor.

Food



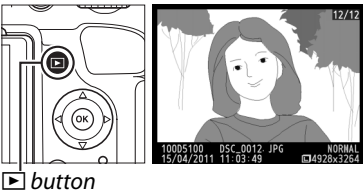
Use for vivid photographs of food. Use of a tripod is recommended to prevent blur; the flash can also be used (☐ 37).

Basic Playback

Photographs are automatically displayed for a few seconds after shooting. If no photograph is displayed in the monitor, the most recent picture can be viewed by pressing the  button.

1 Press the button.

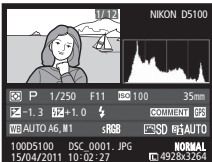
A photograph will be displayed in the monitor.



2 View additional pictures.

Additional pictures can be displayed by pressing  or  or rotating the command dial.

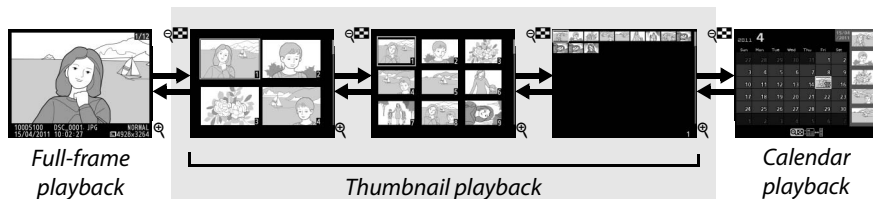
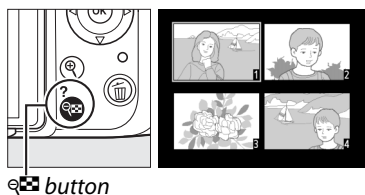
To view additional information on the current photograph, press  and .



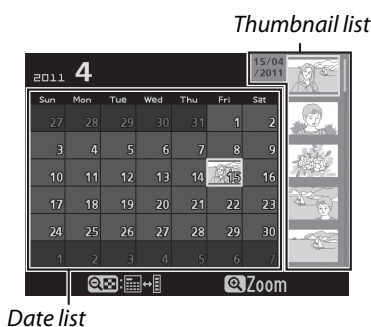
To end playback and return to shooting mode, press the shutter-release button halfway.



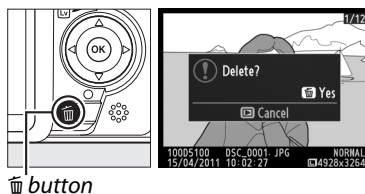
To display images in “contact sheets” of four, nine, or 72 images (thumbnail playback), press the  button. Use the multi selector or command dial to highlight images and press  to display the highlighted image full frame. Press  to reduce the number of images displayed.



To view images taken on a selected date (calendar playback), press the  button when 72 images are displayed. Press the  button to toggle between the date list and the list of thumbnails for the selected date. Use the multi selector to highlight dates in the date list or to highlight pictures in the thumbnail list. Press  when the cursor is in the date list to return to 72-frame playback.



To delete the photograph currently displayed in full-frame playback or highlighted in thumbnail playback or the thumbnail list, press the  button. A confirmation dialog will be displayed; press the  button again to delete the image and return to playback (to exit without deleting the picture, press ).



To end playback and return to shooting mode, press the shutter-release button halfway.



For More Information

See the *Reference Manual* (available in pdf format on the supplied reference CD) for complete information on **P**, **S**, **A**, and **M** modes, playback, printing pictures, viewing pictures on TV, camera menus, troubleshooting, and optional flash units. For information on viewing the *Reference Manual*, see the inside front cover of this booklet.



More on Photography

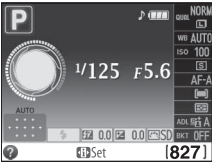
Release Mode

Choose from the following release modes:

Mode	Description
	Single frame: Camera takes one photograph each time shutter-release button is pressed.
	Continuous: While shutter-release button is held down, camera records up to 4 frames per second.
	Self-timer: Use self-timer for self-portraits or to reduce blurring caused by camera shake (30).
	Delayed remote: Shutter is released 2 s after shutter-release button on optional ML-L3 remote control is pressed (30).
	Quick-response remote: Shutter is released when shutter-release button on optional ML-L3 remote control is pressed (30).
	Quiet shutter release: As for single frame, except that mirror does not click back into place while shutter-release button is fully pressed, allowing user to control timing of click made by mirror, which is also quieter than in single frame mode. Also, beep does not sound when camera focuses, keeping noise to a minimum in quiet surroundings.

1 Place the cursor in the information display.

If shooting information is not displayed in the monitor, press the  button. Press the  button again to place the cursor in the information display.



Information display

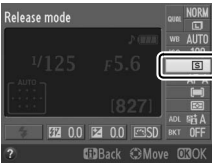


 button



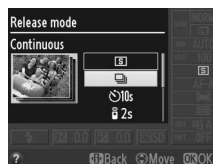
2 Display release-mode options.

Highlight the current release mode in the information display and press .



3 Choose a release mode.

Highlight a release mode and press **OK**. To return to shooting mode, press the shutter-release button halfway.



The Memory Buffer

The camera is equipped with a memory buffer for temporary storage, allowing shooting to continue while photographs are being saved to the memory card. Up to 100 photographs can be taken in succession; note, however, that frame rate will drop when the buffer is full.

While photographs are being recorded to the memory card, the access lamp next to the memory card slot will light. Depending on the number of the images in the buffer, recording may take from a few seconds to a few minutes. *Do not remove the memory card or remove or disconnect the power source until the access lamp has gone out.* If the camera is switched off while data remain in the buffer, the power will not turn off until all images in the buffer have been recorded. If the battery is exhausted while images remain in the buffer, the shutter release will be disabled and the images transferred to the memory card.

 Buffer Size

The approximate number of images that can be stored in the memory buffer at current settings is shown in the viewfinder exposure-count display while the shutter-release button is pressed. The illustration shows the display when space remains in the buffer for about 27 pictures.



 Auto Image Rotation

The camera orientation recorded for the first shot applies to all images in the same burst, even if the camera is rotated during shooting.



Self-Timer and Remote Control Modes

The self-timer and optional ML-L3 remote control (☞ 67) can be used to reduce camera shake or for self-portraits.

1 Mount the camera on a tripod.

Mount the camera on a tripod or place the camera on a stable, level surface.

2 Select a release mode.

Select ☺ (self-timer), ⌚ 2s (delayed remote), or ⌚ (quick-response remote) mode (☞ 28; note that if no operations are performed for about a minute after a remote control mode is selected, the camera will automatically return to single frame, continuous, or quiet shutter-release mode).

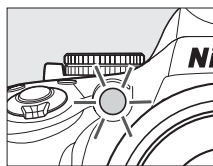


3 Frame the photograph.

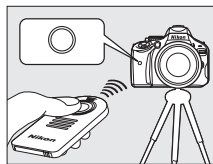
Remote control mode: Check focus by pressing the shutter-release button halfway. No photograph will be taken even if the button is pressed all the way down.

4 Take the photograph.

Self-timer mode: Press the shutter-release button halfway to focus, and then press the button the rest of the way down. The self-timer lamp will start to blink and a beep will begin to sound. Two seconds before the photo is taken, the lamp will stop blinking and the beeping will become more rapid. The shutter will be released ten seconds after the timer starts.



Remote control mode: From a distance of 5 m (16 ft.) or less, aim the transmitter on the ML-L3 at either of the infrared receivers on the camera (☞ 2, 3) and press the ML-L3 shutter-release button. *In delayed remote mode*, the self-timer lamp will light for about two seconds before the shutter is released. *In quick-response remote mode*, the self-timer lamp will flash after the shutter has been released.



Note that the timer may not start or a photograph may not be taken if the camera is unable to focus or in other situations in which the shutter can not be released. Turning the camera off cancels self-timer and remote control release modes and restores single frame, continuous, or quiet shutter-release mode.

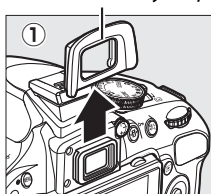
✓ Before Using the Remote Control

Before using the remote control for the first time, remove the clear plastic battery-insulator sheet.

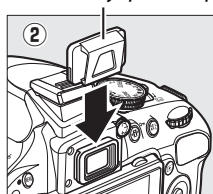
✎ Cover the Viewfinder

When taking photos without your eye to the viewfinder, remove the DK-20 rubber eyecup (①) and insert the supplied DK-5 eyepiece cap as shown (②). This prevents light entering via the viewfinder interfering with exposure. Hold the camera firmly when removing the rubber eyecup.

DK-20 rubber eyecup



DK-5 eyepiece cap



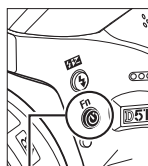
✓ Using the Built-in Flash

Before taking a photograph with the flash in **P**, **S**, **A**, **M**, or **11** modes, press the  button to raise the flash and wait for the  indicator to be displayed in the viewfinder (20). Shooting will be interrupted if the flash is raised while a remote control mode is in effect or after the self-timer has started. If the flash is required, the camera will only respond to the ML-L3 shutter-release button once the flash has charged. In auto or scene modes in which the flash pops up automatically, the flash will begin charging when a remote control mode is selected; once the flash is charged, it will automatically pop up and fire when required. Note that only one photograph will be taken when the flash fires, regardless of the number of exposures selected for Custom Setting c3 (**Self-timer**).

In flash modes that support red-eye reduction, the red-eye reduction lamp will light for about one second before the shutter is released in quick-response remote mode. In delayed remote mode, the self-timer lamp will light for two seconds, followed by the red-eye reduction lamp which light for one second before the shutter is released.

✎ The Button

Self-timer mode can also be selected by pressing the  button.



 button



Focus

This section describes the focus options available when photographs are framed in the viewfinder.

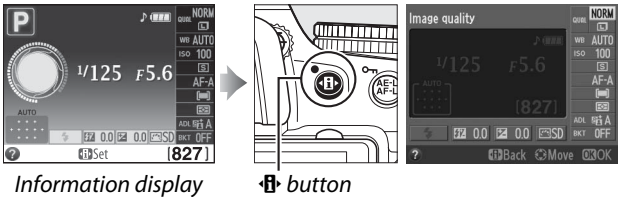
Focus Mode

Choose from the following focus modes. Note that **AF-S** and **AF-C** are available only in modes **P**, **S**, **A**, and **M**.

Option	Description
AF-A Auto-servo AF	Camera automatically selects single-servo autofocus if subject is stationary, continuous-servo autofocus if subject is moving. Shutter can only be released if camera is able to focus.
AF-S Single-servo AF	For stationary subjects. Focus locks when shutter-release button is pressed halfway. Shutter can only be released if camera is able to focus.
AF-C Continuous-servo AF	For moving subjects. Camera focuses continuously while shutter-release button is pressed halfway. If subject moves, camera will engage <i>predictive focus tracking</i> to predict final distance to subject and adjust focus as necessary. At default settings, shutter can only be released if camera is able to focus.
MF Manual focus	Focus using the lens focus ring (if the lens is equipped with an M/A-M or A-M mode switch, slide the switch to M before focusing).

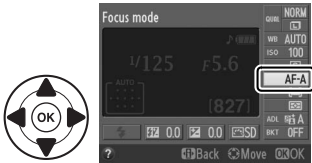
1 Place the cursor in the information display.

If shooting information is not displayed in the monitor, press the  button. Press the  button again to place the cursor in the information display.



2 Display focus-mode options.

Highlight the current focus mode in the information display and press .



3 Choose a focus mode.

Highlight a focus mode and press **OK**. To return to shooting mode, press the shutter-release button halfway.



