

**DIGITAL CAMERA** 



**User's Manual** 

# Where to Find It

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Camera behaving unexpectedly? Find the solution here.

### **⚠** For Your Safety

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

### Help

Use the camera's on-board help feature for help on menu items and other topics. See page 18 for details.

### 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



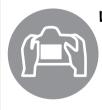
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# Q&A Index

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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.

### Number of the viewfinder diopter adjustment control

When operating the viewfinder diopter adjustment 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.

### No 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

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

### nd 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.

# 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 handle the power cable or go near the charger during thunderstorms.
   Failure to observe this precaution could result in electric shock.
- Do not damage, modify, or forcibly tug or bend the power cable. Do not place it under heavy objects or expose it to heat or flame. Should the insulation be damaged and the wires become exposed, take the power cable to a Nikon-authorized service representative for inspection. Failure to observe this precaution could result in fire or 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.

# ♠ 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.

# **Notices**

- No part of the manuals included with this product may be reproduced, transmitted, transcribed, stored in a retrieval system, or 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.

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

### Nikon will not be held liable for any damages resulting from the use of this product.

translated into any language in any form, by • 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).

### ATTENTION

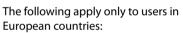
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

### **Notices for Customers in Europe**

### CAUTION

RISK OF EXPLOSION IF RATTERY 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.



- 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.

### Notices for Customers in the U.S.A.

### **Power Cable**

At voltages over AC 125 V (U.S.A. only): The power cable must be rated for the voltage in use, be at least AWG no. 18 gauge, and have SVG insulation or better with a NEMA 6P-15 plug rated for AC 250 V 15 A.

### 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** D7000

### 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.

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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 (\$\sup\$ 123). Care should be taken to avoid injury when physically destroying data storage devices.

### **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.



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### 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.

### 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

# Overview

Thank you for your purchase of a Nikon single-lens reflex (SLR) digital camera. 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 who use the product.

### **II** 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.

# **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.

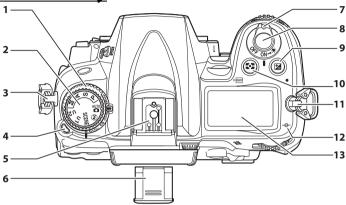
# Camera Settings

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

# **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

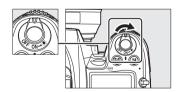


| 1 | Release mode dial7, 77                       |
|---|----------------------------------------------|
| 2 | Mode dial6                                   |
| 3 | Eyelet for camera strap                      |
| 4 | Release mode dial lock release7, 77          |
| 5 | Accessory shoe (for optional flash unit) 275 |
| 6 | Accessory shoe cover275                      |
| 7 | Power switch2                                |
| Я | Shutter-release button 38 39                 |

| 9 🗷 (exposure compensation) button | 107 |
|------------------------------------|-----|
| Two-button reset button            | 151 |
| 10 (metering) button               | 105 |
| format) button                     | 32  |
| 11 Eyelet for camera strap         |     |
| 12 Focal plane mark ()             | 100 |
| 13 Control panel                   | 8   |

# The Power Switch

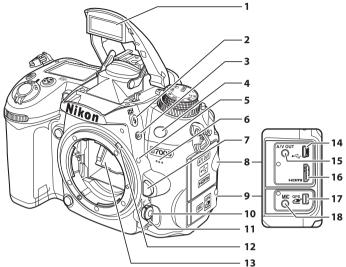
Rotate the power switch as shown to turn the camera on.



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

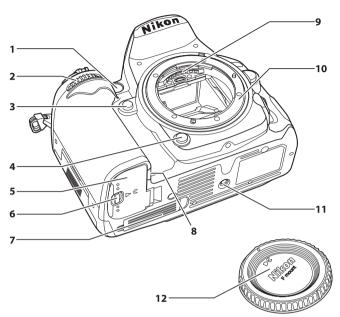


# The Camera Body (Continued)



| 1 | Built-in flash                        | 143         |
|---|---------------------------------------|-------------|
| 2 | 🗲 (flash mode) button                 | 143         |
|   | ☐                                     | 148         |
| 3 | BKT (bracketing) button               | 109, 164    |
| 4 | Infrared receiver (front)             | 81          |
| 5 | Mounting mark                         | 25          |
| 6 | Built-in microphone                   | 58, 60      |
| 7 | Lens release button                   | 26          |
| 8 | Connector cover180, 18                | 2, 191, 193 |
| 9 | Cover for accessory terminal and exte | rnal        |
|   | microphone connectors                 | 57          |
|   |                                       |             |

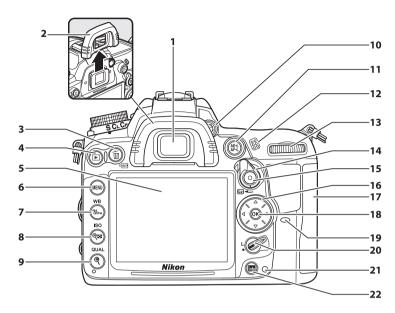
|   | <del></del> 13                    |            |
|---|-----------------------------------|------------|
| 0 | AF-mode button                    | 50, 92, 95 |
| 1 | Focus-mode selector               | 91, 99     |
| 2 | Meter coupling lever              | 310        |
|   | Mirror                            | 83, 286    |
| 4 | USB connector                     |            |
|   | Connecting to a computer          | 180        |
|   | Connecting to a printer           |            |
| 5 | A/V connector                     | 191        |
| б | HDMI mini-pin connector           | 193        |
| 7 | Accessory terminal                | 162, 281   |
| 8 | Connector for external microphone | 57         |



| 1 | AF-assist illuminator                |    |                   |
|---|--------------------------------------|----|-------------------|
|   | Red-eye reduction lamp145            |    |                   |
| 2 | Sub-command dial13, 233              | 9  | CPU contacts      |
| 3 | <b>Fn</b> button149, 230             | 10 | Lens mount25, 100 |
| 4 | Depth-of-field preview button72, 232 | 11 | Tripod socket     |
| 5 | Battery-chamber cover24              | 12 | Body cap25, 281   |
|   | Battery-chamber cover latch24        |    |                   |

# The Microphone and Speaker

Do not place the microphone or speaker in close proximity to magnetic devices. Failure to observe this precaution could affect the data recorded on the magnetic devices.



| 1 | Viewfinder eyepiece                    | 81     |
|---|----------------------------------------|--------|
| 2 | Rubber eyecup                          | 81     |
| 3 | ั่ (delete) button                     |        |
|   | Deleting pictures                      | 47     |
|   | Deleting pictures during playback      | 175    |
|   | ন্দ্রে (format) button                 |        |
| 4 | ▶ (playback) button4                   | 6, 163 |
| 5 |                                        |        |
|   | Viewing settings                       | 10     |
|   | Live view                              | 49, 57 |
|   | Viewing pictures                       | 46     |
|   | Full-frame playback                    | 163    |
| 6 | MENU (menu) button1                    | 8, 195 |
| 7 | ?⁄⊶ (help/protect) button1             | 8, 174 |
|   | WB (white balance) button              | 117    |
| 8 | ⟨E (thumbnail/playback zoom out) butto | n      |
|   | 17                                     | 1, 172 |
|   | ISO (ISO sensitivity) button           | 101    |

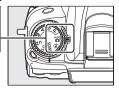
| 9  | ♥ (playback zoom in) button             | 173          |
|----|-----------------------------------------|--------------|
|    | <b>QUAL</b> (image quality/size) button | 86, 88       |
|    | Two-button reset button                 | 151          |
| 0  | Diopter adjustment control              | 34           |
| 1  | 윤 (AE-L/AF-L) button                    | 97, 106, 232 |
| 2  | Speaker                                 | 62           |
| 3  | Main command dial                       | 13, 233      |
| 4  | Live view switch                        | 49, 57       |
| 5  | Movie-record button                     | 58           |
| 6  | Multi selector                          | 19           |
| 7  | Memory card slot cover                  | 29           |
| 8  | ⊚ (OK) button                           |              |
| 9  | Infrared receiver (rear)                |              |
| 20 | Focus selector lock                     | 96           |
| 21 | Memory card access lamp                 |              |
| 22 | info) button                            |              |
|    | _ , , , , , , , , , , , , , , , , , , , |              |

# **The Mode Dial**

The camera offers a choice of the following modes:

Mode dial

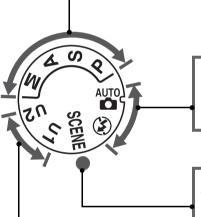




### P, S, A, and M Modes

Select these modes for full control over camera settings.

- P—Programmed auto (\$\square\$ 68)
- S—Shutter-priority auto (\$\square\$ 69)
- A—Aperture-priority auto (\$\square\$ 70)
- M—Manual (□ 71)



### **Auto Modes**

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

- Auto (□ 35)
- **3** Auto (flash off) ( 35)

## Scene Modes (🕮 40)

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

### U1 and U2 Modes ( 75)

Store and recall customized shooting settings.

# Non-CPU Lenses

Non-CPU ( $\square$  270) lenses can be used only in modes **A** and **M**. Selecting another mode when a non-CPU lens is attached disables the shutter release.

# The Release-Mode Dial

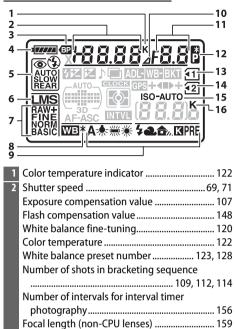
To choose a release mode, press the release mode dial lock release and turn the release mode dial to the desired setting  $(\square 77)$ .



Release mode dial

| Mode  |          |                       | Description                                                                                                 |
|-------|----------|-----------------------|-------------------------------------------------------------------------------------------------------------|
| SCICE | S        | Single frame          | One photograph is taken each time the shutter-<br>release button is pressed.                                |
| GG: S | CL       | Continuous low speed  | The camera takes photographs at about 1 to 5 frames per second while the shutter-release button is pressed. |
| 3:50  | Сн       | Continuous high speed | The camera takes photographs at up to 6 frames per second while the shutter-release button is pressed.      |
|       | Q        | Quiet shutter-release | As for single-frame, except that camera noise is reduced.                                                   |
|       | <b>હ</b> | Self-timer            | Take pictures with the self-timer.                                                                          |
|       |          | Remote control        | Take pictures with an optional ML-L3 remote control.                                                        |
| Mur   | Mup      | Mirror up             | Raise the mirror before taking photographs.                                                                 |

# **The Control Panel**

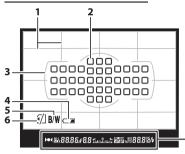


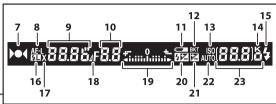
| 3  | MB-D11 battery indicator             | 221      |
|----|--------------------------------------|----------|
| 4  | Battery indicator                    | 35       |
| 5  | Flash mode                           | 144      |
| 6  | Image size                           | 88       |
| 7  | Image quality                        | 85       |
| 8  | White balance fine-tuning indicator  | 120      |
| 9  | White balance                        | 117      |
| 10 | Aperture stop indicator              | 70, 270  |
| 11 | Aperture (f-number)                  | 70, 71   |
|    | Aperture (number of stops)           | 70, 270  |
|    | Bracketing increment                 | 110, 112 |
|    | Number of shots per interval         | 156      |
|    | Maximum aperture (non-CPU lenses)    | 159      |
|    | PC mode indicator                    | 181      |
| 12 | Flexible program indicator           | 68       |
| 13 | Memory card indicator (Slot 1)       | 30, 89   |
| 14 | Memory card indicator (Slot 2)       | 30, 89   |
| 15 | ISO sensitivity indicator            | 101      |
|    | Auto ISO sensitivity indicator       | 104      |
| 16 | "K" (appears when memory remains for | r over   |
|    | 1000 exposures)                      | 36       |
|    |                                      |          |

| 17 -<br>18 -         | 2                                | 5           |
|----------------------|----------------------------------|-------------|
| 19 -<br>20 -<br>21 - |                                  | 7<br>8<br>9 |
| 22 -<br>23 -<br>24 - | BASIC WB*A                       | 0           |
| 17                   | "Beep" indicator 2               | 15          |
| 18                   | Exposure compensation indicator1 | 07          |
| 19                   | Flash sync indicator2            | 22          |
| 20                   | Flash compensation indicator1    | 48          |
| 21                   | Auto-area AF indicator           | .95         |
|                      | AF-area mode indicator           | .95         |
|                      | 3D-tracking indicator            | .94         |
| 22                   | Autofocus mode                   | 91          |

| 23 | "Clock not set" indicator 28, 237            |
|----|----------------------------------------------|
| 24 | Interval timer indicator157                  |
| 25 | Multiple exposure indicator153               |
| 26 | Exposure and flash bracketing indicator109   |
|    | WB bracketing indicator112                   |
|    | ADL bracketing indicator114                  |
| 27 | Bracketing progress indicator 109, 112, 115  |
| 28 | GPS connection indicator162                  |
| 29 | Metering105                                  |
| 30 | Number of exposures remaining36              |
|    | Number of shots remaining before memory      |
|    | buffer fills38, 79                           |
|    | Capture mode indicator181                    |
|    | ISO sensitivity101                           |
|    | Preset white balance recording indicator 124 |
|    | Active D-Lighting amount139                  |
|    | Manual lens number161                        |
|    | HDMI-CEC connection indicator194             |
|    |                                              |

# **The Viewfinder**





| 1  | Framing grid (displayed when <b>On</b> is selected for |  |  |
|----|--------------------------------------------------------|--|--|
|    | Custom Setting d2)216                                  |  |  |
| 2  | Focus points                                           |  |  |
|    | AF-area mode94                                         |  |  |
| 3  | AF area brackets37, 165                                |  |  |
| 4  | Battery indicator *35, 216                             |  |  |
| 5  | Black-and-white indicator*216                          |  |  |
| 6  | "No memory card" indicator *30, 216                    |  |  |
| 7  | Focus indicator 38, 97, 100                            |  |  |
| 8  | Autoexposure (AE) lock106                              |  |  |
| 9  | Shutter speed 69, 71                                   |  |  |
|    | AF mode91                                              |  |  |
| 10 | Aperture (f-number)70, 71                              |  |  |
|    | Aperture (number of stops)70, 270                      |  |  |
| 11 | Low battery warning35                                  |  |  |
| 12 | Exposure and flash bracketing indicator109             |  |  |
|    | WB bracketing indicator112                             |  |  |
|    | ADL bracketing indicator114                            |  |  |
| 13 | ISO sensitivity indicator101                           |  |  |
| 14 | "K" (appears when memory remains for over              |  |  |
|    | 1000 exposures)36                                      |  |  |

| 5 | Flash-ready indicator                    | 39, 219  |
|---|------------------------------------------|----------|
| 6 | FV lock indicator                        | 149      |
| 7 | Flash sync indicator                     | 222      |
| 8 | Aperture stop indicator                  | .70, 270 |
| 9 | Exposure indicator                       | 72       |
|   | Exposure compensation display            | 107      |
|   | Tilt indicator                           | 231      |
| 0 | Flash compensation indicator             | 148      |
| 1 | Exposure compensation indicator          | 107      |
| 2 | Auto ISO sensitivity indicator           | 104      |
| 3 | Number of exposures remaining            | 36       |
|   | Number of shots remaining before mem     | ory      |
|   | buffer fills                             | 38, 79   |
|   | ISO sensitivity                          | 101      |
|   | Preset white balance recording indicator | 124      |
|   | Exposure compensation value              | 107      |
|   | Flash compensation value                 |          |
|   | Active D-Lighting amount                 |          |
|   | AF-area mode                             | 94       |

# No Battery

When the battery is totally exhausted or no battery is inserted, the display in the viewfinder will dim. This is normal and does not indicate a malfunction. The viewfinder display will return to normal when a fully-charged battery is inserted.

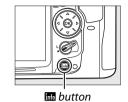
## The Control Panel and Viewfinder Displays

The brightness of the control panel and viewfinder displays varies with temperature, and the response times of the displays may drop at low temperatures. This is normal and does not indicate a malfunction.

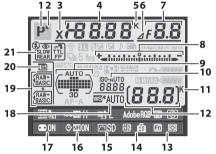
<sup>\*</sup> Display can be turned off with Custom Setting d4.

# **The Information Display**

Press the button to display shutter speed, aperture, the number of exposures remaining, AF-area mode, and other shooting information in the monitor.







| 1 | Shooting mode6                         |
|---|----------------------------------------|
| _ |                                        |
| 2 | Flexible program indicator68           |
| 3 | Flash sync indicator222                |
| 4 | Shutter speed69, 71                    |
|   | Exposure compensation value 107        |
|   | Flash compensation value 148           |
|   | Number of shots in bracketing sequence |
|   |                                        |
|   | Focal length (non-CPU lenses)159       |
|   | Color temperature 122                  |
| 5 | Color temperature indicator 122        |
| 6 | Aperture stop indicator70, 270         |
| 7 | Aperture (f-number)70, 71              |
|   | Aperture (number of stops)70, 270      |
|   | Bracketing increment110, 112           |
|   | Maximum aperture (non-CPU lenses) 159  |
|   |                                        |

| 8  | Exposure indicator                       | 72     |
|----|------------------------------------------|--------|
|    | Exposure compensation display            | 107    |
|    | Bracketing progress indicator            |        |
|    | Exposure and flash bracketing            | 109    |
|    | WB bracketing                            | 112    |
| 9  | Auto-area AF indicator                   | 95     |
|    | Focus points indicator                   | 37, 96 |
|    | AF-area mode indicator                   | 95     |
|    | 3D-tracking indicator                    | 94     |
| 10 | ISO sensitivity indicator                | 101    |
|    | Auto ISO sensitivity indicator           | 104    |
| 11 | "K" (appears when memory remains for o   | ver    |
|    | 1000 exposures)                          | 36     |
| 12 | Number of exposures remaining            | 36     |
|    | Manual lens number                       |        |
| 13 | Fn button assignment                     | 230    |
| 14 | AE-L/AF-L button assignment              | 232    |
| 15 | Picture Control indicator                | 132    |
| 16 | Long exposure noise reduction indicator. | 205    |
| 17 |                                          |        |
|    | White balance                            |        |
|    | White balance fine-tuning indicator      |        |
| 19 |                                          |        |
|    | Role played by card in slot 2            |        |
| 20 |                                          |        |
|    | Flash mode                               |        |

| 44—<br>43—<br>42—<br>41—<br>40—<br>39—<br>38—<br>37—<br>36— | ISLOWITTI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | AUTO .                 | CK | K                   | SKT OFF AUTO                   | -23<br>-24<br>-25<br>-26<br>-27<br>-28<br>-29<br>-30 |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----|---------------------|--------------------------------|------------------------------------------------------|
|                                                             | 1080 to 10 local | ISONE H<br>ORRON<br>34 | 1  | AdobeRGB<br>日<br>32 | <b>™</b> 🚳  <br><b>13</b>   31 |                                                      |

| 22 | "Beep" indicator                         | 215 |
|----|------------------------------------------|-----|
| 23 | Multiple exposure indicator              | 153 |
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|    | WB bracketing indicator                  | 112 |
|    | ADL bracketing indicator                 | 114 |
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| 26 | Interval timer indicator                 | 157 |
| 27 | Camera battery indicator                 | 3   |
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| 28 | MB-D11 battery type display22                |
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| 29 | GPS connection indicator16                   |
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| 42 | FV lock indicator149                         |
| 43 | Flash compensation indicator148              |
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# Turning the Monitor Off

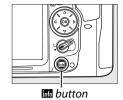
To clear shooting information from the monitor, press the button twice more or press the shutter-release button halfway. The monitor will turn off automatically if no operations are performed for about 10 seconds.

### See Also

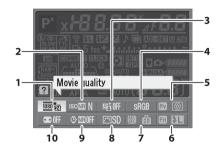
For information on choosing how long the monitor stays on, see Custom Setting c4 (**Monitor off delay**,  $\square$  215). For information on changing the color of the lettering in the information display, see Custom Setting d9 (**Information display**,  $\square$  219).

# **II** Changing Settings in the Information Display

To change settings for the items listed below, press the button in the information display. Highlight items using the multi selector and press to view options for the highlighted item.







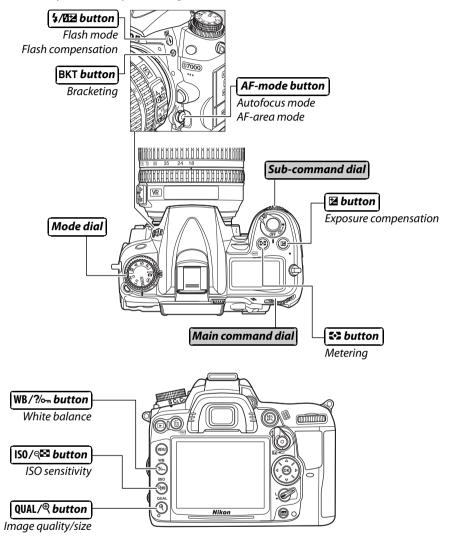
| 1  | Movie quality                            | 60    |
|----|------------------------------------------|-------|
| 2  | High ISO noise reduction                 | . 205 |
| 3  | Active D-Lighting                        | .139  |
| 4  | Color space                              | .141  |
| 5  | Depth-of-field preview button assignment | .232  |
| 6  | Fn button assignment                     | .230  |
| 7  | AE-L/AF-L button assignment              | . 232 |
| 8  | Picture Control                          | .132  |
| 9  | Long exposure noise reduction            | .205  |
| 10 | Auto distortion control                  | .205  |

# Tool Tips

A tool tip giving the name of the selected item appears in the information display. Tool tips can be turned off using Custom Setting d5 (**Screen Tips**;  $\square$  216).

# **The Command Dials**

The main- and sub-command dials are used alone or in combination with other controls to adjust a variety of settings.



### II Scene Mode

7.5

Choose a scene (**SCENE**; □ 41).







SCENE mode

Monitor

# **III** Image Quality and Size

Set image quality (\$\square\$ 86).



Choose an image size (\$\square\$ 88).



## ■ Autofocus

Choose an autofocus mode (🕮 92).





Control panel

Choose an AF-area mode (🕮 95).



AF-mode button Sub-command dial

Control panel

# II ISO Sensitivity

Set ISO sensitivity ( 101).



ISO button Main command dial

Control panel

iso o

# **Exposure**

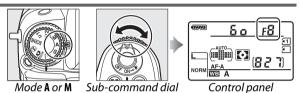
Choose a combination of aperture and shutter speed (mode P;  $\square$  68).



Choose a shutter speed (mode **S** or **M**;  $\square$  69, 71).



Choose an aperture (mode **A** or  $\mathbf{M}$ :  $\square$  70, 71).



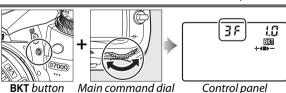
Choose a metering option (mode **P**, **S**, **A**, or **M**;  $\square$  105).



Set exposure compensation (mode **P**, **S**, **A**, or **M**;  $\square$  107).



Activate or cancel bracketing/ select number of shots in bracketing sequence (mode **P**, **S**, **A**, or **M**;  $\square$  109, 112, 114).



Select bracketing increment (mode **P**, **S**, **A**, or **M**; □ 110, 112).



7-5

## ■ White Balance

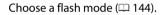
Choose a white balance option (mode **P**, **S**, **A**, or **M**;  $\square$  117).



Fine-tune white balance (\$\Pi\$ 120), set color temperature (\$\Pi\$ 122), or choose a white balance preset (\$\Pi\$ 128) in mode **P, S, A**, or **M**.



# II Flash Settings





Set flash compensation (mode P,

**S**, **A**, or **M**;  $\square$  148).



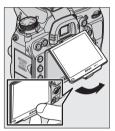
## **The BM-11 Monitor Cover**

A clear plastic cover is provided with the camera to keep the monitor clean and protect it when the camera is not in use. To attach the cover, insert the projection on the top of the cover into the matching indentation above the camera monitor (①) and press the bottom of the cover until it clicks into place (②).





To remove the cover, hold the camera firmly and pull the bottom of the cover gently outwards as shown at right.



# 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



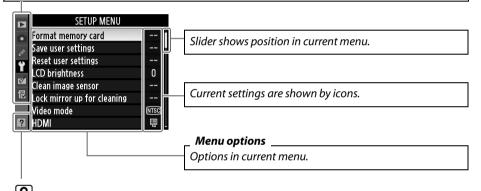


#### Tabs

Choose from the following menus:

- **▶**: **Playback** (□ 195)
- **C**: Shooting (□ 202)
- *@*: Custom Settings (□ 206)

- **Y**: Setup (□ 236)
- ☑: Retouch (□ 248)
- 湿/冒: My Menu or Recent settings (defaults to My Menu; 🕮 265)



If a ? icon is displayed at the bottom left corner of the monitor, help can be displayed by pressing the ?/-

button. A description of the currently selected option or menu will be displayed while the button is pressed. Press

 $\triangle$  or  $\nabla$  to scroll through the display.

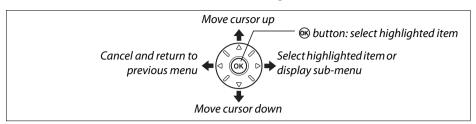


Record the specified number of shots as a single image. If no operations are performed for 30 seconds, shooting will end and a multiple exposure will be created from any shots that have been

% button

# **Using Camera Menus**

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



Follow the steps below to navigate the menus.

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.









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



#### Note the following:

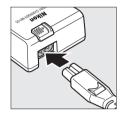
- Menu items that are displayed in gray are not currently available.
- While pressing ▶ generally has the same effect as pressing ®, there are some cases in which selection can only be made by pressing ®.
- To exit the menus and return to shooting mode, press the shutter-release button halfway (□ 39).

# **First Steps**

# **Charge the Battery**

The camera is powered by an EN-EL15 rechargeable Li-ion battery (supplied). To maximize shooting time, charge the battery in the supplied MH-25 battery charger before use. About 2 hours and 35 minutes are required to fully recharge the battery when no charge remains.

1 Connect the AC power cable or wall adapter.
Connect the power cable as shown at right. Use the AC adapter plug in the position shown; do not rotate.



Depending on the country or region of purchase, an AC wall adapter may also be supplied with the charger. To use the adapter, insert it into the charger AC inlet (1). Slide the AC wall adapter latch in the direction shown (2) and rotate the adapter 90 ° to fix it in the position shown (3). Reverse these steps to remove the adapter.



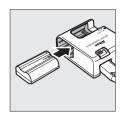
AC wall adapter latch



**2** Remove the terminal cover.

Remove the terminal cover from the battery.

Place the battery in the battery bay as shown in the illustration on the charger.



-

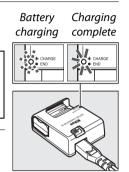
4 Plug the charger in.

The CHARGE lamp will blink while the battery charges.

#### Charging the Battery

Charge the battery indoors at ambient temperatures between 5-35 °C (41-95 °F). The battery will not charge if its temperature is below 0 °C (32 °F) or above 60 °C (140 °F).

**5** Remove the battery when charging is complete. Charging is complete when the **CHARGE** lamp stops blinking. Unplug the charger and remove the battery.



#### The Battery and Charger

Read and follow the warnings and cautions on pages xii–xiii and 289–291 of this manual. Do not use the battery at ambient temperatures below  $0^{\circ}$ C/32°F or above  $40^{\circ}$ 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  $0^{\circ}$ C/32°F to  $15^{\circ}$ C/59°F and from  $45^{\circ}$ C/113°F to  $60^{\circ}$ C/140°F.

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.

If the **CHARGE** lamp flickers (i.e., flashes about eight times a second) 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.

The supplied power cable and AC wall adapter are for use with the MH-25 only. Use the charger with compatible batteries only. Unplug when not in use.

#### EN-EL15 Rechargeable Li-ion Batteries

The supplied EN-EL15 shares information with compatible devices, enabling the camera to show battery charge state in six levels ( $\square$  35). The **Battery info** option in the setup menu details battery charge, battery life, and the number of pictures taken since the battery was last charged ( $\square$  242).

#### Inserting and Removing Batteries

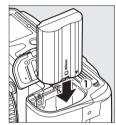
Always turn the camera off before inserting or removing batteries.

**2** Open the battery-chamber cover. Unlatch (1) and open (2) the battery-chamber cover.



3 Insert the battery.

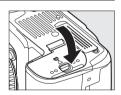
Insert the battery in the orientation shown  $(\begin{cal} \end{cal})$ , using the battery to keep the orange battery latch pressed to one side. The latch locks the battery in place when the battery is fully inserted  $(\begin{cal} \end{cal})$ .





Battery latch

4 Close the battery-chamber cover.



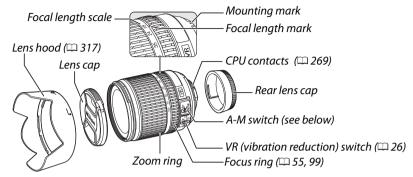
#### Removing the Battery

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.

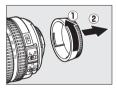


# **Attach a Lens**

Care should be taken to prevent dust from entering the camera when the lens is removed. The lens generally used in this manual for illustrative purposes is an AF-S DX NIKKOR 18–105 mm f/3.5–5.6G ED VR.



- 1 Turn the camera off.
- 2 Remove the rear lens cap and the camera body cap.

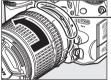


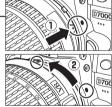


**3** Attach the lens.

Keeping the mounting mark on the lens aligned with the mounting mark on the camera body, position the lens in the camera's bayonet mount (1). Being careful not to press the lens-release button, rotate the lens counter-clockwise until it clicks into place (2).

Slide the A-M switch to A (autofocus; if the lens has an M/A-M switch, select M/A for autofocus with manual override).







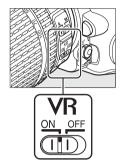


#### ■■ Vibration Reduction (VR)

AF-S DX NIKKOR 18–105 mm f/3.5–5.6G ED VR lenses support vibration reduction (VR), which reduces blur caused by camera shake even when the camera is panned, allowing shutter speeds to be slowed by approximately 3 EV (Nikon measurements; effects vary with the user and shooting conditions).

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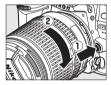
To use vibration reduction, slide the VR switch to **ON**. Vibration reduction is activated when the shutter-release button is pressed halfway, reducing the effects of camera shake on the image in the viewfinder and simplifying the process of framing the subject and focusing in both autofocus and manual focus modes. When the camera is panned, vibration reduction applies only to motion that is not part of the pan (if the camera is panned horizontally, for example, vibration reduction will be applied only to vertical shake), making it much easier to pan the camera smoothly in a wide arc.



Vibration reduction can be turned off by sliding the VR switch to **OFF**. Turn vibration reduction off when the camera is securely mounted on a tripod, but leave it on if the tripod head is not secured or when using a monopod.

#### 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.



#### CPU Lenses with Aperture Rings

In the case of CPU lenses equipped with an aperture ring ( $\square$  269), lock aperture at the minimum setting (highest f-number).

#### 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.

# **Basic Setup**

A language-selection dialog will be displayed the first time the camera is turned on. Choose a language and set the time and date. Photographs can not be taken until you have set the time and date.

1 Turn the camera on.

A language-selection dialog will be displayed.

**2** Select a language.

Press  $\triangle$  or  $\nabla$  to highlight the desired language and press  $\otimes$ .





**3** Choose a time zone.

A time-zone selection dialog will be displayed. Press ◀ or ▶ to highlight the local time zone (the **UTC** field shows the difference between the selected time zone and Coordinated Universal Time, or UTC, in hours) and press ๋.





**4** Choose a date format.

Press  $\triangle$  or  $\nabla$  to choose the order in which the year, month, and day will be displayed. Press  $\otimes$  to proceed to the next step.





Turn daylight saving time on or off.
Daylight saving time options will be displayed.
Daylight saving time is off by default; if daylight saving time is in effect in the local time zone, press ▲ to highlight On and press .





**6** Set the date and time.

The dialog shown at right will be displayed. Press  $\triangleleft$  or  $\triangleright$  to select an item,  $\triangle$  or  $\blacktriangledown$  to change. Press  $\bowtie$  to set the clock and exit to shooting mode.





#### Setting the Clock

Language and date/time settings can be changed at any time using the **Language** ( $\square$  238) and **Time zone and date** ( $\square$  237) options in the setup menu. The camera clock can also be synchronized with GPS devices ( $\square$  162).

#### The Clock Battery

The camera clock is powered by an independent, rechargeable power source, which is charged as necessary when the main battery is installed or the camera is powered by an optional EP-5B power connector and EH-5a AC adapter ( $\square$  280). Two days of charging will power the clock for about three months. If the  $\square$  icon flashes in the control panel, the clock battery is exhausted and the clock has been reset. Set the clock to the correct time and date.

#### 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.

# **Insert a Memory Card**

The camera stores pictures on **S**ecure **D**igital (SD) memory cards (available separately;  $\square$  319). The camera has two memory card slots (Slot 1 and Slot 2); if you will be using only one memory card, insert it in Slot 1 ( $\square$  30).

1 Turn the camera off.

#### Inserting and Removing Memory Cards

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

# **2** Open the card slot cover.

Slide the card slot cover out (1) and open the card slot (2).



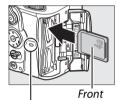
# 3 Insert the memory card.

Holding the memory card as shown at right, slide it in until it clicks into place. The memory card access lamp will light for a few seconds.

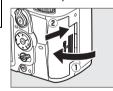
#### Inserting Memory Cards

Inserting memory cards upside down or backwards could damage the camera or the card. Check to be sure the card is in the correct orientation.

Close the memory card slot cover. If this is the first time the memory card will be used in the camera or the card has been formatted in another device, format the card as described on page 32.

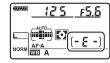


Access lamp



#### No Memory Card

If no memory card is inserted, the displays in the control panel and at the bottom of the viewfinder will show (- **£** -) and a "no memory card" icon will be displayed in the viewfinder screen while the battery has charge remaining, even when the camera is off.

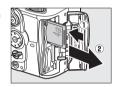






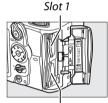
#### Removing Memory Cards

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).



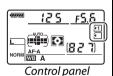
#### Using Two Memory Cards

Slot 1 is for the main card; the card in slot 2 plays a backup or secondary role. If the default setting of **Overflow** is selected for **Role played by card in Slot 2** ( $\square$  89) when two memory cards are inserted, the card in slot 2 will only be used when the card in slot 1 is full.



Slot 2

The control panel shows the slot or slots that currently hold a memory card (the example at right shows the icons displayed when a card is inserted in each slot). If the memory card is full or locked or an error has occurred, the icon for the affected card will blink ( $\square$  307).





Information display

#### 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.

# **Format the Memory Card**

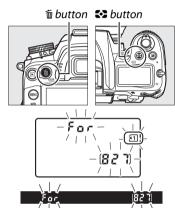
Memory cards must be formatted before first use or after being used or formatted in other devices.

#### **▼** Formatting Memory Cards

Formatting memory cards permanently deletes any data they may contain. Be sure to copy any photographs and other data you wish to keep to a computer before proceeding  $(\square 179)$ .

#### 1 Turn the camera on.

# Press the www buttons. Hold the www (www and www) buttons down simultaneously until a blinking For appears in the shutter-speed displays in the control panel and viewfinder. If two memory cards are inserted, the card in Slot 1 (□ 30) will be selected; you can choose the card in Slot 2 by rotating the main command dial. To exit without formatting the memory card, wait until For stops blinking (about six seconds) or press any button other than the www (www and wait)



# **3** Press the **™** buttons again.

buttons.

Press the (fin and conditions) buttons together a second time while For is blinking to format the memory card. Do not remove the memory card or remove or disconnect the power source during formatting. When formatting is complete, the control panel and viewfinder will show the number of photographs that can be recorded at current settings.

#### 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 warning will be displayed in the monitor if you attempt to release the shutter). To unlock the memory card, slide the switch to the "write" position.



Write-protect switch

#### See Also

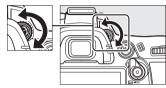
See page 236 for information on formatting memory cards using the **Format memory card** option in the setup menu.

# **Adjust Viewfinder Focus**

The camera is equipped with diopter adjustment to accommodate individual differences in vision. Check that the display in the viewfinder is in focus before framing pictures in the viewfinder.

- 7
- 1 Remove the lens cap.
- **2** Turn the camera on.
- **3** Focus the viewfinder.

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





AF area brackets

#### Adjusting Viewfinder Focus

If you are unable to focus the viewfinder as described above, select single-servo autofocus (**AF-S**;  $\square$  91), single-point AF ( $\square$  94), and the center focus point ( $\square$  96), 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 ( $\square$  281).

# **Basic Photography and Playback**

# "Point-and-Shoot" Photography (AUTO and ② Modes)

This section describes how to take photographs in  $\Box$  (auto) mode, an automatic "point-and-shoot" mode in which the majority of settings are controlled by the camera in response to shooting conditions, and in which the flash will fire automatically if the subject is poorly lit. To take photographs with the flash off while leaving the camera in control of other settings, rotate the mode dial to ③ to select auto (flash off) mode.

# **Step 1: Turn the Camera On**

#### 1 Turn the camera on.

Remove the lens cap and turn the camera on. The control panel will turn on and the display in the viewfinder will light.

# **2** Check the battery level.

Check the battery level in the control panel or viewfinder.





| Control panel * | Viewfinder* | Description                                           |  |
|-----------------|-------------|-------------------------------------------------------|--|
| (W###A          | _           | Battery fully charged.                                |  |
|                 | _           |                                                       |  |
|                 | _           | Battery partially discharged.                         |  |
| - #A            | _           |                                                       |  |
| 4_4             |             | Low battery. Charge battery or ready spare battery.   |  |
| (blinks)        | (blinks)    | Shutter release disabled. Charge or exchange battery. |  |

No icon displayed when camera is powered by optional EP-5B power connector and EH-5a AC adapter. 

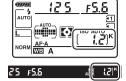
appears in information display.

#### 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 ( $\square$  284).

# 3 Check the number of exposures remaining.

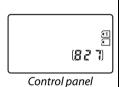
The control panel and viewfinder show the number of photographs that can be taken at current settings (values over 1,000 are rounded down to the nearest hundred; e.g., values



between 1,200 and 1,299 are shown as 1.2 K). If two memory cards are inserted, the displays show the space available on the card in Slot 1 ( $\square$  30). When the number of exposures remaining reaches  $\square$ , the number will flash,  $F \sqcup L L$  or  $F \sqcup L$  will blink in the shutter-speed displays, and the icon for the affected card will blink. Insert another memory card ( $\square$  29) or delete some photos ( $\square$  47, 175).

#### Camera Off Display

If the camera is turned off with a battery and memory card inserted, the memory card icon and number of exposures remaining will be displayed (some memory cards may in rare cases only display this information when the camera is on).



# Step 2: Select or 3 Mode

To shoot where use of a flash is prohibited, photograph infants, or capture natural lighting under low light conditions, rotate the mode dial to  $\mathfrak{D}$ . Otherwise, rotate the mode dial to  $\mathfrak{D}$ .



ℜ mode



📅 mode

Mode dial





# **Step 3: Frame the Photograph**

# 1 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.

Hold the camera as shown at right when framing photographs in portrait (tall) orientation.

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





# **2** Frame the photograph.

Frame a photograph in the viewfinder with the main subject in the AF area brackets.



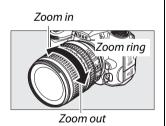
AF area brackets

#### 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).

The AF-S DX NIKKOR 18–105 mm f/3.5–5.6G ED VR In the case of the AF-S DX NIKKOR 18–105 mm f/3.5–5.6G ED VR ( $\square$  315, 316), changes to zoom can alter maximum aperture by up to 1<sup>1</sup>/<sub>3</sub> EV. The camera however automatically takes this into account when setting exposure, and no modifications to camera settings are

required following adjustments to zoom.



# **Step 4: Focus**

1 Press the shutter-release button halfway.
Press the shutter-release button halfway to
focus. The active focus point will be displayed. If
the subject is poorly lit, the flash may pop up and
the AF-assist illuminator may light.

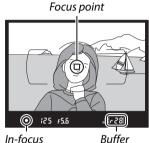


-0

**2** Check the indicators in the viewfinder. When the focus operation is complete, the in-

When the focus operation is complete, the infocus indicator (lacktriangle) will appear in the viewfinder.

| In-focus<br>indicator | Description                                |
|-----------------------|--------------------------------------------|
| •                     | Subject in focus.                          |
| <b>•</b>              | Focus point is between camera and subject. |
|                       | Focus point is behind subject.             |
| ▶ ◀                   | Camera unable to focus using autofocus.    |
| (blinks)              | See page 93.                               |



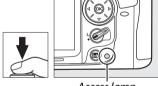
In-focus indicator

Buffer capacity

While the shutter-release button is pressed halfway, the number of exposures that can be stored in the memory buffer (" $\Gamma$ ";  $\square$  79) will be displayed in the viewfinder.

# Step 5: 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 while the photograph is being recorded to the memory card. Do not eject the memory card or remove or disconnect the power source until the lamp has gone out and recording is complete.



Access lamp

#### 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.







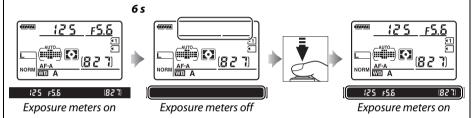




Focus: press halfway Shoot: press all the way down

#### Auto-Meter Off

The viewfinder and the control panel shutter speed and aperture displays will turn off if no operations are performed for about 6 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 meter-off delay**,  $\square$  214).



#### The Built-in Flash

If additional lighting is required for correct exposure in make 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 (4) 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.



# **Creative Photography (Scene Modes)**

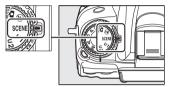
The camera offers a choice of "scene" modes. Choosing a scene mode automatically optimizes settings to suit the selected scene, making creative photography as simple as selecting a mode, framing a picture, and shooting as described on pages 35–39.



#### **SCENE** Mode

To select a scene, rotate the mode dial to **SCENE** and then rotate the main command dial until the desired scene is displayed in the monitor. The monitor turns on automatically when the dial is rotated.

#### Mode dial







Main command dial

Monitor

| Portrait     | Landscape        | Child              | Sports     | Close up     | Night<br>portrait | Night<br>landscape |
|--------------|------------------|--------------------|------------|--------------|-------------------|--------------------|
| Party/indoor | Beach/snow       | Sunset<br><b>ដ</b> | Dusk/dawn  | Pet portrait | Candlelight       | Blossom            |
|              | Autumn<br>colors | Food<br><b>#1</b>  | Silhouette | High key     | Low key           |                    |

#### ■ Scene Modes

#### 🏅 Portrait



Use for portraits with soft, naturallooking 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.

#### 🚣 Child



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

#### 📤 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.

#### 💐 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. To take a sequence of shots, select continuous release mode (\$\sim\$ 7, 77, 78).

#### 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.

#### Might 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.

#### 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 when lighting is poor.

#### **X** Party/Indoor



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

#### Beach/Snow



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

#### 📤 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.

#### 🚔 Sunset



Preserves the deep hues seen in sunsets and sunrises. The built-in flash and AFassist 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.

#### 2 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.

#### 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.

#### 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.

#### TI Food



Use for vivid photographs of food. Use of a tripod is recommended to prevent blur; the flash can also be used  $(\square 143)$ .

#### *▲ Silhouette*



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





Use when shooting dark scenes to create dark, somber images that bring out highlights. The built-in flash turns off; use of a tripod is recommended to prevent blur when lighting is poor.





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

A photograph will be displayed in the monitor. The memory card containing the picture currently displayed is shown by an icon.

#### **▶** button





**2** View additional pictures.

Additional pictures can be displayed by pressing  $\triangleleft$  or  $\triangleright$ .





To view additional information on the current photograph, press  $\triangle$  and  $\nabla$  ( $\square$  165).









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



Image Review

When **On** is selected for **Image review** in the playback menu ( $\square$  200), photographs are automatically displayed in the monitor for about 4 s after shooting.

See Also

See page 164 for information on choosing a memory card slot.

-1

# **Deleting Unwanted Photographs**

To delete the photograph currently displayed in the monitor, press the fin button. Note that photographs can not be recovered once deleted.

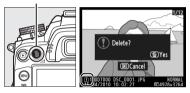
# Display the photograph. Display the photograph you wish to delete as described on the preceding page.



2 Delete the photograph.

Press the fi button. A confirmation dialog will be displayed with an icon at bottom left showing the location of the current picture; press the fi button again to delete the image and return to playback (to exit without deleting the picture, press ).

#### ี่ button



To delete selected images ( $\square$  176), all images taken on a selected date ( $\square$  177), or all images in a chosen location on a selected memory card ( $\square$  176), use the **Delete** option in the playback menu.

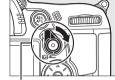
# Live View

# 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

**Note**: For illustrative purposes, monitor is shown with all indicators displayed.

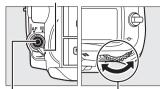
| Item                        | Description                                                    | Ш      |  |
|-----------------------------|----------------------------------------------------------------|--------|--|
| 1 Shooting mode             | The mode currently selected with the mode dial.                | 6      |  |
| 2 "No movie" icon           | Indicates that movies can not be recorded.                     | 57     |  |
| 3 Audio recording indicator | Indicates whether sound is being recorded with movies.         | 60     |  |
| (4) Time remaining          | The amount of time remaining before live view ends             | 54, 59 |  |
| 4 Time remaining            | automatically. Displayed if shooting will end in 30 s or less. |        |  |
| 5 AF mode                   | The current autofocus mode.                                    | 50     |  |
| 6 AF-area mode              | The current AF-area mode.                                      | 50     |  |
| (7) Focus point             | The current focus point. The display varies with the option    |        |  |
| 7) Totas point              | selected for AF-area mode ( $\bigcirc$ 50).                    | 51     |  |
| 8 (movie mode)              | The recording time remaining in movie mode.                    | 58     |  |
| Movie quality               | The frame size and quality of movies recorded in movie mode.   | 60     |  |
| _ Monitor                   | Displayed while the ?/ button is pressed; keep the button      |        |  |
| 10 brightness               | pressed and press ▲ or ▼ to adjust brightness (this applies to |        |  |
| bilgililess                 | the monitor only; exposure is not affected).                   |        |  |

# 2 Choose a focus mode.

To choose an autofocus mode, rotate the focusmode selector to **AF**, and then press the AF-mode button and rotate the main command dial until the desired mode is displayed in the monitor.

| Mode | Description                                                                                                                                                                      |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AF-S | <b>Single-servo AF</b> : For stationary subjects. Focus locks when shutter-release button is pressed halfway.                                                                    |
| AF-F | <b>Full time-servo AF:</b> For moving subjects. Camera focuses continuously until shutter-release button is pressed. Focus locks when shutter-release button is pressed halfway. |

#### Focus-mode selector



AF-mode Main command dial button

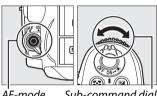


To use manual focus, rotate the focus-mode selector to **M** and proceed to Step 6 after focusing as described on page 55.

# **3** Choose an AF-area mode.

To choose an AF-area mode, press the AF-mode button and rotate the sub-command dial until the desired mode is displayed in the monitor.

| Mode         | Description                                         |
|--------------|-----------------------------------------------------|
|              | Face-priority AF: The camera automatically detects  |
| ( <b>@</b> ) | and focuses on portrait subjects facing the         |
|              | camera. Use for portraits.                          |
|              | Wide-area AF: Use for hand-held shots of            |
| WIDE         | 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        |
| NORM         | selected spot in the frame. A tripod is             |
|              | recommended.                                        |
|              | Subject-tracking AF: Track a selected subject as it |
| رى           | moves through the frame.                            |
|              |                                                     |



ÀF-mode Sub-command dial button



Monitor

#### Live View AF and AF-Area Modes

The AF and AF-area modes for live view can also be chosen using Custom Setting a8 (**Live view/movie AF**;  $\square$  211).



## 4 Choose the focus point.

(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, press the multi selector up, down, left, or right).

right).