Predictive Focus Tracking

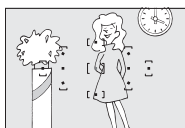
In **AF-C** mode or when continuous-servo autofocus is selected in **AF-A** mode, the camera will initiate predictive focus tracking if the subject moves toward or away from the camera while the shutter-release button is pressed halfway. This allows the camera to track focus while attempting to predict where the subject will be when the shutter is released.

Continuous-servo Autofocus

When **Focus** is selected for Custom Setting a1 (**AF-C priority selection**) and the camera is in **AF-C** mode or continuous-servo autofocus is selected in **AF-A** mode, the camera gives higher priority to focus response (has a wider focus range) than in **AF-S** mode, and the shutter may be released before the in-focus indicator is displayed.

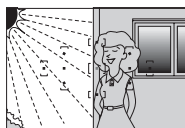
Getting Good Results with Autofocus

Autofocus does not perform well under the conditions listed below. The shutter release may be disabled if the camera is unable to focus under these conditions, or the in-focus indicator (●) may be displayed and the camera may sound a beep, allowing the shutter to be released even when the subject is not in focus. In these cases, focus manually or use focus lock to focus on another subject at the same distance and then recompose the photograph.



There is little or no contrast between the subject and the background.

Example: Subject is the same color as the background.



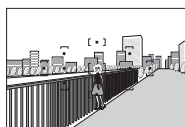
The focus point contains areas of sharply contrasting brightness.

Example: Subject is half in the shade.



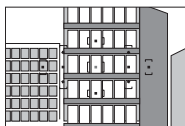
The focus point contains objects at different distances from the camera.

Example: Subject is inside a cage.



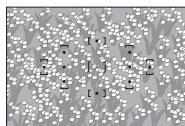
Background objects appear larger than the subject.

Example: A building is in the frame behind the subject.



The subject is dominated by regular geometric patterns.

Example: Blinds or a row of windows in a skyscraper.



The subject contains many fine details.

Example: A field of flowers or other subjects that are small or lack variation in brightness.

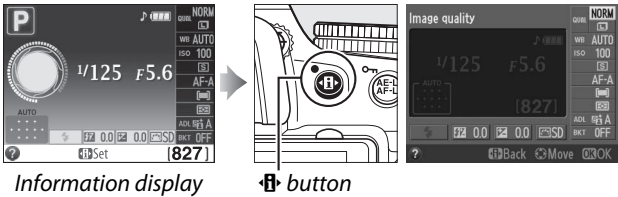
AF-Area Mode

Choose how the focus point for autofocus is selected. Note that **[*]** (**Dynamic-area AF**) and **[3D]** (**3D-tracking (11 points)**) are not available when **AF-S** is selected for focus mode.

Option	Description
[*] Single-point AF	User selects focus point using multi selector; camera focuses on subject in selected focus point only. Use with stationary subjects.
[*] Dynamic-area AF	In AF-A and AF-C focus modes , user selects focus point using multi selector, but camera will focus based on information from surrounding focus points if subject briefly leaves selected point. Use with erratically moving subjects.
[3D] 3D-tracking (11 points)	In AF-A and AF-C focus modes , user selects focus point using multi selector. If subject moves after camera has focused, camera uses 3D-tracking to select new focus point and keep focus locked on original subject while shutter-release button is pressed halfway. If subject leaves viewfinder, remove your finger from shutter-release button and recompose photograph with subject in selected focus point.
[] Auto-area AF	Camera automatically detects subject and selects focus point.

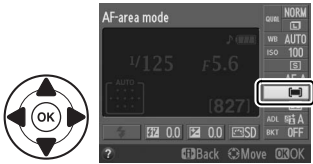
1 Place the cursor in the information display.

If shooting information is not displayed in the monitor, press the **[i]** button. Press the **[i]** button again to place the cursor in the information display.



2 Display AF-area mode options.

Highlight the current AF-area mode in the information display and press **[OK]**.



3 Choose an AF-area mode.

Highlight an AF-area mode and press **[OK]**. To return to shooting mode, press the shutter-release button halfway.

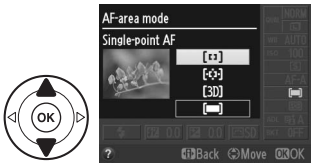


Image Quality and Size

Together, image quality and size determine how much space each photograph occupies on the memory card. Larger, higher quality images can be printed at larger sizes but also require more memory, meaning that fewer such images can be stored on the memory card.

Image Quality

Choose a file format and compression ratio (image quality).

Option	File type	Description
NEF (RAW)	NEF	Raw 14-bit data from the image sensor are saved directly to the memory card. Settings such as white balance and contrast can be adjusted on a computer after shooting.
JPEG fine	JPEG	Record JPEG images at a compression ratio of roughly 1 : 4 (fine quality).
JPEG normal		Record JPEG images at a compression ratio of roughly 1 : 8 (normal quality).
JPEG basic		Record JPEG images at a compression ratio of roughly 1 : 16 (basic quality).
NEF (RAW) + JPEG fine	NEF/ JPEG	Two images are recorded: one NEF (RAW) image and one fine-quality JPEG image.
NEF (RAW) + JPEG normal		Two images are recorded: one NEF (RAW) image and one normal-quality JPEG image.
NEF (RAW) + JPEG basic		Two images are recorded: one NEF (RAW) image and one basic-quality JPEG image.



1 Place the cursor in the information display.

If shooting information is not displayed in the monitor, press the  button. Press the  button again to place the cursor in the information display.



Information display

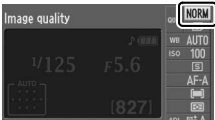


 button



2 Display image quality options.

Highlight the current image quality in the information display and press .



3 Choose a file type.

Highlight an option and press . To return to shooting mode, press the shutter-release button halfway.

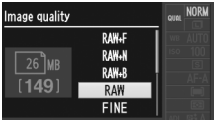


Image Size

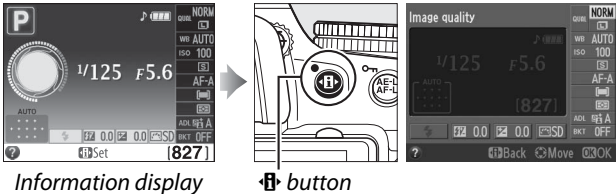
Image size is measured in pixels. Choose from the following options:

Image size	Size (pixels)	Print size (cm/in.)*
Large	4,928 × 3,264	41.7 × 27.6/16.4 × 11.4
Medium	3,696 × 2,448	31.3 × 20.7/12.3 × 8.2
Small	2,464 × 1,632	20.9 × 13.8/8.2 × 5.4

* Approximate size when printed at 300 dpi. Print size in inches equals image size in pixels divided by printer resolution in dots per inch (dpi; 1 inch=approximately 2.54 cm).

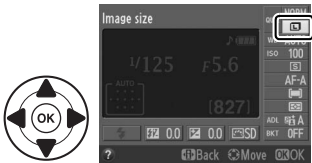
1 Place the cursor in the information display.

If shooting information is not displayed in the monitor, press the button. Press the button again to place the cursor in the information display.



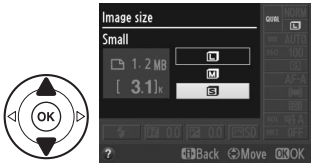
2 Display image size options.

Highlight the current image size in the information display and press .



3 Choose an image size.

Highlight an option and press . To return to shooting mode, press the shutter-release button halfway.



File Names

Photographs are stored as image files with names of the form “DSC_####.xxx,” where #### is a four-digit number between 0001 and 9999 assigned automatically in ascending order by the camera, and xxx is one of the following three letter extensions: “NEF” for NEF images, “JPG” for JPEG images, or “MOV” for movies. The NEF and JPEG files recorded at a setting of NEF (RAW)+JPEG have the same file names but different extensions.

Using the Built-in Flash

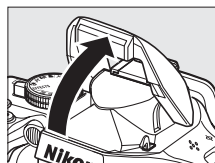
The camera supports a variety of flash modes for photographing poorly lit or backlit subjects.

■ ■ Using the Built-in Flash: , , , , , , and Modes

1 Choose a flash mode (38).

2 Take pictures.

The flash will pop up as required when the shutter-release button is pressed halfway, and fire when a photograph is taken. *If the flash does not pop up automatically, DO NOT attempt to raise it by hand. Failure to observe this precaution could damage the flash.*



■ ■ Using the Built-in Flash: P, S, A, M, and Modes

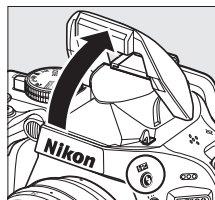
1 Raise the flash.

Press the  button to raise the flash.

2 Choose a flash mode (P, S, A, and M modes only; 38).

3 Take pictures.

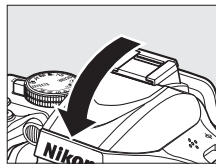
The flash will fire whenever a picture is taken.



 button

Lowering the Built-in Flash

To save power when the flash is not in use, press it gently downward until the latch clicks into place.



Flash Mode

The flash modes available vary with shooting mode:

P, A		S, M	
	Fill flash		Fill flash
	Red-eye reduction		Red-eye reduction
	Slow sync + red-eye reduction		Rear-curtain sync
	Slow sync		
	Rear curtain + slow sync		

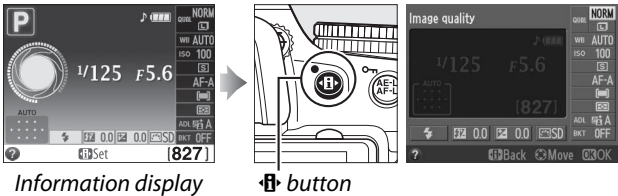
P, A		S, M	
	Auto		Auto + slow sync + red-eye reduction
	Auto + red-eye reduction		Auto + slow sync
	Off		Off

P, A		S, M	
	Auto		Auto + slow sync + red-eye reduction
	Auto + red-eye reduction		Auto + slow sync
	Off		Off

* SLOW appears in information display when setting is complete.

1 Place the cursor in the information display.

If shooting information is not displayed in the monitor, press the button. Press the button again to place the cursor in the information display.



2 Display flash mode options.

Highlight the current flash mode in the information display and press .



3 Choose a flash mode.

Highlight a mode and press . To return to shooting mode, press the shutter-release button halfway.



Flash Modes

The flash modes listed on the previous page may combine one or more of the following settings, as shown by the flash mode icon:

- **AUTO (auto flash):** When lighting is poor or subject is back lit, flash pops up automatically when shutter-release button is pressed halfway and fires as required.
- **Red-eye reduction:** Use for portraits. Red-eye reduction lamp lights before flash fires, reducing "red-eye."
- **(off):** Flash does not fire even when lighting is poor or subject is back-lit.
- **SLOW (slow sync):** Shutter speed slows automatically to capture background lighting at night or under low light. Use to include background lighting in portraits.
- **REAR (rear-curtain sync):** Flash fires just before shutter closes, creating a stream of light behind moving light sources (below at right). If this icon is not displayed, flash will fire as the shutter opens (front-curtain sync; the effect this produces with moving light sources is shown below at left).



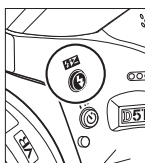
Front-curtain sync



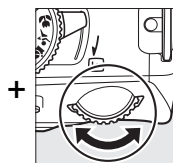
Rear-curtain sync

Choosing a Flash Mode

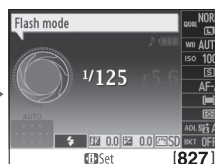
The flash mode can also be selected by pressing the  button and rotating the command dial (in P, S, A, M, and $\frac{1}{f}$ modes, raise the flash before using the  button to choose the flash mode).



 button



Command dial



Information display

The Built-in Flash

For information on the lenses that can be used with the built-in flash, see the *Reference Manual* (on CD). Remove lens hoods to prevent shadows. The flash has a minimum range of 0.6 m (2 ft.) and can not be used in the macro range of zoom lenses with a macro function.

The shutter release may be briefly disabled to protect the flash after it has been used for several consecutive shots. The flash can be used again after a short pause.

Shutter Speeds Available with the Built-in Flash

Shutter speed is restricted to the following ranges when the built-in flash is used:

Mode	Shutter speed	Mode	Shutter speed
AUTO,  ,  ,  ,  , P, A	$\frac{1}{200}$ – $\frac{1}{60}$ s	S	$\frac{1}{200}$ –30 s
 , $\frac{1}{f}$	$\frac{1}{200}$ – $\frac{1}{125}$ s	M	$\frac{1}{200}$ –30 s, Bulb
	$\frac{1}{200}$ –1 s		

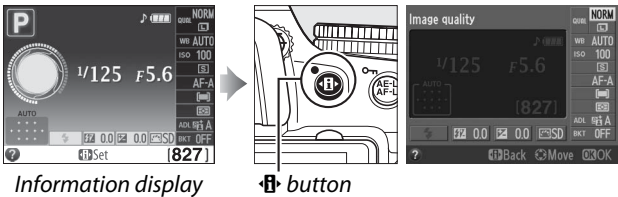
ISO Sensitivity

“ISO sensitivity” is the digital equivalent of film speed. The higher the ISO sensitivity, the less light needed to make an exposure, allowing higher shutter speeds or smaller apertures, but the more likely the image is to be affected by noise (randomly-spaced bright pixels, fog, or lines; noise is particularly likely at settings of Hi 0.3–Hi 2). Choosing **Auto** allows the camera to set ISO sensitivity automatically in response to lighting conditions.

Mode	ISO sensitivity
	AUTO
P, S, A, M	100–6400 in steps of 1/3 EV; Hi 0.3, Hi 0.7, Hi 1, Hi 2
Other shooting modes	AUTO; 100–6400 in steps of 1/3 EV; Hi 0.3, Hi 0.7, Hi 1, Hi 2

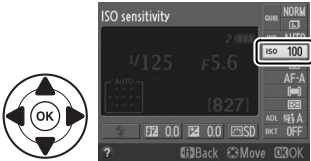
1 Place the cursor in the information display.

If shooting information is not displayed in the monitor, press the button. Press the button again to place the cursor in the information display.



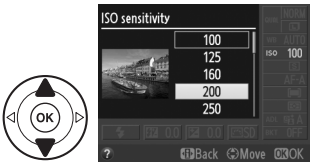
2 Display ISO sensitivity options.

Highlight the current ISO sensitivity in the information display and press .



3 Choose an ISO sensitivity.

Highlight an option and press . To return to shooting mode, press the shutter-release button halfway.



Interval Timer Photography

The camera is equipped to take photographs automatically at preset intervals.

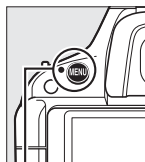
☑ Before Shooting

Before beginning interval timer photography, take a test shot at current settings and view the results in the monitor. To ensure that shooting starts at the desired time, check that the camera clock is set correctly (14).

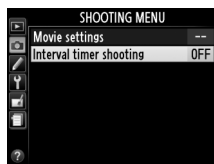
Use of a tripod is recommended. Mount the camera on a tripod before shooting begins. To ensure that shooting is not interrupted, be sure the battery is fully charged or use an optional EH-5b AC adapter and EP-5A power connector.

1 Select Interval timer shooting.

Press the **MENU** button to display the menus. Highlight **Interval timer shooting** in the shooting menu and press **►**.



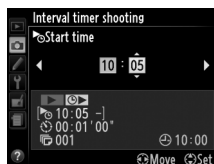
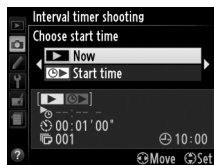
MENU button



2 Choose a starting time.

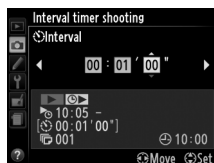
Choose from the following starting triggers.

- **To start shooting immediately**, highlight **Now** and press **►**. Shooting begins about 3 s after settings are completed; proceed to Step 3.
- **To choose a starting time**, highlight **Start time** and press **►** to display the start time options shown at right. Press **◀** or **▶** to highlight hours or minutes and press **▲** or **▼** to change. Press **►** to continue.



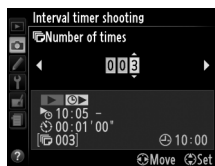
3 Choose the interval.

Press **◀** or **▶** to highlight hours, minutes, or seconds and press **▲** or **▼** to choose an interval longer than the slowest anticipated shutter speed. Press **►** to continue.



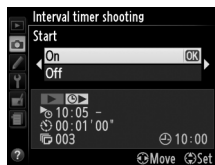
4 Choose the number of intervals.

Press ◀ or ▶ to highlight number of intervals (i.e., the number of times the camera shoots); press ▲ or ▼ to change. Press ▶ to continue.



5 Start shooting.

Highlight **On** and press OK (to return to the shooting menu without starting the interval timer, highlight **Off** and press OK). The first series of shots will be taken at the specified starting time, or after about 3 s if **Now** was selected for **Choose start time** in Step 2. Shooting will continue at the selected interval until all shots have been taken. Note that because shutter speed and the time needed to record the image to the memory card may vary from shot to shot, the interval between a shot being recorded and the start of the next shot may vary.



Cover the Viewfinder

To prevent light entering via the viewfinder interfering with exposure, remove the rubber eyecup and cover the viewfinder with the supplied DK-5 eyepiece cap (□ 31).

Other Settings

Settings can not be adjusted during interval timer photography. Regardless of the release mode selected, the camera takes one photograph at each interval; in mode , camera noise will be reduced. Bracketing, multiple exposure, and high dynamic range can not be used.

Interrupting Interval Timer Photography

To interrupt interval timer shooting, turn the camera off or rotate the mode dial to a new setting. Returning the monitor to the storage position does not interrupt interval timer shooting.

P, S, A, and M Modes

P, S, A, and M modes offer different degrees of control over shutter speed and aperture. See the *Reference Manual* (on CD) for more information on each mode.



Mode		Description
P	Programmed auto	Camera sets shutter speed and aperture for optimal exposure (user can rotate command dial to choose from different combinations of shutter speed and aperture that will produce optimal exposure). Recommended for snapshots and in other situations in which there is little time to adjust camera settings.
S	Shutter-priority auto	User rotates command dial to choose shutter speed; camera selects aperture for best results. Use to freeze or blur motion.
A	Aperture-priority auto	User rotates command dial to choose aperture; camera selects shutter speed for best results. Use to blur background or bring both foreground and background into focus.
M	Manual	User rotates command dial to choose shutter speed, presses button and rotates command dial to choose aperture. Set shutter speed to "Bulb" or "Time" for long time-exposures.

Shutter Speed and Aperture

The same exposure can be achieved with different combinations of shutter speed and aperture. Fast shutter speeds and large apertures freeze moving objects and soften background details, while slow shutter speeds and small apertures blur moving objects and bring out background details.



			
Fast shutter speed (1/1,600 s)	Slow shutter speed (1 s)	Large aperture (f/5.6) (Remember, the higher the f-number, the smaller the aperture.)	Small aperture (f/22)

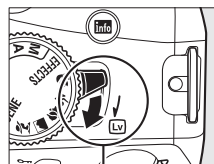
Live View/Movies

Framing Photographs in the Monitor

Follow the steps below to take photographs in live view.

1 Rotate the live view switch.

The mirror will be raised and the view through the lens will be displayed in the camera monitor. The subject will no longer be visible in the viewfinder.



Live view switch

2 Position the focus point.

Position the focus point over your subject as described on page 47.



Focus point

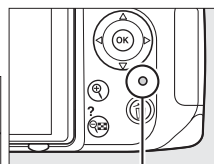
3 Focus.

Press the shutter-release button halfway. The focus point will blink green while the camera focuses. If the camera is able to focus, the focus point will be displayed in green; if the camera is unable to focus, the focus point will blink red (note that pictures can be taken even when the focus point blinks red; check focus in the monitor before shooting). Except in  and  modes, exposure can be locked by pressing the **AE-L/AF-L** button.



4 Take the picture.

Press the shutter-release button the rest of the way down. The monitor turns off and the memory card access lamp lights during recording. *Do not remove the battery or memory card or unplug the optional AC adapter until recording is complete.* When shooting is complete, the photograph will be displayed in the monitor for a few seconds or until the shutter-release button is pressed halfway. The camera will then return to live view mode. To exit, rotate the live view switch.



Memory card access lamp

Focusing in Live View

Follow the steps below to choose focus and AF-area modes and position the focus point.

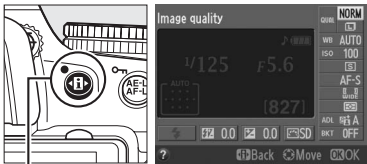
■ ■ Choosing a Focus Mode

The following focus modes are available in live view:

Option	Description
AF-S Single-servo AF	For stationary subjects. Focus locks when shutter-release button is pressed halfway.
AF-F Full-time-servo AF	For moving subjects. Camera focuses continuously during live view and movie recording.
MF Manual focus	Focus manually. For information on manual focus, see the <i>Reference Manual</i> (on CD).

1 Place the cursor in the information display.

Press the  button to place the cursor in the information display.



 button

2 Display focus options.

Highlight the current focus mode in the information display and press .



3 Choose a focus option.

Highlight an option and press . To return to live view, press .



■ ■ **Choosing an AF-Area Mode**

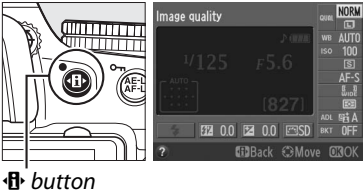
In modes other than and , the following AF-area modes can be selected in live view:

Option	Description
Face-priority AF	The camera automatically detects and focuses on portrait subjects facing the camera. Use for portraits.
Wide-area AF	Use for hand-held shots of landscapes and other non-portrait subjects. Use the multi selector to select the focus point.
Normal-area AF	Use for pin-point focus on a selected spot in the frame. A tripod is recommended.
Subject-tracking AF	Track a selected subject as it moves through the frame.

- 1

Place the cursor in the information display.

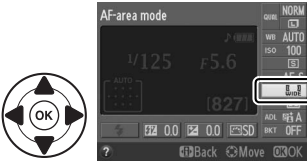
Press the button to place the cursor in the information display.



- 2

Display AF-area modes.

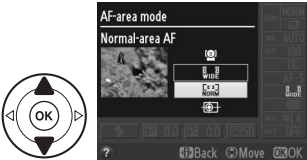
Highlight the current AF-area mode in the information display and press .



- 3

Choose an AF-area mode.

Highlight an option and press . To return to live view, press .



■ Choosing the Focus Point

The method for selecting the focus point for autofocus varies with the option selected for AF-area mode (46).

 **(face-priority AF):** A double yellow border will be displayed when the camera detects a portrait subject facing the camera (if multiple faces, up to a maximum of 35, are detected, the camera will focus on the closest subject; to choose a different subject, use the multi selector).

 **(wide- and normal-area AF):** Use the multi selector to move the focus point anywhere in the frame, or press  to position the focus point in the center of the frame.

 **(subject-tracking AF):** Position the focus point over your subject and press . The focus point will track the selected subject as it moves through the frame. To end focus tracking, press  a second time.