(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







Focus point

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





Focus point

#### **✓** Using Autofocus in Live View

Use an AF-S lens. The desired results may not be achieved with other lenses or teleconverters. Note that in live view, autofocus is slower and the monitor may brighten or darken while the camera focuses. The focus point may sometimes be displayed in green when the camera is unable to focus. 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

# **5** Focus.

Press the shutter-release button halfway to focus.



(face-priority AF): The camera sets focus for the face in the double yellow border while the shutter-release button is pressed halfway; if the camera can no longer detect the subject (because, for example, the subject has looked away), borders will no longer be displayed.



**Wile- and normal-area AF):** The camera focuses on the subject in the selected focus point while the shutter-release button is pressed halfway.



subject-tracking AF): The camera focuses on the current subject. To end tracking, press 8.



#### **▼** Subject Tracking

The camera may be unable to track subjects if they are small, moving quickly, or a similar color to the background, or if both the subject and the background are very bright or very dark, the brightness and color of the subject or background varies greatly, the subject leaves the frame, or the subject visibly changes size.

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). Exposure can be locked by pressing the AE-L/AF-L button ( $\square$  106). Focus can be locked by pressing the shutter-release button halfway.

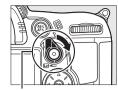
# **6** Take the picture.

Press the shutter-release button the rest of the way down to shoot. The monitor will turn off.



#### 7 Exit live view mode.

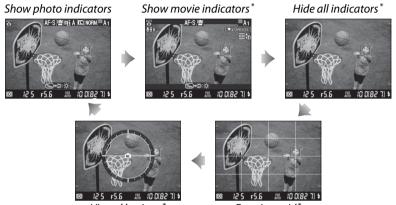
Rotate the live view switch to exit live view mode.



Live view switch

#### Live View/Movie Recording Display Options

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



Virtual horizon\*

Framing grid<sup>\*</sup>

\* 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 (\$\subset\$ 60; when movie indicators are displayed, the area outside the crop is greyed out).

#### 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 ( $\square$  237).

#### 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 **M** modes, exposure can be adjusted by  $\pm 5$  EV ( $\square$  107). Note that the effects of values over +3 EV or under -3 EV can not be previewed in the monitor.

#### **HDMI**

When the camera is attached to an HDMI video device, the camera monitor will turn off and the video device will display the view through the lens as shown at right. If the device supports HDMI-CEC, select **Off** for the **HDMI** > **Device control** option in the setup menu (\$\square\$ 194) before shooting in live view.



#### 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 ( $\square$  81).

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 in the monitor when the camera is panned. 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.

Live view may end automatically to prevent damage to the camera's internal circuits; exit live view when the camera is not 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 (\$\square\$ 49; the timer turns red 5 s before the expiry of the time selected **Monitor off delay** > **Live view**—\$\square\$ 215—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 during playback, live view will still end automatically when the timer expires.

#### **Manual Focus**

To focus in manual focus mode ( $\square$  99), rotate the lens focus ring until the subject is in focus.



To magnify the view in the monitor up to about 6.7 × for precise focus, press the <sup>®</sup> button. While the view through the lens is zoomed in, a navigation window will appear in a gray frame at the bottom right corner of the display. Use the multi selector to scroll to areas of the frame not visible in the monitor (available only if wide- or normal-area AF is selected for AF-area mode), or press <sup>®</sup> to zoom out.



outton Navigation window



# **Recording and Viewing Movies**

## **Recording Movies**

Movies can be recorded in live view mode. If desired, choose a Picture Control  $(\square 131)$  and color space  $(\square 141)$  before recording.

#### **1** Rotate the live view switch.

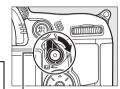
The mirror is raised and the view through the lens is displayed in the monitor instead of the viewfinder.

#### The 🔯 Icon

A 🔯 icon (🗆 49) indicates that movies can not be recorded.

#### Before Recording

Set aperture before recording in mode A or M. Note that movies may be over- or under-exposed at some aperture settings. Before shooting, check the brightness of the scene in the monitor; if the picture is too bright or too dark, end live view and adjust aperture as necessary.



Live view switch

## **2** Choose a focus mode.

Choose a focus mode as described in Step 2 of "Live View" (\$\sime\$ 50).

#### **Using an External Microphone**

The built-in microphone may record lens noise during autofocus or vibration reduction. This can be prevented by using a commercially-available external microphone with a stereo mini-pin jack (3.5 mm diameter). External microphones can also be used to record in stereo.

## **3** Choose an AF-area mode.

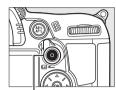
See Step 3 on page 50 for more information.

Frame the opening shot and focus as described in Steps 4 and 5 of "Live View" ( $\square$  51–52). Note that the number of subjects that can be detected in face-priority AF drops during movie recording.



## **5** 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. Exposure can be locked by pressing the **AE-L/AF-L** button ( $\square$  106) or (in modes **P**, **S**, **A**, and **M**) altered by up to  $\pm 3$  EV in steps of 1/3 EV using exposure compensation ( $\square$  107; note that depending on the brightness of the subject, changes to exposure may have no visible effect), and that exposure compensation is not available when **On** is selected for **Manual movie settings** in mode **M** as described on page 60. In autofocus mode, focus can be locked by pressing the shutter-release button halfway.



Movie-record button Recording indicator



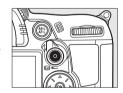
Time remaining

#### See Also

The behavior of the AE-L/AF-L button can be adjusted using Custom Setting f5 (Assign AE-L/AF-L button;  $\square$  232).

## **6** End recording.

Press the movie-record button again to end recording (to end recording, return to live view, and take a photograph, press the shutter-release button all the way down). Recording will end automatically when the maximum length is reached, or the memory card is full.



#### 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  $(\square 319)$ .

#### 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; 237). Bright light sources may leave after-images when the camera is panned. Jagged edges, false colors, and moiré 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.

Recording ends automatically if the lens is removed or when the mode dial is rotated.

Live view may end automatically to prevent damage to the camera's internal circuits; exit live view when the camera is not 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.

Shutter speed and ISO sensitivity are adjusted automatically unless  $\mathbf{On}$  is selected for  $\mathbf{Manual}$  movie settings ( $\square$  60) and the camera is in mode  $\mathbf{M}$ .

#### The Count-Down Display

A count down will be displayed 30 s before movie recording ends automatically ( $\square$  49). 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

Use the **Movie settings** option in the shooting menu to choose movie quality, sound, destination, and manual movie settings options.

• Movie quality: Choose from frame sizes of ■ 1920 × 1080, 型 1280 × 720, and 型 640 × 424 and from ★ high and normal quality. The frame rate depends on the option currently selected for **Video mode** in the setup menu (□ 237):

| NTSC                |                 | SC             | PAL              |                |
|---------------------|-----------------|----------------|------------------|----------------|
| Frame size (pixels) | Frame rate      | Maximum length | Frame rate       | Maximum length |
| 1920 × 1080         | 24 fps*         |                | 24 fps*          |                |
| 1280 × 720          | Choose from 24* | 20 min.        | Choose from 24 * | 20 min.        |
| 1200 X 720          | and 30 fps †    |                | and 25 fps       |                |
| 640× 424            | 30 fps †        |                | 25 fps           |                |

<sup>\*</sup> Listed value. Actual rate is 23.976 fps.

- Microphone: Turn the built-in or external microphone on or off or to adjust
  microphone sensitivity. Selecting Microphone off turns sound recording off;
  selecting any other option turns recording on and sets the microphone to the
  selected sensitivity.
- **Destination**: To record movies to the memory card in Slot 1, select **Slot 1**. Select **Slot 2** to record movies to the card in Slot 2. The menu shows the time available on each card; recording ends automatically when no time remains



• Manual movie settings: Choose On to allow manual adjustments to shutter speed and ISO sensitivity when the camera is in mode M. Shutter speed can be chosen from values between 1/8,000 s and 1/30 s, ISO sensitivity from values between ISO 100 and Hi 2 (110 101). Note that ISO sensitivity is fixed at the value selected; the camera does not adjust ISO sensitivity automatically when On is selected for ISO sensitivity settings > Auto ISO sensitivity control in the shooting menu (110 103). Exposure compensation is not available.



<sup>†</sup> Listed value. Actual rate is 29.97 fps.

## 1 Select Movie settings.

Press the MENU button to display the menus. Highlight **Movie settings** in the shooting menu and press **>**.

#### **MENU** button



## **2** Choose movie options.

Highlight the desired item and press ▶, then highlight an option and press ๋.

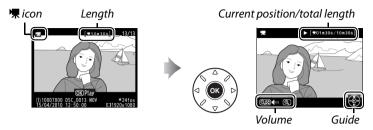






## **Viewing Movies**

Movies are indicated by a  $\P$  icon in full-frame playback ( $\square$  163). Press 8 to start playback.



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#### The following operations can be performed:

| То                                | Use                  | Description                                                                                                                                                                                                                        |  |
|-----------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Pause                             |                      | Pause playback.                                                                                                                                                                                                                    |  |
| Play                              | ØK)                  | Resume playback when movie is paused or during rewind/advance.                                                                                                                                                                     |  |
| Advance/<br>rewind                |                      | Speed doubles with each press, from 2x to 4x to 8x to 16x; keep pressed to skip to beginning or end of movie. If playback is paused, movie rewinds or advances one frame at a time; keep pressed for continuous rewind or advance. |  |
| Adjust volume                     | <b>⊕</b> / <b>⊝⊞</b> | Press ♥ to increase volume, ♥ to decrease.                                                                                                                                                                                         |  |
| Edit movie                        | ?∕₀-,,               | To edit movie, press <b>?</b> /o-, while movie is paused (🕮 63).                                                                                                                                                                   |  |
| Return to full-<br>frame playback |                      | Press ▲ or ▶ to exit to full-frame playback.                                                                                                                                                                                       |  |
| Exit to shooting mode             | <b>▼</b>             | Press shutter-release button halfway. Monitor will turn off; photographs can be taken immediately.                                                                                                                                 |  |
| Display menus                     | MENU                 | See page 195 for more information.                                                                                                                                                                                                 |  |



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



## **Editing Movies**

Trim footage to create edited copies of movies or save selected frames as JPEG stills.

| Option Description                                                                     |                                        |
|----------------------------------------------------------------------------------------|----------------------------------------|
| <b>Choose start point</b> Create a copy from which the opening footage has been remove |                                        |
| <b>Choose end point</b> Create a copy from which the ending footage has been remo      |                                        |
| Save selected frame                                                                    | Save a selected frame as a JPEG still. |

## **Trimming Movies**

To create trimmed copies of movies:

1 Display a movie full frame.

Press the ▶ button to display pictures full frame in the monitor and press ◀ and ▶ to scroll through pictures until the movie you wish to edit is displayed.







**2** Choose a starting or end point.

Play the movie back as described on page 62, pressing 

to start and resume playback and 

to pause. If you intend to trim the opening footage from the copy, pause on the first frame you wish to keep; if you will be editing out the ending footage pause on the last frame you wish to keep.





Starting and Ending Frames

The first frame is shown by a  $\blacksquare$ , the final frame by a  $\blacksquare$  icon.



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Press % to display the retouch menu.



**?**∕⊶ button

## 4 Choose an option.

To create a copy that includes the current frame and all following frames, highlight **Choose start point** in the edit movie menu and press **®**. Select **Choose end point** to create a copy that includes the current frame and all preceding frames.





## **5** Delete frames.

Press ▲ to delete all frames before (**Choose start point**) or after (**Choose end point**) the current frame.





## **6** Save the copy.

Highlight **Yes** and press ® to save the edited copy. If necessary, the copy can be trimmed as described above to remove additional footage. Edited copies are indicated by a icon in full-frame playback.





#### Trimming Movies

Movies must be at least two seconds long. If a copy can not be created at the current playback position, the current position will be displayed in red in Step 5 and no copy will be created. The copy will not be saved if there is insufficient space available on the memory card.

To prevent the camera from turning off unexpectedly, use a fully-charged battery when editing movies.

#### The Retouch Menu

Movies can also be edited using the **Edit movie** option in the retouch menu ( $\square$  248).





## **Saving Selected Frames**

To save a copy of a selected frame as a JPEG still:

1 View the movie and choose a frame.
Play the movie back as described on page
62. Pause the movie at the frame you intend to copy.





2 Display the retouch menu.
Press %— to display the retouch menu.





**?**∕⊶ button

3 Choose Save selected frame. Highlight Save selected frame and press ®.





4 Create a still copy.
Press ▲ to create a still copy of the current frame.





5 Save the copy.

Highlight Yes and press ® to create a JPEG copy of the selected frame. Movie stills are indicated by a 

icon in full-frame playback.





#### Save Selected Frame

JPEG movie stills created with the **Save selected frame** option can not be retouched. JPEG movie stills lack some categories of photo information ( $\square$  165).



# P, S, A, and M Modes

**P, S, A,** and **M** modes offer different degrees of control over shutter speed and aperture:

| Mode | Description                                                                                |
|------|--------------------------------------------------------------------------------------------|
|      | Programmed auto (□ 68): Camera sets shutter speed and aperture for                         |
| P    | optimal exposure. Recommended for snapshots and in other                                   |
|      | situations in which there is little time to adjust camera settings.                        |
|      | <b>Shutter-priority auto (</b> \$\square\$ 69): User chooses shutter speed; camera selects |
| 3    | aperture for best results. Use to freeze or blur motion.                                   |
|      | <b>Aperture-priority auto (</b> □ 70): User chooses aperture; camera selects               |
| Α    | shutter speed for best results. Use to blur background or bring both                       |
|      | foreground and background into focus.                                                      |
| М    | Manual (🕮 71): User controls both shutter speed and aperture. Set                          |
| IVI  | shutter speed to "bulb" or "time" for long time-exposures.                                 |

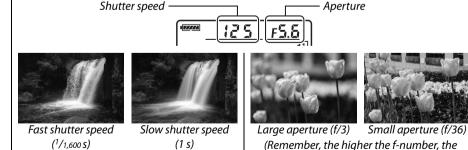


When using a CPU lens equipped with an aperture ring ( $\square$  269), lock the aperture ring at the minimum aperture (highest f-number). Type G lenses are not equipped with an aperture ring.

Non-CPU lenses can only be used in modes **A** (aperture-priority auto) and **M** (manual), when aperture can only be adjusted using the lens aperture ring. Selecting any other mode disables the shutter release.

#### 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.



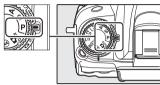
smaller the aperture.)

## **Mode P (Programmed Auto)**

In this mode, the camera automatically adjusts shutter speed and aperture for optimal exposure in most situations. This mode is recommended for snapshots and other situations in which you want to leave the camera in charge of shutter speed and aperture. To take photographs in programmed auto:

#### 1 Rotate the mode dial to P.

#### Mode dial

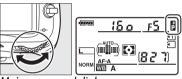


#### PS AM

## 2 Frame a photograph, focus, and shoot.

#### Flexible Program

In mode **P**, different combinations of shutter speed and aperture can be selected by rotating the main command dial while the exposure meters are on ("flexible program"). Rotate the dial to the right for large apertures (low f-numbers) that blur background details or fast shutter speeds that "freeze" motion. Rotate the dial to the left for small apertures (high



Main command dial

f-numbers) that increase depth of field or slow shutter speeds that blur motion. All combinations produce the same exposure. While flexible program is in effect, a lindicator appears in the control panel. To restore default shutter speed and aperture settings, rotate the main command dial until the indicator is no longer displayed, choose another mode, or turn the camera off.

#### See Also

See page 298 for information on the built-in exposure program. For information on activating the exposure meters, see "Auto-Meter Off" on page 39.

## **Mode S (Shutter-Priority Auto)**

In shutter-priority auto, you choose the shutter speed while the camera automatically selects the aperture that will produce the optimal exposure. Use slow shutter speeds to suggest motion by blurring moving subjects, fast shutter speeds to "freeze" motion.



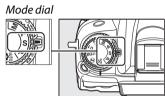
Fast shutter speed  $(^{1}/_{1,600} s)$ 



Slow shutter speed ( $^{1}/_{6}$  s)

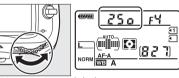
To take photographs in shutter-priority auto:

1 Rotate the mode dial to S.



2 Choose a shutter speed.

While the exposure meters are on, rotate the main command dial to choose the desired shutter speed from " $x \geq 5a$ " or values between 30 s and  $\frac{1}{8000}$  s.



Main command dial

**3** Frame a photograph, focus, and shoot.

#### See Also

See page 306 for information on what to do if flashing "au L b" or "- -" indicator appears in the shutter-speed displays.

In aperture-priority auto, you choose the aperture while the camera automatically selects the shutter speed that will produce the optimal exposure. Large apertures (low f-numbers) reduce depth of field, blurring objects behind and in front of the main subject. Small apertures (high f-numbers) increase depth of field, bringing out details in the background and foreground. Short field depths are generally used in portraits to blur background details, long field depths in landscape photographs to bring the foreground and background into focus.



Large aperture (f/2.8)

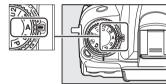


Small aperture (f/36)

To take photographs in aperture-priority auto:

1 Rotate the mode dial to A.

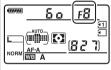
Mode dial



**2** Choose an aperture.

While the exposure meters are on, rotate the sub-command dial to choose the desired aperture from values between the minimum and maximum for the lens.



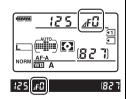


Sub-command dial

3 Frame a photograph, focus, and shoot.

✓ Non-CPU Lenses (□ 270)

Use the lens aperture ring to adjust aperture. If the maximum aperture of the lens has been specified using the **Non-CPU lens data** item in setup menu ( $\square$  159) when a non-CPU lens is attached, the current f-number will be displayed in the viewfinder and control panel, rounded to the nearest full stop. Otherwise the aperture displays will show only the number of stops ( $\Delta F$ , with maximum aperture displayed as  $\Delta F$ ) and the f-number must be read from the lens aperture ring.

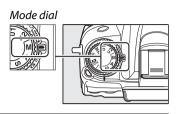


PS AM

## **Mode M (Manual)**

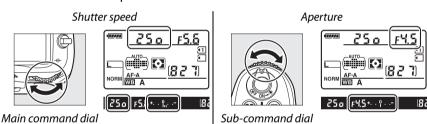
In mode M, you control both shutter speed and aperture. To take photographs in mode M:

1 Rotate the mode dial to M.



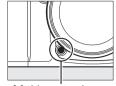
## **2** Choose aperture and shutter speed.

While the exposure meters are on, rotate the main command dial to choose a shutter speed, and the sub-command dial to set aperture. Shutter speed can be set to " $x \ 25 \ a$ " or to values between 30 s and  $1/8,000 \ s$ , or the shutter can be held open indefinitely for a long time-exposure ( $a \ a \ b \ a$ ). Aperture can be set to values between the minimum and maximum for the lens. Use the exposure indicators to check exposure.



**3** Frame a photograph, focus, and shoot.

To preview the effects of aperture, press and hold the depth-of-field preview button. The lens will be stopped down to the aperture value selected by the camera (modes **P** and **S**) or the value chosen by the user (modes **A** and **M**), allowing depth of field to be previewed in the viewfinder.



Depth-of-field preview button

#### Custom Setting e4—Modeling Flash

This setting controls whether the built-in flash and optional flash units that support the Creative Lighting System (CLS; see page 276) will emit a modeling flash when the depth-of-field preview button is pressed. See page 228 for more information.

#### AF Micro NIKKOR Lenses

Provided that an external exposure meter is used, the exposure ratio need only be taken into account when the lens aperture ring is used to set aperture.

#### The Exposure Indicator

If a shutter speed other than "bulb" or "time" is selected, the exposure indicator in the viewfinder shows whether the photograph would be under- or over-exposed at current settings (if **Lo** or **Hi** is displayed, the indicators show the amount of under- or over-exposure). Depending on the option chosen for Custom Setting b2 (**EV steps for exposure cntrl.**,  $\square$  211), the amount of under- or over-exposure is shown in increments of 1/3 EV or 1/2 EV (the illustrations below show the display in the viewfinder when **1/3 step** is selected for Custom Setting b2). If the limits of the exposure metering system are exceeded, the displays will flash.

| Optimal exposure | Underexposed by 1/3 EV | Overexposed by over 2 EV |
|------------------|------------------------|--------------------------|
| + 0              | + 0                    | + 0                      |

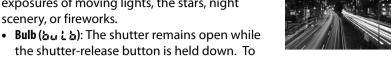
#### Reverse Indicators

35 s exposure

at aperture

#### ■■ Lona Time-Exposures (M Mode Only)

Select the following shutter speeds for long timeexposures of moving lights, the stars, night scenery, or fireworks.



the shutter-release button is held down. To prevent blur, use a tripod or an optional MC-DC2 remote cord ( 281).

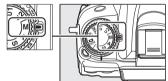
• Time (- -): Requires an optional ML-L3 remote control (\$\square\$ 281). Start the exposure by pressing the ML-L3 shutter-release button. The shutter remains open for thirty minutes or until the button is pressed a second time.

## 1 Ready the camera.

Mount the camera on a tripod or place it on a stable, level surface. To avoid loss of power during the exposure, use a fully charged EN-EL15 battery or an optional EH-5a AC adapter and EP-5B power connector. Note that noise (randomly-spaced bright pixels or fog) may occur in long exposures; before shooting, choose **On** for **Long exp. NR** in the shooting menu ( $\square$  205).

2 Rotate the mode dial to M.

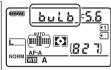
#### Mode dial



## **3** Choose a shutter speed.

While the exposure meters are on, rotate the main command dial to choose a shutter speed of bulb. For a shutter speed of "time" (- -), select remote mode (\$\square\$ 80) after choosing the shutter speed.





Main command dial

## **4** Open the shutter.

**Bulb**: After focusing, press the shutter-release button on the camera or optional MC-DC2 remote cord all the way down. Keep the shutter-release button pressed until the exposure is complete.

Time: Press the ML-L3 shutter-release button all the way down to start shooting.

## **5** Close the shutter.

**Bulb**: Take your finger off the shutter-release button.

**Time**: Press the ML-L3 shutter-release button all the way down. Shooting ends automatically after thirty minutes.



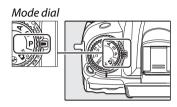
# **User Settings: U1 and U2 Modes**

Assign frequently-used settings to the **U1** and **U2** positions on the mode dial.

## Saving User Settings

1 Select a mode.

Rotate the mode dial to the desired mode.



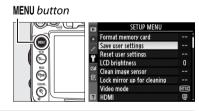
**2** Adjust settings.

Make the desired adjustments to flexible program (mode P), shutter speed (modes S and M), aperture (modes A and M), exposure and flash compensation, flash mode, focus point, metering, AF and AF-area modes (viewfinder photography only), bracketing, and settings in the shooting ( $\square$  202) and Custom Settings ( $\square$  206) menus (note that the camera will not store the options selected for Storage folder, File naming, Manage Picture Control, Multiple exposure, or Interval timer shooting).

3 Select Save user settings.

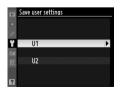
Press the MENU button to display the menus.

Highlight Save user settings in the setup menu and press ▶.



4 Select U1 or U2.
Highlight U1 or U2 and press ▶.





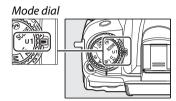
Highlight **Save settings** and press ® to assign the settings selected in Steps 1 and 2 to the mode dial position selected in Step 4.





## **Recalling User Settings**

Simply rotate the mode dial to **U1** to recall the settings assigned to **U1**, or to **U2** to recall the settings assigned to **U2**.



U1)

## **Resetting User Settings**

To reset settings for **U1** or **U2** to default values:

Select Reset user settings. Press the MENU button to display the menus. Highlight Reset user settings in the setup menu and press ▶.







2 Select U1 or U2. Highlight U1 or U2 and press ▶.





**3** Reset user settings. Highlight Reset and press ®.

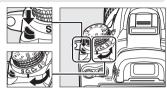




## **Release Mode**

## **Choosing a Release Mode**

To choose a release mode, press the release mode dial lock release and turn the release mode dial to the desired setting.



Release mode dial

| Mode       | Description                                                                                                                                                                                                                                                                                                                                                                         |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| S          | <b>Single frame</b> : Camera takes one photograph each time shutter-release button is pressed.                                                                                                                                                                                                                                                                                      |
| <b>C</b> L | <b>Continuous low speed</b> : While shutter-release button is held down, camera records 1–5 frames per second. ¹ Frame rate can be chosen using Custom Setting d6 ( <b>CL mode shooting speed</b> , □ 217).                                                                                                                                                                         |
| Сн         | <b>Continuous high speed</b> : While shutter-release button is held down, camera records up to 6 frames per second. <sup>2</sup>                                                                                                                                                                                                                                                    |
| Q          | <b>Quiet shutter-release:</b> 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. In addition, beep does not sound regardless of setting selected for Custom Setting d1 ( <b>Beep</b> ; $\square$ 215). |
| ৩          | <b>Self-timer</b> : Use self-timer for self-portraits or to reduce blurring caused by camera shake (\$\Pi\$ 80).                                                                                                                                                                                                                                                                    |
|            | <b>Remote control</b> : Shutter is controlled using shutter-release button on optional ML-L3 remote control (□ 80).                                                                                                                                                                                                                                                                 |
| Mup        | Mirror up: Choose this mode to minimize camera shake in telephoto or close-up photography or in other situations in which the slightest camera movement can result in blurred photographs (\$\subset\$ 83).                                                                                                                                                                         |

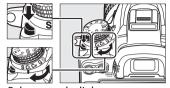
- 1 Average frame rate with an EN-EL15 battery, continuous-servo AF, manual or shutter-priority auto exposure, a shutter speed of <sup>1</sup>/<sub>250</sub> s or faster, remaining settings other than Custom Setting d6 at default values, and memory remaining in memory buffer.
- 2 Average frame rate with an EN-EL15 battery, continuous-servo AF, manual or shutter-priority auto exposure, a shutter speed of  $^{1}/_{250}$  s or faster, other settings at default values, and memory remaining in memory buffer.

## Continuous Mode (CH/CL)

To take pictures in CH (continuous high speed) and CL (continuous low speed) modes:

1 Select (H or (L mode.

Press the release mode dial lock release and turn the release mode dial to **CH** or **CL**.



Release mode dial

2 Frame a photograph, focus, and shoot.
While the shutter-release button is pressed all the way down, pictures will be taken at about 6 fps in continuous high speed mode, or at the



frame rate selected for Custom Setting d6 (**CL mode shooting speed**,  $\square$  217) in continuous low speed mode. Frame rates may slow when the battery is low or vibration reduction or auto ISO sensitivity control ( $\square$  103) is on.



#### 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 shooting conditions and memory card performance, 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 exposure-count displays in the viewfinder and control panel while the shutter-release button is pressed. The illustration at right shows the display when space remains in the buffer for about 28 pictures.





#### See Also

For information on choosing the maximum number of photographs that can be taken in a single burst, see Custom Setting d7 (**Max. continuous release**,  $\square$  217). For information on the number of pictures that can be taken in a single burst, see page 320.

The self-timer and optional ML-L3 remote control (\$\square\$ 281) can be used to reduce camera shake or for self-portraits.

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.

Press the release mode dial lock release and rotate the release-mode dial to 🖒 (self-timer) or ■ (remote) mode.



Release mode dial

In remote mode, the timing of the shutter release can be selected using the **Remote** control mode option in the shooting menu. After pressing the MENU button to display the menus, highlight Remote control mode in the shooting menu and press ▶ to display the following options. Press the selector up or down to highlight an option and press @.

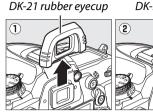


|             | Option           | Description                                                       |  |
|-------------|------------------|-------------------------------------------------------------------|--|
| ≘ 2c        | Delayed remote   | Shutter is released 2 s after ML-L3 shutter-release button is     |  |
| <b>L</b> 23 | Delayed Telliote | pressed.                                                          |  |
| 8           | Quick-response   | Shutter is released when ML-L3 shutter-release button is          |  |
| •           | remote           | pressed.                                                          |  |
|             | Remote           | Press ML-L3 shutter-release button once to raise mirror, again to |  |
| 🖺 Mup       | mirror-up        | release shutter and take photograph. Prevents blur caused by      |  |
|             | пптот-ир         | camera moving when mirror is raised.                              |  |

## **3** Frame the photograph.

#### **Cover the Viewfinder**

When taking photos without your eye to the viewfinder, remove the DK-21 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.





## **4** Take the photograph.

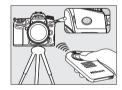
**Self-timer mode**: Press the shutter-release button halfway to focus, and then press the button the rest of the way down to start the





self-timer (note that the timer will not start if the camera is unable to focus or in other situations in which the shutter can not be released). The self-timer lamp will start to blink. Two seconds before the photograph is taken, the self-timer lamp will stop blinking. 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 (□ 3, 5) 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. *In remote mirror-up mode*, pressing the ML-L3 shutter-release button once raises the mirror; the shutter will be released and the self-timer lamp will flash after 30 s or when the button is pressed a second time.

To cancel shooting, select another release mode.

#### Before Using the Remote Control

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

#### Using the Built-in Flash

Before taking a photograph with the flash in P, S, A, M, or ¶ modes, press the \$ button to raise the flash and wait for the \$ indicator to be displayed in the viewfinder (□ 143). Shooting will be interrupted if the flash is raised while 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 remote 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**; □ 214).

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 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.

#### Focusing in Remote Control Mode

The camera will not adjust focus in remote mirror-up mode or when continuous-servo autofocus is selected; note however that if any autofocus mode is selected, you can focus by pressing the camera shutter-release button halfway before shooting (pressing the button all the way down will not release the shutter). If auto- or single-servo autofocus is selected or the camera is in live view in delayed or quick-response remote mode, the camera will automatically adjust focus before shooting; if the camera is unable to focus in viewfinder photography, it will return to stand-by without releasing the shutter.

#### Remote Mirror-up Mode

Metering is not performed in remote mirror-up mode. Photos can not be framed in the viewfinder while the mirror is raised.

#### O bulb

In self-timer mode, a shutter speed of bu Lb is equivalent to approximately 1/4 s.

#### See Also

For information on choosing the duration of the self-timer, the number of shots taken, and the interval between shots, see Custom Setting c3 (**Self-timer**;  $\square$  214). For information on choosing the length of time the camera will remain in stand-by mode waiting for a signal from the remote control, see Custom Setting c5 (**Remote on duration**;  $\square$  215). For information on controlling the beeps that sound when the self-timer and remote control are used, see Custom Setting d1 (**Beep**;  $\square$  215).

## Mirror up Mode

Choose this mode to minimize blurring caused by camera movement when the mirror is raised. Use of a tripod is recommended.

## 1 Select mirror up mode.

Press the release mode dial lock release and rotate the release mode dial to MUP.



Release mode dial

#### 2 Raise the mirror.

Frame the picture, focus, and then press the shutter-release button the rest of the way down to raise the mirror.



#### Mirror Up

While the mirror is raised, photos can not be framed in the viewfinder and autofocus and metering will not be performed.

## **3** Take a picture.

Press the shutter-release button all the way down again to take a picture. To prevent blurring caused by camera movement, press the shutter-release button smoothly, or use an optional remote cord (\$\square\$ 281). The mirror lowers when shooting ends.

## Mirror up Mode

A picture will be taken automatically if no operations are performed for about 30 s after the mirror is raised.

#### See Also

For information on using the optional ML-L3 remote control for mirror-up photography, see page 80.

# **Image Recording Options**

## **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 ( $\square$  320).

## **Image Quality**

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

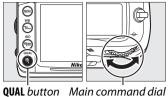
| Option      | File type | Description                                                                                                                                                     |
|-------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NEF (RAW)   | NEF       | Raw 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   |           | Record JPEG images at a compression ratio of roughly 1:4 (fine quality).*                                                                                       |
| JPEG normal | JPEG      | 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)+  |           | Two images are recorded, one NEF (RAW) image and one fine-quality                                                                                               |
| JPEG fine   |           | JPEG image.                                                                                                                                                     |
| NEF (RAW)+  | NEF/      | Two images are recorded, one NEF (RAW) image and one normal-                                                                                                    |
| JPEG normal | JPEG      | quality JPEG image.                                                                                                                                             |
| NEF (RAW)+  | 1         | Two images are recorded, one NEF (RAW) image and one basic-quality                                                                                              |
| JPEG basic  |           | JPEG image.                                                                                                                                                     |

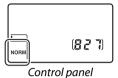
<sup>\*</sup> Size priority selected for JPEG compression.

Image quality is set by pressing the QUAL button and rotating the main command dial until the desired setting is displayed in the control panel.

The Shooting Menu Image quality can also be adjusted using the Image quality option in the shooting menu (🕮 202).









The following options can be accessed from the shooting menu. Press the MENU button to display the menus, highlight the desired option and press ▶.

#### **■■** JPEG Compression

Choose the type of compression for JPEG images.

| Option Description |                                                                              | Description                                                  |
|--------------------|------------------------------------------------------------------------------|--------------------------------------------------------------|
| 4                  | Size priority Images are compressed to produce relatively uniform file size. |                                                              |
| **                 | Optimal quality                                                              | Optimal image quality. File size varies with scene recorded. |

#### ■■ NEF (RAW) Recording > Type

Choose the type of compression for NEF (RAW) images.

|               | Option     | Description                                                       |  |
|---------------|------------|-------------------------------------------------------------------|--|
| ON 3          | Lossless   | NEF images are compressed using a reversible algorithm, reducing  |  |
| compressed    |            | file size by about 20–40% with no effect on image quality.        |  |
|               |            | NEF images are compressed using a non-reversible algorithm,       |  |
| ON <b>Ξ</b> C | Compressed | reducing file size by about 40-55% with almost no effect on image |  |
|               |            | quality.                                                          |  |

#### ■■ NEF (RAW) Recording > NEF (RAW) Bit Depth

Choose a bit depth for NEF (RAW) images.

| Option                                                                                                          | Description |  |
|-----------------------------------------------------------------------------------------------------------------|-------------|--|
| 12-bit 12-bit NEF (RAW) images are recorded at a bit-depth of 12 bits.                                          |             |  |
| NEF (RAW) images are recorded at a bit-depth of 14 bits, p larger files but increasing the color data recorded. |             |  |

#### NEF (RAW) Images

NEF (RAW) images can be viewed on the camera or using software such as Capture NX 2 (available separately;  $\square$  281) or ViewNX 2 (available on the supplied ViewNX 2 CD). JPEG copies of NEF (RAW) images can be created using the **NEF (RAW) processing** option in the retouch menu ( $\square$  258). Note that the option selected for image size does not affect the size of NEF (RAW) images.

#### NEF+JPEG

When photographs taken at settings of NEF (RAW) + JPEG are viewed on the camera with only one memory card inserted, only the JPEG image will be displayed. If both copies are recorded to the same memory card, both copies will be erased when the photo is deleted. If the JPEG copy is recorded to a separate memory card using the **Role played by card in Slot 2 > RAW Slot 1—JPEG Slot 2** option, deleting the JPEG copy will not delete the NEF (RAW) image.

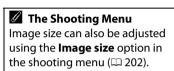
## **Image Size**

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

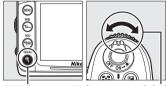
| lmage size     | Size (pixels) | Print size (cm/in.)*    |
|----------------|---------------|-------------------------|
| <b>□</b> Large | 4,928 × 3,264 | 41.7 × 27.6/16.4 × 10.9 |
| M Medium       | 3,696× 2,448  | 31.3 × 20.7/12.3 × 8.2  |
| <b>⑤</b> Small | 2,464 × 1,632 | 20.9 × 13.8/8.2 × 5.4   |

<sup>\*</sup> 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).

Image size is set by pressing the **QUAL** button and rotating the sub-command dial until the desired setting is displayed in the control panel.







QUAL button Sub-command dial



Control panel



# **Using Two Memory Cards**

When two memory cards are inserted in the camera, you can use the **Role played by card in Slot 2** item in the shooting menu to choose the role played by the card in Slot 2. Choose from **Overflow** (the card in Slot 2 is used only when the card in Slot 1 is full), **Backup** (each picture is recorded twice, once to the card in Slot 1 and again to the card in Slot 2), and **RAW Slot 1—JPEG Slot 2** (as for **Backup**, except that the NEF/RAW copies of photos recorded at settings of NEF/RAW + JPEG are recorded only to the card in Slot 1 and the JPEG copies only to the card in Slot 2).

# #Backup" and "RAW Slot 1—JPEG Slot 2"

The camera shows the number of exposures remaining on the card with the least amount of memory. Shutter release will be disabled when either card is full.

## Recording Movies

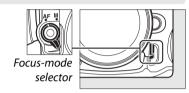
When two memory cards are inserted in the camera, the slot used to record movies can be selected using the **Movie settings** > **Destination** option in the shooting menu ( $\square$  60).



This section describes the focus options available when photographs are framed in the viewfinder. Focus can be adjusted automatically (see below) or manually ( $\square$  99). The user can also select the focus point for automatic or manual focus ( $\square$  96) or use focus lock to focus to recompose photographs after focusing ( $\square$  97).

# **Autofocus**

To use autofocus, rotate the focus-mode selector to **AF**.

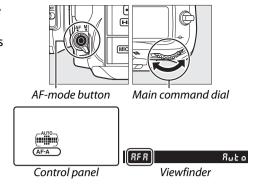


# **Autofocus Mode**

Choose from the following autofocus modes:

| Mode | Description                                                                                                                                                                                                                                                                                                                                                                                                          |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| АГ-А | Auto-servo AF: Camera automatically selects single-servo autofocus if subject is stationary,                                                                                                                                                                                                                                                                                                                         |
|      | continuous-servo autofocus if subject is moving.                                                                                                                                                                                                                                                                                                                                                                     |
| AF-S | <b>Single-servo AF</b> : For stationary subjects. Focus locks when shutter-release button is pressed halfway. At default settings, shutter can only be released when in-focus indicator is displayed ( <i>focus priority</i> ;   208).                                                                                                                                                                               |
| AF-C | <b>Continuous-servo AF</b> : For moving subjects. Camera focuses continuously while shutter-release button is pressed halfway; if subject moves, camera will engage <i>predictive focus tracking</i> ( $\square$ 93) to predict final distance to subject and adjust focus as necessary. At default settings, shutter can be released whether or not subject is in focus ( <i>release priority</i> ; $\square$ 208). |

To select the autofocus mode, press the AF-mode button and rotate the main command dial until the desired setting is displayed in the viewfinder or control panel.





## 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.

#### 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 ( ) 99) or use focus lock ( ) 77) 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.

### See Also

For information on using focus priority in continuous-servo AF, see Custom Setting a1 (**AF-C priority selection**,  $\square$  208). For information on using release priority in single-servo AF, see Custom Setting a2 (**AF-S priority selection**,  $\square$  208). See page 50 for information on the autofocus options available in live view or during movie recording.

# **AF-Area Mode**

Choose how the focus point for autofocus is selected.

- **Single-point AF**: Select the focus point as described on page 96; the camera will focus on the subject in the selected focus point only. Use with stationary subjects.
- **Dynamic-area AF:** Select the focus point as described on page 96. In **AF-A** and **AF-C** focus modes, the camera will focus based on information from surrounding focus points if the subject briefly leaves the selected point. The number of focus points varies with the mode selected:
  - 9-point dynamic-area AF: Choose when there is time to compose the photograph or when photographing subjects that are moving predictably (e.g., runners or race cars on a track).
  - **21-point dynamic-area AF**: Choose when photographing subjects that are moving unpredictably (e.g., players at a football game).
  - **39-point dynamic-area AF**: Choose when photographing subjects that are moving quickly and can not be easily framed in the viewfinder (e.g., birds).
- 3D-tracking: Select the focus point as described on page 96. In AF-A and AF-C focus modes, the camera will track subjects that leave the selected focus point and select new focus points as required. Use to quickly compose pictures with subjects that are moving erratically from side to side (e.g., tennis players). If the subject leaves viewfinder, remove your finger from the shutter-release button and recompose the photograph with the subject in the selected focus point.







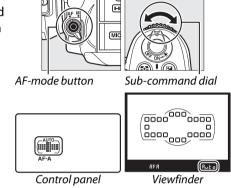
# 3D-tracking

When the shutter-release button is pressed halfway, the colors in the area surrounding the focus point are stored in the camera. Consequently 3D-tracking may not produce the desired results with subjects that are the same color as the background or that occupy a very small area of the frame.

 Auto-area AF: The camera automatically detects the subject and selects the focus point. If a type G or D lens is used, the camera can distinguish human subjects from the background for improved subject detection. The active focus points are highlighted briefly after the camera focuses; in AF-C mode or when continuous-servo autofocus is selected in AF-A mode, the main focus point remains highlighted after the other focus points have turned off.



To select the AF-area mode, press the AF-mode button and rotate the sub-command dial until the desired setting is displayed in the viewfinder or control panel.



#### AF-Area Mode

AF-area mode is shown in the control panel and viewfinder.

| AF-area mode Control panel   |     | Viewfinder | AF-area mode                 | Control panel                          | Viewfinder |
|------------------------------|-----|------------|------------------------------|----------------------------------------|------------|
| Single-point AF              |     | 5          | 39-point dynamic-area<br>AF* |                                        | 439        |
| 9-point dynamic-area<br>AF * | ( ) | d 3        | 3D-tracking*                 | (IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII | 34         |
| 21-point dynamic-area<br>AF* |     | d2 1       | Auto-area AF                 | AUTO                                   | Ruto       |

<sup>\*</sup> Only active focus point is displayed in the viewfinder. Remaining focus points provide information to assist focus operation.

#### Manual Focus

Single-point AF is automatically selected when manual focus is used.

#### See Also

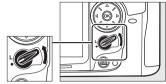
For information on adjusting how long the camera waits before refocusing when an object moves in front of the camera, see Custom Setting a3 (**Focus tracking with lock-on**,  $\square$  209). See page 50 for information on the autofocus options available in live view or during movie recording.

# **Focus Point Selection**

The camera offers a choice of 39 focus points that can be used to compose photographs with the main subject positioned almost anywhere in the frame.

**1** Rotate the focus selector lock to ●.

This allows the multi selector to be used to select the focus point.



Focus selector lock

# **2** Select the focus point.

Use the multi selector to select the focus point in the viewfinder while the exposure meters are on. Press ® to select the center focus point.

The focus selector lock can be rotated to the locked (L) position following selection to prevent the selected focus point from changing when the multi selector is pressed.











## Auto-area AF

The focus point for auto-area AF is selected automatically; manual focus-point selection is not available.

# See Also

For information on choosing when the focus point is illuminated, see Custom Setting a4 (**AF point illumination**,  $\square$  209). For information on setting focus-point selection to "wrap around," see Custom Setting a5 (**Focus point wrap-around**,  $\square$  209). For information on choosing the number of focus points that can be selected using the multi selector, see Custom Setting a6 (**Number of focus points**,  $\square$  210). For information on changing the role of the B button, see Custom Setting f2, **OK button (shooting mode)**;  $\square$  229.

# **Focus Lock**

Focus lock can be used to change the composition after focusing, making it possible to focus on a subject that will not be in a focus point in the final composition. If the camera is unable to focus using autofocus ( $\square$  93), focus lock can also be used to recompose the photograph after focusing on another object at the same distance as your original subject. Focus lock is most effective when an option other than autoarea AF is selected for AF-area mode ( $\square$  94).

# 1 Focus.

Position the subject in the selected focus point and press the shutter-release button halfway to initiate focus. Check that the in-focus indicator ( ) appears in the viewfinder.





# **2** Lock focus.

AF-A and AF-C focus modes: With the shutter-release button pressed halfway (1), press the AE-L/AF-L button (2) to lock both focus and exposure (an AE-L icon will be displayed in the viewfinder). Focus will remain locked while the AE-L/AF-L button is pressed, even if you later remove your finger from the shutter-release button.

**AF-S focus mode**: Focus will lock automatically when the in-focus indicator appears, and remain locked until you remove your finger from the shutter-release button. Focus can also be locked by pressing the **AE-L/AF-L** button (see above).

#### Shutter-release button



AE-L/AF-L button



Focus will remain locked between shots if you keep the shutter-release button pressed halfway (AF-S) or keep the AE-L/AF-L button pressed, allowing several photographs in succession to be taken at the same focus setting.





Do not change the distance between the camera and the subject while focus lock is in effect. If the subject moves, focus again at the new distance.

## See Also

See Custom setting c1 (**Shutter-release button AE-L**,  $\square$  213) for information on using the shutter-release button to lock exposure, Custom Setting f5 (**Assign AE-L/AF-L button**,  $\square$  232) for information on choosing the role played by the **AE-L/AF-L** button.



# **Manual Focus**

Manual focus is available for lenses that do not support autofocus (non-AF NIKKOR lenses) or when the autofocus does not produce the desired results ( $\square$  93).

• AF-S lenses: Set the lens focus mode switch to M.

#### AF-S Lenses

Users of AF-S lenses (including the AF-S DX NIKKOR 18–105 mm f/3.5–5.6G ED VR lens used in this manual for illustrative purposes;  $\square$  315, 316) can select manual focus simply by setting the lens focus-mode switch to **M**.

• AF lenses: Set the lens focus mode switch (if present) and camera focus-mode selector to M.

# **▼** AF Lenses

Do not use AF lenses with the lens focus mode switch set to **M** and the camera focus-mode selector set to **AF**. Failure to observe this precaution could damage the camera.

AF M

Focus-mode selector

Manual focus lenses: Set the camera focus-mode selector to M.

To focus manually, adjust the lens focus ring until the image displayed on the clear matte field in the viewfinder is in focus. Photographs can be taken at any time, even when the image is not in focus.





# ■■ The Electronic Rangefinder

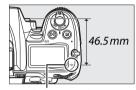
If the lens has a maximum aperture of f/5.6 or faster, the viewfinder focus indicator can be used to confirm whether the subject in the selected focus point is in focus (the focus point can be selected from any of the 39 focus points). After positioning the subject in the selected focus point, press the shutter-release button halfway and rotate the lens focus ring until the infocus indicator (●) is displayed. Note that with the subjects listed on page 93, the in-focus indicator may sometimes be displayed when the subject is not in focus; confirm focus in the viewfinder before shooting.





#### Focal Plane Position

To determine the distance between your subject and the camera, measure from the focal plane mark on the camera body. The distance between the lens mounting flange and the focal plane is 46.5 mm (1.83 in.).



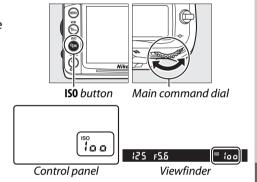
Focal plane mark



# S ISO Sensitivity

"ISO sensitivity" is the digital equivalent of film speed. Choose from settings that range from a value roughly equivalent to ISO 100 to one roughly equivalent to ISO 6400 in steps equivalent to  $^{1}/_{3}$  EV. For special situations, ISO sensitivity can be raised above ISO 6400 by from about 0.3 EV (Hi 0.3, equivalent to ISO 8000) to about 2 EV (Hi 2, equivalent to ISO 25600). Auto and scene modes also offer an **AUTO** option, which allows the camera to set ISO sensitivity automatically in response to lighting conditions. The higher the ISO sensitivity, the less light needed to make an exposure, allowing higher shutter speeds or smaller apertures.

ISO sensitivity can be adjusted by pressing the **ISO** button and rotating the main command dial until the desired setting is displayed in the control panel or viewfinder.



#### **AUTO**

If the mode dial is rotated to P, S, A, or M after AUTO is selected for ISO sensitivity in another mode, the ISO sensitivity last selected in P, S, A, or M mode will be restored.

#### 

Pictures taken at these settings are more likely to be subject to noise (randomly-spaced bright pixels, fog, or lines).

#### See Also

For information on choosing the ISO sensitivity step size, see Custom Setting b1 (**ISO** sensitivity step value;  $\square$  211). For information on using the **High ISO NR** option in the shooting menu to reduce noise at high ISO sensitivities, see page 205.

## The Shooting Menu

ISO sensitivity can also be adjusted using the **ISO sensitivity settings** option in the shooting menu ( $\square$  202).



# Auto ISO Sensitivity Control (P, S, A, and M Modes Only)

If **On** is selected for **ISO sensitivity settings** > **Auto ISO sensitivity control** in the shooting menu, ISO sensitivity will automatically be adjusted if optimal exposure can not be achieved at the value selected by the user (ISO sensitivity is adjusted appropriately when the flash is used).

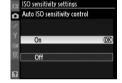
Select Auto ISO sensitivity control. Press the MENU button and select ISO sensitivity settings in the shooting menu. Highlight Auto ISO sensitivity control and press .



2 Select On.

Highlight **On** and press (if **Off** is selected, ISO sensitivity will remain fixed at the value selected by the user).





**3** Adjust settings.

The maximum value for auto ISO sensitivity can be selected using **Maximum sensitivity** (choose lower values to prevent noise in the form of randomly-spaced bright pixels, fog, or lines); the minimum value for auto ISO





sensitivity is automatically set to ISO 100. In modes **P** and **A**, sensitivity will only be adjusted if underexposure would result at the shutter speed selected for **Minimum shutter speed** (1/4000–1 s; in modes **S** and **M**, sensitivity will be adjusted for optimal exposure at the shutter speed selected by the user). Slower shutter speeds will be used only if optimum exposure can not be achieved at the ISO sensitivity value selected for **Maximum sensitivity**. If the ISO sensitivity selected by the user is higher than the value selected for **Maximum sensitivity**, the value selected for **Maximum sensitivity** will be used instead.

Press ( to exit when settings are complete. When **On** is selected, the display at right appears in the viewfinder and control panel. When sensitivity is altered from the value selected by the user, these indicators blink and the altered value is shown in the information display.



## Auto ISO Sensitivity Control

Noise is more likely at higher sensitivities. Use the **High ISO NR** option in the shooting menu to reduce noise (see page 205). When a flash is used, the value selected for **Minimum shutter speed** is ignored in favor of the option selected for Custom Setting e1 (**Flash sync speed**,  $\square$  222). Note that ISO sensitivity may be raised automatically when auto ISO sensitivity control is used in combination with slow sync flash modes (available with the built-in flash and SB-900, SB-800, SB-700, SB-600, and SB-400 flash units), possibly preventing the camera from selecting slow shutter speeds.

# **Exposure/Bracketing**

# Metering

(P, S, A, and M Modes Only)

Choose how the camera sets exposure in **P**, **S**, **A**, and **M** modes (in other modes, the camera selects the metering method automatically).

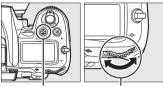
| Option | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ø      | Matrix: Produces natural results in most situations. Camera meters a wide area of the frame and set exposure according to tone distribution, color, composition, and, with type G or D lenses (\$\subseteq\$ 269), distance information (3D color matrix metering II; with other CPU lenses, camera uses color matrix metering II, which does not include 3D distance information). With non-CPU lenses, camera uses color matrix metering if focal length and maximum aperture are specified using Non-CPU lens data option in setup menu (\$\supseteq\$ 159); otherwise camera uses center-weighted metering. |
| (0)    | <b>Center-weighted</b> : Camera meters entire frame but assigns greatest weight to center area (if CPU lens is attached, size of area can be selected using Custom Setting b4, <b>Centerweighted area</b> , $\square$ 213; if non-CPU lens is attached, area is 8 mm in diameter). Classic meter for portraits; recommended when using filters with an exposure factor (filter factor) over 1x.*                                                                                                                                                                                                                |
|        | <b>Spot</b> : Camera meters circle 3.5 mm (0.14 in.) in diameter (approximately 2.5% of frame). Circle is centered on current focus point, making it possible to meter off-center subjects (if non-CPU lens is used or if auto-area AF is in effect, camera will meter center focus point). Ensures that subject will be correctly exposed, even when background is much brighter or darker.*                                                                                                                                                                                                                   |

<sup>\*</sup> For improved precision with non-CPU lenses, specify lens focal length and maximum aperture in **Non-CPU lens data** menu ( 159).

To choose a metering option, press the to button and rotate the main command dial until the desired setting is displayed in the control panel.

# See Also

For information on making separate adjustments to optimal exposure for each metering method, see Custom Setting b5 (**Fine tune optimal exposure**,  $\square$  213).



**₩** button Main command dial



Control panel

Use autoexposure lock to recompose photographs after metering exposure:

- **1** Set metering to ⑤ or ⓒ (◯ 105). Choose ⑥ to assign the greatest weight to the center of frame, or ⓒ to set exposure for a 3.5-mm circle centered on the active focus point. ☑ will not produce the desired results.
- 2 Lock exposure.
  Position the subject in the selected focus point and press the shutter-release button halfway.
  With the shutter-release button pressed halfway and the subject positioned in the focus point, press the AE-L/AF-L button to lock focus and exposure (if you are using autofocus, confirm that the in-focus indicator appears in the

Shutter-release button

AE-L/AF-L button

While exposure lock is in effect, an **AE-L** indicator will appear in the viewfinder.



**3** Recompose the photograph. Keeping the AE-L/AF-L button pressed, recompose the photograph and shoot.





# Adjusting Shutter Speed and Aperture

viewfinder).

While exposure lock is in effect, the following settings can be adjusted without altering the metered value for exposure:

| Mode                                                  | Setting  |  |  |
|-------------------------------------------------------|----------|--|--|
| P Shutter speed and aperture (flexible program; □ 68) |          |  |  |
| Shutter speed                                         |          |  |  |
| Α                                                     | Aperture |  |  |

The new values can be confirmed in the viewfinder and control panel. Note that metering can not be changed while exposure lock is in effect.

# See Also

If **On** is selected for Custom Setting c1 (**Shutter-release button AE-L**,  $\square$  213), exposure will lock when the shutter-release button is pressed halfway. For information on changing the role of the **AE-L/AF-L** button, see Custom Setting f5 (**Assign AE-L/AF-L button**,  $\square$  232).

6

# **Exposure Compensation**

Exposure compensation is used to alter exposure from the value suggested by the camera, making pictures brighter or darker. It is most effective when used with center-weighted or spot metering (□ 105). Choose from values between –5 EV (underexposure) and +5 EV (overexposure) in increments of 1/3 EV. In general, positive values make the subject brighter while negative values make it darker.



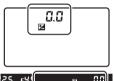




-1 EV

No exposure compensation

To choose a value for exposure compensation, press the **2** button and rotate the main command dial until the desired value is displayed in the control panel or viewfinder.









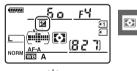
25 FY. ±0 EV

-0.3 EV



(**∠** button pressed)

At values other than  $\pm 0.0$ , the 0 at the center of the exposure indicators will flash (modes P, S, and A only) and a icon will be displayed in the control panel and viewfinder after you release the **b**utton. The current value for exposure compensation can be confirmed in the exposure indicator by pressing the button.





Normal exposure can be restored by setting exposure compensation to ±0. Exposure compensation is not reset when the camera is turned off.

#### Mode M

In mode  $\mathbf{M}$ , exposure compensation affects only the exposure indicator; shutter speed and aperture do not change.

#### Using a Flash

When a flash is used, exposure compensation affects both background exposure and flash level.

#### See Also

For information on choosing the size of the increments available for exposure compensation, see Custom Setting b2 (**EV steps for exposure cntrl.**,  $\square$  211). For information on making adjustments to exposure compensation without pressing the button, see Custom Setting b3 (**Easy exposure compensation**,  $\square$  212). For information on automatically varying exposure, flash level, white balance, or Active D-Lighting, see page 109.

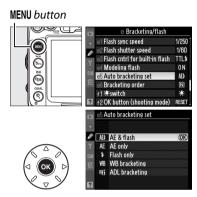
# **Bracketing**

Bracketing automatically varies exposure, flash level, Active D-Lighting (ADL), or white balance slightly with each shot, "bracketing" the current value. Choose in situations in which it is difficult to set exposure, flash level, white balance, or Active D-Lighting and there is not time to check results and adjust settings with each shot, or to experiment with different settings for the same subject.

# ■■ Exposure and Flash Bracketing

To vary exposure and/or flash level over a series of photographs:

1 Select exposure or flash bracketing.
To display the menus, press the MENU button.
Select Custom Setting e5 (Auto bracketing set) in the Custom Settings menu, highlight an option, and press . Choose AE & flash to vary both exposure and flash level, AE only to vary only exposure, or Flash only to vary only flash level.

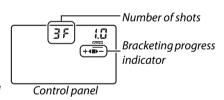


# **2** Choose the number of shots.

Pressing the **BKT** button, rotate the main command dial to choose the number of shots in the bracketing sequence and the order in which they will be taken.







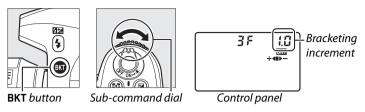
| No. of shots   Bracketing progress indicator |                | Bracketing order                             |
|----------------------------------------------|----------------|----------------------------------------------|
| 35                                           | ÷ <b>∢≡</b> ▶− | Normal exposure, underexposure, overexposure |
| +25                                          | <b>+</b> 4■    | Normal exposure, overexposure                |
| 25                                           | ■>-            | Normal exposure, underexposure               |

**BKT** will be displayed in the viewfinder (see right); the control panel will show **30**.



# **3** Select the bracketing increment.

Pressing the **BKT** button, rotate the sub-command dial to choose from values between 0.3 EV and 2 EV.



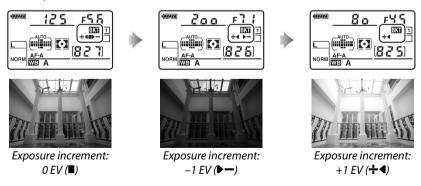
#### See Also

For information on choosing the size of the increment, see Custom Setting b2 (**EV steps for exposure cntrl.**,  $\square$  211). For information on choosing the order in which bracketing is performed, see Custom Setting e6 (**Bracketing order**,  $\square$  229).

# 4 Frame a photograph, focus, and shoot.

The camera will vary exposure and/or flash level shot-byshot according to the bracketing program selected. Modifications to exposure are added to those made with exposure compensation (\$\subseteq\$ 107), making it possible to achieve exposure compensation values of more than 5 EV.

While bracketing is in effect, a bracketing progress indicator will be displayed in the control panel. A segment will disappear from the indicator after each shot: the  $\blacksquare$  segment when the unmodified shot is taken, the  $\blacktriangleright$ — segment when the shot with the negative increment is taken, and the  $\pm$ 4 segment when the shot with the positive increment is taken.



To cancel bracketing, press the **BKT** button and rotate the main command dial until the bracketing progress indicator and so icon are no longer displayed.

## Exposure and Flash Bracketing

In continuous low speed and continuous high speed release modes ( $\square$  78), shooting will pause after the number of shots specified in the bracketing program have been taken. Shooting will resume the next time the shutter-release button is pressed. In self-timer mode, the camera will take the number of shots selected in Step 2 on page 109 each time the shutter-release button is pressed, regardless of the option selected for Custom Setting c3 (Self-timer) > Number of shots ( $\square$  214). In other release modes, one shot will be taken each time the shutter-release button is pressed.

If the memory card fills before all shots in the sequence have been taken, shooting can be resumed from the next shot in the sequence after the memory card has been replaced or shots have been deleted to make room on the memory card. If the camera is turned off before all shots in the sequence have been taken, bracketing will resume from the next shot in the sequence when the camera is turned on.

## Exposure Bracketing

The camera modifies exposure by varying shutter speed and aperture (mode P), aperture (mode S), or shutter speed (modes A and M). If auto ISO sensitivity control is enabled in modes P, S, and A, the camera will automatically vary ISO sensitivity for optimum exposure when the limits of the camera exposure system are exceeded; in mode M, the camera will first use auto ISO sensitivity control to bring exposure as close as possible to the optimum and then bracket this exposure by varying shutter speed.

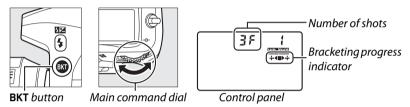
The camera creates multiple copies of each photograph, each with a different white balance. For more information on white balance, see page 117.

1 Select white balance bracketing.
Choose WB bracketing for Custom Setting e5 Auto bracketing set.



# **2** Choose the number of shots.

Pressing the **BKT** button, rotate the main command dial to choose the number of shots in the bracketing sequence and the order in which they will be taken.



BKT will be displayed in the viewfinder (see right); the control panel will show will.

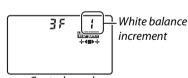


# **3** Select a white balance increment.

Pressing the **BKT** button, rotate the sub-command dial to choose from increments of 1 (5 mired;  $\square$  121), 2 (10 mired), or 3 (15 mired). The **B** value indicates the amount of blue, the **A** value the amount of amber ( $\square$  119).







**BKT** button

Sub-command dial

Control panel

The bracketing programs with an increment of 1 are listed below.

| Control panel |   | Bracketing progress indicator | No. of shots | Increment | Bracketing order |
|---------------|---|-------------------------------|--------------|-----------|------------------|
| b2F           | 1 | <b>+</b> 4∎                   | 2            | 1B        | 0/1B             |
| 825           | 1 | ■>÷                           | 2            | 1A        | 0/1A             |
| 35            | 1 | <b>+4■&gt;</b> +              | 3            | 1A, 1B    | 0/1A/1B          |

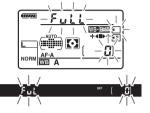
•

# 4 Frame a photograph, focus, and shoot.

Each shot will be processed to create the number of copies specified in the bracketing program, and each copy will have a different white balance. Modifications to white balance are added to the white balance adjustment made with white balance fine-tuning.



If the number of shots in the bracketing program is greater than the number of exposures remaining, the exposure count displays in the control panel and viewfinder will flash and the shutter release will be disabled. Shooting can begin when a new memory card is inserted.



To cancel bracketing, press the **BKT** button and rotate the main command dial until the bracketing progress indicator and rotate icon are no longer displayed.

#### White Balance Bracketing

White balance bracketing is not available at an image quality of NEF (RAW). Selecting **NEF** (RAW), NEF (RAW)+JPEG fine, NEF (RAW)+JPEG normal, or NEF (RAW)+JPEG basic cancels white balance bracketing.

White balance bracketing affects only color temperature (the amber-blue axis in the white balance fine-tuning display,  $\square$  119). No adjustments are made on the green-magenta axis.

In self-timer mode ( $\square$  80), the number of copies specified in the white-balance program will be created each time the shutter is released, regardless of the option selected for Custom Setting c3 (**Self-timer**) > **Number of shots** ( $\square$  214).

If the camera is turned off while the memory card access lamp is lit, the camera will power off only after all photographs in the sequence have been recorded.

# **II** ADL Bracketing

The camera varies Active D-Lighting over a series of exposures. For more information on Active D-Lighting, see page 139.

1 Select ADL bracketing.
Choose ADL bracketing for Custom Setting e5 Autobracketing set.

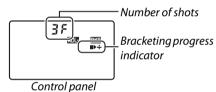


# **2** Choose the number of shots.

Pressing the **BKT** button, rotate the main command dial to choose the number of shots in the bracketing sequence. Choose two shots to take one photograph with Active D-Lighting off and another at the value currently selected for Active D-Lighting in the shooting menu (if Active D-Lighting is off, the second shot will be taken with Active D-Lighting set to **Auto**). Choose three shots to take a series of photographs with Active D-Lighting set to **Off, Normal**, and **High**.







**BKT** button

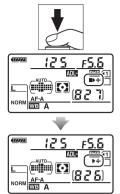
Main command dial

**BKT** will be displayed in the viewfinder (see right); the control panel will show **DESSIN**.



# 3 Frame a photograph, focus, and shoot.

The camera will vary Active D-Lighting shot-by-shot according to the bracketing program selected. While bracketing is in effect, a bracketing progress indicator will be displayed in the control panel. A segment will disappear from the indicator after each shot: the ■ segment when the first shot is taken, the ▶ segment when the second shot is taken, and the ★ segment when the third shot (if applicable) is taken.



To cancel bracketing, press the **BKT** button and rotate the main command dial until the bracketing progress indicator and mam icon are no longer displayed.

# ADL Bracketing

In continuous low speed and continuous high speed release modes ( $\square$  78), shooting will pause after the number of shots specified in the bracketing program have been taken. Shooting will resume the next time the shutter-release button is pressed. In self-timer mode, the camera will take the number of shots selected in Step 2 on page 114 each time the shutter-release button is pressed, regardless of the option selected for Custom Setting c3 (Self-timer) > Number of shots ( $\square$  214). In other release modes, one shot will be taken each time the shutter-release button is pressed.

If the memory card fills before all shots in the sequence have been taken, shooting can be resumed from the next shot in the sequence after the memory card has been replaced or shots have been deleted to make room on the memory card. If the camera is turned off before all shots in the sequence have been taken, bracketing will resume from the next shot in the sequence when the camera is turned on.

# **White Balance**

(P, S, A, and M Modes Only)

White balance ensures that colors are unaffected by the color of the light source. Auto white balance is recommended for most light sources; in **P**, **S**, **A**, and **M** modes, other values can be selected if necessary according to the type of source:

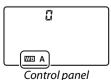
|              | Option                    | Colortemp.* | Description                                            |
|--------------|---------------------------|-------------|--------------------------------------------------------|
| AUT0         | Auto                      | 3,500-      | White balance is adjusted automatically. For best      |
|              | Normal                    | 8,000 K     | results, use type G or D lens. If built-in or optional |
|              | Keep warm lighting colors | 0,000 K     | flash fires, results are adjusted for flash.           |
| *            | Incandescent              | 3,000 K     | Use under incandescent lighting.                       |
|              | Fluorescent               |             | Use with:                                              |
|              | Sodium-vapor lamps        | 2,700 K     | Sodium-vapor lighting (found in sports venues).        |
|              | Warm-white fluorescent    | 3,000 K     | Warm-white fluorescent lights.                         |
|              | White fluorescent         | 3,700 K     | White fluorescent lights.                              |
|              | Cool-white fluorescent    | 4,200 K     | Cool-white fluorescent lights.                         |
|              | Day white fluorescent     | 5,000 K     | Daylight white fluorescent lights.                     |
|              | Daylight fluorescent      | 6,500 K     | Daylight fluorescent lights.                           |
|              | High temp. mercury-vapor  | 7,200 K     | High color temperature light sources (e.g.             |
|              |                           |             | mercury-vapor lamps).                                  |
| *            | Direct sunlight           | 5,200 K     | Use with subjects lit by direct sunlight.              |
| 4            | Flash                     | 5,400 K     | Use with built-in or optional flash.                   |
| 2            | Cloudy                    | 6,000 K     | Use in daylight under overcast skies.                  |
| <b>a</b> //. | Shade                     | 8,000 K     | Use in daylight with subjects in the shade.            |
| K            | Choose color temp.        | 2,500-      | Choose color temperature from list of values           |
|              |                           | 10,000 K    | (CD 122).                                              |
| DRE          | Preset manual             | _           | Use subject, light source, or existing photograph as   |
| FNL          | r reset ilialiual         |             | reference for white balance (🕮 123).                   |

<sup>\*</sup> All values are approximate. Fine-tuning set to 0.

White balance is set by pressing the **WB** button and rotating the main command dial until the desired setting is displayed in the control panel.



**WB** button Main command dial



White balance can also be adjusted using the **White balance** option in the shooting menu ( $\square$  202), which also can be used to fine-tune white balance ( $\square$  119) or measure a value for preset white balance ( $\square$  123). The **Auto** option in the **White balance** menu offers a choice of **Normal** and **Keep warm lighting colors**, which preserves the warm colors produced by incandescent lighting, while the **#Fluorescent** option can be used to select the light source from the bulb types.



## Studio Flash Lighting

Auto white balance may not produce the desired results with large studio flash units. Use preset white balance or set white balance to **Flash** and use fine tuning to adjust white balance.

## Color Temperature

The perceived color of a light source varies with the viewer and other conditions. Color temperature is an objective measure of the color of a light source, defined with reference to the temperature to which an object would have to be heated to radiate light in the same wavelengths. While light sources with a color temperature in the neighborhood of 5,000–5,500 K appear white, light sources with a lower color temperature, such as incandescent light bulbs, appear slightly yellow or red. Light sources with a higher color temperature appear tinged with blue. The camera white balance options are adapted to the following color temperatures:

- 端 (sodium-vapor lamps): 2,700 K
- ★ (incandescent)/
  - ₩ (warm-white fluorescent.): 3,000 K
- ₩ (cool-white fluorescent): 4,200 K
- 端 (day white fluorescent): 5,000 K
- \* (direct sunlight): 5,200 K
- 4 (flash): 5,400 K
- **4.** (cloudv): **6,000 K**
- # (daylight fluorescent): 6,500 K
- # (high temp. mercury-vapor): 7,200 K
- ♠, (shade): 8,000 K

#### See Also

When **WB bracketing** is selected for Custom Setting e5 (**Auto bracketing set**,  $\square$  229), the camera will create several images each time the shutter is released. White balance will be varied with each image, "bracketing" the value currently selected for white balance ( $\square$  112).

WВ

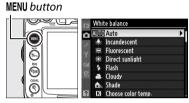
# **Fine-Tuning White Balance**

White balance can be "fine tuned" to compensate for variations in the color of the light source or to introduce a deliberate color cast into an image. White balance is fine tuned using the **White balance** option in the shooting menu or by pressing the **WB** button and rotating the sub-command dial.

#### ■■ The White Balance Menu

# 1 Select a white balance option.

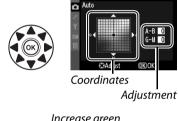
To display the menus, press the MENU button. Select White balance in the shooting menu, then highlight a white balance option and press ▶. If an option other than Auto, Fluorescent, Choose color temp., or Preset manual is selected, proceed to Step 2. If

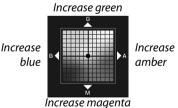


**Auto**, **Fluorescent**, or **Choose color temp.** is selected, highlight the desired setting and press ▶. If **Preset manual** is selected, choose a preset as described on page 128 before proceeding.

# **2** Fine tune white balance.

Use the multi selector to fine-tune white balance. White balance can be fine tuned on the amber (A)-blue (B) axis and the green (G)-magenta (M) axis. The horizontal (amber-blue) axis corresponds to color temperature, with each increment equivalent to about 5 mired. The vertical (green-magenta) axis has the similar effects to the corresponding color compensation (CC) filters.







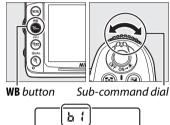
# **3** Press ⊗.

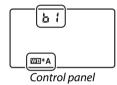
Press (w) to save settings and return to the shooting menu. An asterisk ("\*") is displayed in the control panel when finetuning is in effect.



# **■■** The WB Button

At settings other than 【 (Choose color temp.) and PRE (Preset manual), the WB button can be used to fine-tune white balance on the amber (A)—blue (B) axis ( 119; to fine-tune white balance when 【 or PRE is selected, use the shooting menu as described on page 119). Six settings in both directions are available; each increment is equivalent to about 5 mired ( 121). Press the WB button and rotate the sub-command dial until the desired value is displayed in the control panel. Rotating the sub-command dial to the left increases the amount of amber (A). Rotating the sub-command dial to the right increases the amount of blue (B). An asterisk ("\*") appears in the control panel at settings other than 0.







## White Balance Fine Tuning

The colors on the fine-tuning axes are relative, not absolute. For example, moving the cursor to **B** (blue) when a "warm" setting such as \*\* (incandescent) is selected for white balance will make photographs slightly "colder" but will not actually make them blue.

#### Color Temperature Fine-Tuning

When **Choose color temp.** is selected, you can view the color temperature while fine-tuning white balance.



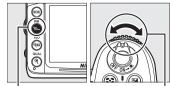
#### #Mired"

Any given change in color temperature produces a greater difference in color at low color temperatures than it would at higher color temperatures. For example, a change of 1000 K produces a much greater change in color at 3000 K than at 6000 K. Mired, calculated by multiplying the inverse of the color temperature by 10 6, is a measure of color temperature that takes such variation into account, and as such is the unit used in color-temperature compensation filters. E.g.:

- 4000 K-3000 K (a difference of 1000 K)=83 mired
- 7000 K-6000 K (a difference of 1000 K)=24 mired

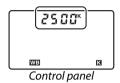
# **Choosing a Color Temperature**

When **K** (Choose color temp.) is selected for white balance, color temperature can be selected by pressing the WB button and rotating the subcommand dial. The color temperature is displayed in the control panel.



**WB** button

Sub-command dial



## Choose Color Temperature

Note that the desired results will not be obtained with flash or fluorescent lighting. Choose **셯** (Flash) or **∰** (Fluorescent) for these sources. With other light sources, take a test shot to determine if the selected value is appropriate.

#### The White Balance Menu

Color temperature can also be selected in the white balance menu. Note that the color temperature with the **WB** button and the sub-command dial replaces the value selected in the white balance menu.





# **Preset Manual**

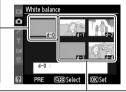
Preset manual is used to record and recall custom white balance settings for shooting under mixed lighting or to compensate for light sources with a strong color cast. Two methods are available for setting preset white balance:

| Method    | Description                                                                                                                         |  |  |  |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| Measure   | Neutral gray or white object is placed under lighting that will be used in final photo and white balance measured by camera ( 124). |  |  |  |
| Use photo | White balance is copied from photo on memory card (\$\square\$ 126).                                                                |  |  |  |

The camera can store up to five values for preset white balance in presets d-0 through d-4. A descriptive comment can be added to any white balance preset ( $\square$  129).

#### d-0

Stores last value measured for white balance  $(\square 124)$ . This preset is overwritten when a new value is measured.



#### d-1-d-4

Store values copied from d-0 (
126).



Store values copied from images on memory card ( $\square$  126).



# 1 Light a reference object.

Place a neutral gray or white object under the lighting that will be used in the final photograph. In studio settings, a standard gray panel can be used as a reference object. Note that exposure is automatically increased by 1 EV when measuring white balance; in mode M, adjust exposure so that the exposure indicator shows  $\pm 0$  ( $\square$  72).

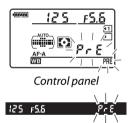
# 2 Set white balance to PRE (Preset manual).

Press the **WB** button and rotate the main command dial until **PRE** is displayed in the control panel.



# **3** Select direct measurement mode.

Release the **WB** button briefly and then press the button until the **PRE** icon in the control panel starts to flash. A flashing **PrE** will also appear in the control panel and viewfinder. The displays will flash for about six seconds.



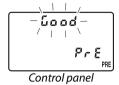
Viewfinder



# **4** Measure white balance.

Before the indicators stop flashing, frame the reference object so that it fills the viewfinder and press the shutter-release button all the way down. The camera will measure a value for white balance and store it in preset d-0. No photograph will be recorded; white balance can be measured accurately even when the camera is not in focus.

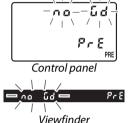
If the camera was able to measure a value for white balance, **Lood** will flash in the control panel for about six seconds, while the viewfinder will show a flashing **Loo**.





Viewfinder

If lighting is too dark or too bright, the camera may be unable to measure white balance. A flashing no Ld will appear in the control panel and viewfinder for about six seconds. Press the shutter-release button halfway to return to Step 4 and measure white balance again.



## **6** Select preset d-0.

If the new value for preset white balance will be used immediately, select preset d-0 by pressing the **WB** button and rotating the sub-command dial until d-0 is displayed in the control panel.

#### Direct Measurement Mode

If no operations are performed while the displays are flashing, direct measurement mode will end in the time selected for Custom Setting c2 (**Auto meter-off delay**,  $\square$  214).

#### Preset d-0

The new value for white balance will be stored in preset d-0, automatically replacing the previous value for this preset (no confirmation dialog will be displayed). A thumbnail will be displayed in the preset white balance list  $(\square 126)$ .



To use the new value for white balance, select preset d-0 (if no value has been measured for white balance before d-0 is selected, white balance will be set to a color temperature of 5,200 K, the same as **Direct sunlight**). The new white balance value will remain in preset d-0 until white balance is measured again. By copying preset d-0 to one of the other presets before measuring a new value for white balance, up to five white balance values can be stored (\$\square\$ 126).

腡

#### ■■ Copying White Balance from d-0 to Presets d-1-d-4

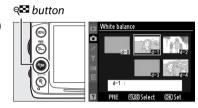
Follow the steps below to copy a measured value for white balance from d-0 to any of the other presets (d-1–d-4).

1 Select PRE (Preset manual). Press the MENU button and select White balance in the shooting menu. Highlight Preset manual and press ▶.



2 Select a destination.

Highlight the destination preset (d-1 to d-4) and press ♥■.







#### ■ Copying White Balance from a Photograph (d-1—d-4 Only)

Copy a value for white balance from an existing image to a selected preset. Note that existing values can not be copied to preset d-0.

1 Select PRE (Preset manual).
Highlight Preset manual in the white balance menu and press ▶.





2 Select a destination.

Highlight the destination preset (d-1 to d-4) and press ♥■.





Highlight **Select image** and press **▶**.





4 Highlight a source image.

Highlight the source image.





To view the highlighted image full frame, press and hold the  $^{e}\!\!\!\!/$  button.







To view images in other locations, hold **BKT** and press  $\triangle$ . The dialog shown at right will be displayed; select the desired card and folder ( $\square$  164).





**BKT** button

## **5** Copy white balance.

Press (e) to copy the white balance value for the highlighted photograph to the selected preset. If the highlighted photograph has a comment ( $\square$  238), the comment will be copied to the comment for the selected preset.





#### Choosing a White Balance Preset

Press  $\blacktriangle$  to highlight the current white balance preset (d-0-d-4) and press  $\blacktriangleright$  to select another preset.



#### ■■ Selecting a White Balance Preset

To set white balance to a preset value:

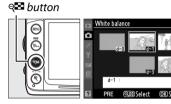
1 Select PRE (Preset manual). Highlight Preset manual in the white balance menu and press ▶.





**2** Select a preset.

Highlight the desired preset and press **₹**. To select the highlighted preset and display fine tuning menu (□ 119) without completing the next step, press **®** instead.



3 Select Set.

Highlight **Set** and press **▶**. Fine tuning menu for the selected white balance preset is displayed (□ 119).



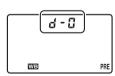


Selecting a White Balance Preset: the WB Button

At a setting of **PRE** (**Preset manual**), presets can also be selected by pressing the **WB** button and rotating the sub-command dial. The current preset is displayed in the control panel while the **WB** button is pressed.







**WB** button

Sub-command dial

Control panel

#### **II** Entering a Comment

Follow the steps below to enter a descriptive comment of up to thirty-six characters for a selected white balance preset.

1 Select PRE (Preset manual). Highlight Preset manual in the white balance menu and press ▶.





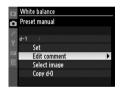
2 Select a preset.
Highlight the desired preset and press ♥ඁ≅.





3 Select Edit comment.
Highlight Edit comment and press ▶.





4 Edit the comment.
Edit the comment as described on page 137.





# Image Enhancement

## **Picture Controls**

(P, S, A, and M Modes Only)

Nikon's unique Picture Control system makes it possible to share image processing settings, including sharpening, contrast, brightness, saturation, and hue, among compatible devices and software.

## **Selecting a Picture Control**

The camera offers a choice of preset Picture Controls. In **P, S, A**, and **M** modes, you can choose a Picture Control according to the subject or type of scene (in other modes, the camera selects a Picture Control automatically).

| Option          | Description                                                                    |
|-----------------|--------------------------------------------------------------------------------|
| SD Standard     | Standard processing for balanced results. Recommended for most                 |
| בייסט ⊃tailualu | situations.                                                                    |
| ⊠NL Neutral     | Minimal processing for natural results. Choose for photographs that will later |
| EML Neutrai     | be extensively processed or retouched.                                         |
|                 | Pictures are enhanced for a vivid, photoprint effect. Choose for photographs   |
| L341 VIVIU      | that emphasize primary colors.                                                 |
| ™MC Monochrome  | Take monochrome photographs.                                                   |
| ☑PT Portrait    | Process portraits for skin with natural texture and a rounded feel.            |
| □LS Landscape   | Produces vibrant landscapes and cityscapes.                                    |

## **1** Display Picture Controls.

To display the menus, press the MENU button. Highlight **Set Picture Control** in the shooting menu and press ▶ to display a list of Picture Controls.



2 Choose a Picture Control.
Highlight an option and press ®.





#### Preset Picture Controls Versus Custom Picture Controls

The Picture Controls supplied with the camera are referred to as *preset Picture Controls*. *Custom Picture Controls* are created through modifications to existing Picture Controls using the **Manage Picture Control** option in the shooting menu ( $\square$  136). Custom Picture Controls can be saved to a memory card for sharing among other cameras of the same model and compatible software ( $\square$  138).

#### **Optional Picture Controls**

Additional optional Picture Controls may be available for download from Nikon websites.

#### The Picture Control Indicator

The current Picture Control is shown in the information display when the  $\blacksquare$  button is pressed.



Picture Control indicator



## **Modifying Picture Controls**

Existing preset or custom Picture Controls (\$\Pi\$ 136) can be modified to suit the scene or the user's creative intent. Choose a balanced combination of settings using **Quick adjust**, or make manual adjustments to individual settings.



Select a Picture Control.
Highlight the desired Picture Control in the Set Picture Control menu (□ 131) and press ▶.



Set Picture Control

**2** Adjust settings.

Press ▲ or ▼ to highlight the desired setting and press ◀ or ▶ to choose a value (□ 134). Repeat this step until all settings have been adjusted, or select **Quick adjust** to choose a preset combination of settings. Default settings can be restored by pressing the figure button.



3 Save changes and exit. Press ®.

Modifications to Original Picture Controls
Picture Controls that have been modified from default settings are indicated by an asterisk ("\*").





#### ■ Picture Control Settings

| (                                                                                 | Option            | Description                                                                                                                                                                                                                                                                                                                               |  |  |  |
|-----------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| Quick adjust                                                                      |                   | Choose from options between <b>–2</b> and <b>+2</b> to reduce or exaggerate the effect of the selected Picture Control (note that this resets all manual adjustments). For example, choosing positive values for <b>Vivid</b> makes pictures more vivid. Not available with <b>Neutral</b> or <b>Monochrome</b> Picture Controls.         |  |  |  |
| Ma<br>(all                                                                        | Sharpening        | <b>0</b> (no sharpening) and <b>9</b> (the higher the value, the greater the sharpening).                                                                                                                                                                                                                                                 |  |  |  |
| Manual adjustments<br>(all Picture Controls)                                      | Contrast          | Select <b>A</b> to adjust contrast automatically according to the type of scene, or choose from values between <b>–3</b> and <b>+3</b> (choose lower values to prevent highlights in portrait subjects from being "washed out" in direct sunlight, higher values to preserve detail in misty landscapes and other low-contrast subjects). |  |  |  |
|                                                                                   | Brightness        | Choose –1 for reduced brightness, +1 for enhanced brightness. Does not affect exposure.                                                                                                                                                                                                                                                   |  |  |  |
| Manual ac                                                                         | Saturation        | Control the vividness of colors. Select <b>A</b> to adjust saturation automatically according to the type of scene, or choose from values between <b>–3</b> and <b>+3</b> (lower values reduce saturation and higher values increase it).                                                                                                 |  |  |  |
| Manual adjustments on-monochrome only)                                            | Hue               | Choose negative values (to a minimum of $-3$ ) to make reds more purple, blues more green, and greens more yellow, positive values (up to $+3$ ) to make reds more orange, greens more blue, and blues more purple.                                                                                                                       |  |  |  |
| Manua<br>(monc                                                                    | Filter<br>effects | Simulate the effect of color filters on monochrome photographs. Choose from <b>Off</b> , yellow, orange, red, and green $(\square 135)$ .                                                                                                                                                                                                 |  |  |  |
| Manual adjustments   Manual adjustments (non-monochrome only)   (monochrome only) | Toning            | Choose the tint used in monochrome photographs from <b>B&amp;W</b> (black-and-white), <b>Sepia</b> , <b>Cyanotype</b> (blue-tinted monochrome), <b>Red</b> , <b>Yellow</b> , <b>Green</b> , <b>Blue Green</b> , <b>Blue</b> , <b>Purple Blue</b> , <b>Red Purple</b> ( 135).                                                              |  |  |  |

#### "A" (Auto)

Results for auto sharpening, contrast, and saturation vary with exposure and the position of the subject in the frame. Use a type G or D lens for best results.

#### Custom Picture Controls

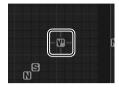
The options available with custom Picture Controls are the same as those on which the custom Picture Control was based.



Pressing the <sup>Q™</sup> button in Step 2 (<sup>™</sup> 133) displays a Picture Control grid showing the contrast and saturation for the selected Picture Control in relation to the other Picture Controls (only contrast is displayed when **Monochrome** is selected). Release the <sup>Q™</sup> button to return to the Picture Control menu.

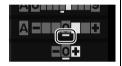


The icons for Picture Controls that use auto contrast and saturation are displayed in green in the Picture Control grid, and lines appear parallel to the axes of the grid.



#### Previous Settings

The line under the value display in the Picture Control setting menu indicates the previous value for the setting. Use this as a reference when adjusting settings.



#### Filter Effects (Monochrome Only)

The options in this menu simulate the effect of color filters on monochrome photographs. The following filter effects are available:

| Option |        | Description                                                              |  |  |  |
|--------|--------|--------------------------------------------------------------------------|--|--|--|
| Y      | Yellow | Enhances contrast. Can be used to tone down the brightness of the sky in |  |  |  |
| 0      | Orange | andscape photographs. Orange produces more contrast than yellow, red     |  |  |  |
| R      | Red    | more contrast than orange.                                               |  |  |  |
| G      | Green  | Softens skin tones. Can be used for portraits.                           |  |  |  |

Note that the effects achieved with **Filter effects** are more pronounced than those produced by physical glass filters.

#### Toning (Monochrome Only)

Pressing ▼ when **Toning** is selected displays saturation options.

Press ◀ or ▶ to adjust saturation. Saturation control is not available when **B&W** (black-and-white) is selected.





## **Creating Custom Picture Controls**

The Picture Controls supplied with the camera can be modified and saved as custom Picture Controls.

Select Manage Picture Control.
To display the menus, press the MENU button.
Highlight Manage Picture Control in the shooting menu and press ▶.

# SHOOTING MENU White balance AUTOSet Picture Control SSE Wanase Picture Control OFF Color space SROB Active D-Lighting OFF Long exp. NR OFF

2 Select Save/edit.
Highlight Save/edit and press ▶.



MENU button



3 Select a Picture Control.

Highlight an existing Picture Control and press ▶, or press ௵ to proceed to step 5 to save a copy of the highlighted Picture Control without further modification.





4 Edit the selected Picture Control.

See page 134 for more information. To abandon any changes and start over from default settings, press the fibutton. Press when settings are complete.

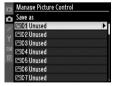




5 Select a destination.

Highlight a destination for the custom Picture Control (C-1 through C-9) and press ▶.







The text-entry dialog shown at right will be displayed. By default, new Picture Controls are named by adding a two-digit number (assigned automatically) to the name of the existing Picture Control. To move the cursor



in the name area, hold the  $\P$  button and press  $\P$  or  $\P$ . To enter a new letter at the current cursor position, use the multi selector to highlight the desired character in the keyboard area and press  $\P$ . To delete the character at the current cursor position, press the  $\P$  button. To return to the shooting menu without saving the Picture Control, press the MENU button.

Custom Picture Control names can be up to nineteen characters long. Any characters after the nineteenth will be deleted.

## **7** Save changes and exit.

After editing the name, press <sup>⊕</sup> to save changes and exit. The new Picture Control will appear in the Picture Control list.



#### Manage Picture Control > Rename

Custom Picture Controls can be renamed at any time using the **Rename** option in the **Manage Picture Control** menu.

#### Manage Picture Control > Delete

The **Delete** option in the **Manage Picture Control** menu can be used to delete selected custom Picture Controls when they are no longer needed.

#### The Original Picture Control Icon

The original preset Picture Control on which the custom Picture Control is based is indicated by an icon in the top right corner of the edit display.



*Original Picture Control icon* 





## **Sharing Custom Picture Controls**

Custom Picture Controls created using the Picture Control Utility available with ViewNX 2 or optional software such as Capture NX 2 can be copied to a memory card and loaded into the camera, or custom Picture Controls created with the camera can be copied to the memory card to be used in compatible cameras and software and then deleted when no longer needed.

To copy custom Picture Controls to or from the memory card, or to delete custom Picture Controls from the memory card, highlight Load/save in the Manage Picture Control menu and press ▶. The following options will be displayed:

- Copy to camera: Copy custom Picture Controls from the memory card to custom Picture Controls C-1 through C-9 on the camera and name them as desired.
- Delete from card: Delete selected custom Picture Controls from the memory card. The confirmation dialog shown at right will be displayed before a Picture Control is deleted: to delete the selected Picture Control, highlight Yes and press @.
- Copy to card: Copy a custom Picture Control (C-1 through C-9) from the camera to a selected destination (1 through 99) on the memory card.







#### Saving Custom Picture Controls

Up to 99 custom Picture Controls can be stored on the memory card at any one time. The memory card can only be used to store user-created custom Picture Controls. The preset Picture Controls supplied with the camera can not be copied to the memory card, renamed, or deleted.



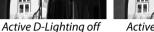
The options in the Manage Picture Control menu apply only to the memory card in Slot 1. Custom Picture Controls can not be deleted from or copied to or from the card in Slot 2.

#### (P, S, A, and M Modes Only)

## **Active D-Lighting**

Active D-Lighting preserves details in highlights and shadows, creating photographs with natural contrast. Use for high contrast scenes, for example when photographing brightly lit outdoor scenery through a door or window or taking pictures of shaded subjects on a sunny day. It is most effective when used with matrix metering (2).







Active D-Lighting: জ্ৰ A Auto



Active D-Lighting off



Active D-Lighting: 瞄HHigh

To use Active D-Lighting:

## 1 Select Active D-Lighting.

To display the menus, press the MENU button. Highlight **Active D-Lighting** in the shooting menu and press ▶.

#### **MENU** button



## **2** Choose an option.

Highlight an option and press <sub>(\*\*)</sub>. If **昭 A Auto** is selected, the camera will automatically adjust Active D-Lighting according to shooting conditions (in mode M, however, **昭 A Auto** is equivalent to **昭 N Normal**).







Noise (randomly-spaced bright pixels, fog, or lines) may appear in photographs taken with Active D-Lighting. Uneven shading may be visible with some subjects. Active D-Lighting can not be used at ISO sensitivities of Hi 0.3 or above.

#### "Active D-Lighting" Versus "D-Lighting"

The **Active D-Lighting** option in the shooting menu adjusts exposure before shooting to optimize the dynamic range, while the **D-Lighting** option in the retouch menu ( $\square$  251) optimizes dynamic range in images after shooting.

#### See Also

When **ADL bracketing** is selected for Custom Setting e5 (**Auto bracketing set**,  $\square$  229), the camera varies Active D-Lighting over a series of shots. See page 114 for more information.

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## **Color Space**

The color space determines the gamut of colors available for color reproduction. Choose a color space according to how photographs will be processed on leaving the camera.

|       | Option | Description                                                                                                                                                             |
|-------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| sRGB  | sRGB   | Choose for photographs that will be printed or used "as is," with no further modification.                                                                              |
| Adobe |        | This color space is capable of expressing a wider gamut of colors than sRGB, making it the preferred choice for images that will be extensively processed or retouched. |

## 1 Select Color space.

To display the menus, press the MENU button. Highlight **Color space** in the shooting menu and press ▶.



## **2** Select a color space.

Highlight the desired option and press @.







#### Color Space

Color spaces define the correspondence between colors and the numeric values that represent them in a digital image file. The sRGB color space is widely used, while the Adobe RGB color space is typically used in publishing and commercial printing. sRGB is recommended when taking photographs that will be printed without modification or viewed in applications that do not support color management, or when taking photographs that will be printed with ExifPrint, the direct printing option on some household printers, or kiosk printing or other commercial print services. Adobe RGB photographs can also be printed using these options, but colors will not be as vivid.

JPEG photographs taken in the Adobe RGB color space are Exif 2.3 and DCF 2.0 compliant: applications and printers that support Exif 2.3 and DCF 2.0 will select the correct color space automatically. If the application or device does not support Exif 2.3 and DCF 2.0, select the appropriate color space manually. For more information, see the documentation provided with the application or device.

#### Nikon Software

ViewNX 2 (supplied) and Capture NX 2 (available separately) automatically select the correct color space when opening photographs created with the camera.

# Flash Photography

## **Using the Built-in Flash**

The built-in flash has a Guide Number (GN) 12/39 (m/ft., ISO 100, 20  $^{\circ}$ C/68  $^{\circ}$ F) and provides coverage for the angle of view of a 16 mm lens. It can be used not only when natural lighting is inadequate but to fill in shadows and backlit subjects or to add a catch light to the subject's eyes.

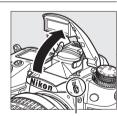
- Using the Built-in Flash: 🖀, 🏖, 👺, 🔼, 💥, and 🨭 Modes
  - 1 Choose a flash mode ( 144).
  - **2** Take pictures.

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 4 button to raise the flash.
  - 2 Choose a flash mode (🕮 144).
  - **Take pictures.**The flash will fire whenever a picture is taken.



5 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:

| ™, <b>½</b> , <b>⊉</b> , ₩, ₩ |                              | ₫                    | T1         |
|-------------------------------|------------------------------|----------------------|------------|
| Auto Auto                     | Auto + sle<br>SLOW red-eye r | ow sync+<br>eduction | Fill flash |
| Auto+red-eye reduction        | Auto+sle                     | ow sync              |            |
| <b>③</b> Off                  | ③ Off                        |                      |            |
| P, A                          |                              |                      | S, M       |
| Fill flash                    |                              | Fill flash           |            |
| Red-eye reduction             |                              | Red-eye r            | reduction  |
| Slow sync+red-eye reductio    | n                            | Rear-curt            | tain sync  |
| SLOW Slow sync                |                              |                      |            |
| Rear curtain + slow sync*     |                              |                      |            |

<sup>\*</sup> **SLOW** is displayed when setting is complete.

To choose a flash mode, press the **\$** button and rotate the main command dial until the desired setting is displayed in the control panel.

#### The Built-in Flash

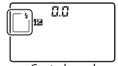
Use with lenses with focal lengths of 16–300 mm ( $\square$  271). Remove lens hoods to prevent shadows. The flash has a minimum range of 0.6 m (2 ft.) and can not be used in the macro range of macro zoom lenses. i-TTL flash control can be used at ISO sensitivities between 100 and 6400. At values over 6400, the desired results may not be achieved at some ranges or aperture settings.

If the flash fires in continuous release mode ( $\square$  78), only one picture will be taken each time the shutter-release button is pressed.

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.



**♦** button Main command dial



Control panel

#### 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."
- ③ (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

#### Shutter Speeds Available with the Built-in Flash

The following shutter speeds are available with the built-in flash.

| Mode                  | Shutter speed                                 | Mode | Shutter speed                       |
|-----------------------|-----------------------------------------------|------|-------------------------------------|
| 👸, P*, A*, Ž, 垄, 溪, 🦋 | <sup>1</sup> /250- <sup>1</sup> /60 <b>S</b>  | S    | <sup>1</sup> / <sub>250</sub> –30 s |
| <b>3</b> , 11         | <sup>1</sup> /250- <sup>1</sup> /125 <b>S</b> | M    | 1/250-30 s, <b>bu i b</b>           |
| <b>□</b>              | <sup>1</sup> /250-1 s                         |      |                                     |

<sup>\*</sup> Speeds as fast as ¹/8,000 s are available with optional SB-900, SB-800, SB-700, and SB-600 flash units in modes P and A if 1/320 s (Auto FP) or 1/250 s (Auto FP) is selected for Custom Setting e1 (Flash sync speed, □ 222).

#### See Also

See page 149 for information on locking flash value (FV) for a metered subject before recomposing a photograph. For information on auto FP high-speed sync and choosing a flash sync speed, see Custom Setting e1 (**Flash sync speed**,  $\square$  222). For information on choosing the slowest shutter speed available when using the flash, see Custom Setting e2 (**Flash shutter speed**,  $\square$  223). For information on flash control and using the built-in flash in commander mode, see Custom Setting e3 (**Flash cntrl for built-in flash**,  $\square$  223). See page 275 for information on using optional flash units.