Focus point



Focus point

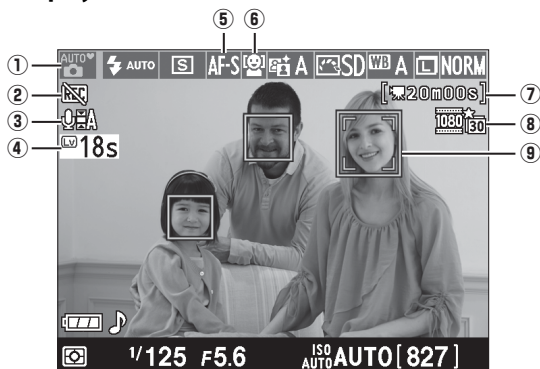


Focus point

✓ Subject Tracking

The camera may be unable to track subjects if they move quickly, leave the frame or are obscured by other objects, change visibly in size, color, or brightness, or are too small, too large, too bright, too dark, or similar in color or brightness to the background.

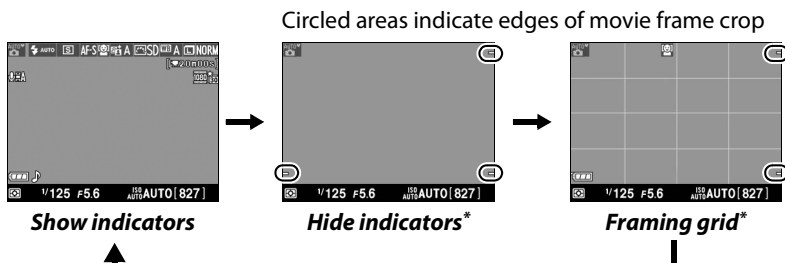
The Live View Display



Item	Description	
① Shooting mode	The mode currently selected with the mode dial. Select  or  for automatic scene selection (autofocus only;  49).	4
② “No movie” icon	Indicates that movies can not be recorded.	51
③ Audio recording indicator	Indicates whether sound is being recorded with movies.	51
④ Time remaining	The amount of time remaining before live view ends automatically. Displayed if shooting will end in 30 s or less.	50, 52
⑤ Focus mode	The current focus mode.	45
⑥ AF-area mode	The current AF-area mode.	46
⑦ Time remaining (movie mode)	The recording time remaining in movie mode.	51
⑧ Movie frame size	The frame size of movies recorded in movie mode.	53
⑨ Focus point	The current focus point. The display varies with the option selected for AF-area mode.	47

Live View Display Options

Press the  button to cycle through display options as shown below.



* A crop showing the area recorded is displayed during movie recording when frame sizes other than 640 × 424 are selected for **Movie settings > Movie quality** in the shooting menu ( 53; the area outside the movie frame crop is grayed out during recording).

Automatic Scene Selection (Scene Auto Selector)

If live view is selected in  or  mode, the camera will automatically analyze the subject and select the appropriate shooting mode when autofocus is enabled. The selected mode is shown in the monitor.



	Portrait	Human portrait subjects
	Landscape	Landscapes and cityscapes
	Close up	Subjects close to the camera
	Night portrait	Portrait subjects framed against a dark background
	Auto	Subjects suited to  or  mode or that do not
	Auto (flash off)	fall into the categories listed above

Flicker

You may notice flicker or banding in the monitor during live view or when shooting movies under certain types of lighting, such as fluorescent or mercury-vapor lamps. Flicker and banding can be reduced by choosing a **Flicker reduction** option that matches the frequency of the local AC power supply (□ 11).

Exposure

Depending on the scene, exposure may differ from that which would be obtained when live view is not used. Metering in live view is adjusted to suit the live view display, producing photographs with exposure close to what is seen in the monitor. In **P**, **S**, **A**, and  modes, exposure can be adjusted by ± 5 EV in increments of $\frac{1}{3}$ EV. Note that the effects of values over +3 EV or under -3 EV can not be previewed in the monitor.

Using Autofocus in Live View

Autofocus is slower in live view and the monitor may brighten or darken while the camera focuses. The camera may be unable to focus in the following situations:

- The subject contains lines parallel to the long edge of the frame
- The subject lacks contrast
- The subject in the focus point contains areas of sharply contrasting brightness, or the subject is lit by spot lighting or by a neon sign or other light source that changes in brightness
- Flicker or banding appears under fluorescent, mercury-vapor, sodium-vapor, or similar lighting
- A cross (star) filter or other special filter is used
- The subject appears smaller than the focus point
- The subject is dominated by regular geometric patterns (e.g., blinds or a row of windows in a skyscraper)
- The subject is moving

Note that the focus point may sometimes be displayed in green when the camera is unable to focus.



Shooting in Live View Mode

To prevent light entering via the viewfinder from interfering with exposure, remove the rubber eyecup and cover the viewfinder with the supplied DK-5 eyepiece cap before shooting (☞ 31).

Although they will not appear in the final picture, flicker, banding, or distortion may be visible in the monitor under fluorescent, mercury vapor, or sodium lamps or if the camera is panned horizontally or an object moves at high speed through frame. Bright light sources may leave after-images when the camera is panned. Bright spots may also appear. When shooting in live view mode, avoid pointing the camera at the sun or other strong light sources. Failure to observe this precaution could result in damage to the camera's internal circuitry.

Live view ends automatically if the lens is removed or when the monitor is closed (closing the monitor does not end live view on televisions or other external displays).

Live view may end automatically to prevent damage to the camera's internal circuits; exit live view when the camera is not in use. Note that the temperature of the camera's internal circuits may rise and noise (bright spots, randomly-spaced bright pixels, or fog) may be displayed in the following instances (the camera may also become noticeably warm, but this does not indicate a malfunction):

- The ambient temperature is high
- The camera has been used for extended periods in live view or to record movies
- The camera has been used in continuous release mode for extended periods

If a warning is displayed when you attempt to start live view, wait for the internal circuits to cool and then try again.

The Count Down Display

A count down will be displayed 30 s before live view ends automatically (☞ 48; the timer turns red 5 s before the auto off timer expires or if live view is about to end to protect the internal circuits). Depending on shooting conditions, the timer may appear immediately when live view is selected. Note that although the count down does not appear in the information display or during playback, live view will still end automatically when the timer expires.

Recording Movies

Movies can be recorded in live view.

1 Rotate the live view switch.

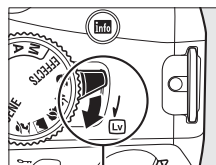
The mirror is raised and the view through the lens is displayed in the monitor instead of the viewfinder.

✓ The Icon

A  icon (□ 48) indicates that movies can not be recorded.

Before Recording

Set aperture before recording in mode **A** or **M**.



Live view switch

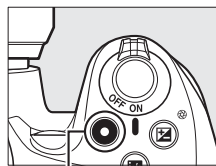
2 Focus.

Frame the opening shot and focus as described in Steps 2 and 3 of “Framing Photographs in the Monitor” (□ 44; see also “Focusing in Live View” on pages □ 45–47). Note that the number of subjects that can be detected in face-priority AF drops during movie recording.



3 Start recording.

Press the movie-record button to start recording (the camera can record both video and sound; do not cover the microphone on the front of the camera during recording). A recording indicator and the time available are displayed in the monitor. Except in  and  modes, exposure can be locked by pressing the **AE-L/AF-L** button or (in modes **P**, **S**, **A**, and **M**) altered by up to ± 3 EV in steps of $\frac{1}{3}$ EV using exposure compensation. Note that the built-in microphone may record lens noise during autofocus and vibration reduction.



Movie-record button

Recording indicator



Time remaining

4 End recording.

Press the movie-record button again to end recording. Recording will end automatically when the maximum length is reached, the memory card is full, another mode is selected, the lens is removed, or the monitor is closed (closing the monitor does not end recording on televisions or other external displays).

Taking Photographs During Movie Recording

To end movie recording, take a photograph, and exit to live view, press the shutter-release button all the way down and hold it in this position until the shutter is released.

Maximum Length

Each movie file can be up to 4 GB in size and 20 minutes long; note that depending on memory card write speed, shooting may end before this length is reached (📖 67). Movies recorded in miniature effect mode are up to three minutes long when played back.

Recording Movies

Flicker, banding, or distortion may be visible in the monitor and in the final movie under fluorescent, mercury vapor, or sodium lamps or if the camera is panned horizontally or an object moves at high speed through frame (flicker and banding can be reduced by choosing a **Flicker reduction** option that matches the frequency of the local AC power supply; 📖 11). Bright light sources may leave after-images when the camera is panned. Jagged edges, color fringing, moiré, and bright spots may also appear. When recording movies, avoid pointing the camera at the sun or other strong light sources. Failure to observe this precaution could result in damage to the camera's internal circuitry.

Live view may end automatically to prevent damage to the camera's internal circuits; exit live view when the camera is not in use. Note that the temperature of the camera's internal circuits may rise and noise (bright spots, randomly-spaced bright pixels, or fog) may be displayed in the following instances (the camera may also become noticeably warm, but this does not indicate a malfunction):

- The ambient temperature is high
- The camera has been used for extended periods in live view or to record movies
- The camera has been used in continuous release mode for extended periods

If a warning is displayed when you attempt to start live view or movie recording, wait for the internal circuits to cool and then try again.

Matrix metering is used regardless of the metering method selected. Shutter speed and ISO sensitivity are adjusted automatically.

The Count-Down Display

A count down will be displayed 30 s before movie recording ends automatically (📖 48). Depending on shooting conditions, the timer may appear immediately when movie recording begins. Note that regardless of the amount of recording time available, live view will still end automatically when the timer expires. Wait for the internal circuits to cool before resuming movie recording.

■ Movie Settings

Choose movie quality and sound options.

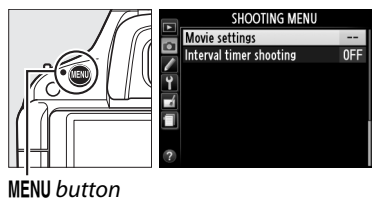
- **Movie quality:** Choose from the following options. The frame rate depends on the option currently selected for **Video mode** in the setup menu (□ 11):

	Movie quality		Quality	Bit rate (high/normal quality)	Maximum length
	Frame size (pixels)	Frame rate			
 1080 60	1920 × 1080	30 fps ^{1, 2}	★ high/normal	18 Mbps/10 Mbps	20 min. ⁴
 1080 25		25 fps ^{2, 3}			
 1080 24		24 fps			
 720 60	1280 × 720	30 fps ¹		10 Mbps/6 Mbps	
 720 25		25 fps ³		8 Mbps/5 Mbps	
 720 24		24 fps			
 424 60	640 × 424	30 fps ¹		4 Mbps/2 Mbps	
 424 25		25 fps ³			

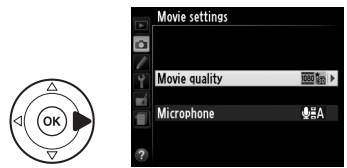
- 1 Available when NTSC is selected for **Video mode**.
- 2 Not output to televisions or other external displays during recording.
- 3 Available when PAL is selected for **Video mode**.
- 4 Movies recorded in miniature effect mode are up to 3 minutes long when played back.

- **Microphone:** Selecting **Microphone off** turns sound recording off; selecting any other option turns recording on and sets the built-in microphone or optional ME-1 stereo microphone (□ 67) to the selected sensitivity.

- 1 **Select Movie settings.**
Press the **MENU** button to display the menus.
Highlight **Movie settings** in the shooting menu and press ►.