#### Flash Control Mode

The camera supports the following i-TTL flash control modes:

- i-TTL balanced fill-flash for digital SLR: Flash emits series of nearly invisible preflashes (monitor preflashes) immediately before main flash. Preflashes reflected from objects in all areas of frame are picked up by 2,016-pixel RGB sensor and are analyzed in combination with range information from matrix metering system to adjust flash output for natural balance between main subject and ambient background lighting. If type G or D lens is used, distance information is included when calculating flash output. Precision of calculation can be increased for non-CPU lenses by providing lens data (focal length and maximum aperture; see \$\Pi\$ 159). Not available when spot metering is used.
- Standard i-TTL flash for digital SLR: Flash output adjusted to bring lighting in frame to standard level; brightness of background is not taken into account. Recommended for shots in which main subject is emphasized at expense of background details, or when exposure compensation is used. Standard i-TTL flash for digital SLR is activated automatically when spot metering is selected.

The flash control mode for the built-in flash can be selected using Custom Setting e3 (**Flash cntrl for built-in flash**,  $\square$  223). The information display shows the flash control mode for the built-in flash as follows:

|                 | Flash sync | Auto FP (🕮 222) |
|-----------------|------------|-----------------|
| i-TTL           | \$   TTL   | _               |
| Manual          | \$ M       | _               |
| Repeating flash | RPT        | _               |
| Commander mode  | \$ CMD     | CMD             |

#### Aperture, Sensitivity, and Flash Range

Flash range varies with sensitivity (ISO equivalency) and aperture.

| Aperture at ISO equivalent of |     |     |     |          | Ra   | nge  |         |                       |
|-------------------------------|-----|-----|-----|----------|------|------|---------|-----------------------|
| 100                           | 200 | 400 | 800 | 1600     | 3200 | 6400 | m       | ft.                   |
| 1.4                           | 2   | 2.8 | 4   | 5.6      | 8    | 11   | 0.7-8.5 | 2ft. 4in.–27ft. 11in. |
| 2                             | 2.8 | 4   | 5.6 | 8        | 11   | 16   | 0.6–6.0 | 2ft.–19ft. 8in.       |
| 2.8                           | 4   | 5.6 | 8   | 11       | 16   | 22   | 0.6-4.2 | 2ft.–13ft. 9in.       |
| 4                             | 5.6 | 8   | 11  | 16       | 22   | 32   | 0.6-3.0 | 2ft.–9ft. 10in.       |
| 5.6                           | 8   | 11  | 16  | 22       | 32   | _    | 0.6–2.1 | 2ft.–6ft. 11in.       |
| - 8                           | 11  | 16  | 22  | 32       | _    | _    | 0.6–1.5 | 2ft.–4ft. 11in.       |
| 11                            | 16  | 22  | 32  | <u> </u> | _    |      | 0.6–1.1 | 2ft3ft. 7in.          |
| 16                            | 22  | 32  | _   | <u> </u> | _    |      | 0.6-0.8 | 2ft2ft. 7in.          |

The built-in flash has a minimum range of 0.6 m (2 ft.).

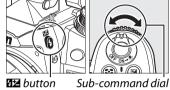
In mode **P**, the maximum aperture (minimum f-number) is limited according to ISO sensitivity, as shown below:

| Maximum aperture at ISO equivalent of: |     |     |     |      |      |      |  |  |
|----------------------------------------|-----|-----|-----|------|------|------|--|--|
| 100                                    | 200 | 400 | 800 | 1600 | 3200 | 6400 |  |  |
| 2.8                                    | 3.5 | 4   | 5   | 5.6  | 7.1  | 8    |  |  |

If the maximum aperture of the lens is smaller than given above, the maximum value for aperture will be the maximum aperture of the lens.

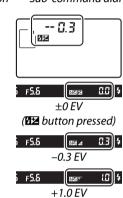
Flash compensation is used to alter flash output by from -3 EV to +1 EV in increments of  $^{1}/_{3}$  EV, changing the brightness of the main subject relative to the background. Flash output can be increased to make the main subject appear brighter, or reduced to prevent unwanted highlights or reflections.

Press the **M** button and rotate the sub-command dial until the desired value is displayed in the control panel. In general, choose positive values to make the main subject brighter, negative values to make it darker.



At values other than ±0.0, a 🔀 icon will be displayed in the control panel and viewfinder after you release the 🔀 button. The current value for flash compensation can be confirmed by pressing the 🔂 button.

Normal flash output can be restored by setting flash compensation to  $\pm 0.0$ . Flash compensation is not reset when the camera is turned off.



#### Optional Flash Units

Flash compensation is also available with optional SB-900, SB-800, SB-700, SB-600, SB-400, and SB-R200 flash units. The SB-900, SB-800, SB-700, and SB-600 also allow flash compensation to be set using the controls on the flash unit; the value selected with the flash unit is added to the value selected with the camera.

#### See Also

For information on choosing the size of the increments available for flash compensation, see Custom Setting b2 (**EV steps for exposure cntrl.**,  $\square$  211). For information on automatically varying flash level over a series of shots, see page  $\square$  109.

## **FV** Lock

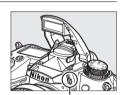
This feature is used to lock flash output, allowing photographs to be recomposed without changing the flash level and ensuring that flash output is appropriate to the subject even when the subject is not positioned in the center of the frame. Flash output is adjusted automatically for any changes in ISO sensitivity and aperture.

To use FV lock:

1 Assign FV lock to the Fn button.
Select FV lock for Custom Setting f3 (Assign Fn button, □ 230).



#### 2 Raise the flash.



5 button

## **3** Focus.

Position the subject in the center of the frame and press the shutter-release button halfway to focus.





#### 4 Lock flash level.

After confirming that the flash ready indicator (\$) is displayed in the viewfinder, press the Fn button. The flash will emit a monitor preflash to determine the appropriate flash level. Flash output will be locked at this level and FV lock icons (41) will appear in the viewfinder.



Fn button



### **6** Take the photograph.

Press the shutter-release button the rest of the way down to shoot. If desired, additional pictures can be taken without releasing FV lock.

#### Release FV lock.

Press the **Fn** button to release FV lock. Confirm that the FV lock icon (**51**) is no longer displayed in the viewfinder.

#### Using FV Lock with the Built-in Flash

FV lock is only available with the built-in flash when **TTL** is selected for Custom Setting e3 (Flash cntrl for built-in flash, 🕮 223).

#### Using FV Lock with Optional Flash Units

FV lock is also available with SB-900, SB-800, SB-700, SB-600, SB-400, and SB-R200 flash units (available separately). Set the optional flash to TTL mode (the SB-900 and SB-800 can also be used in AA mode; see the flash manual for details). While FV lock is in effect, flash output will automatically be adjusted for changes in flash zoom head position.

When Commander mode is selected for Custom Setting e3 (Flash cntrl for built-in flash, © 223), FV lock can be used with remote SB-900, SB-800, SB-700, SB-600, or SB-R200 flash units if (a) any of the built-in flash, flash group A, or flash group B is in TTL mode, or (b) a flash group is composed entirely of SB-900 and SB-800 flash units in TTL or AA mode.

#### Metering

The metering areas for FV lock when using optional flash unit are as follows:

| Flash unit                   | Flash mode       | Metered area                         |
|------------------------------|------------------|--------------------------------------|
| Stand-alone flash unit       | i-TTL            | 4-mm circle in center of frame       |
| Stand-alone hash drift       | AA               | Area metered by flash exposure meter |
| Used with other flash units  | i-TTL            | Entire frame                         |
| (Advanced Wireless Lighting) | AA               | Area metered by flash exposure meter |
| (Advanced wireless Lighting) | A (master flash) | Area metered by hash exposure meter  |

#### See Also

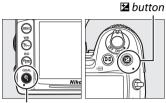
For information on using the depth-of-field preview or AE-L/AF-L button for FV lock, see Custom Setting f4 (Assign preview button, \$\sim\$ 232) or Custom Setting f5 (Assign AE-L/AF-L **button**, 🕮 232).

4

## Other Shooting Options

## **Restoring Default Settings**

The camera settings listed below can be restored to default values by holding the **QUAL** and **2** buttons down together for more than two seconds (these buttons are marked by a green dot). The control panel turns off briefly while settings are reset.



OUAL button

| Option                   | Default                     | Ш   |
|--------------------------|-----------------------------|-----|
| Image quality            | NORMAL                      | 85  |
| Image size               | L                           | 88  |
| White balance            | Auto > Normal               | 117 |
| Fine tuning              | 0                           | 119 |
| ISO sensitivity          |                             |     |
| Auto and scene modes     | AUTO                        | 101 |
| P, S, A, M               | 100                         | 101 |
| Autofocus (viewfinder)   |                             |     |
| Autofocus mode           | AF-A                        | 91  |
| AF-area mode             |                             |     |
| ♥, º, ¶, 益, ⊞, 🔟         | Single-point AF             |     |
| ₹,₩                      | 39-point<br>dynamic-area AF | 94  |
| Other shooting modes     | Auto-area AF                |     |
| Autofocus (live view/mov | ie)                         |     |
| Autofocus mode           | AF-S                        | 50  |
| AF-area mode             | '                           |     |
| 💐, <b>፫</b> , ₩, Ϫ, ℍ, 🖸 | Wide-area AF                |     |
| ₩, 11                    | Normal-area AF              | 50  |
| Other shooting modes     | Face-priority AF            |     |

| <b>Option</b>                         | Default    | m          |
|---------------------------------------|------------|------------|
| Focus point 1                         | Center     | 96         |
| Metering                              | Matrix     | 105        |
| AE/AF lock hold                       | Off        | 97,<br>106 |
| Active D-Lighting                     | Off        | 139        |
| Bracketing                            | Off        | 109        |
| Picture Control settings <sup>2</sup> | Unmodified | 131        |
| Flash compensation                    | Off        | 148        |
| Exposure compensation                 | Off        | 107        |
| Flash mode                            |            |            |

| riasti filode     |                |     |
|-------------------|----------------|-----|
| ™, £, &, <b>\</b> | Auto front-    |     |
|                   | curtain sync   |     |
| ×                 | Auto+red-eye   |     |
|                   | reduction      | 144 |
| <b>₫</b>          | Auto slow sync |     |
| 11, P, S, A, M    | Front-curtain  |     |
|                   | sync           |     |
| FV lock           | Off            | 149 |
| Multiple Exposure | Off            | 152 |
| Flexible program  | Off            | 68  |
|                   |                |     |

- 1 Focus point not displayed if auto-area AF is selected for AF-area mode.
- 2 Current Picture Control only.

Follow the steps below to record a series of two or three exposures in a single photograph. Multiple exposures can be recorded at any image quality setting, and make use of RAW data from the camera image sensor to produce colors noticeably superior to those in software-generated photographic overlays.

#### ■■ Creating a Multiple Exposure

Multiple exposures can not be recorded in live view. Exit live view before proceeding. Note that at default settings, shooting will end and a multiple exposure will be recorded automatically if no operations are performed for 30 s.

#### Extended Recording Times

For an interval between exposures of more than 30 s, select **On** for the **Image review** ( $\square$  200) option in the playback menu and extend the monitor-off delay for image review using Custom Setting c4 (**Monitor off delay**,  $\square$  215). The maximum interval between exposures is 30 s longer than the option selected for Custom Setting c4. If no operations are performed for 30 s after the monitor has turned off during playback or menu operations, shooting will end and a multiple exposure will be created from the exposures that have been recorded to that point.

1 Select Multiple exposure. Press the MENU button to display the menus. Highlight Multiple exposure in the shooting menu and press ▶.

#### MENU button

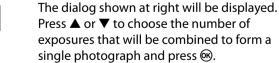




2 Choose the number of shots.
Highlight Number of shots and press ▶.













## **3** Choose the amount of gain.

Highlight **Auto gain** and press ▶.





The following options will be displayed. Highlight an option and press @.

• **0n**: Gain is adjusted according to number of exposures actually recorded (gain for each exposure is set to 1/2 for 2 exposures,  $^{1}/_{3}$  for 3 exposures, etc.).





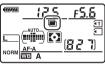
• Off: Gain is not adjusted when recording multiple exposure. Recommended if background is dark.

#### 4 Select Done.

Highlight **Done** and press <sup>(R)</sup>. A **■** icon will be displayed in the control panel and the **Done** option in the multiple exposure menu will be replaced by **Reset**. To continue shooting without taking a multiple exposure, return to the shooting menu and select Multiple exposure > Reset.





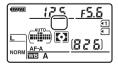


## 5 Frame a photograph, focus, and shoot.

In continuous high-speed and continuous low-speed release modes (\$\sup\$ 78), the camera records all exposures in a single burst. In self-timer mode, the camera will automatically record the number of exposures selected in Step 2 on page 152, regardless of the option selected for Custom Setting c3 (**Self-timer**) > **Number of shots** ( $\square$  214). In other release modes, one photograph will be taken each time the shutter-release button is pressed; continue shooting until all exposures have been recorded (for information on interrupting a multiple exposure before all photographs are recorded, see page 154).



The icon will blink until shooting ends. When shooting ends, multiple exposure mode will end and the icon will no longer be displayed.



#### ■■ Interrupting Multiple Exposures

Selecting **Multiple exposure** in the shooting menu while a multiple exposure is being recorded displays the options shown at right. To interrupt a multiple exposure before the specified number of exposures have been taken, highlight **Cancel** and press **®**. If shooting ends before the specified number of exposures have been taken, a multiple exposure will be created



from the exposures that have been recorded to that point. If **Auto gain** is on, gain will be adjusted to reflect the number of exposures actually recorded. Note that shooting will end automatically if:

- A two-button reset is performed (\$\square\$ 151)
- · The camera is turned off
- The battery is exhausted
- · Pictures are deleted

#### Multiple Exposures

Do not remove or replace the memory card while recording a multiple exposure.

The information listed in the playback photo information display (including metering, exposure, shooting mode, focal length, date of recording and camera orientation) is for the first shot in the multiple exposure.

#### Interval Timer Photography

If interval timer photography is activated before the first exposure is taken, the camera will record exposures at the selected interval until the number of exposures specified in the multiple exposure menu have been taken (the number of shots listed in the interval timer shooting menu is ignored). These exposures will then be recorded as a single photograph and multiple exposure mode and interval timer shooting will end. Cancelling multiple exposure cancels interval timer shooting.

#### Other Settings

While multiple exposure mode is in effect, memory cards can not be formatted and some menu options will not be available.



## Interval Timer Photography

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

#### **☑** Before Shooting

Do not select self-timer (🕙) or remote (🖜) release mode when using the interval timer. Before beginning interval timer photography, take a test shot at current settings and view the results in the monitor.

Before choosing a starting time, select **Time zone and date** in the setup menu and make sure that the camera clock is set to the correct time and date ( $\Omega$  237).

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.

1 Select Interval timer shooting.

Press the MENU button to display the menus.

Highlight Interval timer shooting in the shooting menu and press ▶.





**2** Choose a starting time.

Chose 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 or minutes and press ▲ or ▼ to choose an interval longer than the slowest anticipated shutter speed. Press ▶ to continue.

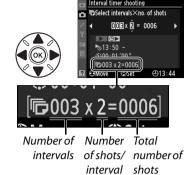






## 4 Choose the number of intervals and number of shots per interval.

Press ◀ or ▶ to highlight number of intervals or number of shots; press ▲ or ▼ to change. Press ▶ to continue.



## **5** Start shooting.

Highlight **On** and press (to return to the shooting menu without starting the interval timer, highlight **Off** and press (s). 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. If shooting can not proceed at current settings (for example, if a shutter speed of **bull b** is currently selected in manual exposure mode or the start time is in less than a minute), a warning will be displayed in the monitor.



#### Out of Memory

If the memory card is full, the interval timer will remain active but no pictures will be taken. Resume shooting ( $\square$  158) after deleting some pictures or turning the camera off and inserting another memory card.

#### 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 ( $\square$  81).

#### Release Mode

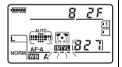
Regardless of the release mode selected, the camera will take the specified number of shots at each interval. In CH (continuous high speed) mode, photographs will be taken at a rate of up to 6 shots per second. In CH (single frame) and CH (continuous low-speed) modes, photographs will be taken at the rate chosen for Custom Setting d6 (CL mode shooting speed, CH 217); in mode CH0, camera noise will be reduced.

#### Bracketing

Adjust bracketing settings before starting interval timer photography. If exposure, flash, or ADL bracketing is active while interval timer photography is in effect, the camera will take the number of shots in the bracketing program at each interval, regardless of the number of shots specified in the interval timer menu. If white balance bracketing is active while interval timer photography is in effect, the camera will take one shot at each interval and process it to create the number of copies specified in the bracketing program.

#### During Shooting

During interval timer photography, the rime icon in the control panel will blink. Immediately before the next shooting interval begins, the shutter speed display will show the number of intervals remaining, and the aperture display will show the number of shots remaining in the current interval. At other times, the number of intervals



remaining and the number of shots in each interval can be viewed by pressing the shutterrelease button halfway (once the button is released, the shutter speed and aperture will be displayed until the exposure meters turn off).

To view current interval timer settings, select **Interval timer shooting** between shots. While interval timer photography is in progress, the interval timer menu will show the starting time, the shooting interval, and the number of intervals and shots remaining. None of these items can be changed while interval timer photography is in progress.



Pictures can be played back and shooting and menu settings can be adjusted freely while interval timer photography is in progress. The monitor will turn off automatically about four seconds before each interval.

#### ■■ Pausing Interval Timer Photography

Interval timer photography can be paused by:

- Highlighting **Start** > **Pause** in the interval timer menu and pressing ®
- Turning the camera off and then on again (if desired, the memory card can be replaced while the camera is off)
- Rotating the release-mode dial or live view switch

To resume shooting:

#### 1 Choose a new starting time. Choose a new starting time as described on page 155.





## **2** Resume shooting.

Highlight **Restart** and press **®**. Note that if interval timer photography was paused during shooting, any shots remaining in the current interval will be canceled.





#### **■■** Interrupting Interval Timer Photography

Interval timer shooting will end automatically if the battery is exhausted. Interval timer photography can also be ended by:

- Selecting **Start** > **Off** in the interval timer menu
- Performing a two button reset (□ 151)
- Selecting **Reset shooting menu** in the shooting menu (□ 202)
- Changing bracketing settings (□ 109)
- Terminating multiple exposure shooting (\$\square\$ 154)

Normal shooting will resume when interval timer photography ends.

### ■■ No Photograph

The camera will skip the current interval if any of the following situations persist for eight seconds or more after the interval was due to start: the photograph or photographs for the previous interval have yet to be taken, the memory buffer is full, or the camera is unable to focus in **AF-S** or when single-servo AF is selected in **AF-A** (note that the camera focuses again before each shot). Shooting will resume with the next interval.



## **Non-CPU Lenses**

By specifying lens data (lens focal length and maximum aperture), the user can gain access to a variety of CPU lens functions when using a non-CPU lens ( $\square$  270). If the focal length of the lens is known:

- Power zoom can be used with SB-900, SB-800, SB-700, and SB-600 flash units (available separately)
- Lens focal length is listed (with an asterisk) in the playback photo info display

*If the maximum aperture of the lens is known:* 

- The aperture value is displayed in the control panel and viewfinder
- Flash level is adjusted for changes in aperture
- Aperture is listed (with an asterisk) in the playback photo info display

Specifying both the focal length and maximum aperture of the lens:

- Enables color matrix metering (note that it may be necessary to use centerweighted or spot metering to achieve accurate results with some lenses, including Reflex-NIKKOR lenses)
- Improves the precision of center-weighted and spot metering and i-TTL balanced fill-flash for digital SLR

The camera can store data for up to nine non-CPU lenses. To enter or edit data for a non-CPU lens:

## 1 Select Non-CPU lens data.

Press the MENU button to display the menus. Highlight Non-CPU lens data in the setup menu and press .

#### MENU button



#### **2** Choose a lens number.

Highlight **Lens number** and press **◄** or **▶** to choose a lens number between 1 and 9.







# 3 Enter the focal length and aperture. Highlight Focal length (mm) or Maximum aperture and press ◀ or ▶ to edit the highlighted item. Focal length can be selected from values between 6 and 4,000 mm, maximum aperture from values





#### Focal Length Not Listed

between f/1.2 and f/22.

If the correct focal length is not listed, choose the closest value greater than the actual focal length of the lens.

#### Teleconverters and Zoom Lenses

The maximum aperture for teleconverters is the combined maximum aperture of the teleconverter and the lens. Note that lens data are not adjusted when non-CPU lenses are zoomed in or out. The data for different focal lengths can be entered as separate lens numbers, or the data for the lens can be edited to reflect the new values for lens focal length and maximum aperture each time zoom is adjusted.

#### 4 Select Done.

Highlight **Done** and press ®. The specified focal length and aperture will be stored under the chosen lens number.



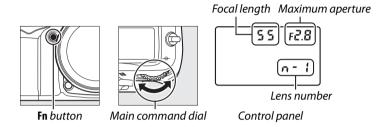




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- **1** Assign non-CPU lens number selection to a camera control. Select Choose non-CPU lens number for Custom Setting f3 (Assign Fn button, □ 230) or Custom Setting f4 (Assign preview button, □ 232).
- 2 Use the selected control to choose the lens number.

  Press the selected button and rotate the main command dial until the desired lens number is displayed in the control panel.



## The GP-1 GPS Unit

The GP-1 GPS unit (available separately) can be connected to the camera's accessory terminal ( $\square$  281) using the cable supplied with the GP-1, allowing information on the camera's current position to be recorded when photographs are taken. Turn the camera off before connecting the GP-1; for more information, see the GP-1 manual.

#### ■■ Setup Menu Options

The **GPS** item in the setup menu contains the options listed below.

 Auto meter-off: Choose whether the exposure meters turn off automatically when the GP-1 is attached.

| Option  | Description                                                                                                                                                                                                                                                                                                                                                          |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Enable  | Exposure meters turn off automatically if no operations are performed for the time selected for Custom Setting c2 ( <b>Auto meter-off delay</b> , $\square$ 214; to allow the camera time to acquire GPS data, the delay is extended by up to one minute after the exposure meters are activated or the camera is turned on). This reduces the drain on the battery. |
| Disable | Exposure meters do not turn off while the GP-1 is connected                                                                                                                                                                                                                                                                                                          |

 Position: This item is only available if the GP-1 is connected, when it displays the current latitude, longitude, altitude, and Coordinated Universal Time (UTC) as reported by the GP-1.



 Use GPS to set camera clock: Select Yes to synchronize the camera clock with the time reported by the GPS device.

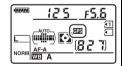
#### **⊘** Coordinated Universal Time (UTC)

UTC data is provided by the GPS device and is independent of the camera clock.

#### The □S Icon

Connection status is shown by the Bis icon:

• ■ (static): Camera has established communication with GP-1. Photo information for pictures taken while this icon is displayed include an additional page of GPS data (□ 169).



- (flashing): The GP-1 is searching for a signal. Pictures taken while
   the icon is flashing do not include GPS data.
- No icon: No new GPS data have been received from the GP-1 for at least two seconds.
   Pictures taken when the sicon is not displayed do not include GPS data.

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# More on Playback

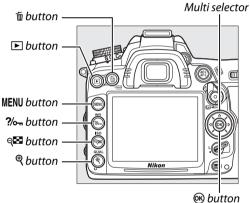
## **Full-Frame Playback**

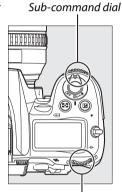
To play photographs back, press the ▶ button. The most recent photograph will be displayed in the monitor











Main command dial

#### Rotate Tall

To display "tall" (portrait-orientation) photographs in tall orientation, select **On** for the **Rotate tall** option in the playback menu ( 200).



#### Image Review

When **On** is selected for **Image review** in the playback menu ( $\square$  200), photographs are automatically displayed in the monitor for about 4 s after shooting (because the camera is already in the correct orientation, images are not rotated automatically during image review). In continuous release mode, display begins when shooting ends, with the first photograph in the current series displayed.



| То                          | Use           | Description                                                                                                                                                      |
|-----------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| View additional photographs |               | Press ▶ to view photographs in order recorded, ◀ to view photographs in reverse order.                                                                           |
| View photo information      |               | Press ▲ or ▼ to view information about current photograph (□ 165).                                                                                               |
| View thumbnails             | Q₩            | See page 171 for more information.                                                                                                                               |
| Zoom in on photograph       | •             | See page 173 for more information.                                                                                                                               |
| Delete images               | Ó             | Confirmation dialog will be displayed. Press in again to delete photo.                                                                                           |
| Change protect status       | ?/₀-,         | To protect image, or to remove protection from protected image, press <b>?/⊶</b> (□ 174).                                                                        |
| Return to shooting mode     | / <b>&gt;</b> | Monitor will turn off. Photographs can be taken immediately.                                                                                                     |
| Display menus MENU          |               | See page 195 for more information.                                                                                                                               |
| Retouch photo or play movie | <b>®</b>      | Create retouched copy of current photograph (□ 248). If current picture is marked with ा icon to show that it is a movie, pressing starts movie playback (□ 62). |

#### Choosing a Memory Card Slot

If two memory cards are inserted, you can select a card for playback by holding the **BKT** button and pressing **A** during fullframe or thumbnail playback. The dialog shown at right will be displayed; highlight the desired slot and press ▶ to list the folders on the selected card, then highlight a folder and press ® to view the pictures in the highlighted folder. The same procedure can be used when selecting pictures for operations in the playback (\$\Pi\$ 195) and retouch (\$\Pi\$ 248) menus or when copying white balance from an existing photograph (\$\square\$ 127).



**BKT** button



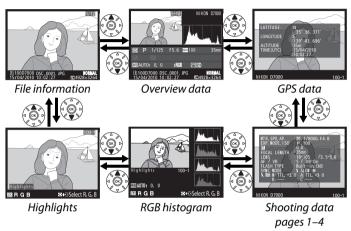
#### See Also

For information on choosing how long the monitor will remain on when no operations are performed, see Custom Setting c4 (Monitor off delay, 🕮 215).

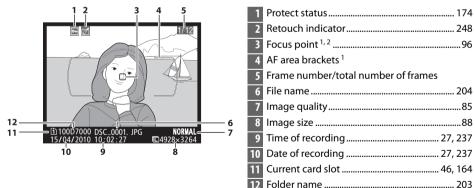


### **Photo Information**

Photo information is superimposed on images displayed in full-frame playback. Press  $\triangle$  or  $\nabla$  to cycle through photo information as shown below. Note that shooting data, RGB histograms, and highlights are only displayed if corresponding option is selected for **Display mode** > **Detailed photo info** ( $\square$  197; shooting data page 4 is only displayed if copyright information was recorded with the photographs as described on page 243). GPS data are only displayed if a GPS device was used when the photo was taken.

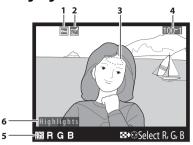


#### **II** File Information



- 1 Displayed only if **Focus point** is selected for **Display mode** ( 197).
- 2 If photograph was taken using AF-S or with single-servo autofocus selected during AF-A, display shows point where focus first locked. If photograph was taken using AF-C or with continuous-servo autofocus selected during AF-A, focus point is only displayed if option other than auto-area AF was selected for AF-area mode and camera was able to focus.

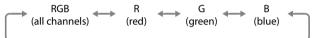
#### ■■ Highlights 1



- 3 Image highlights 2
- 4 Folder number—frame number ......218
- 5 Current channel 2
- 6 Highlight display indicator

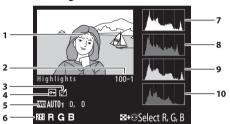
1 Displayed only if **Highlights** is selected for **Display mode** ( $\square$  197).

2 Blinking areas indicate highlights for the current channel. Hold <sup>QM</sup> button and press ◀ or ▶ to cycle through channels as follows:





#### **■■** RGB Histogram <sup>1</sup>



- 1 Image highlights 2
- Folder number—frame number.....218
- 3 Protect status ......174

- 4
   Retouch indicator
   248

   5
   White balance
   117

   Color temperature
   122

   White balance fine-tuning
   119

   Preset manual
   123
- 6 Current channel 2
- 7 Histogram (RGB channel). In all histograms, horizontal axis gives pixel brightness, vertical axis number of pixels.
- 8 Histogram (red channel)
- 9 Histogram (green channel)
- 10 Histogram (blue channel)
- 1 Displayed only if **RGB histogram** is selected for **Display mode** (\$\omega\$ 197).
- 2 Blinking areas indicate highlights for the current channel. Hold ♥☑ button and press ◀ or ▶ to cycle through channels as follows:









To zoom in on the photograph when the histogram is displayed, press <sup>Q</sup>. Use the <sup>Q</sup> and <sup>Q</sup> buttons to zoom in and out and scroll the image with the multi selector. The histogram will be updated to show only the data for the portion of the image visible in the monitor.



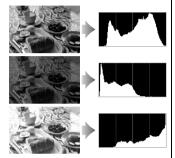
#### Histograms

Camera histograms are intended as a guide only and may differ from those displayed in imaging applications. Some sample histograms are shown below:

If the image contains objects with a wide range of brightnesses, the distribution of tones will be relatively even.

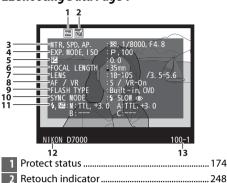
If the image is dark, tone distribution will be shifted to the left.

If the image is bright, tone distribution will be shifted to the right.



Increasing exposure compensation shifts the distribution of tones to the right, while decreasing exposure compensation shifts the distribution to the left. Histograms can provide a rough idea of overall exposure when bright ambient lighting makes it difficult to see photographs in the monitor.

#### **II** Shooting Data Page 1 <sup>1</sup>



|    | ISO sensitivity 2               | 101      |
|----|---------------------------------|----------|
| 5  | Exposure compensation           | 107      |
|    | Optimal exposure tuning 3       | 213      |
| 6  | Focal length                    | 159, 274 |
| 7  | Lens data                       |          |
| 8  | Focus mode                      | 91, 99   |
|    | Lens VR (vibration reduction) 4 | 26       |
| 9  | Flash type                      | 143, 275 |
|    | Commander mode                  | 225      |
| 10 | Flash mode                      | 144      |
| 11 | Flash control                   | 223      |
|    | Flash compensation              | 148      |
| 12 | Camera name                     |          |
| 13 | Folder number—frame number      | 218      |

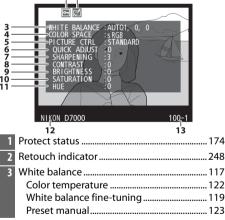
4 Shooting mode......6

1 Displayed only if **Data** is selected for **Display mode** (\$\subset\$ 197).

Metering ...... 105 Shutter speed......67 Aperture......67

- 2 Displayed in red if photo was taken with auto ISO sensitivity control on.
- 3 Displayed if Custom Setting b5 (Fine tune optimal exposure, \$\Pi\$ 213) has been set to a value other than zero for any metering method.
- 4 Displayed only if VR lens is attached.

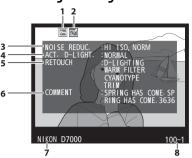
#### ■■ Shooting Data Page 2<sup>1</sup>



| 4  | Color space141                            | l |
|----|-------------------------------------------|---|
| 5  | Picture Control131                        | ı |
| 6  | Quick adjust <sup>2</sup> 13 <sup>4</sup> |   |
|    | Original Picture Control 3137             | 7 |
| 7  | Sharpening134                             | 1 |
| 8  | Contrast134                               | ļ |
| 9  | Brightness134                             | 1 |
| 10 | Saturation 4134                           | 1 |
|    | Filter effects 5134                       | ļ |
| 11 | Hue 4134                                  | 1 |
|    | Toning 5 134, 135                         | 5 |
| 12 | Camera name                               |   |
| 13 | Folder number—frame number218             | 3 |
|    |                                           |   |

- Displayed only if **Data** is selected for **Display mode** (\$\square\$ 197).
  - 2 Standard, Vivid, Portrait, and Landscape Picture Controls only.
  - 3 Neutral, Monochrome, and custom Picture Controls.
  - 4 Not displayed with monochrome Picture Controls.
  - 5 Monochrome Picture Controls only.

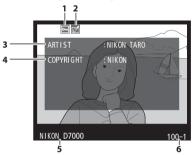
#### ■■ Shooting Data Page 3\*



| 1 Protect status              | 174 |
|-------------------------------|-----|
| 2 Retouch indicator           | 248 |
| 3 High ISO noise reduction    | 205 |
| Long exposure noise reduction | 205 |
| 4 Active D-Lighting           | 139 |
| 5 Retouch history             | 248 |
| 6 Image comment               | 238 |
| 7 Camera name                 |     |
| 8 Folder number—frame number  | 218 |

\* Displayed only if **Data** is selected for **Display mode** (\$\subset\$ 197).

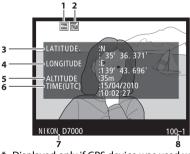
#### ■■ Shooting Data Page 4\*



| 1 | Protect status 174            |
|---|-------------------------------|
| 2 | Retouch indicator248          |
| 3 | Name of photographer243       |
| 4 | Copyright holder243           |
| 5 | Camera name                   |
| 6 | Folder number—frame number218 |

\* Displayed only if **Data** is selected for **Display mode** (\$\sup\$ 197) and copyright information is appended to photograph (\$\sup\$ 243).

#### **II** GPS Data\*

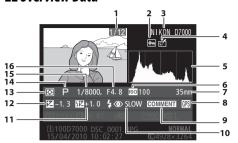


| 1 Protect status                   |
|------------------------------------|
| 2 Retouch indicator248             |
| 3 Latitude                         |
| 4 Longitude                        |
| 5 Altitude                         |
| 6 Coordinated Universal Time (UTC) |
| 7 Camera name                      |
| 8 Folder number—frame number218    |

\* Displayed only if GPS device was used when photo was taken (\$\subset\$ 162); data for movies are for start of recording.



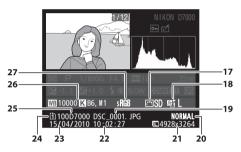
#### ■ Overview Data



| 1 | Frame number/total number of images |     |
|---|-------------------------------------|-----|
| 2 | Protect status                      | 174 |

3 Camera name
4 Retouch indicator......248

\* Displayed in red if photo was taken with auto ISO sensitivity control on.



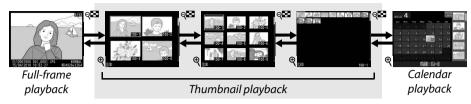
| 17 | Picture Control   | 131 |
|----|-------------------|-----|
| 18 | Active D-Lighting | 139 |

|   | 5  | Histogram showing the distribution of tones in |          |
|---|----|------------------------------------------------|----------|
|   |    | the image ( $\square$ 167).                    |          |
| ĺ | 6  | ISO sensitivity*                               | 101      |
| ĺ | 7  | Focal length                                   | 159, 274 |
| ĺ | 8  | GPS data indicator                             | 162      |
| ĺ | 9  | Image comment indicator                        | 238      |
| ĺ | 10 | Flash mode                                     | 144      |
| ĺ | 11 | Flash compensation                             | 148      |
|   |    | Commander mode                                 | 225      |
| ĺ | 12 | Exposure compensation                          | 107      |
| ĺ | 13 | Metering                                       | 105      |
| ĺ | 14 | Shooting mode                                  | 6        |
| ĺ | 15 | Shutter speed                                  | 67       |
| ĺ | 16 | Aperture                                       | 67       |

| 19 | File name                 | 204     |
|----|---------------------------|---------|
| 20 | Image quality             | 85      |
| 21 | Image size                | 88      |
| 22 | Time of recording         | 27, 237 |
| 23 | Date of recording         | 27, 237 |
| 24 | Current card slot         | 46, 164 |
| 25 | Folder name               | 203     |
| 26 | White balance             | 117     |
|    | Color temperature         | 122     |
|    | White balance fine-tuning | 119     |
|    | Preset manual             |         |
| 27 | Color space               | 141     |

## **Thumbnail Playback**

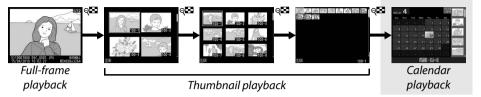
To display images in "contact sheets" of four, nine, or 72 images, press the 9™ button.



| То                                         | Use           | Description                                                                                                                                                |
|--------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display more images                        | Q <b>₽</b>    | Press <b>₹</b> to increase the number of images displayed.                                                                                                 |
| Display fewer images                       | Ф             | Press <sup>®</sup> to reduce the number of images displayed. When four images are displayed, press to view highlighted image full frame.                   |
| Highlight images                           | OK            | Use multi selector to highlight images for full-frame playback, playback zoom ( $\square$ 173), deletion ( $\square$ 175), or protection ( $\square$ 174). |
| View highlighted image                     | <b>⊚</b> K    | Press ® to display the highlighted image full frame.                                                                                                       |
| Delete highlighted<br>image                | Ó             | See page 175 for more information.                                                                                                                         |
| Change protect status of highlighted image | ?∕₀-,         | See page 174 for more information.                                                                                                                         |
| Return to shooting mode                    | / <b>&gt;</b> | Monitor will turn off. Photographs can be taken immediately.                                                                                               |
| Display menus                              | MENU          | See page 195 for more information.                                                                                                                         |

## **Calendar Playback**

To view images taken on a selected date, press the <sup>QES</sup> button when 72 images are displayed.



Press the selected 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.





Date list

The operations can be performed depend on whether the cursor is in the date list or the thumbnail list:

| To                      | Use            | Description                                                            |  |
|-------------------------|----------------|------------------------------------------------------------------------|--|
|                         | 036            | •                                                                      |  |
| Toggle between date     | Q <b>≣</b>     | Press  sutton in date list to place cursor in thumbnail                |  |
| list and thumbnail list | \ <u>-</u>     | list. Press again to return to date list.                              |  |
| Exit to thumbnail       |                | Date list: Exit to 72-frame playback.                                  |  |
| playback/Zoom in on     | ⊕              | • Thumbnail list: Press and hold <sup>®</sup> button to zoom in on     |  |
| ' '                     | `              |                                                                        |  |
| highlighted photo       |                | highlighted picture.                                                   |  |
| Highlight dates/        |                | Date list: Highlight date.                                             |  |
| Highlight images        | (OK)           | Thumbnail list: Highlight picture.                                     |  |
|                         |                | 3 3 1                                                                  |  |
| Toggle full frame       | (ok)           | Date list: View first picture taken on selected date.                  |  |
| playback                |                | Thumbnail list: View highlighted picture.                              |  |
| Delete highlighted      |                | Date list: Delete all pictures taken on selected date.                 |  |
| photo(s)                | <b>1</b>       | • <b>Thumbnail list</b> : Delete highlighted picture ( $\square$ 175). |  |
|                         |                | Thumbhan list. Delete highinghted picture (🕮 175).                     |  |
| Change protect          |                |                                                                        |  |
| status of highlighted   | ?∕₀            | See page 174 for more information.                                     |  |
| photo                   |                |                                                                        |  |
| D-ttt                   |                | M:                                                                     |  |
| Return to shooting      | <b>   ▼</b> /▶ | Monitor will turn off. Photographs can be taken                        |  |
| mode                    |                | immediately.                                                           |  |
| Display menus           | MENU           | See page 195 for more information.                                     |  |

## **Taking a Closer Look: Playback Zoom**

Press the  $^{\oplus}$  button to zoom in on the image displayed in full-frame playback or on the image currently highlighted in thumbnail or calendar playback. The following operations can be performed while zoom is in effect:

| То                        | Use           | Description                                                                                                                                                                                                                                       |  |  |  |
|---------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| Zoom in or out            | ୩ / ବ୍⊑       | Press <sup>®</sup> to zoom in to maximum of approximately 31 × (large images), 23 × (medium images) or 15 × (small images). Press <sup>®</sup> to zoom out. While photo is zoomed in, use multi selector                                          |  |  |  |
| View other areas of image |               | to view areas of image not visible in monitor. Keep multi selector pressed to scroll rapidly to other areas of frame. Navigation window is displayed when zoom ratio is altered; area currently visible in monitor is indicated by yellow border. |  |  |  |
| Select faces              |               | Faces (up to 35) detected during zoom are indicated by white borders in navigation window. Rotate subcommand dial to view other faces.                                                                                                            |  |  |  |
| View other images         |               | Rotate main command dial to view same location in other images at current zoom ratio.                                                                                                                                                             |  |  |  |
| Change protect status     | ?/₀-,         | See page 174 for more information.                                                                                                                                                                                                                |  |  |  |
| Return to shooting mode   | / <b>&gt;</b> | Monitor will turn off. Photographs can be taken immediately.                                                                                                                                                                                      |  |  |  |
| Display menus             | MENU          | See page 195 for more information.                                                                                                                                                                                                                |  |  |  |

## **Protecting Photographs from Deletion**

In full-frame, zoom, thumbnail, and calendar playback, the ?/ button can be used to protect photographs from accidental deletion. Protected files can not be deleted using the m button or the **Delete** option in the playback menu. Note that protected images will be deleted when the memory card is formatted ( $\square$  32).

To protect a photograph:

### 1 Select an image.

Display the image in full-frame playback or playback zoom or highlight it in the thumbnail list in thumbnail or calendar playback.









Full-frame playback

Thumbnail playback

Calendar playback

### 2 Press the ?/-, button.

The photograph will be marked with a icon. To remove protection from the photograph so that it can be deleted, display the photograph or highlight it in the thumbnail list and then press the ?/~ button.





**?**∕⊶ button

#### Removing Protection from All Images

To remove protection from all images in the folder or folders currently selected in the Playback folder menu, press the %- and find buttons together for about two seconds during playback.



## **Deleting Photographs**

To delete the photograph displayed in full-frame playback or the photograph highlighted in the thumbnail list, press the  $\tilde{\mathbf{m}}$  button. To delete multiple selected photographs, all photographs taken on a selected date, or all photographs in the current playback folder, use the **Delete** option in the playback menu. Once deleted, photographs can not be recovered.

## Full-Frame, Thumbnail, and Calendar Playback

Press the fi button to delete the current photograph.

- 1 Select an image.
  - Display the image or highlight it in the thumbnail list in thumbnail or calendar playback.
- 2 Press the fi button.

A confirmation dialog will be displayed.



Full-frame playback



Thumbnail playback



Calendar playback (thumbnail list)



## 3 Press the fi button again.

To delete the photograph, press the fi button again. To exit without deleting the photograph, press the ▶ button.



#### Calendar Playback

During calendar playback, you can delete all photographs taken on a selected date by highlighting the date in the date list and pressing the  $\hat{\mathbf{m}}$  button ( $\mathbf{\square}$  172).

#### See Also

The **After delete** option in the playback menu determines whether the next or previous image is displayed after an image is deleted  $(\square 200)$ .

## **The Playback Menu**

The **Delete** option in the playback menu contains the following options. Note that depending on the number of images, some time may be required for deletion.

| Option           | Description                                                                                                                                                                  |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Selected         | Delete selected pictures.                                                                                                                                                    |
| DATE Select date | Delete all pictures taken on a selected date (🕮 177).                                                                                                                        |
| ALL AII          | Delete all pictures in the folder currently selected for playback (\$\square\$ 195). If two cards are inserted, you can select the card from which pictures will be deleted. |

#### ■■ Selected: Deleting Selected Photographs

#### 1 Choose Selected.

Press the MENU button and select **Delete** in the playback menu. Highlight **Selected** and press ▶.

#### **MENU** button



### **2** Highlight a picture.

Use the multi selector to highlight a picture (to view the highlighted picture full screen, press and hold the <sup>®</sup> button; to view images in other locations, hold the **BKT** button, press **A**, and select the desired card and folder as described on page 164).





## **3** Select the highlighted picture.

Press the  $\P^{\square}$  button to select the highlighted picture. Selected pictures are marked by a  $\tilde{m}$  icon. Repeat steps 2 and 3 to select additional pictures; to deselect a picture, highlight it and press  $\P^{\square}$ .





▶

highlight **Yes** and press ®.





#### ■■ Select Date: Deleting Photographs Taken on a Selected Date

1 Choose Select date. In the delete menu, highlight Select date and press ▶.





**2** Highlight a date.

Use the multi selector to highlight a date.

To view the pictures taken on the highlighted date, press **Q**■. Use the multi selector to scroll through the pictures, or press and hold  $\mathfrak{P}$  to view the current picture full screen. Press **♀** to return to the date list.









**3** Select the highlighted date.

Press ▶ to select all pictures taken on the highlighted date. Selected dates are marked with a ☑ icon. Repeat steps 2 and 3 to select additional dates; to deselect a date, highlight it and press ▶.





**4** Press **®** to complete the operation. A confirmation dialog will be displayed; highlight Yes and press ®.







# Connections

## **Connecting to a Computer**

This section describes how to use the supplied UC-E4 USB cable to connect the camera to a computer.

## **Before Connecting the Camera**

Before connecting the camera, install the software on the supplied ViewNX 2 CD. To ensure that data transfer is not interrupted, be sure the camera EN-EL15 battery is fully charged. If in doubt, charge the battery before use or use an EH-5a AC adapter and EP-5B power connector (available separately).

#### **II** Supplied Software

ViewNX 2 includes a "Nikon Transfer 2" function for copying pictures from the camera to the computer, where ViewNX 2 can be used to view and print selected images or to edit photographs and movies. For more information, see ViewNX 2 online help.

#### ■■ Supported Operating Systems

The supplied software can be used with computers running the following operating systems:

- Windows: Windows 7 (Home Basic/Home Premium/Professional/Enterprise/ Ultimate), Windows Vista Service Pack 2 (Home Basic/Home Premium/Business/ Enterprise/Ultimate) and Windows XP Service Pack 3 (Home Edition/Professional). ViewNX 2 runs as 32-bit applications in 64-bit editions of Windows 7 and Windows Vista.
- Macintosh: Mac OS X (version 10.4.11, 10.5.8, 10.6.4)
  See the websites listed on page xvii for the latest information on supported operating systems.

#### Connecting Cables

Be sure the camera is off when connecting or disconnecting interface cables. Do not use force or attempt to insert the connectors at an angle. Close the camera connector cover when the connector is not in use.

#### **During Transfer**

Do not turn the camera off or disconnect the USB cable while transfer is in progress.

#### Windows

To visit the Nikon website after installing ViewNX 2, select **All Programs** > **Link to Nikon** from the Windows start menu (Internet connection required).

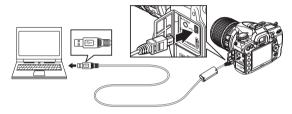
## **Connecting the Camera**

Connect the camera using the supplied UC-E4 USB cable.

- 1 Turn the camera off.
- **2** Turn the computer on.

  Turn the computer on and wait for it to start up.
- 3 Connect the USB cable.

  Connect the USB cable as shown. Do not use force or attempt to insert the connectors at an angle.



#### **USB** Hubs

Connect the camera directly to the computer; do not connect the cable via a USB hub or keyboard.

- 4 Turn the camera on.
- 5 Transfer photographs.

  After following the on-screen instructions to start Nikon Transfer 2, click Start Transfer to transfer photographs (for more information on using Nikon Transfer 2, start ViewNX 2 or Nikon Transfer 2 and select ViewNX 2 Help from the Help menu).



Start Transfer

**6** Turn the camera off and disconnect the USB cable when transfer ends. Nikon Transfer 2 will close automatically when transfer is complete.



If the optional WT-4 wireless transmitter ( $\square$  280) is attached, photographs can be transferred or printed over wireless or Ethernet networks and the camera can also be controlled from network computers running Camera Control Pro 2 (available separately). The WT-4 can be used in any of the following modes:

| Mode                  | Function                                                                        |  |
|-----------------------|---------------------------------------------------------------------------------|--|
| Transfer mode         | Upload new or existing photographs to computer or ftp server.                   |  |
| Thumbnail select mode | Preview photographs on computer monitor before upload.                          |  |
| PC mode               | Control camera from computer using Camera Control Pro 2 (available separately). |  |
| Print mode            | Print JPEG photographs on printer connected to network computer.                |  |

For more information, see the WT-4 user's manual. Be sure to update to the latest versions of the WT-4 firmware and supplied software.

#### Transfer Mode

When the WT-4 is connected to the camera in transfer mode, the picture currently displayed in full-frame playback can be uploaded to the computer by pressing the **BKT** and ® buttons.

#### Movies

The WT-4 can be used to upload movies in transfer mode if **Auto send** or **Send folder** is not selected for **Transfer settings**. Movies can not be uploaded in thumbnail selector mode.

#### Recording and Viewing Movies During Transfer

Movies can not be recorded or played back in image transfer mode when a WT-4 is connected to the camera ("image transfer mode" applies when images are being transferred and when images remain to be sent).

#### Thumbnail Select Mode

Camera settings can not be changed from the computer in thumbnail select mode.

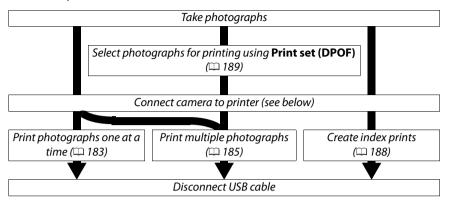
#### Camera Control Pro 2

Camera Control Pro 2 software (available separately) can be used to control the camera from a computer. When Camera Control Pro 2 is used to capture photographs directly to the computer, the PC connection indicator ( $P \subseteq$ ) will appear in the control panel.

M

## **Printing Photographs**

To print selected JPEG pictures on a PictBridge printer via a direct USB connection, follow the steps below.



#### Printing Via Direct USB Connection

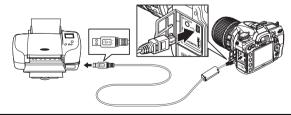
Be sure the EN-EL15 battery is fully charged or use an optional EH-5a AC adapter and EP-5B power connector. When taking photographs to be printed via direct USB connection, set **Color space** to **sRGB**  $(\square$  141).

## **Connecting the Printer**

Connect the camera using the supplied UC-E4 USB cable.

- 1 Turn the camera off.
- **2** Connect the USB cable.

Turn the printer on and connect the USB cable as shown. Do not use force or attempt to insert the connectors at an angle.



**USB** Hubs

Connect the camera directly to the printer; do not connect the cable via a USB hub.

### **3** Turn the camera on.

A welcome screen will be displayed in the monitor, followed by a PictBridge playback display.



### **Printing Pictures One at a Time**

**1** Select a picture.

Press ◀ or ▶ to view additional pictures, or press ▲ or ▼ to view photo information (□ 165). Press the <sup>®</sup> button to zoom in on the current frame (□ 173; press ► to exit zoom). To view six pictures at a time, press the <sup>®</sup> button. Use the



multi selector to highlight pictures, or press  $^{\circ}$  to display the highlighted picture full frame; to view images in other locations, hold the **BKT** button, press  $\triangle$ , and select the desired card and folder as described on page 164.

## **2** Display printing options.

Press ® to display PictBridge printing options.







## Adjust printing options.

Press ▲ or ▼ to highlight an option and press ▶ to select.

| Option        | Description                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Page size     | Menu of page sizes will be displayed (options not supported by current printer are not listed). Press ▲ or ▼ to choose page size (to print at default page size for current printer, select <b>Printer default</b> ), then press ⊛ to select and return to previous menu.                                                                                                                                     | Page size  _Printer default (OK) 3.5x5 in. 5x7 in. A4          |
| No. of copies | Menu shown at right will be displayed. Press ▲ or ▼ to choose number of copies (maximum 99), then press ⊛ to select and return to previous menu.                                                                                                                                                                                                                                                              | No. of copies  3  010                                          |
| Border        | This option is available only if supported by current printer. Menu shown at right will be displayed. Press ▲ or ▼ to choose print style from <b>Printer default</b> (print using current printer settings), <b>Print with border</b> (print photo with white border), or <b>No border</b> , then press ⋘ to select and return to previous menu. Only options supported by current printer will be displayed. |                                                                |
| Time<br>stamp | Menu shown at right will be displayed. Press ▲ or ▼ to choose <b>Printer default</b> (print using current printer settings), <b>Print time stamp</b> (print time and date of recording on photo), or <b>No time stamp</b> , then press <b>®</b> to select and return to previous menu.                                                                                                                        | ✓ Time stamp  Printer default  Print time stamp  No time stamp |
| Cropping      | This option is available only with printers that support cropping. Menu shown at right will be displayed. To exit without cropping picture, highlight <b>No cropping</b> and press <b>®</b> . To crop picture, highlight <b>Crop</b> and press ▶.                                                                                                                                                             | Cropping  Crop  No cropping                                    |
|               | If <b>Crop</b> is selected, dialog shown at right will be displayed. Press <sup>®</sup> to increase size of crop, <sup>®</sup> to decrease. Choose position of crop using multi selector and press <sup>®</sup> . Note that print quality may drop if small crops are printed at large sizes.                                                                                                                 | Cropping  GB EI G 14: GB OK                                    |

### 4 Start printing.

Select **Start printing** and press ® to start printing. To cancel before all copies have been printed, press ®.





#### NEF (RAW)

NEF (RAW) photographs ( $\square$  85) can not be printed by direct USB connection. JPEG copies of NEF (RAW) images can be created using the **NEF (RAW) processing** option in the retouch menu ( $\square$  258).

#### **Connecting Cables**

Be sure the camera is off when connecting or disconnecting interface cables. Do not use force or attempt to insert the connectors at an angle. Close the camera connector cover when the connector is not in use.

## Printing Multiple Pictures

Display the PictBridge menu.

Press the MENU button in the PictBridge playback display (see Step 3 on page 183).







### **2** Choose an option.

Highlight one of the following options and press ▶.

- Print select: Select pictures for printing.
- **Select date**: Print one copy of all the pictures taken on a selected date.
- Print (DPOF): Print an existing print order created with the Print set (DPOF) option in the playback menu (
   189). The current print order will be displayed in Step 3.

To create an index print of all JPEG pictures on the memory card, select **Index print**. See page 188 for more information.





■ Selecting Photographs for Printing
NEF (RAW) photographs (□ 85) can not be
selected for printing. JPEG copies of NEF (RAW)
images can be created using the NEF (RAW)
processing option in the retouch menu
(□ 258).

desired pictures have been selected.

If you chose Select date in Step 2, press ▲ or ▼ to highlight a date and press ▶ to toggle the highlighted date on or off. To view the pictures taken on the selected date, press ��. Use the multi selector to scroll through the pictures, or press and hold ♠ to view the current picture full screen. Press �� again to return to the date selection dialog.





 $\mathbf{P} + \mathbf{A} \mathbf{\nabla}$  : Choose number of copies





tiew photo full screen













tighlighted photo

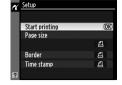




## **4** Display printing options.

Press ® to display PictBridge printing options.





## **5** Adjust printing options.

Press ▲ or ▼ to highlight an option and press ▶ to select.

| Option        | Description                                                                                                                                                                                                                                                                                                                                        |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Page<br>size  | Menu of page sizes will be displayed (□ 184; options not supported by current printer are not listed). Press ▲ or ▼ to choose page size (to print at default page size for current printer, select <b>Printer default</b> ), then press ❸ to select and return to previous menu.                                                                   |
| Border        | Menu of border options will be displayed (□ 184; options not supported by current printer are not listed). Press ▲ or ▼ to choose print style from <b>Printer default</b> (print at current printer settings), <b>Print with border</b> (print photo with white border), or <b>No border</b> , then press ® to select and return to previous menu. |
| Time<br>stamp | Menu of time stamp options will be displayed (□ 184). Press ▲ or ▼ to choose <b>Printer default</b> (print at current printer settings), <b>Print time stamp</b> (print time and date of recording on photo), or <b>No time stamp</b> , then press <sup>®</sup> to select and return to previous menu.                                             |

## **6** Start printing.

Select **Start printing** and press ® to start printing. To cancel before all copies have been printed, press ®.



#### Errors

See page 308 for information on what to do if an error occurs during printing.



## **Creating Index Prints**

To create an index print of all JPEG pictures on the memory card, select **Index print** in Step 2 of "Printing Multiple Pictures" (\$\square\$ 185). Note that if the memory card contains more than 256 pictures, only the first 256 images will be printed.

Select Index print.
Selecting Index print in the PictBridge menu
(□ 185) displays the images on the memory card as shown at right.



2 Display printing options.

Press ® to display PictBridge printing options.





- **3** Adjust printing options.

  Choose page size, border, and time stamp options as described on page 187 (a warning will be displayed if the selected page size is too small).
- 4 Start printing.
  Select Start printing and press ® to start printing. To cancel before printing is complete, press ®.

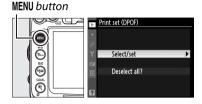




## **Creating a DPOF Print Order: Print Set**

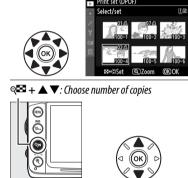
The **Print set (DPOF)** option in the playback menu is used to create digital "print orders" for PictBridge-compatible printers and devices that support DPOF.

1 Choose Select/set for the Print set (DPOF) item in the playback menu. Press the MENU button and select Print set (DPOF) in the playback menu. Highlight Select/set and press ► (to remove all photographs from the print order, select Deselect all?).



### **2** Select pictures.

Use the multi selector to scroll through the pictures on the memory card (to view images in other locations, hold the BKT button and press ▲). To display the current picture in full screen, press and hold the  $^{\mbox{\tiny $\alpha$}}$  button. To select the current picture for printing, hold the  $^{\mbox{\tiny $\alpha$}}$  button and press ▲. The picture will be marked with a  $^{\mbox{\tiny $\alpha$}}$  icon and the number of prints will be set to 1. Keeping the  $^{\mbox{\tiny $\alpha$}}$  button pressed, press  $^{\mbox{\tiny $\alpha$}}$  or  $^{\mbox{\tiny $\gamma$}}$  to specify the number of prints (up to 99; to deselect the picture, press  $^{\mbox{\tiny $\gamma$}}$  when the number of prints is 1). Continue until all the desired pictures have been selected.



the button: View photo full screen



**3** Display imprint options. Press ® to display data imprint options.







### **4** Select imprint options.

Highlight the following options and press ▶ to toggle the highlighted option on or off (to complete the print order without including this information, proceed to Step 5).

- Data imprint: Print shutter speed and aperture on all pictures in print order.
- Imprint date: Print date of recording on all pictures in print order.

## **5** Complete the print order.

Highlight **Done** and press ® to complete the print order.





Select/set

☑ Data imprint

☑ Imprint date

▶Set

#### Print Set (DPOF)

To print the current print order when the camera is connected to a PictBridge printer, select **Print (DPOF)** in the PictBridge menu and follow the steps in "Printing Multiple Pictures" to modify and print the current order (\$\square\$ 185). DPOF date and data imprint options are not supported when printing via direct USB connection; to print the date of recording on photographs in the current print order, use the PictBridge **Time stamp** option.

The **Print set (DPOF)** option can not be used if there is not enough space on the memory card to store the print order.

NEF (RAW) photographs ( $\square$  85) can not be selected using this option. JPEG copies of NEF (RAW) images can be created using the **NEF (RAW) processing** option in the retouch menu ( $\square$  258).

Print orders may not print correctly if images are deleted using a computer or other device after the print order is created.



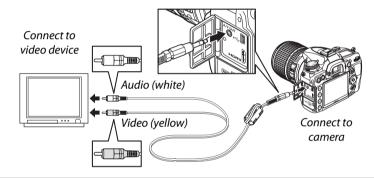
The supplied EG-D2 audio video (A/V) cable can be used to connect the camera to a television or video recorder for playback or recording. A type C mini-pin High-Definition Multimedia Interface (HDMI) cable (available separately from third-party suppliers) can be used to connect the camera to high-definition video devices.

### **Standard Definition Devices**

Before connecting the camera to a standard television, confirm that the camera video standard ( $\square$  237) matches that used in the TV.

- 1 Turn the camera off.

  Always turn the camera off before connecting or disconnecting the A/V cable.
- 2 Connect the A/V cable as shown.



- **3** Tune the television to the video channel.
- 4 Turn the camera on and press the button.

  During playback, image will be displayed both in the camera monitor and on the television screen. Note that the edges of images may not be displayed.

M

#### ✓ Video Mode

If no image is displayed, check that camera is correctly connected and that the option selected for **Video mode** ( $\square$  237) matches the video standard used in the TV.

#### Television Playback

Use of an EH-5a AC adapter and EP-5B power connector (available separately) is recommended for extended playback.

#### Slide Shows

The **Slide show** option in the playback menu can be used for automated playback ( 201).

#### Audio

When a movie with sound recorded in stereo using an external microphone is viewed on a television connected to the camera via an A/V cable, the audio output is monaural. HDMI connections support stereo output. Volume can be adjusted using television controls; the camera controls can not be used.

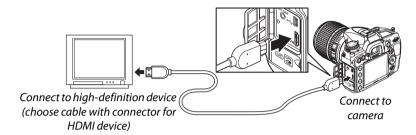
#### Close the Connector Cover

Close the camera connector cover when the connectors are not in use. Foreign matter in the connectors can interfere with data transfer.

## **High-Definition Devices**

The camera can be connected to HDMI devices using a type C mini-pin HDMI cable (available separately from third-party suppliers).

- 1 Turn the camera off.
  - Always turn the camera off before connecting or disconnecting an HDMI cable.
- **2** Connect the HDMI cable as shown.



- **3** Tune the device to the HDMI channel.
- **4** Turn the camera on and press the ▶ button.

  During playback, images will be displayed on the high-definition television or monitor screen; the camera monitor will remain off.

#### **✓** Close the Connector Cover

Close the camera connector cover when the connectors are not in use. Foreign matter in the connectors can interfere with data transfer.

M

#### **II** HDMI Options

The **HDMI** option in the setup menu controls output resolution and can be used to enable the camera for remote control from devices that support HDMI-CEC (**High-Definition Multimedia Interface—Consumer Electronics Control**, a standard that allows HDMI devices to be used to control peripherals to which they are connected).

#### **Output Resolution**

Choose the format for images output to the HDMI device. If **Auto** is selected, the camera will automatically select the appropriate format.



#### **Device Control**

If **On** is selected for **HDMI** > **Device control** in the setup menu when the camera is connected to a television that supports HDMI-CEC and both the camera and television are on, the display shown at right will appear on the television and the television remote can be used in place of the camera multi selector and button during full-frame playback and slide shows. If **Off** is selected, the television remote can not be used to control the camera.



#### HDMI-CEC Devices

When the camera is connected to an HDMI-CEC device, **[ E [** will appear in the control panel in place of the number of exposures remaining.

#### Device Control

See the television manual for details.



# Menu Guide

## **▶** The Playback Menu: *Managing Images*

To display the playback menu, press MENU and select the ▶ (playback menu) tab.

#### **MENU** button



The playback menu contains the following options:

| Option          | m   | Option           | Ш   |
|-----------------|-----|------------------|-----|
| Delete          | 176 | Image review     | 200 |
| Playback folder | 195 | After delete     | 200 |
| Hide image      | 196 | Rotate tall      | 200 |
| Display mode    | 197 | Slide show       | 201 |
| Copy image(s)   | 197 | Print set (DPOF) | 189 |

## Playback Folder MENU button → ▶ playback menu

Choose a folder for playback ( 163):

| Option  | Description                                                                     |  |  |
|---------|---------------------------------------------------------------------------------|--|--|
| D7000   | Pictures in all folders created with the D7000 will be visible during playback. |  |  |
| All     | Pictures in all folders will be visible during playback.                        |  |  |
| Current | Only pictures in the current folder will be visible during playback.            |  |  |

#### **Hide Image**

MENU button → ▶ playback menu

Hide or reveal pictures. Hidden pictures are visible only in the **Hide image** menu and can only be deleted by formatting the memory card.

| Option        | Description                                                                                                                                                                                                                                                           |                                                                       |               |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------|
| Select/set    | Hide or reveal selected pictures.                                                                                                                                                                                                                                     |                                                                       |               |
| Select date   | Selecting this option displays a list of dates. To hide all pictures taken on a date, highlight the date and press ▶. Selected dates are marked by a ✓; to reveal all pictures taken on a selected date, highlight it and press ▶. Press ⊗ to complete the operation. | ■ Select date  ■ 15/04/2010  ■ 18/04/2010  □ 18/04/2010  □ 18/04/2010 | ►Set<br>■ Set |
| Deselect all? | Reveal all pictures.                                                                                                                                                                                                                                                  |                                                                       |               |

#### Protected and Hidden Images

Revealing a protected image will also remove protection from the image.

Follow the steps below to hide or reveal selected pictures.

1 Choose Select/set.
Highlight Select/set and press ▶.





## **2** Select pictures.

Use the multi selector to scroll through the pictures on the memory card (to view the highlighted picture full screen, press and hold the <sup>®</sup> button; to view images in other locations as described on page 164, hold **BKT** and press ▲) and press <sup>®</sup> to select the current picture. Selected pictures are marked by a <sup>®</sup> icon; to deselect a picture, highlight it and press <sup>®</sup> again. Continue un

**9™** button



highlight it and press <sup>Q</sup>■ again. Continue until all the desired pictures have been selected.

**3** Press ⊗.

Press ® to complete the operation.







### **Display Mode**

MENU button → ▶ playback menu

Choose the information available in the playback photo information display ( $\square$  165). Press  $\blacktriangle$  or  $\blacktriangledown$  to highlight an option, then press  $\blacktriangleright$  to select the option for the photo information display. A  $\checkmark$  appears next to selected items; to deselect, highlight and press  $\blacktriangleright$ . To return to the playback menu, highlight **Done** and press \$.



### Copy Image(s)

MENU button → ▶ playback menu

Copy images between memory cards. This option is only available when two memory cards are inserted in the camera.

| Option                    | Description                                         |  |  |
|---------------------------|-----------------------------------------------------|--|--|
| Select source             | Select the card from which pictures will be copied. |  |  |
| Select image(s)           | Select the pictures to be copied.                   |  |  |
| Select destination folder | Select the folder to which pictures will be copied. |  |  |
| Copy image(s)?            | Copy the images.                                    |  |  |

To copy images:

1 Choose Select source.Highlight Select source and press ▶.





2 Select the source card.

Highlight the slot containing the card from which images will be copied and press .





3 Choose Select image(s).
Highlight Select image(s) and press ▶.







# **4** Select the source folder.

Highlight the folder containing the images to be copied and press ▶.





### **5** Make the initial selection.

Before going on select or deselect individual images, you can mark all or all protected images in the folder for copying by choosing Select all images or Select protected images. To mark only individually selected images for copying, choose Deselect all before proceeding.





# **6** Select additional images.

Highlight pictures and press **₹** to select or deselect (to view the highlighted picture full screen, press and hold the **₹** button). Selected images are marked with a **√**. Press **®** to proceed to Step 7 when your selection is complete.

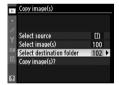






7 Choose Select destination folder. Highlight Select destination folder and press .





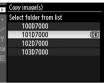


### **8** Select a destination folder.

To enter a folder number, choose **Select folder by number**, enter the number ( $\square$  203), and press 1. If the folder with the selected number does not already exist, a new folder will be created.

To choose from a list of existing folders, choose **Select folder from list**, highlight a folder, and press **®**.





# **9** Copy the images.

Highlight Copy image(s)? and press @.





A confirmation dialog will be displayed; highlight **Yes** and press ®. Press ® again to exit when copying is complete.





### **▼** Copying Images

Images will not be copied if there is insufficient space on the destination card. Be sure the battery is fully charged before copying movies.

If the destination folder contains an image with the same name as one of the images to be copied, a confirmation dialog will be displayed. Select **Replace existing image** to replace the image with the image to be copied, or select **Replace all** to replace all existing images with the same names without further prompting. To continue without replacing the image, select **Skip**, or select **Cancel** to exit without copying any further images.





Protect status is copied with the images but print marking ( $\square$  189) is not. Hidden images can not be copied.



### **Image Review**

MENU button → ▶ playback menu

Choose whether pictures are automatically displayed in the monitor immediately after shooting. If Off is selected, pictures can only be displayed by pressing the **b** button.



### **After Delete**

MENU button → ▶ playback menu

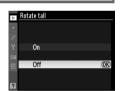
Choose the picture displayed after an image is deleted.

| Option                                                                                      | Description                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display following picture. If deleted picture was last frame, pripicture will be displayed. |                                                                                                                                                                                                                                                                       |
| <b>▶</b> Show previous                                                                      | Display previous picture. If deleted picture was first frame, following picture will be displayed.                                                                                                                                                                    |
| © Continue as before                                                                        | If user was scrolling through pictures in order recorded, following picture will be displayed as described for <b>Show next</b> . If user was scrolling through pictures in reverse order, previous picture will be displayed as described for <b>Show previous</b> . |

#### **Rotate Tall**

MENU button → ▶ playback menu

Choose whether to rotate "tall" (portrait-orientation) pictures for display during playback. Note that because the camera itself is already in the appropriate orientation during shooting, images are not rotated automatically during image review.



|    | Option | Description                                                                                                                                                                                  |  |  |
|----|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| On |        | "Tall" (portrait-orientation) pictures are automatically rotated for display in the camera monitor. Pictures taken with <b>Off</b> selected for <b>Auto image rotation</b> (\$\square\$ 239) |  |  |
|    |        | will be displayed in "wide" (landscape) orientation.                                                                                                                                         |  |  |
|    | Off    | "Tall" (portrait-orientation) pictures are displayed in "wide" (landscape) orientation.                                                                                                      |  |  |



### **Slide Show**

MENU button → ▶ playback menu

Create a slide show of the pictures in the current playback folder ( $\square$  195). Hidden images ( $\square$  196) are not displayed.

| Option         | Description                                           |  |
|----------------|-------------------------------------------------------|--|
| Start          | Start slide show.                                     |  |
| Frame interval | erval Choose how long each picture will be displayed. |  |

To start the slide show, highlight **Start** and press **®**. The following operations can be performed while the slide show is in progress:

| To                         | Press    | Description                                                                  |
|----------------------------|----------|------------------------------------------------------------------------------|
| Skip back/skip ahead       |          | Press ◀ to return to previous frame, ▶ to skip to next frame.                |
| View additional photo info |          | Change photo info displayed (🕮 165).                                         |
| Pause/resume               | <b>⊗</b> | Pause or resume slide show.                                                  |
| Exit to playback menu      | MENU     | End slide show and return to playback menu.                                  |
| Exit to playback mode      | Þ        | End slide show and exit to full-frame (□ 163) or thumbnail playback (□ 171). |
| Exit to shooting mode      | V        | Press shutter-release button halfway to return to shooting mode.             |

The dialog shown at right is displayed when the show ends. Select **Restart** to restart or **Exit** to return to the playback menu.





# The Shooting Menu: Shooting Options

To display the shooting menu, press MENU and select the 
(shooting menu) tab.

#### MENU button



The shooting menu contains the following options:

| Option                        | m   | Option                   |     |
|-------------------------------|-----|--------------------------|-----|
| Reset shooting menu           | 202 | Auto distortion control  | 205 |
| Storage folder                | 203 | Color space              | 141 |
| File naming                   | 204 | Active D-Lighting        | 139 |
| Role played by card in Slot 2 | 89  | Long exp. NR             | 205 |
| Image quality                 | 85  | High ISO NR              | 205 |
| Image size                    | 88  | ISO sensitivity settings | 101 |
| JPEG compression              | 87  | Multiple exposure        | 152 |
| NEF (RAW) recording           | 87  | Movie settings           | 60  |
| White balance                 | 117 | Interval timer shooting  | 155 |
| Set Picture Control           | 131 | Remote control mode      | 80  |
| Manage Picture Control        | 136 |                          |     |

**Note**: Depending on camera settings, some items may be grayed out and unavailable. For information on the options available in each shooting mode, see page 292.

# **Reset Shooting Menu**

MENU button → **□** shooting menu

Select **Yes** to restore shooting menu options to their default values (\$\square\$ 295).





Select the folder in which subsequent images will be stored.

### ■■ Selecting Folders by Folder Number

# 1 Choose Select folder by number.

Highlight **Select folder by number** and press ▶. The dialog shown at right will be displayed.





# **2** Choose a folder number.

Press  $\blacktriangleleft$  or  $\blacktriangleright$  to highlight a digit, press  $\blacktriangle$  or  $\blacktriangledown$  to change. If a folder with the selected number already exists, a  $\Box$ ,  $\sqsubseteq$ , or  $\boxminus$  icon will be displayed to the left of the folder number:

- 🗀 : Folder is empty.
- 🖃 : Folder is partially full.
- 🗎 : Folder contains 999 pictures or a picture numbered 9999. No further pictures can be stored in this folder.

The card on which the folder is stored is shown by the card slot icon in the top right corner of the Select folder by number dialog. The card used for new folders depends on the option currently selected for **Role played by card in slot 2** ( $\square$  89).

# **3** Save changes and exit.

Press ® to complete the operation and return to the shooting menu (to exit without choosing a folder, press the MENU button). If a folder with the specified number does not already exist, a new folder will be created. Subsequent photographs will be stored in the selected folder unless it is already full.

### Folder and File Numbers

If the current folder is numbered 999 and contains 999 pictures or a picture numbered 9999, the shutter-release will be disabled and no further photographs can be taken. To continue shooting, create a folder with a number less than 999, or select an existing folder with a number less than 999 and less than 999 images.

### Startup Time

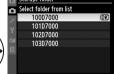
Additional time may be required for camera startup if the memory card contains a very large number of files or folders.



### ■■ Selecting Folders from a List

1 Choose Select folder from list.
Highlight Select folder from list and press ▶.





Highlight a folder.

Press ▲ or ▼ to highlight a folder.

**3** Select the highlighted folder.

Press M to select the highlighted folder and return to the shooting menu (to exit without changing the active folder, press the MENU button). Subsequent photographs will be stored in the selected folder.

### **File Naming**

MENU button → **△** shooting menu

Photographs are saved using file names consisting of "DSC\_" or, in the case of images that use the Adobe RGB color space, "\_DSC", followed by a four-digit number and a three-letter extension (e.g., "DSC\_0001.JPG"). The **File naming** option is used to select three letters to replace the "DSC" portion of the file name. For information on editing file names, see page 137. Note that the portion of the name that can be edited is a maximum of three characters long.

### Extensions

The following extensions are used: ".NEF" for NEF (RAW) images, ".JPG" for JPEG images, ".MOV" for movies, and ".NDF" for dust off reference data. In each pair of photographs recorded at image-quality settings of NEF (RAW)+JPEG, the NEF and JPEG images have the same file names but different extensions.



#### **Auto Distortion Control**

MENU button → **△** shooting menu

Select **On** to reduce barrel distortion when shooting with wideangle lenses and to reduce pin-cushion distortion when shooting with long lenses (note that the edges of the area visible in the viewfinder may be cropped out of the final photograph, and that the time needed to process photographs before recording begins may increase). This option is recommended only with type G and D lenses (PC, fisheye, and certain other lenses excluded); results are not guaranteed with other lenses.

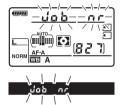


#### Retouch: Distortion Control

For information on creating copies of existing photographs with reduced barrel and pincushion distortion, see page 261.

### **Long Exp. NR (Long Exposure Noise Reduction)** MENU button → □ shooting menu

If **On** is selected, photographs taken at shutter speeds slower than 8 s will be processed to reduce noise (randomly-spaced bright pixels or fog), increasing the time required to record images by roughly 1.5 to 2 times. During processing, "Job nr" will blink in the shutter speed/aperture displays and pictures can not be taken (if the camera is turned off before processing is complete, the picture will be saved but noise reduction will not be performed). In continuous release mode, frame rates will slow and while photographs are being processed, the capacity of the memory buffer will drop.



### **High ISO NR**

MENU button → **\textit{D}** shooting menu

Photographs taken at high ISO sensitivities can be processed to reduce "noise."

| Option      | Description                                                                                                                                                     |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HIGH High   | Reduce noise (randomly-spaced bright pixels, lines, or fog), particularly in                                                                                    |
| NORM Normal | photographs taken at high ISO sensitivities. Choose the amount of noise                                                                                         |
| LOW Low     | reduction performed from <b>High</b> , <b>Normal</b> , and <b>Low</b> .                                                                                         |
| Off         | Noise reduction is only performed at ISO sensitivities of ISO 1600 and higher.  The amount of noise reduction is less than the amount performed when <b>Low</b> |
|             | is selected for <b>High ISO NR</b> .                                                                                                                            |



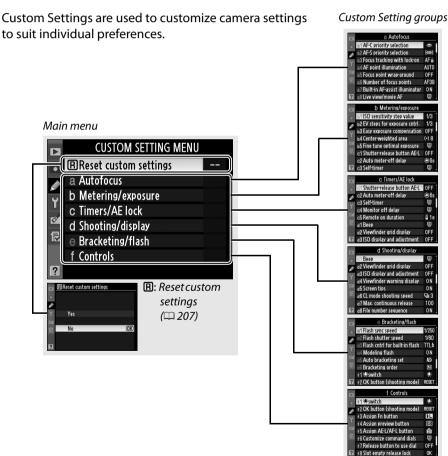
# **O** Custom Settings:

# Fine-Tuning Camera Settings

To display the Custom Settings menu, press **MENU** and select the  $\mathcal{Q}$  (Custom Settings menu) tab.







The following Custom Settings are available:

|            | Custom Setting                 |     |     | Custom Setting                 | m   |
|------------|--------------------------------|-----|-----|--------------------------------|-----|
| R          | Reset custom settings 20       |     |     | Shooting/display               |     |
| a          | Autofocus                      |     | d6  | CL mode shooting speed         | 217 |
| a1         | AF-C priority selection        | 208 | d7  | Max. continuous release        | 217 |
| a2         | AF-S priority selection        | 208 | d8  | File number sequence           | 218 |
| a3         | Focus tracking with lock-on    | 209 | d9  | Information display            | 219 |
| a4         | AF point illumination          | 209 | d10 | LCD illumination               | 219 |
| a5         | Focus point wrap-around        | 209 | d11 | Exposure delay mode            | 219 |
| a6         | Number of focus points         | 210 | d12 | Flash warning                  | 219 |
| a7         | Built-in AF-assist illuminator | 210 | d13 | MB-D11 battery type            | 220 |
| a8         | Live view/movie AF             | 211 | d14 | Battery order                  | 221 |
| b          | Metering/exposure              |     | е   | Bracketing/flash               |     |
| b1         | ISO sensitivity step value     | 211 | e1  | Flash sync speed               | 222 |
| b2         | EV steps for exposure cntrl.   | 211 | e2  | Flash shutter speed            | 223 |
| b3         | Easy exposure compensation     | 212 | e3  | Flash cntrl for built-in flash | 223 |
| b4         | Center-weighted area           | 213 | e4  | Modeling flash                 | 228 |
| b5         | Fine tune optimal exposure     | 213 | e5  | Auto bracketing set            | 229 |
| C          | Timers/AE lock                 |     | е6  | Bracketing order               | 229 |
| <b>c</b> 1 | Shutter-release button AE-L    | 213 | f   | Controls                       |     |
| c2         | Auto meter-off delay           | 214 | f1  | <b>.</b> switch                | 229 |
| <b>c</b> 3 | Self-timer                     | 214 | f2  | OK button (shooting mode)      | 229 |
| c4         | Monitor off delay              | 215 | f3  | Assign Fn button               | 230 |
| c5         | Remote on duration             | 215 | f4  | Assign preview button          | 232 |
| d          | Shooting/display               |     | f5  | Assign AE-L/AF-L button        | 232 |
| d1         | Веер                           | 215 | f6  | Customize command dials        | 233 |
| d2         | Viewfinder grid display        | 216 | f7  | Release button to use dial     | 234 |
| d3         | ISO display and adjustment     | 216 | f8  | Slot empty release lock        | 234 |
| d4         | Viewfinder warning display     | 216 | f9  | Reverse indicators             | 234 |
| d5         | Screen tips                    | 216 | f10 | Assign MB-D11 圈 button         | 235 |
| N - 4 -    | D                              |     |     |                                |     |

**Note**: Depending on camera settings, some items may be grayed out and unavailable. For information on the options available in each shooting mode, see page 292.

# **R: Reset Custom Settings**MENU button → ② Custom Settings menu

Select **Yes** to restore Custom Settings to their default values  $(\square 296)$ .



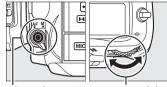


### a: Autofocus

### a1: AF-C Priority Selection

MENU button → ② Custom Settings menu

When **AF-C** is selected for viewfinder photography ( $\square$  91), this option controls whether photographs can be taken whenever the shutter-release button is pressed (*release priority*) or only when the camera is in focus (*focus priority*).



AF-mode Main command dial button

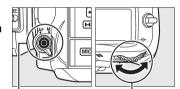
|        | Option  | Description                                                            |
|--------|---------|------------------------------------------------------------------------|
| 9      | Release | Photos can be taken whenever the shutter-release button is pressed.    |
| [::::] | Focus   | Photos can only be taken when the in-focus indicator (●) is displayed. |

Regardless of the option selected, focus will not lock when AF-C is selected for AF mode. The camera will continue to adjust focus until the shutter is released.

### a2: AF-S Priority Selection

MENU button → ② Custom Settings menu

When **AF-S** is selected for viewfinder photography ( $\square$  91), this option controls whether photographs can be taken only when the camera is in focus (*focus priority*) or whenever the shutter-release button is pressed (*release priority*).



AF-mode Main command dial button

|        | Option  | Description                                                            |
|--------|---------|------------------------------------------------------------------------|
| 9      | Release | Photos can be taken whenever the shutter-release button is pressed.    |
| [::::] | Focus   | Photos can only be taken when the in-focus indicator (●) is displayed. |

Regardless of the option selected, if the in-focus indicator (•) is displayed when AF-S is selected for AF mode, focus will lock while the shutter-release button is pressed halfway. Focus lock continues until the shutter is released.

# **a3: Focus Tracking with Lock-On** MENU button → ② Custom Settings menu

This option controls how autofocus adjusts to sudden large changes in the distance to the subject when AF-C is selected or continuous-servo autofocus is selected when the camera is in AF-A mode for viewfinder photography (\$\square\$ 91).

|             | Option     | Description                                                                                                                                                                        |  |  |  |  |  |
|-------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| AF≣         | 5 (Long)   |                                                                                                                                                                                    |  |  |  |  |  |
| AF≣         |            | When the distance to the subject changes abruptly, the camera waits for the                                                                                                        |  |  |  |  |  |
| AF≣         | 3 (Normal) | specified period before adjusting the distance to the subject. This prevents the camera from refocusing when the subject is briefly obscured by objects passing through the frame. |  |  |  |  |  |
| AF≞         | 2          |                                                                                                                                                                                    |  |  |  |  |  |
| AF <u>≣</u> | 1 (Short)  |                                                                                                                                                                                    |  |  |  |  |  |
|             | Off        | The camera immediately adjusts focus when the distance to the subject changes. Use when photographing a series of subjects at varying distances in quick succession.               |  |  |  |  |  |

Choose whether the active focus point is highlighted in red in the viewfinder.

| Option    | Description                                                                     |
|-----------|---------------------------------------------------------------------------------|
| AUTO Auto | The selected focus point is automatically highlighted as needed to establish    |
| AUTO AUTO | contrast with the background.                                                   |
|           | The selected focus point is always highlighted, regardless of the brightness of |
| 0n        | the background. Depending on the brightness of the background, the              |
|           | selected focus point may be difficult to see.                                   |
| Off       | The selected focus point is not highlighted.                                    |

# **a5: Focus Point Wrap-Around** MENU button → ② Custom Settings menu

Choose whether focus-point selection "wraps around" from one edge of the display to another.

| Option  | Description                                                                                                                                                                                                                                                                                  |   |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| Wrap    | Focus-point selection "wraps around" from top to bottom, bottom to top, right to left, and left to right, so that, for example, pressing ▶ when a focus point at the right edge of the display is highlighted (①) selects the corresponding focus point at the left edge of the display (②). | 2 |
| No wrap | The focus-area display is bounded by the outermost focus points so that, for example, pressing ▶ when a focus point at the right edge of the display is selected has no effect.                                                                                                              |   |



### a6: Number of Focus Points

**MENU** button → *②* Custom Settings menu

Choose the number of focus points available for manual focus-point selection.

| Option         | Description                                                                          |                                         |
|----------------|--------------------------------------------------------------------------------------|-----------------------------------------|
| AF39 39 points | Choose from the 39 focus points shown at right.                                      | 000000000000000000000000000000000000000 |
| AF11 11 points | Choose from the 11 focus points shown at right. Use for quick focus-point selection. |                                         |

### a7: Built-in AF-assist Illuminator

**MENU** button → *②* Custom Settings menu

Choose whether the built-in AF-assist illuminator lights to assist the focus operation when lighting is poor.



| Option | Description                                                                                                                                                                                                                                                                              |  |  |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|        | The AF-assist illuminator lights when lighting is poor (viewfinder photography only). AF-assist illumination is only available when both of the following conditions are met:                                                                                                            |  |  |
| On     | <ol> <li>AF-S is selected for autofocus mode (\$\sup\$ 91) or single-servo autofocus is selected when the camera is in AF-A mode.</li> <li>(auto-area AF) is chosen for AF-area mode (\$\sup\$ 94), or an option other than is chosen and the center focus point is selected.</li> </ol> |  |  |
| Off    | The AF-assist illuminator does not light to assist the focus operation. The camera may not be able to focus using autofocus when lighting is poor.                                                                                                                                       |  |  |

### The AF-Assist Illuminator

The AF-assist illuminator has a range of about 0.5–3.0 m (1 ft. 8 in.–9 ft. 10 in.); when using the illuminator, use a lens with a focal length of 24–200 mm and remove the lens hood.

### See Also

For information on the shooting modes in which AF-assist is available, see page 292. See page 273 for restrictions on the lenses that can be used with AF assist.



#### a8: Live View/Movie AF

**MENU** button → ② Custom Settings menu

Choose how the camera focuses when autofocus is selected in live view or during movie recording.

- Autofocus mode: Select the focus mode used for autofocus in live view and movie recording (\$\square\$ 50). Choose from Singleservo AF and Full-time-servo AF.
- AF-area mode: Choose how the focus point for autofocus is selected during live view and movie recording (\$\square\$ 50).
   Choose from Face-priority AF, Wide-area AF, Normal-area AF, and Subject-tracking AF.



### **b:** Metering/Exposure

### **b1: ISO Sensitivity Step Value**

MENU button → ② Custom Settings menu

Select the increments used when making adjustments to ISO sensitivity. If possible, the current ISO sensitivity setting is maintained when the step value is changed. If the current setting is not available at the new step value, ISO sensitivity will be rounded to the nearest available setting.



### **b2: EV Steps for Exposure Cntrl.**

**MENU** button → Ø Custom Settings menu

Select the increments used when making adjustments to shutter speed, aperture, exposure and flash compensation, and bracketing.





### **b3: Easy Exposure Compensation**

**MENU** button → *②* Custom Settings menu

This option controls whether the  $\square$  button is needed to set exposure compensation ( $\square$  107). If **On (Auto reset)** or **On** is selected, the 0 at the center of the exposure display will blink even when exposure compensation is set to  $\pm 0$ .

| Option                | Description                                                                                                                                                                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RESET On (Auto reset) | Exposure compensation is set by rotating one of the command dials (see note below). The setting selected using the command dial is reset when the camera or exposure meters turn off (exposure compensation settings selected using the <b>B</b> button are not reset). |
| On                    | As above, except that the exposure compensation value selected using the command dial is not reset when the camera or exposure meters turn off.                                                                                                                         |
| Off                   | Exposure compensation is set by pressing the 🗷 button and rotating the main command dial.                                                                                                                                                                               |

### Change Main/Sub

The dial used to set exposure compensation when **On (Auto reset)** or **On** is selected for Custom Setting b3 (**Easy exposure compensation**) depends on the option selected for Custom Setting f6 (**Customize command dials**) > **Change main/sub** ( $\square$  233).

|      |   | Customize command dials > Change main/sub |                   |  |
|------|---|-------------------------------------------|-------------------|--|
|      |   | Off                                       | 0n                |  |
|      | P | Sub-command dial                          | Sub-command dial  |  |
| ≥    | S | Sub-command dial                          | Main command dial |  |
| Mode | A | Main command dial                         | Sub-command dial  |  |
| M    |   | N/                                        | /A                |  |

### Show ISO/Easy ISO

Custom Setting b3 (**Easy exposure compensation**) can not be used with Custom Setting d3 (**Show ISO/Easy ISO**). Adjustments to either of these items reset the remaining item; a message is displayed when the item is reset.

### **b4: Center-Weighted Area**

MENU button → Ø Custom Settings menu

When calculating exposure, center-weighted metering assigns the greatest weight to a circle in the center of the frame. The diameter  $(\phi)$  of this circle can be set to 6, 8, 10, or 13 mm or to the average of the entire frame.

|    | 1            | Option         |
|----|--------------|----------------|
| )  | (•) 6        | ф <b>6 mm</b>  |
|    | (•) 8        | ф 8 mm         |
|    | <b>(•)10</b> | ф <b>10 mm</b> |
| ı  | <b>(•)13</b> | ф <b>13 mm</b> |
| ١. | (•)Avg       | Average        |

Note that the diameter is fixed at 8 mm when a non-CPU lens is used

### **b5: Fine Tune Optimal Exposure**

MENU button → @ Custom Settings menu

Use this option to fine-tune the exposure value selected by the camera. Exposure can be fine tuned separately for each metering method by from +1 to -1 EV in steps of  $^{1}/_{6}$  EV.



#### Fine-Tuning Exposure

Exposure fine tuning is not affected by two-button resets. Note that as the exposure compensation  $(\mathbf{\Xi})$  icon is not displayed, the only way to determine how much exposure has been altered is to view the amount in the fine-tuning menu. Exposure compensation  $(\mathbf{\Box})$  107) is preferred in most situations.

# c: Timers/AE Lock

#### c1: Shutter-Release Button AE-L

MENU button → Ø Custom Settings menu

At the default setting of **Off**, exposure only locks when the **AE-L/AF-L** button is pressed. If **On** is selected, exposure will also lock when the shutter-release button is pressed halfway.





### c2: Auto Meter-off Delay

Choose how long the camera continues to meter exposure when no operations are performed. The shutter-speed and aperture displays in the control panel and viewfinder turn off automatically when the exposure meters turn off.

Choose a shorter meter-off delay for longer battery life.



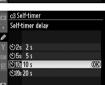
#### c3: Self-Timer

**MENU** button → *②* Custom Settings menu

Choose the length of the shutter release delay, the number of shots taken, and the interval between shots in self-timer mode.



• **Self-timer delay**: Choose the length of the shutter-release delay.



• **Number of shots**: Press ▲ and ▼ to choose the number of shots taken each time the shutter-release button is pressed.

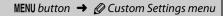


• Interval between shots: Choose the interval between shots when the **Number of shots** is more than 1.





### c4: Monitor off Delay



Choose how long the monitor remains on when no operations are performed during playback (**Playback**; defaults to 10 s) and image review (**Image review**; defaults to 4 s), when menus (**Menus**; defaults to 20 s) or information (**Information display**; defaults to 10 s) are displayed, or during live view and movie recording (**Live view**; defaults to 10 minutes). Choose a shorter monitor-off delay for longer battery life.



#### c5: Remote on Duration

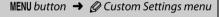


Choose how long the camera will remain on stand-by in remote release mode ( $\square$  80). If no operations are performed for the selected period, remote shooting will end and the exposure meters will turn off. Choose shorter times for longer battery life. To reactivate remote mode after the timer has expired, press the camera shutter-release button halfway.



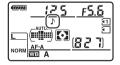
# d: Shooting/Display

#### d1: Beep



Choose the pitch and volume of the beep that sounds when the camera focuses using single-servo AF (**AF-S** or when single-servo AF is selected for **AF-A**;  $\square$  50, 91), when focus locks in live view, while the release timer is counting down in self-timer and delayed remote release modes ( $\square$  80), when a photograph is taken in quick-response remote or remote mirror-up mode ( $\square$  80), or if you attempt to take a photograph when the memory card is locked ( $\square$  33). Note that a beep will not sound in quiet-shutter release mode (mode  $\mathbf{Q}$ ;  $\square$  77), regardless of the option selected.

- Volume: Choose 3 (high), 2 (medium), 1 (low) or Off (mute).
   When an option other than Off is selected, ♪ appears in the control panel and information display.
- Pitch: Choose High or Low.





### d2: Viewfinder Grid Display

MENU button → ② Custom Settings menu

Choose **On** to display on-demand grid lines in the viewfinder for reference when composing photographs ( $\square$  9).



### d3: ISO Display and Adjustment

**MENU** button → *②* Custom Settings menu

If **Show ISO sensitivity** or **Show ISO/Easy ISO** is selected, the viewfinder and control panel will show ISO sensitivity in place of the number of exposures remaining. If **Show ISO/Easy ISO** is selected, ISO sensitivity can be set in modes **P** and **S** by rotating the sub-command dial or in mode **A** by rotating the main command dial. Select **Show frame count** to display the number of exposures remaining in the viewfinder and control panel.

### d4: Viewfinder Warning Display

**MENU** button → ② Custom Settings menu

Selecting **On** enables the following viewfinder warnings:

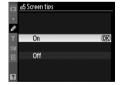
- B/W: Displayed when a monochrome Picture Control is selected
- : Displayed when the battery is low
- 1/2: Displayed if no memory card is inserted in the camera



### d5: Screen Tips

MENU button → Ø Custom Settings menu

Choose **On** to display tool tips for items selected in the information display.





## d6: CL Mode Shooting Speed

MENU button → ② Custom Settings menu

Choose the maximum frame advance rate in  $\Omega$  (continuous low speed) mode (during interval timer photography, this setting also determines the frame advance rate for single-frame). Note that the frame advance rate may drop below the selected value at slow shutter speeds.



### d7: Max. Continuous Release

MENU button → ② Custom Settings menu

The maximum number of shots that can be taken in a single burst in continuous mode can be set to any value between 1 and 100.



#### The Memory Buffer

Regardless of the option selected for Custom Setting d7, shooting will slow when the memory buffer fills. See page 320 for more information on the capacity of the memory buffer.

When a photograph is taken, the camera names the file by adding one to the last file number used. This option controls whether file numbering continues from the last number used when a new folder is created, the memory card is formatted, or a new memory card is inserted in the camera.



| 0pt                                                                    | ion   | Description                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |
|------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|                                                                        | On    | When a new folder is created, the memory card formatted, or a new memory card inserted in the camera, file numbering continues from the last number used or from the largest file number in the current folder, whichever is higher. If a photograph is taken when the current folder contains a photograph numbered 9999, a new folder will be created automatically and file numbering will begin again from 0001. |  |  |
| formatted, or a new memory card is inserted in the camera. Note that a |       | , , ,                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| RESET                                                                  | Reset | As for <b>On</b> , except that the next photograph taken is assigned a file number by adding one to the largest file number in the current folder. If the folder is empty, file numbering is reset to 0001.                                                                                                                                                                                                          |  |  |

### File Number Sequence

If the current folder is numbered 999 and contains either 999 photographs or a photograph numbered 9999, the shutter-release button will be disabled and no further photographs can be taken. Choose **Reset** for Custom Setting d8 (**File number sequence**) and then either format the current memory card or insert a new memory card.



### d9: Information Display

**MENU** button → *②* Custom Settings menu

At the default setting of **Auto** (**AUTO**), the color of the lettering in the information display ( $\square$  10) will automatically change from black to white or white to black to maintain contrast with the background. To always use the same color lettering, select **Manual** and choose **Dark on light** (**B**; black lettering) or **Light on dark** (**W**; white lettering). Monitor brightness will automatically be adjusted for maximum contrast with the selected text color.





Dark on light

Light on dark

#### d10: LCD Illumination

MENU button → ② Custom Settings menu

At the default setting of **Off**, the control panel backlight (LCD illuminator) will only light while the power switch is rotated toward .: If **On** is selected, the control panel will be illuminated whenever the exposure meters are active ( $\square$  39). Select **Off** for increased battery life.