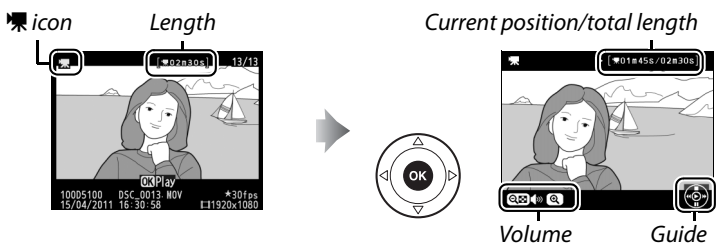


- 2 **Choose movie options.**
Highlight the desired item and press ►, then highlight an option and press OK.



Viewing Movies

Movies are indicated by a  icon in full-frame playback ( 26). Press  to start playback.



The following operations can be performed:

To	Use	Description
Pause		Pause playback.
Play		Resume playback when movie is paused or during rewind/advance.
Advance/ rewind		Speed doubles with each press, from 2x to 4x to 8x to 16x; keep pressed to skip to beginning or end of movie (first frame is indicated by  icon in top right corner of monitor, last frame by ). If playback is paused, movie rewinds or advances one frame at a time; keep pressed for continuous rewind or advance.
Adjust volume		Press  to increase volume,  to decrease.
Edit movie		To edit movie, press AE-L/AF-L while movie is paused.
Return to full-frame playback		Press  or  to exit to full-frame playback.
Exit to shooting mode		Press shutter-release button halfway. Monitor will turn off; photographs can be taken immediately.
Display menus	MENU	See page 8 for more information.

The Icon

 is displayed in full-frame and movie playback if the movie was recorded without sound.





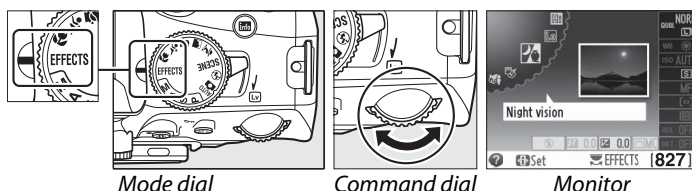
Special Effects

Special effects can be used when recording images.



Shooting with Special Effects

The following effects can be selected by rotating the mode dial to **EFFECTS** and rotating the command dial until the desired option appears in the monitor.



NEF (RAW)

If NEF (RAW)+JPEG is selected for image quality in , , , or mode, only the JPEG images will be recorded (35). If NEF (RAW) is selected, fine-quality JPEG photographs will be recorded instead of NEF (RAW) images.

The Icon

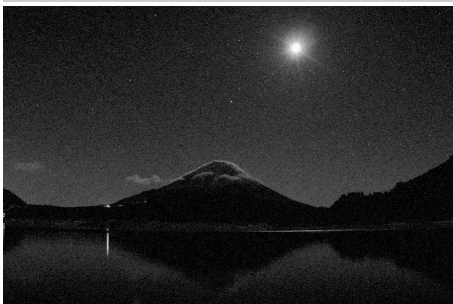
If a icon is displayed in or mode, no pictures will be taken while the shutter-release button is pressed in continuous release mode.

The Retouch Menu

The **Color sketch**, **Miniature effect**, and **Selective color** options in the retouch menu (11) can be used to apply these effects to existing pictures.



Night Vision



Use under conditions of darkness to record monochrome images at high ISO sensitivities (with some noise in the form of randomly-spaced bright pixels, fog, or lines). Autofocus is available in live view only; manual focus can be used if the camera is unable to focus. The built-in flash and AF-assist illuminator turn off; use of a tripod is recommended to reduce blur.

Color Sketch



The camera detects and colors outlines for a color sketch effect. Movies shot in this mode play back like a slide show made up of a series of stills. The effect can be chosen during live view ([book 44](#)); note that the display refresh rate drops when live view is in effect and that the frame rate drops in continuous release mode. Autofocus is not available during movie recording.

Miniature Effect



Distant subjects appear as miniatures. Miniature effect movies play back at high speed, compressing 30 to 45 minutes of footage shot at 1920 × 1080/30 fps into a movie that plays back in about 3 minutes. The effect can be chosen during live view ([book 58](#)); note that the display refresh rate drops when live view is in effect and that the frame rate drops in continuous release mode. Sound is not recorded with movies; autofocus is not available during movie recording. The built-in flash and AF-assist illuminator turn off; use of a tripod is recommended when lighting is poor.

Selective Color



All colors other than the selected colors are recorded in black and white. The effect can be chosen during live view (□ 44). The built-in flash turns off; use of a tripod is recommended when lighting is poor.

Silhouette



Silhouette subjects against bright backgrounds. The built-in flash turns off; use of a tripod is recommended when lighting is poor.

High Key



Use with bright scenes to create bright images that seem filled with light. The built-in flash turns off.

Low Key



Use with dark scenes to create dark, somber images with prominent highlights. The built-in flash turns off; use of a tripod is recommended when lighting is poor.

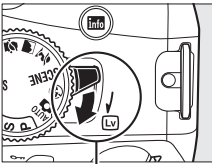


Options Available in Live View

Color Sketch

1 Select live view.

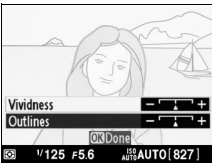
Rotate the live view switch to raise the mirror and display the view through the lens in the monitor.



Live view switch

2 Adjust options.

Press **OK** to display the options shown at right (note that the options temporarily clear from the display during autofocus). Press **▲** or **▼** to highlight **Vividness** or **Outlines** and press **◀** or **▶** to change. Vividness can be increased to make colors more saturated, or decreased for a washed-out, monochromatic effect, while outlines can be made thicker or thinner. Increasing the thickness of the lines also makes colors more saturated. Press **OK** to exit when settings are complete. To exit live view, rotate the live view switch. The selected settings will continue in effect and will apply to photographs taken using the viewfinder.



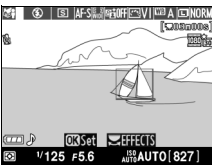
Miniature Effect

1 Select live view.

Rotate the live view switch to raise the mirror and display the view through the lens in the monitor.

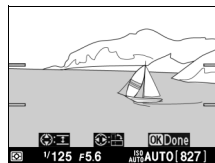
2 Position the focus point.

Use the multi selector to position the focus point in the area that will be in focus and then press the shutter-release button halfway to focus (note that the options temporarily clear from the display during autofocus). To temporarily clear miniature effect options from the display and enlarge the view in the monitor for precise focus, press **Q**. Press **Q** to restore the miniature effect display.



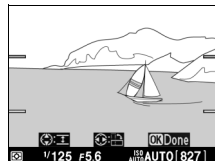
3 Display options.

Press **OK** to display miniature effect options.



4 Adjust options.

Press **◀** or **▶** to choose the orientation of the area that will be in focus and press **▲** or **▼** to adjust its width.



5 Return to the live view display.

Press **OK** to return to live view. To exit live view, rotate the live view switch. The selected settings will continue in effect and will apply to photographs taken using the viewfinder.

Selective Color

1 Select live view.

Rotate the live view switch to raise the mirror and display the view through the lens in the monitor.

2 Display options.

Press **OK** to display selective color options.



3 Select a color.

Frame an object in the white square in the center of the display and press **▲** to choose the color of the object as one that will remain in the final image (the camera may have difficulty detecting unsaturated colors; choose a saturated color). To zoom in on the center of the display for more precise color selection, press **⌕**. Press **⌕** to zoom out.



Selected color

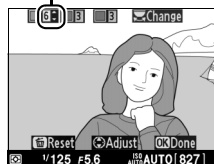


4 Choose the color range.

Press ▲ or ▼ to increase or decrease the range of similar hues that will be included in the final image. Choose from values between 1 and 7; note that higher values may include hues from other colors.



Color range



5 Select additional colors.

To select additional colors, rotate the command dial to highlight another of the three color boxes at the top of the display and repeat Steps 3 and 4 to select another color. Repeat for a third color if desired. To deselect the highlighted color, press , or press and hold  to remove all colors.



6 Return to the live view display.

Press  to return to live view. During shooting, only objects of the selected hues will be recorded in color; all others will be recorded in black-and-white. To exit live view, rotate the live view switch. The selected settings will continue in effect and will apply to photographs taken using the viewfinder.

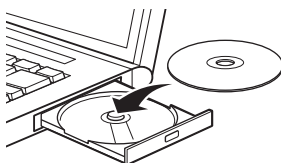
ViewNX 2

Installing ViewNX 2

Install the supplied software to display and edit photographs and movies that have been copied to your computer. Before installing ViewNX 2, confirm that your computer meets the system requirements on page 62.



1 Start the computer and insert the installer CD.



Windows

Mac OS



Double-click icon on desktop



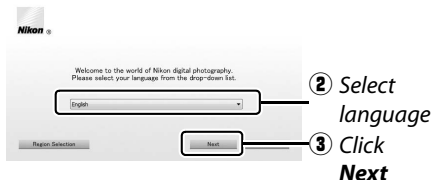
Double-click **Welcome** icon



2 Select a language.

If the desired language is not available, click **Region Selection** to choose a different region and then choose the desired language (the **Region Selection** button is not available in the European release).

① Select region (if required)



3 Start the installer.

Click **Install** and follow the on-screen instructions.

**Installation Guide**

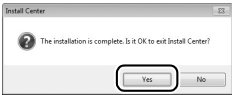
For help installing ViewNX 2, click Installation Guide in Step 3.



*Click **Install***

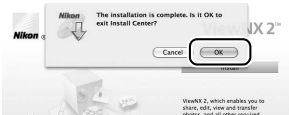
4 Exit the installer.

Windows



*Click **Yes***

Mac OS



*Click **OK***

The following software is installed:

- ViewNX 2
- Apple QuickTime (Windows only)

5 Remove the installer CD from the CD-ROM drive.

System Requirements

	Windows	Mac OS
CPU	• Photos/JPEG movies: Intel Celeron, Pentium 4, or Core series, 1.6 GHz or better • H.264 movies (playback): 3.0 GHz or better Pentium D • H.264 movies (editing): 2.6 GHz or better Core 2 Duo	• Photos/JPEG movies: PowerPC G4 (1 GHz or better), G5, Intel Core, or Xeon series • H.264 movies (playback): PowerPC G5 Dual or Core Duo, 2 GHz or better • H.264 movies (editing): 2.6 GHz or better Core 2 Duo
OS	Pre-installed versions of Windows 7 Home Basic/ Home Premium/Professional/Enterprise/Ultimate (Service Pack 1), Windows Vista Home Basic/ Home Premium/Business/Enterprise/Ultimate (Service Pack 2), or Windows XP Home Edition/ Professional (Service Pack 3). All installed programs run as 32-bit applications in 64-bit editions of Windows 7 and Windows Vista.	Mac OS X version 10.4.11, 10.5.8, or 10.6.7
RAM	• Windows 7/Windows Vista: 1 GB or more (2 GB or more recommended) • Windows XP: 512 MB or more (2 GB or more recommended)	512 MB or more (2 GB or more recommended)
Hard-disk space	A minimum of 500 MB available on the startup disk (1 GB or more recommended)	
Monitor	Resolution: 1024×768 pixels (XGA) or more (1280×1024 pixels (SXGA) or more recommended) Color: 24-bit color (True Color) or more	Resolution: 1024×768 pixels (XGA) or more (1280×1024 pixels (SXGA) or more recommended) Color: 24-bit color (millions of colors) or more

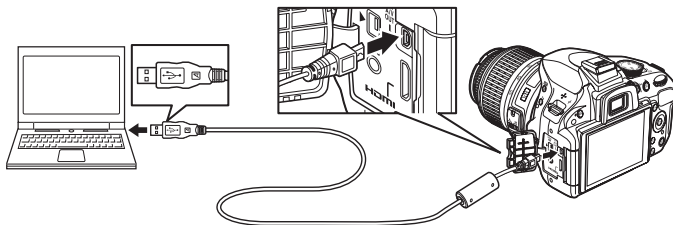
Using ViewNX 2

Step 1—Copy Pictures to the Computer

1 Choose how pictures will be copied to the computer.

Choose one of the following methods:

- **Direct USB connection:** Turn the camera off and ensure that the memory card is inserted in the camera. Connect the camera to the computer using the supplied UC-E6 USB cable and then turn the camera on.



- **SD card slot:** If your computer is equipped with an SD card slot, the card can be inserted directly in the slot.
- **SD card reader:** Connect a card reader (available separately from third-party suppliers) to the computer and insert the memory card.

If a message is displayed prompting you to choose a program, select Nikon Transfer 2.

Windows 7

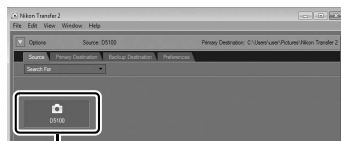
If the dialog shown at right is displayed, follow the steps below to select Nikon Transfer 2.

- 1 Select Nikon Transfer 2 for **Import pictures and videos**. Under **Import pictures and videos**, click **Change program**. A program selection dialog will be displayed; select **Import File using Nikon Transfer 2** and click **OK**.
- 2 Double-click **Import File**.



2 Confirm that the correct source is selected.

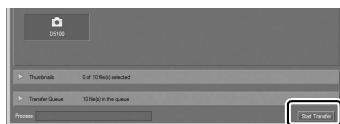
Confirm that the camera or removable disk appears as a device button in the “Source” panel of the Nikon Transfer 2 “Options” area.



Device button

3 Click **Start Transfer**.

At default settings, all the pictures on the memory card will be copied to the computer.



Click **Start Transfer**

4 Terminate the connection.

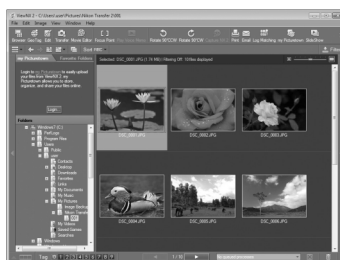
If the camera is connected to the computer, turn the camera off and disconnect the USB cable. If you are using a card reader or card slot, choose the appropriate option in the computer operating system to eject the removable disk corresponding to the memory card and then remove the card from the card reader or card slot.

Step 2—View Pictures

Pictures are displayed in ViewNX 2 when transfer is complete.

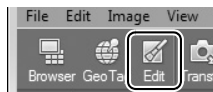
Starting ViewNX 2 Manually

- Windows: Double-click the ViewNX 2 shortcut on the desktop.
- Mac OS: Click the ViewNX 2 icon in the Dock.



■ ■ Retouching Photographs

To crop pictures and perform such tasks as adjusting sharpness and tone levels, click the **Edit** button in the ViewNX 2 toolbar.



■ ■ Editing Movies

To perform such tasks as trimming unwanted footage from movies shot with the camera, click the **Movie Editor** button in the ViewNX 2 toolbar.



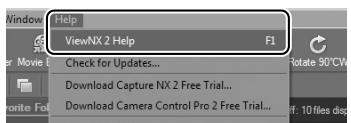
■ ■ Printing Pictures

Click the **Print** button in the ViewNX 2 toolbar. A dialog will be displayed, allowing you to print pictures on a printer connected to the computer.



For More Information

Consult online help for more information on using ViewNX 2.





Technical Notes

Compatible CPU Lenses

This camera supports autofocus with AF-S and AF-I CPU lenses only. AF-S lenses have names beginning with **AF-S**, AF-I lenses names beginning with **AF-I**. Autofocus is not supported with other autofocus (AF) lenses. The following table lists the features available with compatible lenses in viewfinder photography:

Lens/accessory	Camera setting		Focus			Mode		Metering		
	AF	MF (with electronic rangefinder)	MF	M	Other modes	3D	Color	3	Color	3
AF-S, AF-I NIKKOR ¹	✓	✓	✓	✓	✓	✓	—	✓ ²	—	✓ ²
Other type G or D AF NIKKOR ¹	—	✓	✓	✓	✓	✓	—	✓ ²	—	✓ ²
PC-E NIKKOR series	—	✓ ³	✓	✓ ³	✓ ³	✓ ³	—	✓ ^{2,3}	—	✓ ^{2,3}
PC Micro 85mm f/2.8D ⁴	—	✓ ³	✓	✓	—	✓	—	✓ ^{2,3}	—	✓ ^{2,3}
AF-S/AF-I teleconverter ⁵	✓ ⁶	✓ ⁶	✓	✓	✓	✓	—	✓ ²	—	✓ ²
Other AF NIKKOR (except lenses for F3AF)	—	✓ ⁷	✓	✓	✓	—	✓	✓ ²	—	✓ ²
AI-P NIKKOR	—	✓ ⁸	✓	✓	✓	—	✓	✓ ²	—	✓ ²

1 Use AF-S or AF-I lenses to get the most from your camera. Vibration Reduction (VR) supported with VR lenses.

2 Spot metering meters selected focus point.

3 Can not be used with shifting or tilting.

4 The camera's exposure metering and flash control systems may not function as expected when the lens is shifted and/or tilted or an aperture other than the maximum aperture is used.

5 AF-S or AF-I lens required.

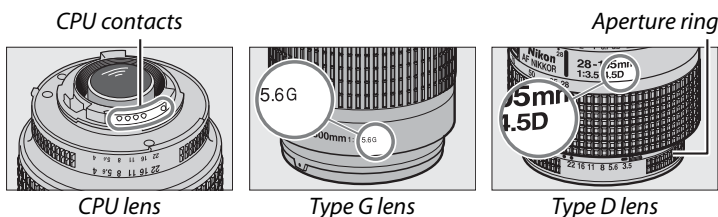
6 With maximum effective aperture of f/5.6 or faster.

7 When AF 80–200mm f/2.8, AF 35–70mm f/2.8, AF 28–85mm f/3.5–4.5 (New), or AF 28–85mm f/3.5–4.5 lenses are zoomed all the way in at the minimum focus distance, the in-focus indicator may be displayed when the image on the matte screen in the viewfinder is not in focus. Focus manually until image in viewfinder is in focus.

8 With maximum aperture of f/5.6 or faster.

Identifying CPU and Type G and D Lenses

CPU lenses can be identified by the presence of CPU contacts, type G and D lenses by a letter on the lens barrel. Type G lenses are not equipped with a lens aperture ring.



IX NIKKOR Lenses

IX NIKKOR lenses can not be used.

Lens f-number

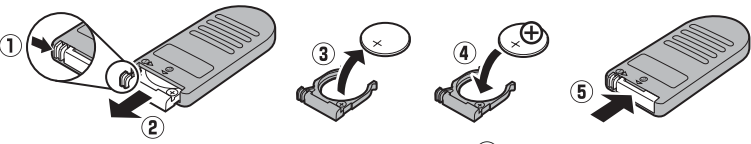
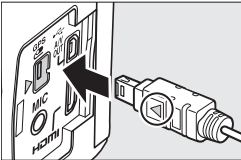
The f-number given in lens names is the maximum aperture of the lens.

Other Accessories

At the time of writing, the following accessories were available for the D5100.

Power sources	• Rechargeable Li-ion Battery EN-EL14 (☐ 12): Additional EN-EL14 batteries are available from local retailers and Nikon-authorized service representatives. • Battery Charger MH-24 (☐ 12): Recharge EN-EL14 batteries. • Power Connector EP-5A, AC Adapter EH-5b: These accessories can be used to power the camera for extended periods (EH-5a and EH-5 AC adapters can also be used). A power connector EP-5A is required to connect the camera to the EH-5b, EH-5a, or EH-5.
Filters	• Filters intended for special-effects photography may interfere with autofocus or the electronic rangefinder. • The D5100 can not be used with linear polarizing filters. Use C-PL or C-PL II circular polarizing filters instead. • NC filters are recommended for protecting the lens. • To prevent ghosting, use of a filter is not recommended when the subject is framed against a bright light, or when a bright light source is in the frame. • Center-weighted metering is recommended with filters with exposure factors (filter factors) over $1 \times$ (Y44, Y48, Y52, O56, R60, X0, X1, C-PL, ND2S, ND4, ND4S, ND8, ND8S, ND400, A2, A12, B2, B8, B12). See the filter manual for details.
Viewfinder eyepiece accessories	• DK-20C Eyepiece Correction Lenses: Lenses are available with diopters of -5, -4, -3, -2, 0, $+0.5$, $+1$, $+2$, and $+3 \text{ m}^{-1}$ when the camera diopter adjustment control is in the neutral position (-1 m^{-1}). Use eyepiece correction lenses only if the desired focus can not be achieved with the built in diopter adjustment control (-1.7 to $+0.7 \text{ m}^{-1}$). Test eyepiece correction lenses before purchase to ensure that the desired focus can be achieved. The rubber eyecup can not be used with eyepiece correction lenses. • Magnifier DG-2: The DG-2 magnifies the scene displayed in the center of the viewfinder for greater precision during focusing. Eyepiece adapter required (available separately). • Eyepiece Adapter DK-22: The DK-22 is used when attaching the DG-2 magnifier. • Right-Angle Viewing Attachment DR-6: The DR-6 attaches at a right angle to the viewfinder eyepiece, allowing the image in the viewfinder to be viewed at right angles to the lens (for example, from directly above when the camera is horizontal).
Software	• Capture NX 2: A complete photo editing package offering such features as white balance adjustment and color control points. • Camera Control Pro 2: Control the camera remotely from a computer and save photographs directly to the computer hard disk. Note: Use the latest versions of Nikon software. Most Nikon software offers an auto update feature when the computer is connected to the Internet. See the websites listed on page vi for the latest information on supported operating systems.
Body cap	BF-1B and BF-1A Body Caps: The body cap keeps the mirror, viewfinder screen, and low-pass filter free of dust when a lens is not in place.



Remote controls	ML-L3 wireless remote control (30): The ML-L3 uses a 3 V CR2025 battery.  Pressing the battery-chamber latch to the right (①), insert a fingernail into the gap and open the battery chamber (②). Ensure that the battery is inserted in the correct orientation (④).
Microphones	ME-1 stereo microphone: Record stereo sound while reducing the noise caused by lens vibration being recorded during autofocus.
Accessory terminal accessories	The D5100 is equipped with an accessory terminal for MC-DC2 remote cords and GP-1 GPS units, which connect with the ◀ mark on the connector aligned with the ▶ next to the accessory terminal (close the connector cover when the terminal is not in use). 

Approved Memory Cards

The following SD memory cards have been tested and approved for use in the D5100. Cards with class 6 or faster write speeds are recommended for movie recording. Recording may end unexpectedly when cards with slower write speeds are used.

	SD memory cards	SDHC memory cards ²	SDXC memory cards ³
SanDisk	1 GB, 2 GB ¹	4 GB, 8 GB, 16 GB, 32 GB	64 GB
Toshiba		4 GB, 6 GB, 8 GB, 12 GB, 16 GB, 24 GB, 32 GB	48 GB, 64 GB
Panasonic		4 GB, 8 GB	—
Lexar Media		4 GB, 8 GB, 16 GB, 32 GB	—
Platinum II		4 GB, 8 GB, 16 GB, 32 GB	—
Professional		4 GB, 8 GB, 16 GB, 32 GB	—

1 Check that any card readers or other devices with which the card will be used support 2 GB cards.

2 Check that any card readers or other devices with which the card will be used are SDHC-compliant. The camera supports UHS-1.

3 Check that any card readers or other devices with which the card will be used are SDXC-compliant. The camera supports UHS-1.



Other cards have not been tested. For more details on the above cards, please contact the manufacturer.