### d11: Exposure Delay Mode

MENU button → Ø Custom Settings menu

In situations where the slightest camera movement can blur pictures, select **On** to delay shutter release until about 1 s after the shutter-release button is pressed and the mirror is raised.



### d12: Flash Warning

MENU button → Ø Custom Settings menu

If **On** is selected, the flash-ready indicator (**\$**) will blink in the viewfinder if the flash is required to ensure optimal exposure.



To ensure that the camera functions as expected when the optional MB-D11 battery pack is used with AA batteries, match the option selected in this menu to the type of batteries inserted in the battery pack. There is no need to adjust this option when using EN-EL15 batteries.

| Option                 | Description                                  |
|------------------------|----------------------------------------------|
| ₫LR6 LR6 (AA alkaline) | Select when using LR6 alkaline AA batteries. |
| ŮNi-MH HR6 (AA Ni-MH)  | Select when using HR6 Ni-MH AA batteries.    |
| ₫FR6 FR6 (AA lithium)  | Select when using FR6 lithium AA batteries.  |

### Using AA Batteries

The MB-D11 takes one EN-EL15 rechargeable Li-ion battery or six AA alkaline, Ni-MH, or lithium batteries (an EN-EL15 is supplied with the camera; AA batteries are available separately). Fewer pictures can be taken with AA batteries ( $\square$  321). The capacity of AA batteries drops sharply at temperatures below 20 °C (68 °F) and varies with make and storage conditions; in some cases, batteries may cease to function before their expiry date. Some AA batteries can not be used; due to their performance characteristics and limited capacity, alkaline batteries should only be used if no alternative is available and then only at warmer temperatures. The camera shows the level of AA batteries as follows:

| Control panel    | Viewfinder | Description                                  |  |  |
|------------------|------------|----------------------------------------------|--|--|
| ( <b>V////</b> A | _          | Batteries fully charged.                     |  |  |
| - 74             | <b>—</b>   | Low battery. Ready fresh batteries.          |  |  |
| <b>4</b>         | <b>—</b>   | Shutter release disabled. Change batteries.  |  |  |
| (blinks)         | (blinks)   | Structer release disabled. Change batteries. |  |  |

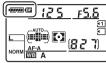


Choose whether the battery in the camera or the batteries in the battery pack are used first when an optional MB-D11 battery pack is attached. Note that if the MB-D11 is powered by an optional EH-5a AC adapter and EP-5B power connector, the AC adapter will be used regardless of the option selected.

A @ icon is displayed in the camera control panel when the batteries in the MB-D11 are in use. The information display shows the type of battery inserted in the MB-D11 as follows:

| lcon         | Battery type                        |  |
|--------------|-------------------------------------|--|
| EL15):[////  | EN-EL15 rechargeable Li-ion battery |  |
| AA batteries |                                     |  |









# e: Bracketing/Flash

# e1: Flash Sync Speed MENU button → ② Custom Settings menu

This option controls flash sync speed.

| Option         | Description                                                                                   |  |
|----------------|-----------------------------------------------------------------------------------------------|--|
|                | Use auto FP high-speed sync with SB-900, SB-800, SB-700, SB-600, and                          |  |
| 1/320 s        | SB-R200 flash units. If other flash units are used, shutter speed is set to 1/320 s.          |  |
| (Auto FP)      | When the camera shows a shutter speed of 1/320 s in mode <b>P</b> or <b>A</b> , auto FP high- |  |
|                | speed sync will be activated if the actual shutter speed is faster than $\frac{1}{320}$ s.    |  |
|                | Use auto FP high-speed sync with SB-900, SB-800, SB-700, SB-600, and                          |  |
| 1/250 s        | SB-R200 flash units. If other flash units are used, shutter speed is set to 1/250 s.          |  |
| (Auto FP)      | When the camera shows a shutter speed of 1/250 s in mode <b>P</b> or <b>A</b> , auto FP high- |  |
|                | speed sync will be activated if the actual shutter speed is faster than 1/250 s.              |  |
| 1/250 s-1/60 s | Flash sync speed set to selected value.                                                       |  |

### Fixing Shutter Speed at the Flash Sync Speed Limit

To fix shutter speed at the sync speed limit in mode **S** or **M**, select the next shutter speed after the slowest possible shutter speed (30 s or bulb). An X (flash sync indicator) will be displayed in the control panel and viewfinder.

### Auto FP High-Speed Sync

Allows the flash to be used at the highest shutter speed supported by the camera, making it possible to choose the maximum aperture for reduced depth of field even when the subject is backlit in bright sunlight. The information display flash mode indicator shows "FP" when auto FP high-speed sync is active (\$\sigma\$ 278).

### ■ Flash Control at 1/320 s (Auto FP)

When **1/320 s (Auto FP)** is selected for Custom Setting e1 (**Flash sync speed**,  $\square$  222), the built-in flash can be used at shutter speeds as fast as  $^{1}/_{320}$  s, while optional SB-900, SB-800, SB-700, SB-600, and SB-R200 flash units can be used at any shutter speed (Auto FP High-Speed Sync).

| Flash sync speed                                                       | 1/320 s (Auto FP) |                        | 1/250 s (Auto FP) |                        | 1/250 s        |                        |
|------------------------------------------------------------------------|-------------------|------------------------|-------------------|------------------------|----------------|------------------------|
| Shutter speed                                                          | Built-in flash    | Optional flash<br>unit | Built-in flash    | Optional flash<br>unit | Built-in flash | Optional flash<br>unit |
| <sup>1</sup> /8,000- <sup>1</sup> /320 <b>S</b>                        | _                 | Auto FP                | _                 | Auto FP                | _              | _                      |
| <sup>1</sup> / <sub>320</sub> – <sup>1</sup> / <sub>250</sub> <b>s</b> | Flash             | sync *                 | _                 | Auto FP                | _              | _                      |
| <sup>1</sup> / <sub>250</sub> –30 s                                    |                   |                        | Flash             | sync                   |                |                        |

<sup>\*</sup> Flash range drops as shutter speed increases. Flash range will nevertheless be greater than that obtained at the same speeds with Auto FP.

#### The Flash-Ready Indicator

When the flash fires at full power, the flash-indicator in the camera viewfinder will blink to warn that the resulting photograph may be underexposed. Note that the flash-ready indicators on optional flash units will not display this warning when 1/320 s (Auto FP) is selected.

### e2: Flash Shutter Speed

MENU button → ② Custom Settings menu

This option determines the slowest shutter speed available when front- or rear-curtain sync or red-eye reduction is used in mode  $\bf P$  or  $\bf A$  (regardless of the setting chosen, shutter speeds can be as slow as 30 s in  $\bf S$  and  $\bf M$  modes or at flash settings of slow sync, slow rear-curtain sync, or red-eye reduction with slow sync). Options range from  $^{1}/_{60}$  s ( $\bf 1/60$  s) to 30 s ( $\bf 30$  s).



# e3: Flash Cntrl for Built-in Flash MENU button → ② Custom Settings menu

Choose the flash mode for the built-in flash.

|       | Option          | Description                                                               |
|-------|-----------------|---------------------------------------------------------------------------|
| TTL\$ | TTI             | Flash output is adjusted automatically in response to shooting            |
|       |                 | conditions.                                                               |
| M\$   | Manual          | Choose the flash level ( 224). The camera does not emit monitor pre-      |
| m≠    | Mana            | flashes.                                                                  |
| DDT4  | Repeating flash | The flash fires repeatedly while the shutter is open, producing a strobe- |
| nrı≠  |                 | light effect (□ 224).                                                     |
| CHD4  | Commander mode  | Use the built-in flash as a master flash controlling one or more remote   |
| CMD₹  |                 | optional flash units (🕮 225).                                             |



#### **Manual**

Choose a flash level between **Full** and **1/128** (1/128 of full power). At full power, the built-in flash has a Guide Number of 12/39 (m/ft., ISO 100, 20°C/68°F).

### **■■** Repeating Flash

The flash fires repeatedly while the shutter is open, producing a strobe-light effect. Press  $\triangleleft$  or  $\triangleright$  to highlight the following options,  $\triangle$  or  $\triangledown$  to change.

| Option    | Description                                                                                                                                                                                                    |  |  |  |  |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| Output    | Choose flash output (expressed as a fraction of full power)                                                                                                                                                    |  |  |  |  |
| Times     | Choose the number of times the flash fires at the selected output. Note that depending on shutter speed and the option selected for <b>Frequency</b> , the actual number of flashes may be less than selected. |  |  |  |  |
| Frequency | ncy Choose how often the flash fires per second.                                                                                                                                                               |  |  |  |  |



#### Flash Control Mode

The flash control mode for the built-in flash is shown in the information display.



### "Manual" and "Repeating Flash"

icons blink in the control panel and viewfinder when these options are selected.

### The SB-400

When an optional SB-400 flash unit is attached and turned on, Custom Setting e3 changes to **Optional flash**, allowing the flash control mode for the SB-400 to be selected from **TTL** and **Manual** (**Repeating flash** and **Commander mode** options are not available).



#### **#** "Times"

The options available for **Repeating Flash** > **Times** are determined by flash output.

| Output | Options available for "Times" | Output | Options available for "Times" |
|--------|-------------------------------|--------|-------------------------------|
| 1/4    | 2                             | 1/32   | 2–10, 15                      |
| 1/8    | 2–5                           | 1/64   | 2–10, 15, 20, 25              |
| 1/16   | 2–10                          | 1/128  | 2–10, 15, 20, 25, 30, 35      |



#### **L** Commander Mode

Use the built-in flash as a master flash controlling one or more remote optional SB-900, SB-800, SB-700, SB-600, or SB-R200 flash units in up to two groups (A and B) using advanced wireless lighting.

Selecting this option displays the menu shown at right. Press  $\triangleleft$  or  $\blacktriangleright$  to highlight the following options,  $\triangle$  or  $\blacktriangledown$  to change.



| Option            | Description                                                                                                                                                            |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Built-in<br>flash | Choose a flash mode for the built-in flash (commander flash).                                                                                                          |
| TTL               | i-TTL mode. Choose flash compensation from values between $+3.0$ and $-3.0$ EV in increments of $^{1}/_{3}$ EV.                                                        |
| М                 | Choose the flash level from values between 1/1 and 1/128 (1/128 of full power).                                                                                        |
|                   | The built-in flash does not fire, although remote flash units do. The built-in flash must be raised so that it can emit monitor pre-flashes.                           |
| Group A           | Choose a flash mode for all flash units in group A.                                                                                                                    |
| TTL               | i-TTL mode. Choose flash compensation from values between $+3.0$ and $-3.0$ EV in increments of $^{1}/_{3}$ EV.                                                        |
| AA                | Auto aperture (available only with SB-900 and SB-800 flash units). Choose flash compensation from values between $+3.0$ and $-3.0$ EV in increments of $^{1}/_{3}$ EV. |
| М                 | Choose the flash level from values between 1/1 and 1/128 (1/128 of full power).                                                                                        |
|                   | The flash units in this group do not fire.                                                                                                                             |
| Group B           | Choose a flash mode for all flash units in group B. The options available are the same as those listed for <b>Group A</b> , above.                                     |
| Channel           | Choose from channels 1–4. All flash units in both groups must be set to the same channel.                                                                              |



Follow the steps below to take photographs in commander mode.

1 Adjust settings for the built-in flash.

Choose the flash control mode and output level for the built-in flash. Note that output level can not be adjusted in – – mode.



2 Adjust settings for group A.
Choose the flash control mode and output level for the flash units in group A.



**3** Adjust settings for group B. Choose the flash control mode and output level for the flash units in group B.



4 Select the channel.

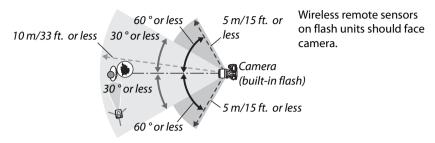


**5** Press ⊗.



# **6** Compose the shot.

Compose the shot and arrange the flash units as shown below. Note that the maximum distance at which the remote flash units can be placed may vary with shooting conditions.



# 7 Set the remote flash units to the selected channel.

Turn all the remote flash units on and set them to the channel selected in Step 4. See the flash unit instruction manuals for details.

# **8** Raise the built-in flash.

Press the **5** button to raise the built-in flash. Note that even if **- -** is selected for **Built-in flash** > **Mode**, the built-in flash must be raised so that monitor preflashes will be emitted.

# **9** Frame the photograph, focus, and shoot.

After confirming that the camera flash-ready light and the flash-ready lights for all other flash units are lit, frame the photograph, focus, and shoot. FV lock (\$\sup\$ 149) can be used if desired.

### The Flash Sync Mode Display

4 does not appear in the control panel flash sync mode display when – – is selected for Builtin flash > Mode.

### Flash Compensation

The flash compensation value selected with the  $\mathbf{BZ}$  (\$) button and sub-command dial is added to the flash compensation values selected for the built-in flash, group A, and group B in the **Commander mode** menu. A  $\mathbf{BZ}$  icon is displayed in the control panel and viewfinder when a flash compensation value other than  $\pm 0$  is selected for **Built-in flash** > **TTL**. The  $\mathbf{BZ}$  icon flashes when the built-in flash is in mode  $\mathbf{M}$ .

#### Commander Mode

Position the sensor windows on the remote flash units to pick up the monitor preflashes from the built-in flash (particular care is required if the camera is not mounted a tripod). Be sure that direct light or strong reflections from the remote flash units do not enter the camera lens (in TTL mode) or the photocells on the remote flash units (AA mode), as this may interfere with exposure. To prevent timing flashes emitted by the built-in flash from appearing in photographs taken at short range, choose low ISO sensitivities or small apertures (large f-numbers) or use an optional SG-3IR infrared panel for the built-in flash. An SG-3IR is required for best results with rear-curtain sync, which produces brighter timing flashes. After positioning the remote flash units, take a test shot and view the results in the camera monitor.

Although there is no limit on the number of remote flash units that may be used, the practical maximum is three. With more than this number, the light emitted by the remote flash units will interfere with performance.

### e4: Modeling Flash

**MENU** button → ② Custom Settings menu

If **On** is selected when the camera is being used with the built-in flash or an optional SB-900, SB-800, SB-700, SB-600, or SB-R200 flash unit, a modeling flash will be emitted when the camera depth-of-field preview button is pressed (\$\subset\$ 72). No modeling flash is emitted if **Off** is selected.





### e5: Auto Bracketing Set

MENU button → ② Custom Settings menu

Choose the setting or settings affected by bracketing (□ 109). Choose **AE & flash** (ጭ) to perform both exposure and flash-level bracketing, **AE only** (♠) to bracket only exposure, **Flash only** (♦) to perform only flash-level bracketing, **WB bracketing** (₩В) to perform white-balance bracketing (□ 112), or **ADL bracketing** (晒) to perform Active D-Lighting bracketing (□ 114). Note that white balance bracketing is not available at image quality settings of NEF (RAW) or NEF (RAW) + JPEG.

### e6: Bracketing Order

**MENU** button → *②* Custom Settings menu

At the default setting of MTR > under > over (ℕ), exposure, flash, and white balance bracketing are performed in the order described on pages 109 and 112. If Under > MTR > over (¬→+) is selected, shooting will proceed in order from the lowest to the highest value. This setting has no effect on ADL bracketing.

### f: Controls

#### f1: : Switch

MENU button → @ Custom Settings menu

Choose what happens when the power switch is rotated to ...

| Option                     | Description                                                                           |
|----------------------------|---------------------------------------------------------------------------------------|
|                            | Control panel backlight illuminates for 6 s.                                          |
| ♣ mand information display | Control panel backlight illuminates and shooting information is displayed in monitor. |

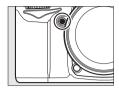
### f2: OK Button (Shooting Mode)

MENU button → Ø Custom Settings menu

Choose the role played by the (8) button during shooting: selecting the center focus point (RESET Select center focus point), highlighting the active focus point (FIFE Highlight active focus point), or none (Not used).



Choose the role played by the **Fn** button.



|          | Option                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |
|----------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|          | Preview                         | Press the <b>Fn</b> button to preview depth of field (\$\square\$ 72).                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |
| \$L      | FV lock                         | Press the <b>Fn</b> button to lock flash value (built-in flash and SB-900, SB-800, SB-700, SB-600, SB-400, and SB-R200 flash units only, $\square$ 149). Press again to cancel FV lock.                                                                                                                                                                                                                                                                                                                                          |  |  |
| A        | AE/AF lock                      | Focus and exposure lock while the <b>Fn</b> button is pressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| Æ        | AE lock only                    | Exposure locks while the <b>Fn</b> button is pressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |
| A O      | AE lock<br>(Hold)               | Exposure locks when the <b>Fn</b> button is pressed, and remains locked until the button is pressed a second time or the exposure meters turn off.                                                                                                                                                                                                                                                                                                                                                                               |  |  |
| Ā        | AF lock only                    | Focus locks while the <b>Fn</b> button is pressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |
| <b>3</b> | Flash off                       | The flash will not fire in photos taken while the <b>Fn</b> button is pressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| ВКТ      | Bracketing<br>burst             | If the <b>Fn</b> button is pressed while exposure, flash, or ADL bracketing is active in single frame or quiet shutter-release mode, all shots in the current bracketing program will be taken each time the shutter-release button is pressed. If white balance bracketing is active or continuous release mode (mode <b>CH</b> or <b>CH</b> ) is selected, the camera will repeat the bracketing burst while the shutter-release button is held down (in single frame release mode, photographs will be taken at about 6 fps). |  |  |
| 醋        | Active<br>D-Lighting            | Press the <b>Fn</b> button and rotate the main command dial to choose Active D-Lighting (\$\Pi\$ 139).                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |
| +[RAW]   | +NEF (RAW)                      | If image quality is set to <b>JPEG fine</b> , <b>JPEG normal</b> , or <b>JPEG basic</b> , "RAW" will be displayed in the control panel and an NEF (RAW) copy will be recorded with the next picture taken after the <b>Fn</b> button is pressed (to record NEF/RAW copies with a series of photographs, keep the shutter-release button pressed halfway between shots). To exit without recording an NEF (RAW) copy, press the <b>Fn</b> button again.                                                                           |  |  |
| Ø        | Matrix<br>metering              | Matrix metering is activated while the <b>Fn</b> button is pressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |
| (0)      | Center-<br>weighted<br>metering | Center-weighted metering is activated while the <b>Fn</b> button is pressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |



|          | Option                            | Description                                                                                                                                                                                                                                                                                                               |  |  |
|----------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| •        | Spot<br>metering                  | Spot metering is activated while the <b>Fn</b> button is pressed.                                                                                                                                                                                                                                                         |  |  |
| <b>=</b> | Framing grid                      | Press the <b>Fn</b> button and rotate the main command dial to turn the framing grid display in the viewfinder on or off $(\square 9)$ .                                                                                                                                                                                  |  |  |
| Ġ        | Viewfinder<br>virtual<br>horizon  | Press the <b>Fn</b> button to view or hide a virtual horizon display in the viewfinder ( $\square$ 231).                                                                                                                                                                                                                  |  |  |
| 湿        | Access top<br>item in MY<br>MENU  | Press the <b>Fn</b> button to jump to the top item in "MY MENU." Select this option for quick access to a frequently-used menu item.                                                                                                                                                                                      |  |  |
| ()⊗      | 1 step spd/<br>aperture           | If the <b>Fn</b> button is pressed when the command dials are rotated, changes to shutter speed (modes <b>S</b> and <b>M</b> ) and aperture (modes <b>A</b> and <b>M</b> ) are made in increments of 1 EV, regardless of the option selected for Custom Setting b2 ( <b>EV</b> steps for exposure cntrl., $\square$ 211). |  |  |
| Non-CPU  | Choose non-<br>CPU lens<br>number | Press the <b>Fn</b> button and rotate a command dial to choose a lens number specified using the <b>Non-CPU lens data</b> option (\$\square\$ 159).                                                                                                                                                                       |  |  |
| <b>•</b> | Playback                          | Fn button performs same function as ▶ button. Select when using a telephoto lens or in other circumstances in which it is difficult to operate the ▶ button with your left hand.                                                                                                                                          |  |  |
| •REC     | Start movie recording             | Press the <b>Fn</b> button in live view to start movie recording (\$\square\$ 57).                                                                                                                                                                                                                                        |  |  |

### Viewfinder Virtual Horizon

When **Viewfinder virtual horizon** is selected for Custom Setting f3 (**Assign Fn button**), the exposure indicator in the viewfinder can be used as a tilt meter. Press the **Fn** button to toggle between exposure and tilt meter displays.

|            | Camera tilted right | Camera level | Camera tilted left |
|------------|---------------------|--------------|--------------------|
|            |                     |              |                    |
| Viewfinder | 4iiiiii · · ·       | 9            | 0<br>liiiiib       |

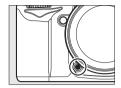
Note that the display may not be accurate when the camera is tilted at a sharp angle forward or back.



## **f4: Assign Preview Button**

**MENU** button → *②* Custom Settings menu

Choose the role played by the depth-of-field preview button. The options available are the same as for **Assign Fn button** ( $\square$  230); the default setting is **Preview**.



### f5: Assign AE-L/AF-L Button

MENU button → ② Custom Settings menu

Choose the role played by the AE-L/AF-L button.

| 0                                                                   | ption             | Description                                               |
|---------------------------------------------------------------------|-------------------|-----------------------------------------------------------|
| <u>A</u>                                                            | AE/AF             | Focus and exposure lock while the AE-L/AF-L button is     |
| lock                                                                |                   | pressed.                                                  |
| AE lock only  Exposure locks while the AE-L/AF-L button is pressed. |                   | Exposure locks while the AE-L/AF-L button is pressed.     |
| Ā                                                                   | AF lock<br>only   | Focus locks while the <b>AE-L/AF-L</b> button is pressed. |
|                                                                     | AE lock<br>(Hold) | Exposure locks when the AE-L/AF-L button is pressed, and  |
| Æ:                                                                  |                   | remains locked until the button is pressed a second time  |
|                                                                     |                   | or the exposure meters turn off.                          |
| AE-ON                                                               | AF-ON             | The AE-L/AF-L button initiates autofocus. The shutter-    |
| AITUN                                                               |                   | release button can not be used to focus.                  |
|                                                                     | FV lock           | Press the AE-L/AF-L button to lock flash value (built-in  |
| 4                                                                   |                   | flash and SB-900, SB-800, SB-700, SB-600, SB-400, and     |
| ZL                                                                  |                   | SB-R200 flash units only, 🕮 149). Press again to cancel   |
|                                                                     |                   | FV lock.                                                  |





This option controls the operation of the main and sub-command dials.

- **Reverse rotation**: Controls the direction of the command dials. Choose **No** for normal command dial operation, **Yes** to reverse the rotation of the command dials. This setting also applies to the command dials for the MB-D11.
- Change main/sub: If Off is selected, the main command dial controls shutter speed and the sub-command dial controls aperture. Select On (Mode A) to use the main command dial to select aperture in shooting mode A, On to use the main command dial to select aperture in modes A and M and the sub-command dial to select shutter speed in modes S and M. This setting also applies to the command dials for the MB-D11.
- Aperture setting: If Sub-command dial is selected, aperture can only be adjusted with the sub-command dial (or with the main command dial if On is selected for Change main/sub). Note that except in the case of PC-E NIKKOR lenses, the sub-command dial can not be used to adjust aperture during live view; adjust aperture before starting live view. If Aperture ring is selected, aperture can only be adjusted with the lens aperture ring and the camera aperture display will show aperture in increments of 1 EV (aperture for type G lenses is still set using the sub-command dial). Note that regardless of the setting chosen, the aperture ring must be used to adjust aperture when a non-CPU lens is attached.
- Menus and playback: If Off is selected, the multi selector is used to choose the picture displayed during full-frame playback, highlight thumbnails, and navigate menus. If On or On (image review excluded) is selected, the main command dial can be used to choose the picture displayed during full-frame playback, move the cursor left or right during thumbnail playback, and move the menu highlight bar up or down, while the sub-command dial is used to display additional photo information in full-frame playback and to move the cursor up or down during thumbnail playback. Select On (image review excluded) to prevent the command dials from being used for playback during image review. While menus are displayed, rotating the sub-command dial right displays the sub-menu for the selected option, while rotating it left displays the previous menu. To make a selection, press ▶ or ⊛.

#### f7: Release Button to Use Dial

**MENU** button → *②* Custom Settings menu

Selecting **Yes** allows adjustments that are normally made by holding the **27**, **4**, **150**, **QUAL**, **WB**, AF-mode, **32**, or **BKT** button and rotating a command dial to be made by rotating the command dial after the button is released (this also applies to the **Fn** and depth-of-field preview buttons if they have been assigned Active D-Lighting using Custom Setting f3, **Assign Fn button**, or Custom Setting f4, **Assign preview button**). Setting ends when any of the affected buttons is pressed again or the shutter-release button is pressed halfway. Except when **No limit** is selected for Custom Setting c2 **Auto meter-off delay**, setting will also end when the exposure meters turn off.

# **f8: Slot Empty Release Lock**

MENU button → Ø Custom Settings menu

Selecting **Enable release** allows the shutter to be released when no memory card is inserted, although no pictures will be recorded (they will however be displayed in the monitor in demo mode). If **Release locked** is selected, the shutter-release button is only enabled when a memory card is inserted in the camera.

#### f9: Reverse Indicators

**MENU** button → *②* Custom Settings menu

At the default setting of + (+0-), the exposure indicators in the viewfinder and information display are displayed with positive values on the left and negative values on the right. Select - (-0+) to display negative values on the left and positive values on the right.



Choose the function assigned to the AE-L/AF-L button on the optional MB-D11 battery pack.



|            | Option               | Description                                                                                                                                                                                 |
|------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A          | AE/AF lock           | Focus and exposure lock while the MB-D11 AE-L/AF-L button is pressed.                                                                                                                       |
| Æ          | AE lock only         | Exposure locks while the MB-D11 AE-L/AF-L button is pressed.                                                                                                                                |
| A:         | AF lock only         | Focus locks while the MB-D11 <b>AE-L/AF-L</b> button is pressed.                                                                                                                            |
| Æ.         | AE lock (Hold)       | Exposure locks when the MB-D11 <b>AE-L/AF-L</b> button is pressed, and remains locked until the button is pressed a second time or the exposure meters turn off.                            |
| AF-ON      | AF-ON                | Pressing the MB-D11 <b>AE-L/AF-L</b> button initiates autofocus. The shutter-release button can not be used to focus.                                                                       |
| <b>3</b> L | FV lock              | Press the MB-D11 <b>AE-L/AF-L</b> button to lock flash value (built-in flash and SB-900, SB-800, SB-700, SB-600, SB-400, and SB-R200 flash units only, 149). Press again to cancel FV lock. |
| Fn         | Same as Fn<br>button | The MB-D11 <b>AE-L/AF-L</b> button performs the function selected for Custom Setting f3 (\(\sime\) 230).                                                                                    |

# **VR** Lenses

Vibration reduction can not be initiated by pressing the AE-L/AF-L button.

# **Y** The Setup Menu: Camera Setup

To display the setup menu, press MENU and select the Y (setup menu) tab.

#### **MENU** button



The setup menu contains the following options:

| Option                                   | m m | Option                     |    |
|------------------------------------------|-----|----------------------------|----|
| Format memory card                       | 236 | Auto image rotation        | 23 |
| Save user settings                       | 75  | Image Dust Off ref photo   | 24 |
| Reset user settings                      | 76  | Battery info               | 24 |
| LCD brightness                           | 237 | Wireless transmitter       | 18 |
| Clean image sensor                       | 284 | Copyright information      | 24 |
| Lock mirror up for cleaning <sup>1</sup> | 286 | Save/load settings         | 24 |
| Video mode                               | 237 | GPS                        | 16 |
| HDMI                                     | 194 | Virtual horizon            | 24 |
| Flicker reduction                        | 237 | Non-CPU lens data          | 15 |
| Time zone and date                       | 237 | AF fine tune               | 24 |
| Language                                 | 238 | Eye-Fi upload <sup>2</sup> | 24 |
| Image comment                            | 238 | Firmware version           | 24 |

- 1 Not available when battery is low.
- 2 Only displayed when compatible Eye-Fi memory card is inserted (\$\subset\$ 247).

# **Format Memory Card**

MENU button → Y Setup menu

To begin formatting, choose a memory card slot and select **Yes**. Note that formatting permanently deletes all pictures and other data on the card in the selected slot. Before formatting, be sure to make backup copies as required.



# During Formatting

Do not turn the camera off or remove memory cards during formatting.

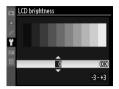
## Two-Button Format

Memory cards can also be formatted by pressing the  $\rightleftharpoons$  ( $\lessapprox$  and  $\leadsto$ ) buttons for more than two seconds ( $\rightleftharpoons$  32).

# **LCD Brightness**

MENU button → Y Setup menu

Press  $\triangle$  or  $\nabla$  to choose monitor brightness. Choose higher values for increased brightness, lower values for reduced brightness.



#### Live View

See page 49 for information on adjusting monitor brightness in live view or during movie recording.

#### Video Mode

MENU button → Y Setup menu

When connecting the camera to a television or VCR via the video connector, be sure the camera video mode matches the device video standard (NTSC or PAL).

#### **Flicker Reduction**

**MENU** button → Y setup menu

Reduce flicker and banding when shooting under fluorescent or mercury-vapor lighting during live view or movie recording. Choose a frequency which matches that of the local AC power supply.

#### Flicker Reduction

If you are unsure as to the frequency of the local power supply, test both options and choose the one that produces the best results. Flicker reduction may not produce the desired results if the subject is very bright, in which case you should select mode  $\bf A$  or  $\bf M$  and choose a smaller aperture (larger f-number) before starting live view. Note that flicker reduction is not available when  $\bf On$  is selected for  $\bf Movie$  settings >  $\bf Manual$  movie settings ( $\Box$  60) in mode  $\bf M$ .

## **Time Zone and Date**

MENU button → Y Setup menu

Change time zones, set the camera clock, choose the date display order, and turn daylight saving time on or off.

| Option               | Description                                                                 |  |  |
|----------------------|-----------------------------------------------------------------------------|--|--|
| Time zone            | Choose a time zone. The camera clock is automatically set to the time in    |  |  |
| Time zone            | the new time zone.                                                          |  |  |
| Date and time        | Set the camera clock (□ 27). If the clock is not set, a blinking  icon will |  |  |
| Date and time        | appear in the control panel.                                                |  |  |
| Date format          | Choose the order in which the day, month, and year are displayed.           |  |  |
| Daylight saving time | Turn daylight saving time on or off. The camera clock will automatically be |  |  |
| Daylight Saving time | advanced or set back one hour. The default setting is <b>Off</b> .          |  |  |



Choose a language for camera menus and messages. The following options are available.

| Option    | Description | Option     | Description |
|-----------|-------------|------------|-------------|
| Čeština   | Czech       | Nederlands | Dutch       |
| Dansk     | Danish      | Norsk      | Norwegian   |
| Deutsch   | German      | Polski     | Polish      |
| English   | English     | Português  | Portuguese  |
| Español   | Spanish     | Русский    | Russian     |
| Français  | French      | Suomi      | Finnish     |
| Indonesia | Indonesian  | Svenska    | Swedish     |
| Italiano  | Italian     | Türkçe     | Turkish     |

| Description |
|-------------|
| Arabic      |
| Traditional |
| Chinese     |
| Simplified  |
| Chinese     |
| Japanese    |
| Korean      |
| Thai        |
|             |

# **Image Comment**

MENU button → Y Setup menu

Add a comment to new photographs as they are taken. Comments can be viewed as metadata in ViewNX 2 (supplied) or Capture NX 2 (available separately;  $\square$  281). The comment is also visible on the third shooting data page in the photo information display ( $\square$  169).

- **Done**: Save changes and return to the setup menu.
- **Input comment**: Input a comment as described on page 137. Comments can be up to 36 characters long.
- Attach comment: Select this option to attach the comment to all subsequent photographs. Attach comment can be turned on and off by highlighting it and pressing ▶.





Photographs taken while **On** is selected contain information on camera orientation, allowing them to be rotated automatically during playback ( $\square$  163) or when viewed in ViewNX 2 (supplied) or in Capture NX 2 (available separately;  $\square$  281). The following orientations are recorded:



Landscape (wide) orientation



Camera rotated 90° clockwise



Camera rotated 90° counter-clockwise

Camera orientation is not recorded when **Off** is selected. Choose this option when panning or taking photographs with the lens pointing up or down.

#### Rotate Tall

To automatically rotate "tall" (portrait-orientation) photographs for display during playback, select **On** for the **Rotate tall** option in the playback menu ( $\square$  200). Note that because the camera itself is already in the appropriate orientation during shooting, images are not rotated automatically during image review ( $\square$  163).

Acquire reference data for the Image Dust Off option in Capture NX 2 (available separately; for more information, see the Capture NX 2 manual).

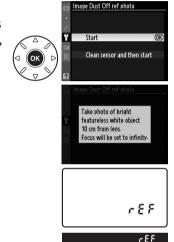
**Image Dust Off ref photo** is available only when a CPU lens is mounted on the camera. A lens with a focal length of at least 50 mm is recommended. When using a zoom lens, zoom all the way in.

# 1 Choose a start option.

Highlight one of the following options and press 

B. To exit without acquiring image dust off data, press MENU.

- **Start**: The message shown at right will be displayed and "rEF" will appear in the viewfinder and control panel displays.
- Clean sensor and then start: Select this option to clean the image sensor before starting. The message shown at right will be displayed and "rEF" will appear in the viewfinder and control panel displays when cleaning is complete.



## Image Sensor Cleaning

Dust off reference data recorded before image sensor cleaning is performed can not be used with photographs taken after image sensor cleaning is performed. Select **Clean sensor and then start** only if the dust off reference data will not be used with existing photographs.

# **2** Frame a featureless white object in the viewfinder.

With the lens about ten centimeters (four inches) from a well-lit, featureless white object, frame the object so that it fills the viewfinder and then press the shutter-release button halfway.

In autofocus mode, focus will automatically be set to infinity; in manual focus mode, set focus to infinity manually.



# **3** Acquire dust off reference data.

Press the shutter-release button the rest of the way down to acquire Image Dust Off reference data. The monitor turns off when the shutter-release button is pressed. Note that noise reduction will be performed if the subject is poorly lit, increasing recording times.

If the reference object is too bright or too dark, the camera may be unable to acquire Image Dust Off reference data and the message shown at right will be displayed. Choose another reference object and repeat the process from step 1.



#### Image Dust Off Reference Data

The same reference data can be used for photographs taken with different lenses or at different apertures. Reference images can not be viewed using computer imaging software. A grid pattern is displayed when reference images are viewed on the camera.





View information on the battery currently inserted in the camera.



| ltem        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bat. meter  | The current battery level expressed as a percentage.                                                                                                                                                                                                                                                                                                                                                                                                     |
| Pic. meter  | The number of times the shutter has been released with the current battery since the battery was last charged. Note that the camera may sometimes release the shutter without recording a photograph, for example when measuring preset white balance.                                                                                                                                                                                                   |
| Battery age | A five-level display showing battery age. 0 (  indicates that battery performance is unimpaired, 4 ( ! ) that the battery has reached the end of its charging life and should be replaced. Note that batteries charged at temperatures under about 5 °C (41 °F) may show a temporary drop in charging life; the battery age display will however return to normal once the battery has been recharged at a temperature of about 20 °C (68 °F) or higher. |

# **☑** The MB-D11 Battery Pack

The display for the MB-D11 battery pack is shown at right. If AA batteries are used, the battery level will be shown by a battery level icon; other items will not be displayed.





Add copyright information to new photographs as they are taken. Copyright information is visible on the fourth shooting data page in the photo information display ( $\square$  169) and can be viewed as metadata in ViewNX 2 (supplied) or in Capture NX 2 (available separately;  $\square$  281).

- **Done**: Save changes and return to the setup menu.
- **Artist**: Enter a photographer name as described on page 137. Photographer names can be up to 36 characters long.
- **Copyright**: Enter the name of the copyright holder as described on page 137. Copyright holder names can be up to 54 characters long.
- Attach copyright information: Select this option to attach
  copyright information to all subsequent photographs.
   Attach copyright information can be turned on and off by
  highlighting it and pressing .



## Copyright Information

To prevent unauthorized use of the artist or copyright holder names, make sure that **Attach copyright information** is not selected and that the **Artist** and **Copyright** fields are blank before lending or transferring the camera to another person. Nikon does not accept liability for any damages or disputes arising from the use of the **Copyright information** option.

# Save/Load Settings

MENU button → Y Setup menu

Select Save settings to save the following settings to the memory card in Slot 1 (if the memory card is full, an error will be displayed;  $\square$  306).

| Menu     | Option                          | Menu     | Option                                  |
|----------|---------------------------------|----------|-----------------------------------------|
|          | Display mode                    | Custom   | All Custom Settings except <b>Reset</b> |
| Dlavback | Image review                    | settings | custom settings                         |
| Playback | After delete                    |          | Clean image sensor                      |
|          | Rotate tall                     |          | Video mode                              |
|          | File naming                     |          | HDMI                                    |
|          | Role played by card in Slot 2   |          | Flicker reduction                       |
|          | Image quality                   |          | Time zone and date (excepting           |
|          | Image size                      | Setup    | date and time)                          |
|          | JPEG compression                |          | Language                                |
|          | NEF (RAW) recording             |          | Image comment                           |
|          | White balance (with fine tuning |          | Auto image rotation                     |
|          | and presets d-0-d-4)            |          | Copyright information                   |
| Shooting | Set Picture Control             |          | GPS                                     |
|          | Auto distortion control         |          | Non-CPU lens data                       |
|          | Color space                     | My Menu/ | All My Menu items                       |
|          | Active D-Lighting               | Recent   | All recent settings                     |
|          | Long exp. NR                    | Settings | Choose tab                              |
|          | High ISO NR                     |          |                                         |
|          | ISO sensitivity settings        |          |                                         |
|          | Movie settings                  |          |                                         |
|          | Remote control mode             |          |                                         |

Settings saved using this model of camera can be restored by selecting Load settings. Note that Save/load settings is only available when a memory card is inserted in the camera, and that the Load settings option is only available if the card contains saved settings.

#### Saved Settings

Settings are saved in a file named NCSETUP7. The camera will not be able to load settings if the file name is changed.



Display a virtual horizon based on information from the camera tilt sensor. The reference line is displayed in green when the camera is level.

# **▼** Tilting the Camera

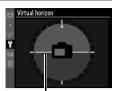
The virtual horizon display is not accurate when the camera is tilted at a sharp angle forward or back. If the camera is unable to measure tilt, the amount of tilt will not be displayed.

#### Viewfinder Virtual Horizon

If **Viewfinder virtual horizon** is assigned to the **Fn** or depth-of-field preview button using Custom Setting f3 (**Assign Fn button**) or f4 (**Assign preview button**), a tilt meter can be displayed in the viewfinder by pressing the selected button ( $\square$  231).

#### See Also

A virtual horizon can also be displayed during live view (\$\sim\$ 53).



Reference line



Fine-tune focus for up to 12 lens types. AF tuning is not recommended in most situations and may interfere with normal focus; use only when required.

| Option                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| AF fine tune<br>(On/Off) | On: Turn AF tuning on.     Off: Turn AF tuning off.                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                  |
| Saved value              | Tune AF for the current lens (CPU lenses only).  Press ▲ or ▼ to choose a value between +20 and -20. Values for up to 12 lens types can be stored.  Only one value can be stored for each type of lens.                                                                                                                                                                                                                                                  | Move focal point away Current from camera. value  AF fine tune Saved value 18-105mm F3.5-5-6 VR                                                  |
| Default                  | Choose the AF tuning value used when no previously saved value exists for the current lens (CPU lenses only).                                                                                                                                                                                                                                                                                                                                            | Move focal Previous point toward value camera.                                                                                                   |
| List saved<br>values     | List previously saved AF tuning values. If a value exists be shown with a licon. To delete a lens from the list and press for . To change a lens identifier (for example is the same as the last two digits of the lens serial nother lenses of the same type in light of the fact the with only one lens of each type), highlight the designation of the menu shown at right will be displayed; press to choose an identifier and press to save changes | it, highlight the desired lense, to choose an identifier that umber to distinguish it from at <b>Saved value</b> can be used red lens and press. |
|                          | exit.                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ₹ F3. 5-5. 6 VR<br>No No. 01<br>12 00 - 99<br>⊕Set ®ROK                                                                                          |

# AF Tuning

The camera may be unable to focus at minimum range or at infinity when AF tuning is applied.

#### Live View

Tuning is not applied to autofocus during in live view (\$\sim\$ 49).

# Saved Value

Only one value can be stored for each type of lens. If a teleconverter is used, separate values can be stored for each combination of lens and teleconverter.



# **Eye-Fi Upload**

MENU button → Y Setup menu

This option is displayed only when an Eye-Fi memory card (available separately from third-party suppliers) is inserted in the camera. Choose **Enable** to upload photographs to a preselected destination. Note that pictures will not be uploaded if signal strength is insufficient.

Observe all local laws concerning wireless devices and choose **Disable** where wireless devices are prohibited.

When an Eye-Fi card is inserted, its status is indicated by an icon in the information display:

- 🖫: Eye-Fi upload disabled.
- ত্বি: Eye-Fi upload enabled but no pictures available for upload.
- 📦 (static): Eye-Fi upload enabled; waiting to begin upload.
- 审 (animated): Eye-Fi upload enabled; uploading data.
- a: Error camera can not control Eye-Fi card. If a blinking [Rrd] appears in the control panel or viewfinder, refer to page 307; if this indicator is not displayed, pictures can be taken normally but you may be unable to change Eye-Fi settings.

## Eye-Fi Cards

Eye-Fi cards may emit wireless signals when **Disable** is selected. If a warning is displayed in the monitor ( $\square$  307), turn the camera off and remove the card.

See the manual provided with the Eye-Fi card, and direct any inquiries to the manufacturer. The camera can be used to turn Eye-Fi cards on and off, but may not support other Eye-Fi functions.

# Supported Eye-Fi Cards

As of June 2010, the following Eye-Fi cards can be used: 2 GB SD cards in the Share, Home, and Explore product categories, 4 GB SDHC cards in the Anniversary, Share Video, Explore Video, and Connect X2 product categories, and 8 GB SDHC cards in the Pro X2 and Explore X2 product categories. Eye-Fi cards are for use only in the country of purchase. Be sure the Eye-Fi card firmware has been updated to the latest version.

#### **Firmware Version**

MENU button → Y Setup menu

View the current camera firmware version.



# **M** The Retouch Menu:

# **Creating Retouched Copies**

To display the retouch menu, press MENU and select the display (retouch menu) tab.

#### MENU button



The options in the retouch menu are used to create trimmed or retouched copies of existing pictures. The retouch menu is only displayed when a memory card containing photographs is inserted in the camera.

| Option                   | Ш   | Option                                   | <b>m</b> |
|--------------------------|-----|------------------------------------------|----------|
| D-Lighting               | 251 | <i>C</i> <b>■</b> Straighten             | 261      |
| Red-eye correction       | 251 | Distortion control                       | 261      |
| ₩ Trim                   | 252 | <b>☑</b> Fisheye                         | 261      |
| <b>■</b> Monochrome      | 253 | Color outline                            | 262      |
| Filter effects           | 254 | S Color sketch                           | 262      |
| © Ø Color balance        | 255 | ■ Perspective control                    | 263      |
| 🖶 Image overlay 1        | 256 | Miniature effect                         | 263      |
| NEF (RAW) processing     | 258 | ₩ Edit movie                             | 63       |
| <b>□</b> Resize          | 259 | ■+□ Side-by-side comparison <sup>2</sup> | 264      |
| □ <b>※</b> Quick retouch | 260 |                                          |          |

- 1 Can only be selected by pressing MENU and selecting of tab.
- 2 Only available if 
   is pressed in full-frame playback when a retouched image or original is displayed.

## Retouching Copies

With the exceptions of **Image overlay** and **Edit movie** > **Choose start point/Choose end point**, each effect can be applied only once (note that multiple edits may result in loss of detail). Options that can not be applied to the current image are grayed out and unavailable.

## Image Quality

Except in the case of copies created with **Trim**, **Image overlay**, **NEF (RAW) processing**, and **Resize**, copies created from JPEG images are the same size and quality as the original, while copies created from NEF (RAW) photos are saved as large fine-quality JPEG images. Size-priority compression is used when copies are saved in JPEG format.



# **Creating Retouched Copies**

To create a retouched copy:

# 1 Display retouch options.

Highlight the desired item in the retouch menu and press ▶.





# **2** Select a picture.

Highlight a picture and press 

(to view the highlighted picture full screen, press and hold the the button; to view images in other locations as described on page 164, hold BKT and press ▲).





#### Retouch

The camera may not be able to display or retouch images created with other devices.

# **3** Select retouch options.

For more information, see the section for the selected item. To exit without creating a retouched copy, press MENU.



# Monitor off Delay

The monitor will turn off and the operation will be cancelled if no actions are performed for 20 s; this can be adjusted using Custom Setting c4 (**Monitor off delay**;  $\square$  215).

# **4** Create a retouched copy.

Press ® to create a retouched copy. Retouched copies are indicated by a ø icon.







# Creating Retouched Copies During Playback Retouched copies can also be created during playback. Fig. Dighting Red eye correction W. Trim Monochrome Officer effects Officer flexis Display picture full frame and press P

# **D-Lighting**

MENU button → ☑ retouch menu

D-lighting brightens shadows, making it ideal for dark or backlit photographs.





Before

After

Press  $\triangle$  or  $\nabla$  to choose the amount of correction performed. The effect can be previewed in the edit display. Press 8 to copy the photograph.



# **Red-Eye Correction**

MENU button → ♂ retouch menu

This option is used to correct "red-eye" caused by the flash, and is available only with photographs taken using the flash. The photograph selected for red-eye correction is previewed as shown at right. Confirm the effects of red-eye correction and create a copy as described in the following table. Note that red-eye correction may not always produce the expected results



and may in very rare circumstances be applied to portions of the image that are not affected by red-eye; check the preview thoroughly before proceeding.

| То                        | Use        | Description                                                                                                                                                                                        |
|---------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Zoom in                   | ⊕          | Press <sup>®</sup> button to zoom in, <sup>®™</sup> button to zoom Redeys correction                                                                                                               |
| Zoom out                  | Q█         | out. While photo is zoomed in, use multi selector to view areas of image not visible in                                                                                                            |
| View other areas of image |            | monitor. Keep multi selector pressed to scroll rapidly to other areas of frame. Navigation window is displayed when zoom buttons or                                                                |
| Cancel zoom               | <b>⊚</b> K | multi selector is pressed; area currently visible in monitor is indicated by yellow border. Press ® to cancel zoom.                                                                                |
| Create copy               | <b>⊗</b>   | If the camera detects red-eye in the selected photograph, a copy will be created that has been processed to reduce its effects. No copy will be created if the camera is unable to detect red-eye. |



Create a cropped copy of the selected photograph. The selected photograph is displayed with the selected crop shown in yellow; create a cropped copy as described in the following table.



| То                       | Use | Description                                                                                |  |
|--------------------------|-----|--------------------------------------------------------------------------------------------|--|
| Reduce size of crop      |     | Press the <sup>Q™</sup> button to reduce the size of the crop.                             |  |
| Increase size of crop    | Ф   | Press the $\P$ button to increase the size of the crop.                                    |  |
| Change crop aspect ratio |     | Rotate the main command dial to switch between aspect ratios of 3:2,4:3,5:4,1:1, and 16:9. |  |
| Move crop                |     | Use multi selector to move the crop to another area of the image.                          |  |
| Create copy              | ©K  | Save the current crop as a separate file.                                                  |  |

# Trim: Image Quality and Size

Copies created from NEF (RAW) or NEF (RAW) + JPEG photos have an image quality ( $\square$  85) of JPEG fine; cropped copies created from JPEG photos have the same image quality as the original. The size of the copy varies with crop size and aspect ratio and appears at upper left in the crop display.



# Viewing Cropped Copies

Playback zoom may not be available when cropped copies are displayed.

# Monochrome

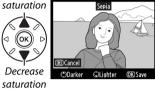
MENU button → ♂ retouch menu

Copy photographs in Black-and-white, Sepia, or Cyanotype (blue and white monochrome).



Selecting Sepia or Cyanotype displays a preview of the selected image; press ▲ to increase color saturation, ▼ to decrease. Press ® to create a monochrome copy.





# **Filter Effects**

MENU button → ♂ retouch menu

Choose from the following filter effects. After adjusting filter effects as described below, press @ to copy the photograph.

| Option            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                        |  |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--|
| Skylight          | Creates the effect of a skylight filter, making the picture less blue. The effect can be previewed in the monitor as shown at right.                                                                                                                                                                                                                                                                                                                                                  | Skylight                               |  |
| Warm filter       | Creates a copy with warm tone filter effects, giving the copy a "warm" red cast. The effect can be previewed in the monitor.                                                                                                                                                                                                                                                                                                                                                          | ©Cancel ©R) Save                       |  |
| Red intensifier   | Intensify reds ( <b>Red intensifier</b> ), greens ( <b>Green</b>                                                                                                                                                                                                                                                                                                                                                                                                                      | Red intensifier                        |  |
| Green intensifier | <b>intensifier</b> ), or blues ( <b>Blue intensifier</b> ). Press ▲ to increase the effect, ▼ to decrease.                                                                                                                                                                                                                                                                                                                                                                            |                                        |  |
| Blue intensifier  | inclease the effect, 7 to declease.                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ©Cancel ©Darker ©Lighter ®CSave        |  |
| Cross screen      | <ul> <li>Add starburst effects to light sources.</li> <li>Number of points: Choose from four, six, or eight.</li> <li>Filter amount: Choose the brightness of the light sources affected.</li> <li>Filter angle: Choose the angle of the points.</li> <li>Length of points: Choose the length of points.</li> <li>Confirm: Preview the effects of the filter as shown at right. Press <sup>®</sup> to preview the copy full frame.</li> <li>Save: Create a retouched copy.</li> </ul> | Cross screen  Number of points         |  |
| Soft              | Add a soft filter effect. Press ▲ or ▼ to choose the filter strength.                                                                                                                                                                                                                                                                                                                                                                                                                 | Soft  Normal  Di Cancel © Zoom  © Save |  |



# **Color Balance**

Use the multi selector to create a copy with modified color balance as shown below. The effect is displayed in the monitor together with red, green, and blue histograms ( $\square$  167) giving the distribution of tones in the copy.



Increase amount of green



Increase amount of magenta

#### Zoom

To zoom in on the image displayed in the monitor, press the  $^{\mathfrak{Q}}$  button. The histogram will be updated to show data only for the portion of the image displayed in the monitor. While the image is zoomed in, press the  $^{\mathfrak{Q}}$ -button to toggle back and forth between color balance and zoom. When zoom is selected, you can zoom in and out with the  $^{\mathfrak{Q}}$  and  $^{\mathfrak{Q}}$  buttons and scroll the image with the multi selector.





Image overlay combines two existing NEF (RAW) photographs to create a single picture that is saved separately from the originals; the results, which make use of RAW data from the camera image sensor, are noticeably better than overlays created in an imaging application. The new picture is saved at current image quality and size settings; before creating an overlay, set image quality and size ( $\square$  85, 88; all options are available). To create a NEF (RAW) copy, choose an image quality of **NEF (RAW)**.



1 Select Image overlay.

Highlight **Image overlay** in the retouch menu and press ▶. The dialog shown at right will be displayed, with **Image 1** highlighted; press <sup>®</sup> to display a list of the NEF pictures created with this camera.



**2** Select the first image.

Use the multi selector to highlight a photo. To view the highlighted image full frame, press and hold the <sup>®</sup> button (to view images in other locations as described on page 164, hold **BKT** and press **A**). Press **®** to select the highlighted photograph and return to the preview display.



**3** Select the second image.

The selected image will appear as **Image 1**. Highlight **Image 2** and press ®, then select the second photo as described in Step 2. Choose an image with the same bit-depth as the photo selected for **Image 1**.



# 4 Adjust gain.

Highlight **Image 1** or **Image 2** and optimize exposure for the overlay by pressing ▲ or ▼ to select gain from values between 0.1 and 2.0. Repeat for the second image. The default value is 1.0; select 0.5 to halve gain or 2.0 to double it. The effects are visible in the **Preview** column.



# **5** Preview the overlay.

Press ◀ or ▶ to place the cursor in the **Preview** column and press ▲ or ▼ to highlight **Overlay**. Press ⊛ to preview the overlay as shown at right (to save the overlay without displaying a preview, select **Save**). To return to Step 4 and select new photos or adjust gain, press ९록.



# **6** Save the overlay.

Press while the preview is displayed to save the overlay. After an overlay is created, the resulting image will be displayed full-frame in the monitor.





## Image Overlay

The overlay has the same photo info (including date of recording, metering, shutter speed, aperture, shooting mode, exposure compensation, focal length, and image orientation), white balance, and Picture Control as **Image 1**. The current image comment is appended to the overlay; copyright information, however, is not copied. NEF (RAW) overlays use the compression selected for **Type** in the **NEF (RAW) recording** menu and have the same bit depth as the original images; JPEG overlays are saved using size-priority compression.



Create JPEG copies of NEF (RAW) photographs.

1 Select NEF (RAW) processing. Highlight NEF (RAW) processing in the retouch menu and press ▶ to display a picture selection dialog listing only NEF (RAW) images created with this camera.



**2** Select a photograph.

Highlight a photograph (to view the highlighted photograph full frame, press and hold the  $^{\circ}$  button; to view images in other locations as described on page 164, hold **BKT** and press  $\triangle$ ). Press m to select the highlighted photograph.

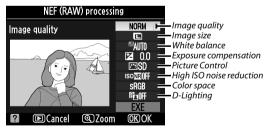




**3** Choose settings for the JPEG copy.

Adjust image quality ( $\square$  85), image size ( $\square$  88), white balance ( $\square$  117; if **Auto** is selected, white balance will be set to whichever of **Normal** and **Keep warm lighting colors** was in effect when the picture was taken), exposure compensation ( $\square$  107), Picture Control ( $\square$  131; note that the Picture Control grid can not be displayed), high ISO noise reduction ( $\square$  205), color space ( $\square$  141), and D-Lighting ( $\square$  251). Note that white balance is not available with multiple exposures or pictures created with image overlay and that exposure compensation can only be set to values between -2 and +2 EV.





4 Copy the photograph.

Highlight **EXE** and press ® to create a JPEG copy of the selected photograph (to exit without copying the photograph, press the MENU button).







Create small copies of selected photographs.

## 1 Select Resize.

To resize selected images, press **MENU** to display the menus and select **Resize** in the retouch menu.



# **2** Choose a destination.

If two memory cards are inserted, you can choose a destination for the resized copies by highlighting **Choose destination** and pressing ► (if only one card is inserted, proceed to Step 3).

The menu shown at right will be displayed; highlight a card slot and press .





# **3** Choose a size.

Highlight **Choose size** and press **▶**.



The following options will be displayed; highlight an option and press .

| Option | Size (pixels) |
|--------|---------------|
| 2.5м   | 1920 × 1280   |
| 1.1м   | 1280 × 856    |
| 0.6м   | 960×640       |

| Option | Size (pixels) |
|--------|---------------|
| 0.3м   | 640 × 424     |
| 0.1м   | 320×216       |

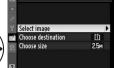




# 4 Choose pictures.

Highlight **Select image** and press **▶**.





The dialog shown at right will be displayed; highlight pictures using the multi selector and press the <sup>Q</sup> button to select or deselect (to view the highlighted picture full screen, press and hold the <sup>Q</sup> button; to view images in other locations as described on page 164, hold **BKT** and press ▲). Selected pictures are marked by a **□** icon. Press ⊛ when the selection is complete.





# **5** Save the resized copies.

A confirmation dialog will be displayed. Highlight **Yes** and press ® to save the resized copies.

# Viewing Resized Copies

Playback zoom may not be available when resized copies are displayed.

# Image Quality

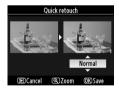
Copies created from NEF (RAW) or NEF (RAW) + JPEG photos have an image quality ( $\square$  85) of JPEG fine; copies created from JPEG photos have the same image quality as the original.

# **Quick Retouch**

MENU button → 🗹 retouch menu

Create copies with enhanced saturation and contrast. D-Lighting is applied as required to brighten dark or backlit subjects.

Press  $\triangle$  or  $\nabla$  to choose the amount of enhancement. The effect can be previewed in the edit display. Press 8 to copy the photograph.





# **Straighten**

Create a straightened copy of the selected image. Press ▶ to rotate the image clockwise by up to five degrees in increments of approximately 0.25 degrees, ◀ to rotate it counterclockwise (note that edges of the image will be trimmed to create a square copy). Press ๋ to copy the photograph, or press ▶ to exit to playback without creating a copy.



#### **Distortion Control**

MENU button → ♂ retouch menu

Create copies with reduced peripheral distortion. Select **Auto** to let the camera correct distortion automatically and then make fine adjustments using the multi selector, or select **Manual** to reduce distortion manually (note that **Auto** is not available with photos taken using auto distortion control; see page 205). Press ▶ to reduce barrel distortion, ◀ to reduce pin-



cushion distortion (note that greater amounts of distortion control result in more of the edges being cropped out). Press 1 to copy the photograph, or press  $\boxed{1}$  to exit to playback without creating a copy.

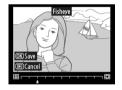
#### Auto

**Auto** is for use only with pictures taken with type G and D lenses (PC, fisheye, and certain other lenses excluded). Results are not guaranteed with other lenses.

# **Fisheye**

MENU button → ☑ retouch menu

Create copies that appear to have been taken with a fisheye lens. Press ▶ to increase the effect (this also increases the amount of that will be cropped out at the edges of the image), ◀ to reduce it. Press ⊛ to copy the photograph, or press ▶ to exit to playback without creating a copy.





## **Color Outline**

MENU button → ♂ retouch menu







Before

After

# **Color Sketch**

MENU button → ♂ retouch menu

Create a copy of a photograph that resembles a sketch made with colored pencils. 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. The results can be previewed in the edit display. Press ⊗ to copy the photograph, or press ▶ to exit to playback without creating a copy.





# **Perspective Control**

MENU button → ☑ retouch menu

Create copies that reduce the effects of perspective taken from the base of a tall object. Use the multi selector to adjust perspective (note that greater amounts of perspective control result in more of the edges being cropped out). The results can be previewed in the edit display. Press ® to copy the photograph, or press • to exit to playback without creating a copy.







Betore

# **Miniature Effect**

MENU button → ☑ retouch menu

Create a copy that appears to be a photo of a diorama. Works best with photos taken from a high vantage point.

| То                   | Press    | Description                                                                                                                                 |
|----------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Choose area in focus |          | If photo is displayed in wide orientation, press  ▲ or ▼ to position frame showing area of copy that will be in focus.     Miniature effect |
|                      |          | If photo is displayed in tall orientation (□ 239), press ◀ or ▶ to position frame showing area of copy that will be in focus.               |
| Preview copy         | ₽        | Preview copy.                                                                                                                               |
| Cancel               | <b>•</b> | Exit to full-frame playback without creating copy.                                                                                          |
| Create copy          | <b>⊗</b> | Create copy.                                                                                                                                |



# **Side-by-side Comparison**

MENU button → ☑ retouch menu

Compare retouched copies to the original photographs. This option is only available if the 8 button is pressed to display the retouch menu when a copy or original is played back full frame.

# **1** Select a picture.

In full-frame playback, select a retouched copy (shown by a ② icon) or a photograph that has been retouched and press ®.





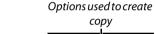
Select Side-by-side comparison.
 Highlight Side-by-side comparison and press
 .





**3** Compare the copy with the original.

The source image is displayed on the left, the retouched copy on the right, with the options used to create the copy listed at the top of the display. Press ◀ or ▶ to switch between the source image and the retouched copy. To view the highlighted picture full frame, press and hold the <sup>®</sup> button. If the copy was created from two source images using **Image overlay**, or if the source has been copied multiple times, press ▲







Source Retouched image copy

or  $\nabla$  to view the other source images or copies. To exit to playback mode, press the  $\square$  button. To exit to playback mode with the highlighted image displayed, press \$.

# Side-by-side Comparisons

The source image will not be displayed if the copy was created from a photograph that was protected ( $\square$  174), is on a locked memory card, has since been deleted or hidden ( $\square$  196), or is on a card in a different slot from that used when the image was created.

# 

"My Menu" is a customized menu that gives you quick access to up to 20 options selected from the playback, shooting, Custom Settings, setup, and retouch menus. To display My Menu, press MENU and select the ⑤ (My Menu) tab.

#### MENU button



Options can be added, deleted, and reordered as described below. If desired, recent settings can be displayed in place of My Menu ( $\square$  268).

# ■ Adding Options to My Menu

1 Select Add items.

In My Menu (園), highlight **Add items** and press ▶.





**2** Select a menu.

Highlight the name of the menu containing the option you wish to add and press ▶.





**3** Select an item.

Highlight the desired menu item and press





4 Position the new item.

Press  $\triangle$  or  $\nabla$  to move the new item up or down in My Menu. Press 8 to add the new item.







# **5** Add more items.

The items currently displayed in My Menu are indicated by a check mark. Items indicated by a ☐ icon can not be selected. Repeat steps 1–4 to select additional items.



# ■■ Deleting Options from My Menu

- 1 Select Remove items.
  In My Menu (園), highlight Remove items and press ▶.
- 2 Select items.

  Highlight items and press ▶ to select or deselect. Selected items are indicated by a check mark.





**3** Select Done. Highlight Done and press . A confirmation dialog will be displayed.





4 Delete the selected items.

Press ® to delete the selected items.





# Deleting Items in My Menu

To delete the item currently highlighted in My Menu, press the fi button. A confirmation dialog will be displayed; press fi again to remove the selected item from My Menu.



# **■■** Reordering Options in My Menu

1 Select Rank items.

In My Menu (園), highlight **Rank items** and press ▶.

**2** Select an item.

Highlight the item you wish to move and press ®.





**3** Position the item.

Press  $\triangle$  or  $\nabla$  to move the item up or down in My Menu and press 8. Repeat Steps 2–3 to reposition additional items.





4 Exit to My Menu.

Press the MENU button to return to My Menu.







# **Recent Settings**

To display the twenty most recently used settings, select **国 Recent settings** for **园 My Menu** > **Choose tab**.

Select Choose tab.
In My Menu (園), highlight Choose tab and press ▶.





2 Select <sup>®</sup> Recent settings.

Highlight <sup>®</sup> Recent settings and press <sup>®</sup>.

The name of the menu will change from "MY MENU" to "RECENT SETTINGS."





Menu items are added to the top of the recent settings menu as they are used. To view My Menu again, select **因 My Menu** for **③ Recent settings** > **Choose tab**.

Removing Items from the Recent Settings Menu

To remove an item from the recent settings menu, highlight it and press the m button. A confirmation dialog will be displayed; press m again to delete the selected item.



# **Technical Notes**

Read this chapter for information on compatible accessories, cleaning and storing the camera, and what to do if an error message is displayed or you encounter problems using the camera.

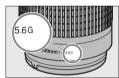
# **Compatible Lenses**

CPU lenses (particularly types G and D) are recommended, but note that IX-NIKKOR lenses can not be used. 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. The maximum aperture of the lens is given by the f-number in the lens name.

CPU contacts



CPU lens



Type G lens

### Aperture ring



Type D lens

# **II** Compatible CPU Lenses

| Camera setting                           |                       | Focus                 |   | Mode           |            |            | Meterir | ıg                    |
|------------------------------------------|-----------------------|-----------------------|---|----------------|------------|------------|---------|-----------------------|
|                                          |                       | M (with electronic    |   | Auto and scene |            | (          |         | (0)                   |
| Lens/accessory <sup>1</sup>              | AF                    | rangefinder)          | M | modes; P, S, A | M          | 3D         | Color   |                       |
| Type G or D AF NIKKOR/AF-S, AF-I NIKKOR  | ~                     | V                     | ~ | ~              | ~          | ~          | _       | <b>✓</b> 2            |
| PC-E NIKKOR series                       | _                     | <b>✓</b> 3            | ~ | <b>✓</b> 3     | <b>✓</b> 3 | <b>✓</b> 3 | _       | <b>✓</b> 2,3          |
| PC Micro 85mm f/2.8D <sup>4</sup>        | _                     | <b>✓</b> 3            | ~ | _              | ~          | ~          | _       | <b>✓</b> 2,3          |
| AF-S/AF-I teleconverter <sup>5</sup>     | <b>✓</b> 6            | <b>✓</b> 6            | ~ | ~              | ~          | ~          | _       | <b>✓</b> <sup>2</sup> |
| Other AF NIKKOR (except lenses for F3AF) | <b>✓</b> <sup>7</sup> | <b>✓</b> <sup>7</sup> | ~ | ~              | ~          | _          | ~       | <b>✓</b> <sup>2</sup> |
| AI-P NIKKOR                              | 1—                    | <b>✓</b> 8            | 1 | ~              | ~          | _          | ~       | <b>✓</b> <sup>2</sup> |

- 1 Vibration Reduction (VR) supported with VR lenses.
- 2 Spot metering meters selected focus point (\$\Pi\$ 105).
- 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 aperture is set to a value other than maximum.
- 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.

# **■■** Compatible Non-CPU Lenses

When using the following non-CPU lenses and accessories, rotate the camera mode dial to **A** and **M** and set aperture using the lens aperture ring. In other modes, the shutter-release is disabled. **Non-CPU lens data** ( $\square$  159) can be used to enable many of the features available with CPU lenses, including color matrix metering; if no data are provided, center-weighted metering will be used in place of color matrix metering, while if the maximum aperture is not provided, the camera aperture display will show the number of stops from maximum aperture and the actual aperture value must be read off the lens aperture ring. For a list of non-CPU lenses and accessories that can not be used with this camera, see page 271.

| Camera setting                                          |    | Focus                 |   | Mode           |             |    | Meterir    | ıg         |
|---------------------------------------------------------|----|-----------------------|---|----------------|-------------|----|------------|------------|
|                                                         |    | M (with electronic    |   | Auto and scene |             |    |            | (0)        |
| Lens/accessory                                          | AF | rangefinder)          | M | modes; P, S    | A, M        | 3D | Color      | ·          |
| AI-, AI-modified, NIKKOR or Nikon Series E <sup>1</sup> | _  | <b>✓</b> <sup>2</sup> | 1 | _              | <b>✓</b> 3  | _  | <b>✓</b> 4 | <b>✓</b> 5 |
| Medical-NIKKOR 120mm f/4                                | _  | V                     | 1 | _              | ✓ 6         | _  | _          | _          |
| Reflex-NIKKOR                                           | _  | _                     | 1 | _              | <b>✓</b> 3  | _  | _          | <b>✓</b> 5 |
| PC-NIKKOR                                               | _  | <b>✓</b> <sup>7</sup> | 1 | _              | ✓8          | _  | _          | ~          |
| Al-type Teleconverter <sup>9</sup>                      | _  | <b>✓</b> 10           | ~ | _              | <b>✓</b> 3  | _  | <b>✓</b> 4 | ✓5         |
| PB-6 Bellows Focusing Attachment 11                     | _  | <b>✓</b> 10           | 1 | _              | <b>✓</b> 12 | _  | _          | ~          |
| Auto extension rings (PK-series 11A, 12, or 13; PN-11)  | _  | <b>✓</b> 10           | ~ | _              | <b>✓</b> 3  | _  | _          | ~          |

- 1 Range of rotation for AI 80–200mm f/2.8 ED tripod mount is limited by camera body. Filters can not be exchanged while AI 200–400mm f/4 ED is mounted on camera.
- 2 With maximum aperture of f/5.6 or faster.
- 3 If maximum aperture is specified using **Non-CPU lens data** (12) 159), aperture value will be displayed in viewfinder and control panel.
- 4 Can be used only if lens focal length and maximum aperture are specified using **Non-CPU lens data** (\$\sigma\$ 159). Use spot or centerweighted metering if desired results are not achieved.
- 5 For improved precision, specify lens focal length and maximum aperture using **Non-CPU lens data** ( $\square$  159).
- 6 Can be used in mode M at shutter speeds slower than flash sync speed by one step or more.
- 7 Electronic rangefinder can not be used with shifting or tilting.

- 8 Exposure determined by presetting lens aperture. In mode A, preset aperture using lens aperture ring before performing AE lock and shifting lens. In mode M, preset aperture using lens aperture ring and determine exposure before shifting lens.
- 9 Exposure compensation required when used with Al 28–85mm f/3.5–4.5, Al 35–105mm f/3.5– 4.5, Al 35–135mm f/3.5–4.5, or AF-S 80–200mm f/2.8D. See teleconverter manual for details.
- 10 With maximum effective aperture of f/5.6 or faster.
- 11 Requires PK-12 or PK-13 auto extension ring. PB-6D may be required depending on camera orientation.
- 12 Use preset aperture. In mode **A**, set aperture using focusing attachment before determining exposure and taking photograph.
- PF-4 Reprocopy Outfit requires PA-4 Camera Holder.

# Incompatible Accessories and Non-CPU Lenses

The following accessories and non-CPU lenses can NOT be used with the D7000:

- TC-16AS AF teleconverter
- Non-Allenses
- Lenses that require the AU-1 focusing unit (400mm f/4.5, 600mm f/5.6, 800mm f/8, 1200mm f/11)
- Fisheye (6mm f/5.6, 7.5mm f/5.6, 8mm f/8, OP 10mm f/5.6)
- 2.1cm f/4
- Extension Ring K2
- 180-600mm f/8 ED (serial numbers 174041-174180)
- 360–1200mm f/11 ED (serial numbers 174031–174127)
- 200–600mm f/9.5 (serial numbers 280001–300490)
- AF lenses for the F3AF (AF 80mm f/2.8, AF 200mm f/3.5 ED, AF Teleconverter TC-16)
- PC 28mm f/4 (serial number 180900 or earlier)
- PC 35mm f/2.8 (serial numbers 851001–906200)
- PC 35mm f/3.5 (old type)
- Reflex 1000mm f/6.3 (old type)
- Reflex 1000mm f/11 (serial numbers 142361–143000)
- Reflex 2000mm f/11 (serial numbers 200111-200310)

### The Built-in Flash

The built-in flash can be used with lenses with focal lengths of 16–300 mm, although in some cases the flash may be unable to entirely light the subject at some ranges or focal lengths due to shadows cast by the lens, while lenses that block the subject's view of the redeye reduction lamp may interfere with red-eye reduction. 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 macro zoom lenses. The flash may be unable to light the entire subject with the following lenses at ranges less than those given below:

| Lens                                           | Zoom position | Minimum distance without vignetting |
|------------------------------------------------|---------------|-------------------------------------|
| AF-S DX NIKKOR 10–24mm f/3.5–4.5G ED           | 18 mm         | 1.0 m/3 ft. 3 in.                   |
| AI -3 DX NIRRON 10-24111111/3.3-4.30 LD        | 20–24 mm      | No vignetting                       |
| AF-S DX Zoom-Nikkor 12–24 mm f/4G IF-ED        | 18 mm         | 1.0 m/3 ft. 3 in.                   |
| AI -3 DA 200111-NIKKOI 12-24111111/4011-LD     | 20–24 mm      | No vignetting                       |
|                                                | 24 mm         | 2.0 m/6 ft. 7 in.                   |
| AF-S NIKKOR 16–35mm f/4G ED VR                 | 28 mm         | 1.0 m/3 ft. 3 in.                   |
|                                                | 35 mm         | No vignetting                       |
| AF-S Zoom-Nikkor 17–35 mm f/2.8D IF-ED         | 20 mm         | 2.0 m/6 ft. 7 in.                   |
| A1-3 20011-NIKKOI 17-33111111/2.00 II-LD       | 24–35 mm      | No vignetting                       |
| AF-S DX Zoom-Nikkor 17–55 mm f/2.8G IF-ED      | 24 mm         | 1.0 m/3 ft. 3 in.                   |
| AI -3 DA 200111-NIKKOI 17-33111111/2.00 II -LD | 28–55 mm      | No vignetting                       |
| AF Zoom-Nikkor 18–35 mm f/3.5– 4.5D IF-ED      | 18 mm         | 1.0 m/3 ft. 3 in.                   |
| AI 200111-141KKOI 10-331111111/3.3-4.3D IF-ED  | 24–35 mm      | No vignetting                       |

| Lens                                               | Zoom position | Minimum distance without vignetting |
|----------------------------------------------------|---------------|-------------------------------------|
| AF-S DX VR Zoom-Nikkor 18– 200 mm f/3.5–5.6G IF-ED | 18 mm         | 1.0 m/3 ft. 3 in.                   |
| AF-S DX NIKKOR 18– 200mm f/3.5– 5.6G ED VR II      | 24–200 mm     | No vignetting                       |
| AF-S NIKKOR 24–70 mm f/2.8G ED                     | 28 mm         | 1.5 m/4 ft. 11 in.                  |
| AF-3 NIKKOK 24–70111111 1/2.0G ED                  | 35–70 mm      | No vignetting                       |
| AF-S Zoom-Nikkor 28–70 mm f/2.8D IF-ED             | 28 mm         | 1.0 m/3 ft. 3 in.                   |
| AF-3 ZOOIII-NIKKOI 20–7011IIII 1/2.8D IF-ED        | 35-70 mm      | No vignetting                       |
| PC-E NIKKOR 24mm f/3.5 ED*                         | 24 mm         | No vignetting                       |

<sup>\*</sup> When not shifted or tilted.

When used with the AF-S NIKKOR 14–24mm f/2.8G ED, the flash will be unable to light the entire subject at all ranges.

The built-in flash can also be used with Al-S, Al-, Al-modified NIKKOR, Nikon Series E and non-CPU lenses with a focal length of  $16-300\,\mathrm{mm}$ . Al  $50-300\,\mathrm{mm}$  f/4.5, modified Al  $50-300\,\mathrm{mm}$  f/4.5, and Al-S  $50-300\,\mathrm{mm}$  f/4.5 ED lenses must be used at a zoom position of  $135\,\mathrm{mm}$  or above, and Al  $50-300\,\mathrm{mm}$  f/4.5 ED lenses at a zoom position of  $105\,\mathrm{mm}$  or above.



### The AF-S/AF-I Teleconverter

The AF-S/AF-I teleconverter can be used with the following AF-S and AF-I lenses:

- AF-S VR 70–200mm f/2.8G ED
- AF-S NIKKOR 70–200mm f/2.8G FD VR II
- AF-S 80-200mm f/2 8D FD
- AF-S VR Micro 105mm f/2.8G ED<sup>1</sup>
- AF-S VR 200mm f/2G FD
- AF-S VR 200–400mm f/4G ED<sup>2</sup>
- AF-S NIKKOR 200–400mm f/4G ED VR II<sup>2</sup>
- AF-S VR 300mm f/2.8G ED
- AF-S 300mm f/2.8D ED
- AF-S 300mm f/2.8D FD II
- AF-I 300mm f/2.8D ED
- AF-S 300mm f/4D ED<sup>2</sup>
- 1 Autofocus not supported.

- AF-S NIKKOR 400mm f/2.8G ED VR
- AF-S 400mm f/2.8D FD
- AF-S 400mm f/2 8D FD II
- AF-I 400mm f/2.8D ED
- AF-S NIKKOR 500mm f/4G FD VR<sup>2</sup>
- AF-S 500mm f/4D ED<sup>2</sup>
- AF-S 500mm f/4D ED II<sup>2</sup>
- AF-I 500mm f/4D ED<sup>2</sup>
- AF-S NIKKOR 600mm f/4G ED VR<sup>2</sup>
- AF-S 600mm f/4D ED<sup>2</sup>
- AF-S 600mm f/4D ED II<sup>2</sup>
- AF-I 600mm f/4D FD<sup>2</sup>

2 Autofocus not supported when used with AF-S Teleconverter TC-17E II/TC-20E II/TC-20E III.

# AF-Assist Illumination

AF-assist illumination is available with lenses with focal lengths of 24–200 mm. It can not however be used to assist the focus operation with the following lenses:

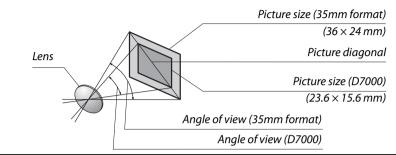
- AF-S NIKKOR 14–24mm f/2.8G ED
- AF-S VR Zoom-Nikkor 70–200mm f/2.8G IF-ED
   AF-S VR Nikkor 200mm f/2G IF-ED
- AF-S NIKKOR 70–200mm f/2.8G ED VR II
- Ai AF Zoom-Nikkor 80–200mm f/2.8D ED
- AF-S Zoom-Nikkor 80–200mm f/2.8D IF-ED
- Ai AF VR Zoom-Nikkor 80–400mm f/4.5–5.6D ED
- AF-S VR Zoom-Nikkor 200–400mm f/4G IF-FD
- AF-S NIKKOR 200–400mm f/4G ED VR II

At ranges under 1 m (3 ft. 3 in.), the following lenses may block the AF-assist illuminator and interfere with autofocus when lighting is poor:

- AF-S Zoom-Nikkor 17–35mm f/2.8D IF-ED
- AF-S DX Zoom-Nikkor 17–55mm f/2.8G IF-ED
- AF-S DX VR Zoom-Nikkor 18–200mm f/3.5– 5.6G IF-ED
- AF-S DX NIKKOR 18-200mm f/3.5-5.6G ED VR II
   AF Zoom-Micro Nikkor 70-180mm f/4.5-5.6D ED
- AF-S NIKKOR 24–70mm f/2.8G ED
- Ai AF Zoom Nikkor 24–120mm F3.5–5.6D (IF)
- AF-S VR Zoom-Nikkor 24–120mm f/3.5–5.6G IF-FD
  - AF-S Zoom-Nikkor 28–70mm f/2.8D IF-ED
  - AF-S NIKKOR 28–300mm f/3.5–5.6G ED VR
  - Ai AF Micro-Nikkor 200mm f/4D IF-ED

# Calculating Angle of View

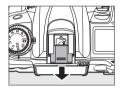
The size of the area exposed by a 35 mm camera is  $36 \times 24$  mm. The size of the area exposed by the D7000, in contrast, is  $23.6 \times 15.6$  mm, meaning that the angle of view of a 35mm camera is approximately 1.5 times that of the D7000. The approximate focal length of lenses for the D7000 in 35 mm format can be calculated by multiplying the focal length of the lens by about 1.5.



# **Optional Flash Units (Speedlights)**

The camera supports the Nikon Creative Lighting System (CLS) and can be used with CLS-compatible flash units. Optional flash units can be attached directly to the camera accessory shoe as described below. The accessory shoe is equipped with a safety lock for flash units with a locking pin, such as the SB-900, SB-800, SB-700, SB-600, and SB-400.

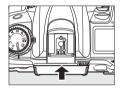
1 Remove the accessory shoe cover.



2 Mount the flash unit on the accessory shoe.

See the manual provided with the flash unit for details.

The built-in flash will not fire when an optional flash unit is attached.



# The AS-15 Sync Terminal Adapter

When the AS-15 sync terminal adapter (available separately) is mounted on the camera accessory shoe, flash accessories can be connected via a sync terminal.

# **Use Only Nikon Flash Accessories**

*Use only Nikon flash units.* Negative voltages or voltages over 250 V applied to the accessory shoe could not only prevent normal operation, but damage the sync circuitry of the camera or flash. Before using a Nikon flash unit not listed in this section, contact a Nikon-authorized service representative for more information.

# **The Nikon Creative Lighting System (CLS)**

Nikon's advanced Creative Lighting System (CLS) offers improved communication between the camera and compatible flash units for improved flash photography.

# **III** CLS-Compatible Flash Units

The camera can be used with the following CLS-compatible flash units:

• The SB-900, SB-800, SB-700, SB-600, SB-400, and SB-R200:

| Feature F               | lash unit | SB-900 <sup>1</sup> | SB-800 | SB-700 | SB-600 | SB-400 | SB-R200 <sup>2</sup> |
|-------------------------|-----------|---------------------|--------|--------|--------|--------|----------------------|
| Guide                   | ISO 100   | 34/111              | 38/125 | 28/92  | 30/98  | 21/69  | 10/33                |
| <b>No.</b> <sup>3</sup> | ISO 200   | 48/157              | 53/174 | 39/128 | 42/138 | 30/98  | 14/46                |

- 1 If a color filter is attached to the SB-900 when **AUTO** or **\$** (flash) is selected for white balance, the camera will automatically detect the filter and adjust white balance appropriately.
- 2 Controlled remotely with built-in flash in commander mode or using optional SB-900, SB-800, or SB-700 flash unit or SU-800 wireless Speedlight commander.
- 3 m/ft., 20 °C (68 °F), SB-900, SB-800, SB-700, and SB-600 at 35 mm zoom head position; SB-900 and SB-700 with standard illumination.
- The SU-800 wireless speedlight commander: When mounted on a CLS-compatible camera, the SU-800 can be used as a commander for remote SB-900, SB-800, SB-700, SB-600, or SB-R200 flash units in up to three groups. The SU-800 itself is not equipped with a flash.

### **Guide Number**

To calculate the range of the flash at full power, divide the Guide Number by the aperture. For example, at ISO 100 the SB-800 has a Guide Number of 38 m or 125 ft. (35 mm zoom head position); its range at an aperture of f/5.6 is  $38 \div 5.6$  or about 6.8 meters (or in feet,  $125 \div 5.6$ =approximately 23 ft. 7 in.). For each twofold increase in ISO sensitivity, multiply the Guide Number by the square root of two (approximately 1.4).

# The following features are available with CLS-compatible flash units:

| Flash unit |                                           |            |            |                       |            |            | Adva   | nced Wir            | eless Lig  | hting    |         |
|------------|-------------------------------------------|------------|------------|-----------------------|------------|------------|--------|---------------------|------------|----------|---------|
|            |                                           |            |            |                       |            | C          | omman  | der                 | Remote     |          | е       |
|            |                                           | SB-900     |            |                       |            | SB-900     |        |                     | SB-900     | SB-700   |         |
| Flash      | mode/feature                              | SB-800     | SB-700     | SB-600                | SB-400     | SB-800     | SB-700 | SU-800 <sup>1</sup> | SB-800     | SB-600   | SB-R200 |
| i-TTL      | i-TTL balanced fill-flash for digital SLR | <b>✓</b> 2 | <b>✓</b> 3 | <b>V</b> <sup>2</sup> | <b>✓</b> 3 | ~          | ~      | ~                   | ~          | ~        | ~       |
| AA         | Auto aperture                             | <b>✓</b> 4 | _          | _                     | _          | <b>✓</b> 5 | _      | <b>✓</b> 5          | <b>✓</b> 5 | _        | _       |
| Α          | Non-TTL auto                              | <b>✓</b> 4 | _          | _                     | _          | <b>✓</b> 5 | _      | _                   | <b>✓</b> 5 | _        | _       |
| GN         | Distance-priority manual                  | ~          | ~          | _                     | _          | _          | _      | _                   | _          | _        | _       |
| M          | Manual                                    | ~          | ~          | ~                     | <b>✓</b> 6 | ~          | ~      | ~                   | ~          | ~        | ~       |
| RPT        | Repeating flash                           | ~          | _          | _                     | _          | ~          | _      | ~                   | ~          | ~        | _       |
| Auto       | FP High-Speed Sync <sup>7</sup>           | ~          | ~          | ~                     | _          | ~          | ~      | ~                   | ~          | ~        | ~       |
| FV loc     | k                                         | ~          | ~          | ~                     | ~          | ~          | ~      | ~                   | ~          | ~        | ~       |
| AF-as:     | sist for multi-area AF <sup>8</sup>       | ~          | ~          | ~                     | _          | ~          | ~      | ~                   | _          | _        | _       |
| Flash      | Color Information Communication           | ~          | ~          | ~                     | ~          | ~          | ~      | _                   | _          | _        |         |
| REAR       | Rear-curtain sync                         | ~          | ~          | ~                     | ~          | ~          | ~      | ~                   | ~          | ~        | ~       |
| <b>③</b>   | Red-eye reduction                         | ~          | ~          | ~                     | ~          | ~          | ~      | _                   | <u> </u>   | <u> </u> |         |
| Powe       | rzoom                                     | ~          | ~          | ~                     | _          | ~          | ~      | _                   | <u> </u>   | <u> </u> | _       |

- 1 Only available when SU-800 is used to control other flash units.
- 2 Standard i-TTL flash for digital SLR is used with spot metering or when selected with flash unit.
- 3 Standard i-TTL flash for digital SLR is used with spot metering.
- 4 Selected with flash unit.
- 5 Auto aperture (AA) is used regardless of mode selected with flash unit.
- 6 Can be selected with camera.
- 7 Select 1/320 s (Auto FP) or 1/250 s (Auto FP) for Custom Setting e1 (Flash sync speed, 🕮 222).
- 8 CPU lens required.

# Auto Aperture/Non-TTL Auto

Unless the focal length and maximum aperture are specified using the **Non-CPU lens data** option in the setup menu, choosing auto aperture (AA) when a non-CPU lens is attached automatically selects non-TTL auto (A).

### ■ Other Flash Units

The following flash units can be used in non-TTL auto and manual modes. If they are set to TTL, the camera shutter-release button will lock and no photographs can be taken.

|       |                                | SB-80DX, SB-28DX, SB-28, |                      | SB-30, SB-27 <sup>2</sup> , SB-22S, | SB-23, SB-29 <sup>3</sup> ,               |
|-------|--------------------------------|--------------------------|----------------------|-------------------------------------|-------------------------------------------|
| Flash | mode                           | SB-26, SB-25, SB-24      | SB-50DX <sup>1</sup> | SB-22, SB-20, SB-16B, SB-15         | SB-21B <sup>3</sup> , SB-29S <sup>3</sup> |
| A     | Non-TTL auto                   | <b>✓</b>                 | _                    | <b>✓</b>                            | _                                         |
| М     | Manual                         | <b>✓</b>                 | <b>/</b>             | <b>✓</b>                            | ~                                         |
| 555   | Repeating flash                | <b>✓</b>                 | _                    | _                                   | _                                         |
| REAR  | Rear-curtain sync <sup>4</sup> | <b>V</b>                 | <b>V</b>             | <b>✓</b>                            | <b>✓</b>                                  |

- 1 Select mode P, S, A, or M, lower built-in flash, and use optional flash unit only.
- 2 Flash mode is automatically set to TTL and shutter-release is disabled. Set flash unit to **A** (non-TTL auto flash).
- 3 Autofocus is available with AF-S VR Micro-Nikkor 105mm f/2.8G IF-ED and AF-S Micro NIKKOR 60mm f/2.8G ED lenses only.
- 4 Available when camera is used to select flash mode.

### Flash Control Mode

The information display shows the flash control mode for optional flash units attached to the camera accessory shoe as follows:

|                                         | Flash sync      | Auto FP (🕮 222)  |  |  |  |  |  |
|-----------------------------------------|-----------------|------------------|--|--|--|--|--|
| i-TTL                                   | TIL             | \$ FILE          |  |  |  |  |  |
| Auto aperture (AA) *                    | AA              | AA FP            |  |  |  |  |  |
| Non-TTL auto flash (A)                  | <b>↓</b> A      | A FP             |  |  |  |  |  |
| Distance-priority manual (GN)           | <b>Ģ</b> GN     | GN FP            |  |  |  |  |  |
| Manual                                  | \$M             | \$               |  |  |  |  |  |
| Repeating flash                         | <b>7</b> ≓¶ RPT | _                |  |  |  |  |  |
| Advanced wireless lighting              | ‡ ≓¶            | # I ← T CMD I FP |  |  |  |  |  |
| * Available with SR-900 and SR-800 only |                 |                  |  |  |  |  |  |

Available with SB-900, and SB-800 only.

# Notes on Optional Flash Units

Refer to the Speedlight manual for detailed instructions. If the flash unit supports CLS, refer to the section on CLS-compatible digital SLR cameras. The D7000 is not included in the "digital SLR" category in the SB-80DX, SB-28DX, and SB-50DX manuals.

If an optional flash unit is attached in shooting modes other than <sup>®</sup>, the flash will fire with every shot, even in modes in which the built-in flash can not be used.

i-TTL flash control can be used at ISO sensitivities between 100 and 6400. At values over 6400, the desired results may not be achieved at some ranges or aperture settings. If the flash-ready indicator blinks for about three seconds after a photograph is taken, the flash has fired at full power and the photograph may be underexposed.

When an SC-series 17, 28, or 29 sync cable is used for off-camera flash photography, correct exposure may not be achieved in i-TTL mode. We recommend that you choose spot metering to select standard i-TTL flash control. Take a test shot and view the results in the monitor.

In i-TTL, use the flash panel or bounce adapter provided with the flash unit. Do not use other panels such as diffusion panels, as this may produce incorrect exposure.

The SB-900, SB-800, SB-700, SB-600, and SB-400 provide red-eye reduction, while the SB-900, SB-800, SB-700, SB-600, and SU-800 provide AF-assist illumination with the following restrictions:

- **SB-900**: AF-assist illumination is available for all focus points; with 17–135 mm AF lenses, however, autofocus is available only with the focus points shown at right (if other focus points are selected, the AF-assist illuminator may not provide sufficient illumination for autofocus).
- **SB-800, SB-600, and SU-800**: With 24–105 mm AF lenses, AF-assist illumination is available only with the focus points shown at right.
- SB-700: AF-assist illumination is available for all focus points; with 24–135 mm AF lenses, however, autofocus is available only with the focus points shown at right (if other focus points are selected, the AF-assist illuminator may not provide sufficient illumination for autofocus).

| 17–19 mm | 20–105 mm | 106–135 mm |
|----------|-----------|------------|
| 24–34 mm | 35–49 mm  | 50–105 mm  |

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# **Other Accessories**

At the time of writing, the following accessories were available for the D7000.

| Power<br>sources            | <ul> <li>Rechargeable Li-ion Battery EN-EL15 (</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wireless<br>LAN<br>adapters | Wireless Transmitter WT-4: Connects the camera to wireless and Ethernet networks. The photographs on the camera memory card can be viewed by computers on the same network or copied to a computer for long-term storage (be sure to always use the latest version of the software supplied with the WT-4). The camera can also be controlled from any computer on the network using Camera Control Pro 2 (available separately). Note that the WT-4 requires an independent power source; an EH-6 AC adapter or EN-EL3e battery is recommended. See the WT-4 manual for details.                                                                                                                                                               |
| Filters                     | <ul> <li>Filters intended for special-effects photography may interfere with autofocus or the electronic rangefinder.</li> <li>The D7000 can not be used with linear polarizing filters. Use C-PL or C-PL II circular polarizing filters instead.</li> <li>NC filters are recommended for protecting the lens.</li> <li>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.</li> <li>Center-weighted metering is recommended with filters with exposure factors (filter factors) over 1 × (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.</li> </ul> |

# • **DK-20C Eyepiece Correction Lenses:** Lenses are available with diopters of -5, -4, -3, -2, 0, +0.5, +1, +2, and +3 m<sup>-1</sup> when the camera diopter adjustment control is in the neutral position (-1 m<sup>-1</sup>). Use eyepiece correction lenses only if the desired focus can not be achieved with the built in diopter adjustment control (-3 to +1 m<sup>-1</sup>). 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.

### Viewfinder eyepiece accessories

- Magnifying Eyepiece DK-21M: The DK-21M magnifies the view through the viewfinder by approximately  $1.17 \times (50 \text{ mm f/} 1.4 \text{ lens at infinity; } -1.0 \text{ m}^{-1})$  for greater precision when framing.
- 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).
- 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 to record movies and photographs 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 xvii for the latest information on supported operating systems.

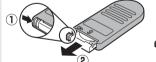
### **Body cap**

Software

**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.

**ML-L3 wireless remote control**: Use as a remote shutter release for self-portraits or to prevent blur caused by camera shake. The ML-L3 uses a 3 V CR2025 battery.

### Remote controls









Pressing the battery-chamber latch to the right  $(\begin{tabular}{c} 1\end{tabular})$ , insert a fingernail into the gap and open the battery chamber  $(\begin{tabular}{c} 2\end{tabular})$ . Ensure that the battery is inserted in the correct orientation  $(\begin{tabular}{c} 4\end{tabular})$ .

# Accessory terminal accessories

The D7000 is equipped with an accessory terminal for MC-DC2 remote cords (□ 73) and GP-1 GPS units (□ 162), which connect with the ◀ mark on the connector aligned with the ▶ next to the accessory terminal (close the camera connector cover when the terminal is not in use).

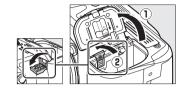


# **Attaching a Power Connector and AC Adapter**

Turn the camera off before attaching an optional power connector and AC adapter.

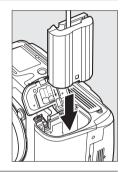
# 1 Ready the camera.

Open the battery-chamber (1) and power connector (2) covers.



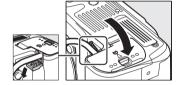
# 2 Insert the EP-5B power connector.

Be sure to insert the connector in the orientation shown, using the connector to keep the orange battery latch pressed to one side. The latch locks the connector in place when the connector is fully inserted.



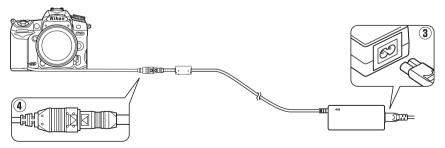
# **3** Close the battery-chamber cover.

Position the power connector cable so that it passes through the power connector slot and close the battery-chamber cover.



# **4** Connect the AC adapter.

Connect the AC adapter power cable to the AC socket on AC adapter (③) and the EP-5B power cable to the DC socket (④). A 🖫 icon is displayed in the monitor when the camera is powered by the AC adapter and power connector.





# **Caring for the Camera**

# **Storage**

When the camera will not be used for an extended period, replace the monitor cover, remove the battery, and store the battery 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<br>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: Dust or other foreign matter inside the camera may cause damage not covered under warranty. |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lens,<br>mirror, and<br>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 Speedlights, should be included when the camera is inspected or serviced.

# The Low-Pass Filter

The image sensor that acts as the camera's picture element is fitted with a low-pass filter to prevent moiré. If you suspect that dirt or dust on the filter is appearing in photographs, you can clean the filter using the **Clean image sensor** option in the setup menu. The filter can be cleaned at any time using the **Clean now** option, or cleaning can be performed automatically when the camera is turned on or off.

### **II** "Clean Now"

1 Place the camera base down.
Image sensor cleaning is most effective when the camera is placed base down as shown at right.



Display the Clean image sensor menu. MENU button Press the MENU button to display the menus. Highlight Clean image sensor in the setup menu and press ▶.



3 Select Clean now. Highlight Clean now and press ®.





The message shown at right will be displayed while cleaning is in progress.



The message shown at right will be displayed when cleaning is in complete.





# **■■** "Clean at Startup/Shutdown"

Choose from the following options:

|              | Option           | Description                                                              |
|--------------|------------------|--------------------------------------------------------------------------|
| <b>⊜</b> ∩N  | Clean at startup | The image sensor is automatically cleaned each time the camera is turned |
| <b>O</b> ON  | Clean at startup | on.                                                                      |
| ©0FF         | Clean at         | The image sensor is automatically cleaned during shutdown each time      |
| <b>●</b> 011 | shutdown         | the camera is turned off.                                                |
| © ON         | Clean at startup | The image sensor is cleaned automatically at startup and at shutdown.    |
| <b>●</b> 0FF | & shutdown       | The image sensor is cleaned automatically at startup and at shutdown.    |
| <b>®</b>     | Cleaning off     | Automatic image sensor cleaning off.                                     |

1 Select Clean at startup/shutdown.
Display the Clean image sensor menu as described in Step 2 on the previous page.
Highlight Clean at startup/shutdown and press ▶.



**2** Select an option. Highlight an option and press **®**.



# Image Sensor Cleaning

Using camera controls interrupts image sensor cleaning. Image sensor cleaning may not be performed at startup if the flash is charging.

Cleaning is performed by vibrating the low-pass filter. If dust can not be fully removed using the options in the **Clean image sensor** menu, clean the image sensor manually ( $\square$  286) or consult a Nikon-authorized service representative.