Caring for the Camera

Storage

When the camera will not be used for an extended period, remove the battery and store it in a cool, dry area with the terminal cover in place. To prevent mold or mildew, store the camera in a dry, well-ventilated area. Do not store your camera with naphtha or camphor moth balls or in locations that:

- are poorly ventilated or subject to humidities of over 60%
- are next to equipment that produces strong electromagnetic fields, such as televisions or radios
- are exposed to temperatures above 50 °C (122 °F) or below –10 °C (14 °F)

Cleaning

Camera body	Use a blower to remove dust and lint, then wipe gently with a soft, dry cloth. After using the camera at the beach or seaside, wipe off sand or salt with a cloth lightly dampened in distilled water and dry thoroughly. Important: <i>Dust or other foreign matter inside the camera may cause damage not covered under warranty.</i>
Lens, mirror, and viewfinder	These glass elements are easily damaged. Remove dust and lint with a blower. If using an aerosol blower, keep the can vertical to prevent the discharge of liquid. To remove fingerprints and other stains, apply a small amount of lens cleaner to a soft cloth and clean with care.
Monitor	Remove dust and lint with a blower. When removing fingerprints and other stains, wipe the surface lightly with a soft cloth or chamois leather. Do not apply pressure, as this could result in damage or malfunction.

Do not use alcohol, thinner, or other volatile chemicals.

Servicing the Camera and Accessories

The camera is a precision device and requires regular servicing. Nikon recommends that the camera be inspected by the original retailer or Nikon-authorized service representative once every one to two years, and that it be serviced once every three to five years (note that fees apply to these services). Frequent inspection and servicing are particularly recommended if the camera is used professionally. Any accessories regularly used with the camera, such as lenses or optional flash units, should be included when the camera is inspected or serviced.



Caring for the Camera and Battery: Cautions

Do not drop: The product may malfunction if subjected to strong shocks or vibration.

Keep dry: This product is not waterproof, and may malfunction if immersed in water or exposed to high levels of humidity. Rusting of the internal mechanism can cause irreparable damage.

Avoid sudden changes in temperature: Sudden changes in temperature, such as those that occur when entering or leaving a heated building on a cold day, can cause condensation inside the device. To prevent condensation, place the device in a carrying case or plastic bag before exposing it to sudden changes in temperature.

Keep away from strong magnetic fields: Do not use or store this device in the vicinity of equipment that generates strong electromagnetic radiation or magnetic fields. Strong static charges or the magnetic fields produced by equipment such as radio transmitters could interfere with the monitor, damage data stored on the memory card, or affect the product's internal circuitry.

Do not leave the lens pointed at the sun: Do not leave the lens pointed at the sun or other strong light source for an extended period. Intense light may cause the image sensor to deteriorate or produce a white blur effect in photographs.

Turn the product off before removing or disconnecting the power source: Do not unplug the product or remove the battery while the product is on or while images are being recorded or deleted. Forcibly cutting power in these circumstances could result in loss of data or in damage to product memory or internal circuitry. To prevent an accidental interruption of power, avoid carrying the product from one location to another while the AC adapter is connected.

Cleaning: When cleaning the camera body, use a blower to gently remove dust and lint, then wipe gently with a soft, dry cloth. After using the camera at the beach or seaside, wipe off any sand or salt using a cloth lightly dampened in pure water and then dry the camera thoroughly.

The lens and mirror are easily damaged. Dust and lint should be gently removed with a blower. When using an aerosol blower, keep the can vertical to prevent discharge of liquid. To remove fingerprints and other stains from the lens, apply a small amount of lens cleaner to a soft cloth and wipe the lens carefully.

See the *Reference Manual* (on CD) for information on cleaning the low-pass filter.



Do not touch the shutter curtain: The shutter curtain is extremely thin and easily damaged. Under no circumstances should you exert pressure on the curtain, poke it with cleaning tools, or subject it to powerful air currents from a blower. These actions could scratch, deform, or tear the curtain.

Storage: To prevent mold or mildew, store the camera in a dry, well-ventilated area. If you are using an AC adapter, unplug the adapter to prevent fire. If the product will not be used for an extended period, remove the battery to prevent leakage and store the camera in a plastic bag containing a desiccant. Do not, however, store the camera case in a plastic bag, as this may cause the material to deteriorate. Note that desiccant gradually loses its capacity to absorb moisture and should be replaced at regular intervals.

To prevent mold or mildew, take the camera out of storage at least once a month. Turn the camera on and release the shutter a few times before putting it away.

Store the battery in a cool, dry place. Replace the terminal cover before putting the battery away.

Notes on the monitor: The monitor may contain a few pixels that are always lit or that do not light. This is common to all TFT LCD monitors and does not indicate a malfunction. Images recorded with the product are unaffected.

Images in the monitor may be difficult to see in a bright light.

Do not apply pressure to the monitor, as this could cause damage or malfunction. Dust or lint on the monitor can be removed with a blower. Stains can be removed by wiping lightly with a soft cloth or chamois leather. Should the monitor break, care should be taken to avoid injury from broken glass and to prevent liquid crystal from the monitor touching the skin or entering the eyes and mouth.

Moiré: Moiré is an interference pattern created by the interaction of an image containing a regular, repeating grid, such as the pattern of weave in cloth or windows in a building, with the camera image sensor grid. If you notice moiré in your photographs, try changing the distance to the subject, zooming in and out, or changing the angle between the subject and the camera.



Batteries: Batteries may leak or explode if improperly handled. Observe the following precautions when handling batteries:

- Use only batteries approved for use in this equipment.
- Do not expose the battery to flame or excessive heat.
- Keep the battery terminals clean.
- Turn the product off before replacing the battery.
- Remove the battery from the camera or charger when not in use and replace the terminal cover. These devices draw minute amounts of charge even when off and could draw the battery down to the point that it will no longer function. If the battery will not be used for some time, insert it in the camera and run it flat before removing it and storing it in a location with an ambient temperature of 15 to 25 °C (59 to 77 °F; avoid hot or extremely cold locations). Repeat this process at least once every six months.
- Turning the camera on and off repeatedly when the battery is fully discharged will shorten battery life. Batteries that have been fully discharged must be charged before use.
- The internal temperature of the battery may rise while the battery is in use. Attempting to charge the battery while the internal temperature is elevated will impair battery performance, and the battery may not charge or charge only partially. Wait for the battery to cool before charging.
- Continuing to charge the battery after it is fully charged can impair battery performance.
- Use the charger with compatible batteries only. Unplug when not in use.
- Do not move the charger or touch the battery during charging. Failure to observe this precaution could in very rare instances result in the charger showing that charging is complete when the battery is only partially charged. Remove and reinsert the battery to begin charging again.
- A marked drop in the time a fully charged battery retains its charge when used at room temperature indicates that it requires replacement. Purchase a new EN-EL14 battery.
- Charge the battery before use. When taking photographs on important occasions, ready a spare EN-EL14 battery and keep it fully charged. Depending on your location, it may be difficult to purchase replacement batteries on short notice. Note that on cold days, the capacity of batteries tends to decrease. Be sure the battery is fully charged before taking photographs outside in cold weather. Keep a spare battery in a warm place and exchange the two as necessary. Once warmed, a cold battery may recover some of its charge.
- Used batteries are a valuable resource; recycle in accord with local regulations.



Error Messages

This section lists the indicators and error messages that appear in the viewfinder and monitor.

 **Warning Icons**
A flashing  in the monitor or  in the viewfinder indicates that a warning or error message can be displayed in the monitor by pressing the  button.

Indicator		Solution
Monitor	Viewfinder	
Lock lens aperture ring at minimum aperture (largest f/-number)	 (blinks)	Set lens aperture ring to minimum aperture (largest f-number).
Lens not attached	 (blinks)	• Attach non-IX NIKKOR lens. • If non-CPU lens is attached, select mode M.
Shutter release disabled. Recharge battery.	 (blinks)	Turn camera off and recharge or replace battery.
This battery cannot be used. Choose battery designated for use in this camera.		Use Nikon-approved battery.
Initialization error. Turn camera off and then on again.	 /[E r r] (blinks)	Turn camera off, remove and replace battery, and then turn camera on again.
Battery level is low. Complete operation and turn camera off immediately.	—	End cleaning and turn camera off and recharge or replace battery.
Clock not set	—	Set camera clock.
No SD card inserted	(- E -)/  (blinks)	Turn camera off and confirm that card is correctly inserted.
Memory card is locked. Slide lock to “write” position.	 d (blinks)	Memory card is locked (write protected). Slide card write-protect switch to “write” position.
This memory card cannot be used. Card may be damaged. Insert another card.	 d/[E r r] (blinks)	• Use approved card. • Format card. If problem persists, card may be damaged. Contact Nikon-authorized service representative. • Error creating new folder. Delete files or insert new memory card. • Insert new memory card. • Eye-Fi card is still emitting wireless signal after Disable has been selected for Eye-Fi upload. To terminate wireless transmission, turn the camera off and remove the card.



Indicator		Solution
Monitor	Viewfinder	
Not available if Eye-Fi card is locked	 (blinks)	Eye-Fi card is locked (write protected). Slide card write-protect switch to “write” position.
This card is not formatted. Format the card.	 (blinks)	Format card or turn camera off and insert new memory card.
Card is full	 (blinks)	• Reduce quality or size. • Delete photographs. • Insert new memory card.
—	 (blinks)	Camera can not focus using autofocus. Change composition or focus manually.
Subject is too bright	 (blinks)	• Use a lower ISO sensitivity. • Use commercial ND filter. • In mode: S Increase shutter speed A Choose a smaller aperture (larger f-number)  Choose another shooting mode
Subject is too dark		• Use a higher ISO sensitivity. • Use flash. • In mode: S Lower shutter speed A Choose a larger aperture (smaller f-number)
No Bulb in S mode	 (blinks)	Change shutter speed or select manual exposure mode.
No Bulb in HDR mode	 (blinks)	Change shutter speed.
Interval timer shooting	—	Menus and playback are not available while interval timer photography is in progress. Turn camera off.
—	 (blinks)	Flash has fired at full power. Check photo in monitor; if underexposed, adjust settings and try again.
Flash is in TTL mode. Choose another setting or use a CPU lens.		Change flash mode setting on optional flash unit or use CPU lens.
—	 (blinks)	• Use the flash. • Change distance to subject, aperture, flash range, or ISO sensitivity. • Lens focal length is less than 18 mm: use a longer focal length. • Optional SB-400 flash unit attached: flash is in bounce position or focus distance is very short. Continue shooting; if necessary, increase focus distance to prevent shadows from appearing in photograph.



Indicator		Solution
Monitor	Viewfinder	
Flash error	 (blinks)	Error occurred updating firmware for optional flash unit. Contact Nikon-authorized service representative.
Error. Press shutter release button again.	 (blinks)	Release shutter. If error persists or appears frequently, consult Nikon-authorized service representative.
Start-up error. Contact a Nikon-authorized service representative.		Consult Nikon-authorized service representative.
Autoexposure error		
Unable to start live view. Please wait for camera to cool.	—	Wait for the internal circuits to cool before resuming live view or movie recording.
Folder contains no images.	—	Folder selected for playback contains no images. Insert another memory card or select a different folder.
Cannot display this file.	—	File has been created or modified using a computer or different make of camera, or file is corrupt.
Cannot select this file.		
No image for retouching.	—	Memory card does not contain NEF (RAW) images for use with NEF (RAW) processing .
Check printer.	—	Check printer. To resume, select Continue (if available).
Check paper.	—	Paper is not selected size. Insert paper of correct size and select Continue .
Paper jam.	—	Clear jam and select Continue .
Out of paper.	—	Insert paper of selected size and select Continue .
Check ink supply.	—	Check ink. To resume, select Continue .
Out of ink.	—	Replace ink and select Continue .

* See printer manual for more information.



Specifications

■ Nikon D5100 Digital Camera

Type	
Type	Single-lens reflex digital camera
Lens mount	Nikon F mount (with AF contacts)
Effective angle of view	Approx. $1.5 \times$ lens focal length (Nikon DX format)
Effective pixels	
Effective pixels	16.2 million
Image sensor	
Image sensor	23.6 × 15.6 mm CMOS sensor
Total pixels	16.9 million
Dust-reduction System	Image sensor cleaning, Image Dust Off reference data (optional Capture NX 2 software required)
Storage	
Image size (pixels)	4,928 × 3,264 (L) 2,464 × 1,632 (S) 3,696 × 2,448 (M)
File format	- NEF (RAW): 14 bit, compressed - JPEG: JPEG-Baseline compliant with fine (approx. 1 : 4), normal (approx. 1 : 8), or basic (approx. 1 : 16) compression - NEF (RAW)+JPEG: Single photograph recorded in both NEF (RAW) and JPEG formats
Picture Control System	Standard, Neutral, Vivid, Monochrome, Portrait, Landscape; selected Picture Control can be modified; storage for custom Picture Controls
Media	SD (Secure Digital), SDHC, and SDXC memory cards
File system	DCF (Design Rule for Camera File System) 2.0, DPOF (Digital Print Order Format), Exif 2.3 (Exchangeable Image File Format for Digital Still Cameras), PictBridge
Viewfinder	
Viewfinder	Eye-level pentamirror single-lens reflex viewfinder
Frame coverage	Approx. 95% horizontal and 95% vertical
Magnification	Approx. $0.78 \times$ (50 mm f/1.4 lens at infinity, -1.0 m^{-1})
Eyepoint	17.9 mm (-1.0 m^{-1} ; from center surface of viewfinder eyepiece lens)
Diopter adjustment	$-1.7 - +0.7 \text{ m}^{-1}$
Focusing screen	Type B BriteView Clear Matte Mark VII screen
Reflex mirror	Quick return
Lens aperture	Instant return, electronically controlled



Lens	
Compatible lenses	Autofocus is available with AF-S and AF-I lenses. Autofocus is not available with other type G and D lenses, AF lenses (IX NIKKOR and lenses for the F3AF are not supported), and AI-P lenses. Non-CPU lenses can be used in mode M , but the camera exposure meter will not function. The electronic rangefinder can be used with lenses that have a maximum aperture of f/5.6 or faster.
Shutter	
Type	Electronically-controlled vertical-travel focal-plane shutter
Speed	$\frac{1}{4000}$ – 30 s in steps of $\frac{1}{3}$ or $\frac{1}{2}$ EV; Bulb; Time (requires optional ML-L3 remote control)
Flash sync speed	$X = \frac{1}{200}$ s; synchronizes with shutter at $\frac{1}{200}$ s or slower
Release	
Release mode	(single frame), (continuous), (self-timer), 2s (delayed remote), (quick-response remote), (quiet shutter release)
Frame advance rate	Up to 4 fps (manual focus, mode M or S , shutter speed $\frac{1}{250}$ s or faster, and other settings at default values)
Self-timer	2 s, 5 s, 10 s, 20 s; 1–9 exposures
Exposure	
Metering	TTL exposure metering using 420-pixel RGB sensor
Metering method	• Matrix: 3D color matrix metering II (type G and D lenses); color matrix metering II (other CPU lenses) • Center-weighted: Weight of 75% given to 8-mm circle in center of frame • Spot: Meters 3.5-mm circle (about 2.5% of frame) centered on selected focus point
Range (ISO 100, f/1.4 lens, 20 °C/68 °F)	• Matrix or center-weighted metering: 0–20 EV • Spot metering: 2–20 EV
Exposure meter coupling	CPU
Mode	Auto modes (auto; auto, flash off); programmed auto with flexible program (P); shutter-priority auto (S); aperture-priority auto (A); manual (M); scene modes (portrait; landscape; child; sports; close up; night portrait; night landscape; party/indoor; beach/snow; sunset; dusk/dawn; pet portrait; candlelight; blossom; autumn colors; food); special effects modes (night vision; color sketch; miniature effect; selective color; silhouette; high key; low key)
Exposure compensation	–5 – +5 EV in increments of $\frac{1}{3}$ or $\frac{1}{2}$ EV
Bracketing	• Exposure bracketing: 3 frames in steps of $\frac{1}{3}$ or $\frac{1}{2}$ EV • White balance bracketing: 3 frames in steps of 1 • Active D-Lighting bracketing: 2 frames
Exposure lock	Luminosity locked at detected value with AE-L/AF-L button



White balance	
White balance	Auto, incandescent, fluorescent (7 types), direct sunlight, flash, cloudy, shade, preset manual, all except preset manual with fine tuning.
Live view	
Lens servo	• Autofocus (AF): Single-servo AF (AF-S); full-time-servo AF (AF-F) • Manual focus (MF)
AF-area mode	Face-priority AF, wide-area AF, normal-area AF, subject-tracking AF
Autofocus	Contrast-detect AF anywhere in frame (camera selects focus point automatically when face-priority AF or subject-tracking AF is selected)
Automatic scene selection	Available in  and  modes
Movie	
Metering	TTL exposure metering using main image sensor
Metering method	Matrix
Frame size (pixels) and frame rate	• 1,920 × 1,080, 30 p/25 p/24 p, ★ high/normal • 1,280 × 720, 30 p/25 p/24 p, ★ high/normal • 640 × 424, 30 p/25 p, ★ high/normal A frame rate of 30 p (actual frame rate 29.97 fps) is available when NTSC is selected for video mode. 25 p is available when PAL is selected for video mode. Actual frame rate when 24 p is selected is 23.976 fps.
File format	MOV
Video compression	H.264/MPEG-4 Advanced Video Coding
Audio recording format	Linear PCM
Audio recording device	Built-in monaural or external stereo microphone; sensitivity adjustable
Monitor	
Monitor	7.5-cm/3-in., approx. 921k-dot (VGA), vari-angle low-temperature polysilicon TFT LCD with 170 ° viewing angle, approx. 100% frame coverage, and brightness adjustment
Playback	
Playback	Full-frame and thumbnail (4, 9, or 72 images or calendar) playback with playback zoom, movie playback, slide show, histogram display, highlights, auto image rotation, and image comment (up to 36 characters)



Interface	
USB	Hi-Speed USB
Video output	NTSC, PAL
HDMI output	Type C mini-pin HDMI connector
Accessory terminal	Remote cord: MC-DC2 (available separately) GPS unit: GP-1 (available separately)
Audio input	Stereo mini-pin jack (3.5 mm diameter)
Supported languages	
Supported languages	Arabic, Chinese (Simplified and Traditional), Czech, Danish, Dutch, English, Finnish, French, German, Indonesian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Thai, Turkish
Power source	
Battery	One rechargeable Li-ion EN-EL14 battery
AC adapter	EH-5b AC adapter; requires EP-5A power connector (available separately)
Tripod socket	
Tripod socket	1/4 in. (ISO 1222)
Dimensions/weight	
Dimensions (W × H × D)	Approx. 128 × 97 × 79 mm (5.0 × 3.8 × 3.1 in.)
Weight	Approx. 560 g (1 lb. 3.7 oz.) with battery and memory card but without body cap; approx. 510 g/1 lb. 2 oz. (camera body only)
Operating environment	
Temperature	0–40 °C (+32–104 °F)
Humidity	Less than 85% (no condensation)

- Unless otherwise stated, all figures are for a camera with a fully-charged battery operating at an ambient temperature of 20 °C (68 °F).
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MH-24 battery charger	
Rated input	AC 100–240 V, 50/60 Hz, 0.2A maximum
Rated output	DC 8.4 V/0.9 A
Supported batteries	Nikon rechargeable Li-ion battery EN-EL14
Charging time	Approx. 1 hour and 30 minutes when no charge remains
Operating temperature	0–40 °C (+32–104 °F)
Dimensions (W × H × D)	Approx. 70 × 26 × 97 mm (2.8 × 1.0 × 3.8 in.), excluding plug adapter
Weight	Approx. 89 g (3.1 oz.), excluding plug adapter
EN-EL14 rechargeable Li-ion battery	
Type	Rechargeable lithium-ion battery
Rated capacity	7.4 V/1030 mAh
Dimensions (W × H × D)	Approx. 38 × 53 × 14 mm (1.5 × 2.1 × 0.6 in.)
Weight	Approx. 48 g (1.7 oz.), excluding terminal cover
AF-S DX NIKKOR 18–55mm f/3.5–5.6G VR lens	
Type	Type G AF-S DX NIKKOR zoom lens with built-in CPU and F mount for use exclusively with Nikon DX-format digital SLR cameras
Focal length	18–55 mm
Maximum aperture	f/3.5–5.6
Lens construction	11 elements in 8 groups (including 1 aspherical element)
Angle of view	76 °–28 ° 50 ′
Focal length scale	Graduated in millimeters (18, 24, 35, 45, 55)
Distance information	Output to camera
Zoom	Manual zoom using independent zoom ring
Focusing	Autofocus controlled by Silent Wave Motor; manual focus
Vibration reduction	Lens-shift method using voice coil motors (VCMs)
Minimum focus distance	0.28 m (0.9 ft) from focal plane at all zoom positions
Diaphragm blades	7 (rounded diaphragm opening)
Diaphragm	Fully automatic
Aperture range	18 mm focal length: f/3.5–22 55 mm focal length: f/5.6–36
Metering	Full aperture
Filter-attachment size	52 mm (P=0.75 mm)
Dimensions	Approx. 73 mm diameter × 79.5 mm/2.9 × 3.1 in. (distance from camera lens-mount flange)
Weight	Approx. 265 g (9.3 oz.)

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Battery Life

The number of shots that can be taken with fully-charged batteries varies with the condition of the battery, temperature, and how the camera is used. Sample figures for EN-EL14 (1030 mAh) batteries are given below.

- **Single-frame release mode (CIPA standard ¹):** Approximately 660 shots
- **Continuous release mode (Nikon standard ²):** Approximately 2200 shots
 - 1 Measured at 23 °C/73.4 °F (±2 °C/3.6 °F) with an AF-S DX NIKKOR 18–55mm f/3.5–5.6G VR lens under the following test conditions: lens cycled from infinity to minimum range and one photograph taken at default settings once every 30 s; after photograph is taken, monitor is turned on for 4 s; tester waits for exposure meters to turn off after monitor is turned off; flash fired at full power once every other shot. Live view not used.
 - 2 Measured at 20 °C/68 °F with an AF-S DX NIKKOR 18–55mm f/3.5–5.6G VR lens under the following test conditions: vibration reduction off, continuous release mode, focus mode set to **AF-C**, image quality set to JPEG basic, image size set to **M** (medium), white balance set to **AUTO**, ISO sensitivity set to ISO 100, shutter speed ¹/₂₅₀ s, focus cycled from infinity to minimum range three times after shutter-release button has been pressed halfway for 3 s; six shots are then taken in succession and monitor turned on for 4 s and then turned off; cycle repeated once exposure meters have turned off.

The following can reduce battery life:

- Using the monitor
- Keeping the shutter-release button pressed halfway
- Repeated autofocus operations
- Taking NEF (RAW) photographs
- Slow shutter speeds
- Using a GP-1 GPS unit
- Using VR (vibration reduction) mode with VR lenses

To ensure that you get the most from rechargeable Nikon EN-EL14 batteries:

- Keep the battery contacts clean. Soiled contacts can reduce battery performance.
- Use batteries immediately after charging. Batteries will lose their charge if left unused.

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