If image sensor cleaning is performed several times in succession, image sensor cleaning may be temporarily disabled to protect the camera's internal circuitry. Cleaning can be performed again after a short wait.

# **II** "Manual Cleaning"

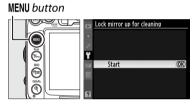
If foreign matter can not be removed from the low-pass filter using the **Clean image sensor** option in the setup menu ( $\square$  284), the filter can be cleaned manually as described below. Note, however, that the filter is extremely delicate and easily damaged. Nikon recommends that the filter be cleaned only by Nikon-authorized service personnel.

1 Charge the battery or connect an AC adapter.

A reliable power source is required when inspecting or cleaning the low-pass filter. Turn the camera off and insert a fully-charged EN-EL15 battery or connect an optional EP-5B power connector and EH-5a AC adapter.

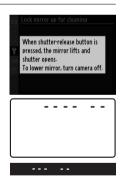
- 2 Remove the lens.

  Turn the camera off and remove the lens.



4 Press ®.

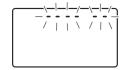
The message shown at right will be displayed in the monitor and a row of dashes will appear in the control panel and viewfinder. To restore normal operation without inspecting the low-pass filter, turn the camera off.



# **5** Raise the mirror.

Press the shutter-release button all the way down. The mirror will be raised and the shutter curtain will open, revealing the low-pass filter.





# **6** Examine the low-pass filter.

Holding the camera so that light falls on the low-pass filter, examine the filter for dust or lint. If no foreign objects are present, proceed to Step 8.



# 7 Clean the filter.

Remove any dust and lint from the filter with a blower. Do not use a blower-brush, as the bristles could damage the filter. Dirt that can not be removed with a blower can only be removed by Nikon-authorized service personnel. Under no circumstances should you touch or wipe the filter.



# 8 Turn the camera off.

The mirror will return to the down position and the shutter curtain will close. Replace the lens or body cap.

### Use a Reliable Power Source

The shutter curtain is delicate and easily damaged. If the camera powers off while the mirror is raised, the curtain will close automatically. To prevent damage to the curtain, observe the following precautions:

- Do not turn the camera off or remove or disconnect the power source while the mirror is raised.
- If the battery runs low while the mirror is raised, a beep will sound and the self-timer lamp
  will blink to warn that the shutter curtain will close and the mirror will be lowered after
  about two minutes. End cleaning or inspection immediately.

### Foreign Matter on the Low-Pass Filter

Nikon takes every possible precaution to prevent foreign matter from coming into contact with the low-pass filter during production and shipping. The D7000, however, is designed to be used with interchangeable lenses, and foreign matter may enter the camera when lenses are removed or exchanged. Once inside the camera, this foreign matter may adhere to the low-pass filter, where it may appear in photographs taken under certain conditions. To protect the camera when no lens is in place, be sure to replace the body cap provided with the camera, being careful to first remove all dust and other foreign matter that may be adhering to the body cap. Avoid exchanging lenses in dusty environments.

Should foreign matter find its way onto the low-pass filter, clean the filter as described above, or have the filter cleaned by authorized Nikon service personnel. Photographs affected by the presence of foreign matter on the filter can be retouched using Capture NX 2 (available separately;  $\square$  281) or the clean image options available in some third-party imaging applications.



# 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:** Keep the lens contacts clean. 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. In rare instances, static electricity may cause LCDs to light up or go dark. This does not indicate a malfunction, and the display will soon return to normal.

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 Low-Pass Filter" (\$\square\$ 284, 286) 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.

Replace the monitor cover when transporting the camera or leaving it unattended.

**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.
- 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.
- 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-EL15 battery.



- Charge the battery before use. When taking photographs on important occasions, ready a spare EN-EL15 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.

# **Available Settings**

The following table lists the settings that can be adjusted in each mode.

|                |                                                                                                      |                       |                |            |            | Ž, <b>≦</b> , | <b>■</b> , <b>戈</b> , |                       |            |            |
|----------------|------------------------------------------------------------------------------------------------------|-----------------------|----------------|------------|------------|---------------|-----------------------|-----------------------|------------|------------|
|                |                                                                                                      |                       | _              |            |            | ₩,⊠,          | <b>≅, </b> %,         |                       | ₫, ῷ,      | <u> </u>   |
|                |                                                                                                      | AUTO                  | 3              | P          | S, A, M    | 溪, ¶          | ≌, ≌                  | ₩                     | 6          | Lo         |
|                | Storage folder                                                                                       | ~                     | ~              | ~          | <b>'</b>   | <b>/</b>      | <b>'</b>              | ~                     | <b>/</b>   | ~          |
|                | File naming                                                                                          | ~                     | ~              | ~          | <b>'</b>   | /             | <b>V</b>              | ~                     | <b>/</b>   | ~          |
|                | Role played by card in Slot 2                                                                        | ~                     | ~              | ~          | ~          | ~             | ~                     | ~                     | ~          | ~          |
|                | lmage quality <sup>2</sup>                                                                           | ~                     | ~              | ~          | <b>V</b>   | ~             | ~                     | ~                     | <b>/</b>   | ~          |
|                | Image size <sup>2</sup>                                                                              | ~                     | ~              | ~          | <b>V</b>   | <b>'</b>      | <b>'</b>              | ~                     | /          | ~          |
|                | JPEG compression                                                                                     | ~                     | <b>'</b>       | ~          | <b>V</b>   | <b>/</b>      | <b>'</b>              | <b>'</b>              | <b>/</b>   | <b>'</b>   |
|                | NEF (RAW) recording                                                                                  | ~                     | <b>'</b>       | ~          | <b>/</b>   | ~             | <b>'</b>              | <b>'</b>              | ~          | <b>'</b>   |
| Ş              | White balance <sup>2</sup>                                                                           | _                     | _              | <b>'</b>   | <b>/</b>   | _             | _                     | _                     | _          | —          |
| 좚              | Set Picture Control                                                                                  | _                     | _              | ~          | <b>/</b>   | _             | _                     | _                     | _          | _          |
| ng             | Auto distortion control                                                                              | ~                     | ~              | ~          | <b>/</b>   | ~             | ~                     | ~                     | ~          | ~          |
| Ħer            | White balance <sup>2</sup> Set Picture Control Auto distortion control Color space Active D-Lighting | ~                     | ~              | ~          | ~          | ~             | ~                     | ~                     | ~          | ~          |
| =              | Active D-Lighting                                                                                    | — <sup>3</sup>        | — <sup>3</sup> | <b>✓</b> 2 | <b>✓</b> 2 | 3             | 3                     | 3                     | 3          | _          |
|                | Long exp. NK                                                                                         | ~                     | ~              | ~          | ~          | ~             | ~                     | ~                     | ~          | ~          |
|                | High ISO NR                                                                                          | ~                     | ~              | ~          | ~          | ~             | ~                     | ~                     | ~          | ~          |
|                | ISO sensitivity settings <sup>2</sup>                                                                | ~                     | ~              | ~          | ~          | ~             | ~                     | ~                     | ~          | ~          |
|                | Multiple exposure <sup>2</sup>                                                                       | _                     | _              | ~          | ~          | _             | _                     | _                     | _          | _          |
|                | Movie settings                                                                                       | ~                     | ~              | ~          | ~          | ~             | ~                     | ~                     | ~          | ~          |
|                | Interval timer shooting                                                                              | ~                     | ~              | ~          | ~          | ~             | ~                     | ~                     | ~          | ~          |
|                | Remote control mode                                                                                  | ~                     | ~              | ~          | ~          | ~             | ~                     | ~                     | ~          | ~          |
|                | AF mode (viewfinder)                                                                                 | <b>✓</b> 4            | <b>✓</b> 4     | ~          | ~          | <b>✓</b> 4    | <b>✓</b> 4            | <b>✓</b> 4            | <b>✓</b> 4 | <b>✓</b> 4 |
|                | AF-area mode (viewfinder)                                                                            | <b>✓</b> 4            | <b>✓</b> 4     | ~          | ~          | <b>✓</b> 4    | <b>√</b> 4            | <b>✓</b> <sup>4</sup> | <b>✓</b> 4 | <b>✓</b> 4 |
|                | AF mode (Live view/movie)                                                                            | <b>✓</b> 4            | <b>✓</b> 4     | ~          | ~          | <b>✓</b> 4    | <b>√</b> 4            | <b>✓</b> 4            | <b>✓</b> 4 | <b>✓</b> 4 |
| _              | AF-area mode (Live view/movie)                                                                       | <b>✓</b> <sup>4</sup> | <b>✓</b> 4     | ~          | ~          | <b>✓</b> 4    | <b>✓</b> 4            | <b>✓</b> 4            | <b>✓</b> 4 | <b>✓</b> 4 |
| Other settings | AE-L/AF-L button hold                                                                                | ~                     | ~              | ~          | ~          | ~             | ~                     | ~                     | ~          | ~          |
| er s           | Flexible program                                                                                     | _                     | _              | ~          | <u> </u>   | _             | _                     | _                     | _          |            |
| Ĕ.             | Metering                                                                                             | _                     | _              | ~          | ~          |               | _                     | _                     | _          |            |
| ngs            | Exposure compensation                                                                                | _                     | _              | ~          | ~          | _             | _                     | _                     | _          |            |
| 2              | Bracketing                                                                                           | _                     | _              | ~          | ~          | _             | _                     | _                     | _          |            |
|                | Flash mode                                                                                           | <b>✓</b> 4            | _              | ~          | ~          | <b>✓</b> 4    | _                     | <b>✓</b> 4            | _          | _          |
|                | Flash compensation                                                                                   | _                     | _              | ~          | ~          | _             | _                     | _                     |            |            |
|                | FV lock                                                                                              | ~                     |                | ~          | <b>'</b>   | <b>'</b>      | _                     | ~                     | _          |            |

|                              |                                     |            |            |   |          | Z, <b>Z</b> , | <b>■</b> , <b>3</b> , |                       |            |               |
|------------------------------|-------------------------------------|------------|------------|---|----------|---------------|-----------------------|-----------------------|------------|---------------|
|                              |                                     |            |            |   |          | ±, <u>=</u> , | <b>=</b> , ∴,         |                       | ۵.۵.       | <b>∡</b> , ₩, |
|                              |                                     | AUTO       | <b>③</b>   | Р | S, A, M  |               | <b>≟</b> , <b>≟</b>   | ₩,                    | •, •,      | Lo            |
|                              | a1: AF-C priority selection         | ~          | 1          | 1 | V        | V             | _,                    | 1                     | 1          |               |
|                              | a2: AF-S priority selection         | ~          | 1          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | a3: Focus tracking with lock-on     | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | a4: AF point illumination           | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | a5: Focus point wrap-around         | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | a6: Number of focus points          | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | a7: Built-in AF-assist illuminator  | ~          | 1          | ~ | ~        | ~             | _                     | _                     | ~          | ~             |
|                              | a8: Live view/movie AF <sup>2</sup> | <b>✓</b> 4 | <b>✓</b> 4 | ~ | ~        | <b>✓</b> 4    | <b>✓</b> 4            | <b>√</b> <sup>4</sup> | <b>✓</b> 4 | <b>✓</b> 4    |
|                              | b1: ISO sensitivity step value      | ~          | 1          | ~ | ~        | ~             | ~                     | 1                     | ~          | ~             |
|                              | b2: EV steps for exposure cntrl.    | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | b3: Easy exposure compensation      | _          | _          | ~ | ~        | _             | _                     | _                     | _          | _             |
|                              | b4: Center-weighted area            | _          | _          | ~ | ~        | _             | _                     | _                     | _          | _             |
|                              | b5: Fine tune optimal exposure      | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
| Ω                            | c1: Shutter-release button AE-L     | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
| Custom Settings <sup>5</sup> | c2: Auto meter-off delay            | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
| Ĭ                            | c3: Self-timer                      | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
| šett                         | c4: Monitor off delay               | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
| ing                          | c5: Remote on duration              | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
| S                            | d1: Beep                            | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | d2: Viewfinder grid display         | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | d3: ISO display and adjustment      | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | d4: Viewfinder warning display      | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | d5: Screen tips                     | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | d6: CL mode shooting speed          | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | d7: Max. continuous release         | ~          | ~          | ~ | ~        | ~             | ~                     | ~                     | ~          | ~             |
|                              | d8: File number sequence            | ~          | <b>'</b>   | ~ | <b>/</b> | ~             | ~                     | <b>'</b>              | ~          | ~             |
|                              | d9: Information display             | ~          | ~          | ~ | <b>/</b> | <b>'</b>      | ~                     | <b>'</b>              | <b>'</b>   | ~             |
|                              | d10: LCD illumination               | ~          | <b>'</b>   | ~ | <b>/</b> | <b>'</b>      | ~                     | <b>'</b>              | <b>'</b>   | ~             |
|                              | d11: Exposure delay mode            | <b>/</b>   | ~          | ~ | <b>V</b> | <b>V</b>      | <b>/</b>              | ~                     | <b>V</b>   | ~             |
|                              | d12: Flash warning                  | _          |            | ~ | <b>/</b> |               | _                     |                       |            |               |
|                              | d13: MB-D11 battery type            | <b>V</b>   | ~          | ~ | <b>V</b> | <b>V</b>      | <b>V</b>              | ~                     | <b>V</b>   | ~             |
|                              | d14: Battery order                  | ~          | <b>'</b>   | ~ | <b>'</b> | <b>'</b>      | <b>'</b>              | <b>'</b>              | <b>'</b>   | <b>'</b>      |

|                              |                                    |      |          |   |         | Ž, <b>≧</b> , | <b>∠</b> , ₹,         |   |          |       |
|------------------------------|------------------------------------|------|----------|---|---------|---------------|-----------------------|---|----------|-------|
|                              |                                    |      |          |   |         | ₩,⊠,          | <b>≅</b> , <b>%</b> , |   | ₫,ῷ,     | 孟, H, |
|                              |                                    | AUTO | <b>③</b> | P | S, A, M | 溪, 11         | <b>≝, ≐</b>           | ₩ | •        | Lo    |
|                              | e1: Flash sync speed               | ~    | ~        | ~ | ~       | ~             | ~                     | ~ | ~        | ~     |
|                              | e2: Flash shutter speed            | _    | _        | ~ | ~       | _             | _                     | _ | _        | _     |
|                              | e3: Flash cntrl for built-in flash | _    | _        | ~ | ~       | _             | _                     | _ | _        | _     |
|                              | e4: Modeling flash                 | _    | _        | ~ | ~       | _             |                       | _ | <u> </u> |       |
|                              | e5: Auto bracketing set            | _    | _        | ~ | ~       | _             |                       | _ | <u> </u> |       |
| ٥                            | e6: Bracketing order               | _    | _        | ~ | ~       | _             | _                     | _ | _        | _     |
| ž                            | f1: <b>∴</b> switch                | ~    | ~        | ~ | ~       | ~             | ~                     | ~ | ~        | ~     |
| Ĭ                            | f2: OK button (shooting mode)      | ~    | ~        | ~ | ~       | ~             | ~                     | ~ | ~        | ~     |
| Custom Settings <sup>5</sup> | f3: Assign Fn button               | ~    | ~        | ~ | ~       | ~             | ~                     | ~ | ~        | ~     |
| ing                          | f4: Assign preview button          | ~    | ~        | ~ | ~       | ~             | ~                     | ~ | ~        | ~     |
| S                            | f5: Assign AE-L/AF-L button        | ~    | ~        | ~ | ~       | ~             | ~                     | ~ | ~        | ~     |
|                              | f6: Customize command dials        | ~    | ~        | ~ | ~       | ~             | ~                     | ~ | ~        | ~     |
|                              | f7: Release button to use dial     | ~    | ~        | ~ | ~       | ~             | ~                     | ~ | ~        | ~     |
|                              | f8: Slot empty release lock        | ~    | ~        | ~ | ~       | ~             | ~                     | ~ | ~        | ~     |
|                              | f9: Reverse indicators             | ~    | ~        | 1 | ~       | ~             | ~                     | ~ | ~        | ~     |
|                              | f10: Assign MB-D11 闥 button        | ~    | 1        | ~ | ~       | ~             | ~                     | 1 | ~        | ~     |

<sup>1</sup> Reset with **Reset shooting menu** ( 202).

<sup>2</sup> Reset with two-button reset (\$\square\$ 151).

<sup>3</sup> Fixed at Auto.

<sup>4</sup> Reset when mode dial is rotated to new setting.

<sup>5</sup> Reset with **Reset custom settings** ( $\square$  207).

# **Defaults**

The default settings for the options in the camera menus are listed below. For information on two-button resets, see page 151.

# ■ Playback Menu Defaults

| Option          | Default   |     | Option         | Default |     |
|-----------------|-----------|-----|----------------|---------|-----|
| Playback folder | D7000     | 195 | Rotate tall    | Off     | 200 |
| Image review    | Off       | 200 | Slide show     |         |     |
| After delete    | Show next | 200 | Frame interval | 2 s     | 201 |

# ■■ Shooting Menu Defaults <sup>1</sup>

| <b>Shooting Mena Delau</b>    | 163           |     |                              |                    |     |  |
|-------------------------------|---------------|-----|------------------------------|--------------------|-----|--|
| Option                        | Default       | m   | Option                       | Default            | m   |  |
| File naming                   | DSC           | 204 | High ISO NR                  | Normal             | 205 |  |
| Role played by card in Slot 2 | Overflow      | 89  | 9 ISO sensitivity settings   |                    |     |  |
| Image quality                 | JPEG normal   | 85  | ISO sensitivity              |                    |     |  |
| Image size                    | Large         | 88  | P, S, A, M                   | 100                | 101 |  |
| JPEG compression              | Size priority | 87  | Other modes                  | Auto               | 101 |  |
| NEF (RAW) recording           |               |     | Auto ISO sensitivity control | Off                | 103 |  |
| Туре                          | Lossless      |     | Multiple exposure            | Reset <sup>2</sup> | 152 |  |
| Туре                          | compressed    | 87  | Movie settings               | '                  |     |  |
| NEF (RAW) bit depth           | 14-bit        |     |                              | 1920×1080;         |     |  |
| White balance                 | Auto > Normal | 117 | Movie quality                | 24 fps; high       |     |  |
| Fine tuning                   | Off           | 119 |                              | quality            |     |  |
| Choose color temp.            | 5000 K        | 122 | Microphone                   | Auto sensitivity   | 60  |  |
| Set Picture Control           | Standard      | 131 | Microphone                   | (A)                |     |  |
| Auto distortion control       | Off           | 205 | Destination                  | Slot 1             |     |  |
| Color space                   | sRGB          | 141 | Manual movie settings        | Off                |     |  |
| Active D-Lighting             | Off           | 139 | Interval timer shooting      | Reset <sup>3</sup> | 155 |  |
| Long exp. NR                  | Off           | 205 | Remote control mode          | Delayed remote     | 80  |  |

- 1 Default settings restored with **Reset shooting menu** ( $\square$  202).
- 2 Reset shooting menu can not be selected while shooting is in progress.
- 3 Shooting ends when reset is performed.

# $\blacksquare$ Custom Settings Menu Defaults $^*$

|            | Option                         | Default          |     |     | Option                     | Default                      | m   |
|------------|--------------------------------|------------------|-----|-----|----------------------------|------------------------------|-----|
| a1         | ·                              | Release          | 208 | d1  |                            | Delauit                      |     |
| -a1        | . ,                            | Focus            | 208 | uı  | Volume                     | Off                          |     |
|            | Focus tracking with lock-on    | 3 (Normal)       | 209 |     | Pitch                      | High                         | 215 |
|            | AF point illumination          | Auto             | 209 | 42  | Viewfinder grid display    | Off                          | 216 |
| a4         | Focus point wrap-around        | No wrap          | 209 | d3  |                            | Show frame count             | 216 |
| a5         |                                | 39 points        | 210 | d3  |                            | On                           | 216 |
| ao         | Built-in AF-assist illuminator | On               | 210 | d5  | Screen tips                | On                           | 216 |
|            |                                | Un               | 210 |     |                            |                              | _   |
| a8         | Autofocus mode                 | Cinala samua AF  | 211 | d6  | CL mode shooting speed     | 3 fps<br>100                 | 217 |
|            |                                | Single-servo AF  | 211 | d7  | Max. continuous release    |                              | 217 |
|            | AF-area mode                   | W: AF            |     |     | File number sequence       | On                           | 218 |
|            | <b>₹, ☑, ₩,</b> ∡, ℍ, 匾        | Wide-area AF     |     | d9  | Information display        | Auto                         | 219 |
|            | <b>3</b> , †1                  | Normal-area AF   | 211 | d10 | LCD illumination           | Off                          | 219 |
|            | Other shooting modes           | Face-priority AF |     | d11 | Exposure delay mode        | Off                          | 219 |
|            | ISO sensitivity step value     | 1/3 step         | 211 |     | Flash warning              | 0n                           | 219 |
|            | EV steps for exposure cntrl.   | 1/3 step         | 211 | d13 | MB-D11 battery type        | LR6 (AA alkaline)            | 220 |
|            | Easy exposure compensation     | Off              | 212 | d14 | Battery order              | Use MB-D11                   | 221 |
|            | Center-weighted area           | ø 8 mm           | 213 |     |                            | batteries first              |     |
| b5         |                                |                  |     | e1  |                            | 1/250 s                      | 222 |
|            | Matrix metering                | 0                |     | e2  |                            | 1/60 s                       | 223 |
|            | Center-weighted metering       | 0                | 213 | e3  |                            | TTL                          | 223 |
|            | Spot metering                  | 0                |     |     | Optional flash             |                              |     |
| c1         | Shutter-release button AE-L    | Off              | 213 | e4  | Modeling flash             | On                           | 228 |
| c2         | Auto meter-off delay           | 6 s              | 214 | e5  | Auto bracketing set        | AE & flash                   | 229 |
| <b>c</b> 3 | Self-timer                     |                  |     | е6  | Bracketing order           | MTR > under >                | 229 |
|            | Self-timer delay               | 10 s             |     |     |                            | over                         |     |
|            | Number of shots                | 0                | 214 | f1  | <b>∵</b> switch            | LCD backlight (🔆)            | 229 |
|            | Interval between shots         | 0.5 s            | 1   | f2  | OK button (shooting mode)  | Select center focus          | 229 |
| с4         | Monitor off delay              |                  |     |     | _                          | point                        |     |
|            | Playback                       | 10 s             |     | f3  |                            | FV lock                      | 230 |
|            | Menus                          | 20 s             | 1   |     | Assign preview button      | Preview                      | 232 |
|            | Information display            | 10 s             | 215 | f5  | Assign AE-L/AF-L button    | AE/AF lock                   | 232 |
|            | Image review                   | 4 s              | 1   | f6  | Customize command dials    |                              |     |
|            | Live view                      | 10 min           | 1   |     | Reverse rotation           | No                           |     |
| c5         | Remote on duration             | 1 min            | 215 |     | Change main/sub            | Off                          | 233 |
|            |                                |                  |     |     | Aperture setting           | Sub-command dial             | 233 |
|            |                                |                  |     |     | Menus and playback         | Off                          |     |
|            |                                |                  |     | f7  | Release button to use dial | No                           | 234 |
|            |                                |                  |     | f8  | Slot empty release lock    | Enable release               | 234 |
|            |                                |                  |     | f9  | Reverse indicators         | † <sub>4</sub> inininininini | 234 |
|            |                                |                  |     | f10 | Assign MB-D11 🕮 button     | AE/AF lock                   | 235 |

M

<sup>\*</sup> Default settings restored with **Reset custom settings** ( $\square$  207).

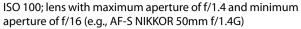
# ■■ Setup Menu Defaults

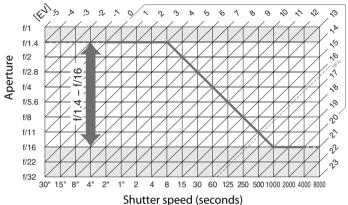
| Option                    | Default                            |     |
|---------------------------|------------------------------------|-----|
| Save user settings        |                                    |     |
| U1<br>U2                  | Shooting mode defaults to <b>P</b> | 75  |
| LCD brightness            | 0                                  | 237 |
| Clean image sensor        |                                    | -   |
| Clean at startup/shutdown | Clean at startup & shutdown        | 284 |
| HDMI                      |                                    |     |
| Output resolution         | Auto                               | 194 |
| Device control            | On                                 | 194 |

| Default | m                          |
|---------|----------------------------|
|         |                            |
| 0ff     | 237                        |
| 0n      | 239                        |
|         |                            |
| Enable  | 162                        |
| Yes     | 102                        |
| Enable  | 247                        |
|         | Off<br>On<br>Enable<br>Yes |

# **Exposure Program (Mode P)**

The exposure program for mode **P** is shown in the following graph:





The maximum and minimum values for EV vary with ISO sensitivity; the above graph assumes an ISO sensitivity of ISO 100 equivalent. When matrix metering is used, values over  $16^{1}/_{3}$  EV are reduced to  $16^{1}/_{3}$  EV.

# **Troubleshooting**

If the camera fails to function as expected, check the list of common problems below before consulting your retailer or Nikon representative.

# **Display**

**Viewfinder is out of focus:** Adjust viewfinder focus or use optional eyepiece correction lenses (\$\Pi\$ 34, 281).

**Viewfinder is dark**: Insert a fully-charged battery ( $\square$  21, 35).

Displays turn off without warning: Choose longer delays for Custom Setting c2 (Auto meter-off delay) or c4 (Monitor off delay) ( $\square$  214, 215).

Camera does not respond to controls: See "A Note on Electronically-Controlled Cameras," below.

**Control panel and viewfinder displays are unresponsive and dim**: The response times and brightness of these displays vary with temperature.

Fine lines are visible around active focus point or display turns red when focus point is highlighted: These phenomena are normal for this type of viewfinder and do not indicate a malfunction.

### A Note on Electronically-Controlled Cameras

In extremely rare instances, unusual characters may appear in the control panel and the camera may stop functioning. In most cases, this phenomenon is caused by a strong external static charge. Turn the camera off, remove and replace the battery, taking care to avoid burns, and turn the camera on again, or, if you are using an AC adapter (available separately), disconnect and reconnect the adapter and turn the camera on again. If the problem persists, contact your retailer or Nikon-authorized service representative.

# **Shooting (All Modes)**

Camera takes time to turn on: Delete files or folders.

### Shutter-release disabled:

- Memory card is locked, full, or not inserted (□ 29, 32).
- Built-in flash is charging (\$\square\$ 39).
- Camera is not in focus (\$\square\$ 38).
- CPU lens with aperture ring attached but aperture not locked at highest f-number. If FE is displayed in control panel, select Aperture ring for Custom Setting f6 (Customize command dials) > Aperture setting to use lens aperture ring to adjust aperture (□ 233).
- Non-CPU lens is attached but camera is not in mode A or M (□ 270).

### No photo taken when remote control shutter-release button is pressed:

- Replace battery in remote control (\$\square\$ 281).
- Choose remote control release mode (□ 80).
- Flash is charging (\$\square\$ 82).
- Time selected for Custom Setting c5 (Remote on duration, □ 215) has elapsed: press camera shutter-release button halfway.
- · Bright light is interfering with remote.

### Photos are out of focus:

- Rotate focus-mode selector to AF (\$\square\$ 91).
- Camera unable to focus using autofocus: use manual focus or focus lock (□ 97, 99).

Focus does not lock when shutter-release button is pressed halfway: Use AE-L/AF-L button to lock focus when AF-C is selected for focus mode or when photographing moving subjects in AF-A mode.

### Can not select focus point:

- Unlock focus selector lock (□ 96).
- 🔳 (auto-area AF) or 🕲 (face-priority AF) selected for AF-area mode: choose another mode.
- Camera is in playback mode (\$\square\$ 163) or menus are in use (\$\square\$ 195).

**Subject-tracking AF not available:** Select a non-monochrome Picture Control (\$\square\$ 131).

Can not select AF-area mode: Manual focus selected (\$\square\$ 55, 99).

Only one shot taken each time shutter-release button is pressed in continuous release mode: Lower built-in flash ( $\square$  143).

Image size can not be changed: Image quality set to NEF (RAW) ( $\square$  85).

**Camera is slow to record photos:** Turn long exposure noise reduction off ( $\square$  205).

### Noise (randomly-spaced bright pixels, fog, or lines) appear in photos:

- Choose lower ISO sensitivity or use high ISO noise reduction (\$\square\$ 101, 205).
- Shutter speed is slower than 8 s: use long exposure noise reduction (□ 205).



### AF-assist illuminator does not light:

- AF-assist lamp does not light if AF-C is selected for autofocus mode (\$\sup\$ 91) or if continuous-servo autofocus is selected when the camera is in AF-A mode. Choose AF-S. If an option other than \$\sup\$ (auto-area AF) is selected for AF-area mode, select center focus point (\$\sup\$ 94, 96).
- The camera is currently in live view or a movie is being recorded.
- Off selected for Custom Setting a7 (Built-in AF-assist illuminator) (\$\square\$ 210).
- Illuminator has turned off automatically. Illuminator may become hot with continued use; wait for lamp to cool down.

### Beep does not sound:

- Off is selected for Custom Setting d1 (Beep; □ 215) > Volume.
- Camera is in quiet shutter-release mode (\$\square\$ 77) or movie is being recorded (\$\square\$ 57).
- Focus-mode selector is set to **M** ( $\square$  99) or **AF-C** is selected for autofocus mode ( $\square$  91).
- Release is selected for Custom Setting a2 (AF-S priority selection; 

   □ 208).

**Smudges appear in photographs:** Clean front and rear lens elements. If problem persists, perform image sensor cleaning ( $\square$  284).

Sound is not recorded with movies: Microphone off is selected for Movie settings > Microphone.

### The brightness of the image in the monitor differs from the exposure of photographs taken in live view:

- Center-weighted or spot metering is selected (\$\square\$ 105).
- The camera is in mode M.
- The subject is too bright or too dark.
- Active D-Lighting is in effect (\$\square\$ 139).
- The photograph is a long time-exposure (\$\square\$ 73).
- The flash is used (\$\square\$ 143).

Flicker or banding appears during live view or movie recording: Choose an option for Flicker reduction that matches the frequency of the local AC power supply (\$\square\$ 237).

**Bright bands appear during live view or movie recording:** A flash or other light source with brief duration was used during live view or movie recording.

Menu item can not be selected: Some options are not available in all modes.

# Shooting (P, S, A, M)

### Shutter-release disabled:

- Non-CPU lens is attached: rotate camera mode dial to **A** or **M** ( $\square$  270).
- Mode dial rotated to S after shutter speed of bu L b selected in mode M: choose new shutter speed (□ 69).

Camera is slow to respond to shutter-release button: Select Off for Custom Setting d11 (Exposure delay mode;  $\square$  219).

### Full range of shutter speeds not available:

- Flash in use. Flash sync speed can be selected using Custom Setting e1 (Flash sync speed); when using optional SB-900, SB-800, SB-700, SB-600, or SB-R200 flash unit, choose 1/320 s (Auto FP) or 1/250 s (Auto FP) for full range of shutter speeds (□ 222).
- When On is selected for Movie options > Manual movie settings in the shooting menu, shutter speed can be set to values between ¹/8000 s and ¹/30 s (□ 60).

### Colors are unnatural:

- Adjust white balance to match light source (\$\square\$ 117).
- Adjust **Set Picture Control** settings ( $\square$  131).

Can not measure white balance: Subject is too dark or too bright (\$\square\$ 125).

Image can not be selected as source for preset white balance: Image was not created with D7000 ( $\square$  126).

### White balance bracketing unavailable:

- NEF (RAW) or NEF+JPEG image quality option selected for image quality (\$\square\$ 85).
- Multiple exposure mode is in effect (\$\square\$ 154).

**Effects of Picture Control differ from image to image: A** (auto) is selected for sharpening, contrast, or saturation. For consistent results over a series of photos, choose another setting ( $\square$  134).

**Metering can not be changed**: Autoexposure lock is in effect ( $\square$  106).

**Exposure compensation can not be used:** Choose mode **P, S,** or **A** ( $\square$  68, 69, 70).

Noise (reddish areas or other artifacts) appears in long time-exposures: Enable long exposure noise reduction  $(\square 205)$ .



# **Playback**

Flashing areas, shooting data, or graphs appear on images: Press  $\triangle$  or  $\nabla$  to choose photo information displayed, or change settings for **Display mode** ( $\square$  165, 197).

**NEF (RAW) image is not played back**: Photo was taken at image quality of NEF + JPEG ( \$\sime\$ 85).

**Can not view pictures recorded with other cameras:** Pictures recorded with other makes of camera may not be displayed correctly.

Message is displayed stating that no images are available for playback: Select All for Playback folder ( $\square$  195).

### "Tall" (portrait) orientation photos are displayed in "wide" (landscape) orientation:

- Select On for Rotate tall (\$\square\$ 200).
- Photo was taken with **Off** selected for **Auto image rotation** ( $\square$  239).
- Camera was pointed up or down when photo was taken (\$\square\$ 239).
- Photo is displayed in image review (\$\square\$ 200).

### Can not delete picture:

- Picture is protected: remove protection (\$\square\$ 174).
- Memory card is locked (□ 33).

Can not retouch picture: Photo can not be further edited with this camera (\$\square\$ 249).

### Can not change print order:

- Memory card is full: delete pictures (□ 36, 175).
- Memory card is locked (□ 33).

**Can not select photo for printing:** Photo is in NEF (RAW) format. Create JPEG copy using **NEF (RAW) processing** or transfer to computer and print using ViewNX 2 (supplied) or Capture NX 2 (available separately).

### Picture is not displayed on TV:

- Choose correct video mode (□ 237) or output resolution (□ 194).
- A/V (□ 191) or HDMI (□ 193) cable is not correctly connected.

### Camera does not respond to remote control for HDMI-CEC television:

- Select **On** for **HDMI** > **Device control** in the setup menu ( 194).
- Adjust HDMI-CEC settings for the television as described in documentation provided with the device.

**Can not transfer photos to computer:** OS not compatible with camera or transfer software. Use card reader to copy photos to computer  $(\square 179)$ .

**NEF (RAW) photos not displayed in Capture NX 2**: Update to latest version ( $\square$  281).

**Image Dust Off option in Capture NX 2 does not have desired effect**: Image sensor cleaning changes the position of dust on the low-pass filter. Dust off reference data recorded before image sensor cleaning is performed can not be used with photographs taken after image sensor cleaning is performed. Dust off reference data recorded after image sensor cleaning is performed can not be used with photographs taken before image sensor cleaning is performed ( $\square$  240).

**Computer displays NEF (RAW) images differently from camera**: Third-party software does not display effects of Picture Controls or Active D-Lighting. Use ViewNX 2 (supplied) or optional Nikon software such as Capture NX 2 (available separately).

# Miscellaneous

**Date of recording is not correct**: Set camera clock (\$\sup\$ 27, 237).

**Menu item can not be selected**: Some options are not available at certain combinations of settings or when no memory card is inserted. Note that **Battery info** option is not available when camera is powered by an optional EP-5B power connector and EH-5a AC adapter ( $\square$  242).



# **Error Messages**

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

| Indicator        |          |                                                                                                                                                                     |                                                                                                                                                                                                                         |                 |
|------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Control View-    |          |                                                                                                                                                                     |                                                                                                                                                                                                                         |                 |
| panel            | finder   | Problem                                                                                                                                                             | Solution                                                                                                                                                                                                                | m               |
| FE E<br>(blinks) |          | Lens aperture ring is not set to minimum aperture.                                                                                                                  | Set ring to minimum aperture (largest f-number).                                                                                                                                                                        | 26              |
| •                | •        | Low battery.                                                                                                                                                        | Ready a fully-charged spare battery.                                                                                                                                                                                    | 21              |
|                  |          | Battery exhausted.                                                                                                                                                  | • Recharge or replace battery.                                                                                                                                                                                          |                 |
|                  |          | Battery can not be used.                                                                                                                                            | <ul> <li>Contact Nikon-authorized service representative.</li> </ul>                                                                                                                                                    |                 |
| (blinks)         | (blinks) | An extremely exhausted<br>rechargeable Li-ion battery<br>or a third-party battery is<br>inserted either in the camera<br>or in the optional MB-D11<br>battery pack. | Replace the battery, or<br>recharge the battery if the<br>rechargeable Li-ion battery<br>is exhausted.                                                                                                                  | xvii, 21,<br>24 |
| (blinks)         | _        | Camera clock is not set.                                                                                                                                            | Set camera clock.                                                                                                                                                                                                       | 27, 237         |
| ΔF               |          | No lens attached, or non-CPU lens attached without specifying maximum aperture. Aperture shown in stops from maximum aperture.                                      | Aperture value will be displayed if maximum aperture is specified.                                                                                                                                                      | 159             |
| _                | (blinks) | Camera unable to focus using autofocus.                                                                                                                             | Change composition or focus manually.                                                                                                                                                                                   | 93, 99          |
| F<br>(blinks)    |          | <ul> <li>No lens attached.</li> <li>Non-CPU lens attached.</li> </ul>                                                                                               | <ul> <li>Attach non-IX Nikkor lens.         If a CPU lens is attached, remove and reattach the lens.     </li> <li>Select mode A or M.</li> </ul>                                                                       | 25, 269<br>270  |
|                  |          | • Non-Cro lens attached.                                                                                                                                            | Use a lower ISO sensitivity                                                                                                                                                                                             | 101             |
| ж:               |          | Subject too bright; photo will be overexposed.                                                                                                                      | <ul> <li>Use a lower iso sensitivity</li> <li>In shooting mode:         <ul> <li>P Use optional ND filter</li> <li>Increase shutter speed</li> <li>A Choose a smaller aperture (larger f-number)</li> </ul> </li> </ul> | 280<br>69<br>70 |

| Indicator       |                   |                                                                                        |                                                                                                            |        |
|-----------------|-------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------|
| Control         | View-             |                                                                                        |                                                                                                            |        |
| panel           | finder            | Problem                                                                                | Solution                                                                                                   | $\Box$ |
|                 |                   |                                                                                        | Use a higher ISO sensitivity                                                                               | 101    |
|                 |                   |                                                                                        | In shooting mode:                                                                                          |        |
| ,               | ۵                 | Subject too dark; photo will be                                                        | P Use flash                                                                                                | 143    |
| _               | u                 | underexposed.                                                                          | <b>S</b> Lower shutter speed                                                                               | 69     |
|                 |                   |                                                                                        | A Choose a larger aperture (smaller f-number)                                                              | 70     |
|                 | <b>Lb</b><br>nks) | ង ៤ ង selected in mode S.                                                              | Change shutter speed or select mode <b>M</b> .                                                             | 69, 71 |
| -<br>(bli       | -<br>nks)         | selected in mode <b>S</b> .                                                            | Change shutter speed or select mode <b>M</b> .                                                             | 69, 71 |
| (blinks)        | <b>4</b> (blinks) | Optional flash unit that does not support i-TTL flash control attached and set to TTL. | Change flash mode setting on optional flash unit.                                                          | 278    |
| _   <b>\$</b>   |                   | If indicator blinks for 3s after flash fires, photo may be underexposed.               | Check photo in monitor; if underexposed, adjust settings and try again.                                    | 163    |
|                 |                   | Memory insufficient to record                                                          | Reduce quality or size.                                                                                    | 85, 88 |
| Full            | Ful               | further photos at current                                                              | Delete photographs.                                                                                        | 175    |
| (blinks)        | (blinks)          | settings, or camera has run out of file or folder numbers.                             | Insert new memory card.                                                                                    | 29     |
| Err<br>(blinks) |                   | Camera malfunction.                                                                    | Release shutter. If error persists or appears frequently, consult Nikon-authorized service representative. | _      |



| Indicator                                                                                                     |                            |                                                                                                                    |                                                                                                                                                                                                     |                       |
|---------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|                                                                                                               | Control                    |                                                                                                                    |                                                                                                                                                                                                     |                       |
| Monitor                                                                                                       | panel                      | Problem                                                                                                            | Solution                                                                                                                                                                                            |                       |
| No memory card.                                                                                               | [ <b>- E -</b> ]           | Camera cannot detect memory card.                                                                                  | Turn camera off and confirm that card is correctly inserted.                                                                                                                                        | 29                    |
| This memory card cannot be used. Card may be damaged. Insert another card.                                    | ERrd,<br>Err<br>(blinks)   | <ul> <li>Error accessing<br/>memory card.</li> <li>Unable to create new<br/>folder.</li> </ul>                     | <ul> <li>Use Nikon-approved card.</li> <li>Check that contacts are clean. If card is damaged, contact retailer or Nikon representative.</li> <li>Delete files or insert new memory card.</li> </ul> | 319<br>—<br>29, 175   |
| -<br>                                                                                                         | [Ard,<br>Err<br>(blinks)   | Camera can not control<br>Eye-Fi card.                                                                             | <ul> <li>Check that Eye-Fi card<br/>firmware is up to date.</li> <li>Copy files on Eye-Fi card to<br/>a computer or other device<br/>and format card, or insert<br/>new card.</li> </ul>            | 247<br>29, 32,<br>179 |
| Memory card is locked. Slide lock to "write" position.                                                        | [Ard,<br><br>(blinks)      | Memory card is locked (write protected).  Slide card write-protect switch to "write" position.  (write protected). |                                                                                                                                                                                                     | 33                    |
| Not available if<br>Eye-Fi card is locked.                                                                    | Errd,<br>Err<br>(blinks)   |                                                                                                                    |                                                                                                                                                                                                     | 33                    |
| This card is not formatted. Format the card.                                                                  | [ <b>For</b> ]<br>(blinks) | Memory card has not been formatted for use in camera.                                                              | Format memory card or insert new memory card.                                                                                                                                                       | 29, 32                |
| Failed to update flash unit firmware. Flash cannot be used. Contact a Nikonauthorized service representative. | _                          | Firmware for flash unit mounted on camera was not updated correctly.                                               | Contact a Nikon-authorized service representative.                                                                                                                                                  | _                     |

| Indicator                    |         |                                                                                                                                                                    |                                                                   |         |
|------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------|
|                              | Control |                                                                                                                                                                    |                                                                   |         |
| Monitor                      | panel   | Problem                                                                                                                                                            | Solution                                                          | $\Box$  |
| Folder contains no images.   | _       | No images on memory card or in folder(s) selected for playback.  Select folder containing images from <b>Playback folder</b> menu or insert different memory card. |                                                                   | 29, 195 |
| All images are<br>hidden.    | _       | All photos in current folder are hidden.                                                                                                                           |                                                                   |         |
| Cannot display this file.    | _       | File has been created or<br>modified using a<br>computer or different<br>make of camera, or file is<br>corrupt.                                                    | nodified using a computer or different nake of camera, or file is |         |
| Cannot select this file.     | _       | Selected image can not be retouched.  Images created with other devices can not be retouched.                                                                      |                                                                   | 249     |
| This movie cannot be edited. | _       | Movies created with other devices can not be edited.      Movies must be at least two seconds long.                                                                |                                                                   | 65      |
| Check printer.               | _       | Printer error. Check printer. To resume, select <b>Continue</b> (if available)                                                                                     |                                                                   | 182*    |
| Check paper.                 |         | Paper in printer is not of selected size. Insert paper of correct size and select <b>Continue</b> .                                                                |                                                                   | 182*    |
| Paper jam.                   |         | Paper is jammed in printer.                                                                                                                                        | Clear jam and select <b>Continue</b> .                            | 182*    |
| Out of paper.                |         | <ul> <li>Printer is out of paper.</li> <li>Insert paper of sele and select Continuation</li> </ul>                                                                 |                                                                   | 182*    |
| Check ink supply.            | _       | Ink error. Check ink. To resume, so Continue.                                                                                                                      |                                                                   | 182*    |
| Out of ink.                  | _       | <ul> <li>Printer is out of ink.</li> <li>Replace ink and s Continue.</li> </ul>                                                                                    |                                                                   | 182*    |

<sup>\*</sup> See printer manual for more information.

# **Specifications**

# ■■ Nikon D7000 Digital Camera

| Туре                                                                              |                                                                                                                                      |  |  |  |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| Туре                                                                              | Single-lens reflex digital camera                                                                                                    |  |  |  |
| Lens mount                                                                        | Nikon F mount (with AF coupling and AF contacts)                                                                                     |  |  |  |
| Effective angle of view                                                           | <b>iew</b> 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                                                                                                                         |  |  |  |
| <b>Dust-reduction System</b>                                                      | Image sensor cleaning, Image Dust Off reference data (optional                                                                       |  |  |  |
|                                                                                   | Capture NX 2 software required)                                                                                                      |  |  |  |
| Storage                                                                           |                                                                                                                                      |  |  |  |
| Image size (pixels)                                                               | • 4,928 × 3,264 (L) • 3,696 × 2,448 (M)                                                                                              |  |  |  |
|                                                                                   | • 2,464 × 1,632 (S)                                                                                                                  |  |  |  |
| File format                                                                       | NEF (RAW): 12 or 14 bit, lossless compressed or compressed                                                                           |  |  |  |
|                                                                                   | • <b>JPEG</b> : JPEG-Baseline compliant with fine (approx. 1 : 4), normal (approx.                                                   |  |  |  |
|                                                                                   | 1:8), or basic (approx. 1:16) compression (Size priority); Optimal                                                                   |  |  |  |
|                                                                                   | quality compression available                                                                                                        |  |  |  |
|                                                                                   | NEF (RAW)+JPEG: Single photograph recorded in both NEF (RAW) and                                                                     |  |  |  |
|                                                                                   | JPEG formats                                                                                                                         |  |  |  |
| Picture Control System Standard, Neutral, Vivid, Monochrome, Portrait, Landscape; |                                                                                                                                      |  |  |  |
|                                                                                   | Picture Control can be modified; storage for custom Picture Controls                                                                 |  |  |  |
| Media                                                                             | SD (Secure Digital), SDHC, and SDXC memory cards                                                                                     |  |  |  |
| Double slot                                                                       | Slot 2 can be used for overflow or backup storage or for separate storage                                                            |  |  |  |
|                                                                                   | of copies created using NEF+JPEG; pictures can be copied between                                                                     |  |  |  |
|                                                                                   | 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 pentaprism single-lens reflex viewfinder                                                                                   |  |  |  |
| Frame coverage                                                                    | Approx. 100% horizontal and 100% vertical                                                                                            |  |  |  |
| Magnification                                                                     | Approx. $0.94 \times (50 \text{ mm f/}1.4 \text{ lens at infinity, } -1.0 \text{ m}^{-1})$                                           |  |  |  |
| Eyepoint                                                                          | 19.5 mm (–1.0 m <sup>-1</sup> )<br>–3–+1 m <sup>-1</sup>                                                                             |  |  |  |
| Diopter adjustment                                                                |                                                                                                                                      |  |  |  |
| Focusing screen                                                                   |                                                                                                                                      |  |  |  |
| Reflex mirror                                                                     | (framing grid can be displayed) Ouick return                                                                                         |  |  |  |
|                                                                                   |                                                                                                                                      |  |  |  |
| pepin-oi-ileia preview                                                            | Pressing depth-of-field preview button stops lens aperture down to value selected by user (A and M modes) or by camera (other modes) |  |  |  |
| Long anortura                                                                     | Instant return, electronically controlled                                                                                            |  |  |  |
| Lens aperture                                                                     | instant return, electronically controlled                                                                                            |  |  |  |
|                                                                                   |                                                                                                                                      |  |  |  |

| Lens                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Compatible lenses                    | <ul> <li>DX AF NIKKOR: All functions supported</li> <li>Type G or D AF NIKKOR: All functions supported (PC Micro-NIKKOR does not support some functions). IX NIKKOR lenses not supported.</li> <li>Other AF NIKKOR: All functions supported except 3D color matrix metering II. Lenses for F3AF not supported.</li> <li>AI-P NIKKOR: All functions supported except 3D color matrix metering II</li> <li>Non-CPU: Can be used in modes A and M; color matrix metering and aperture value display supported if user provides lens data (Al lenses only)</li> <li>Electronic rangefinder can be used if maximum aperture is f/5.6 or faster.</li> </ul> |
| Shutter                              | electionic rangemaci can be abea il maximum apertare is 1/3.0 01 laster.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Type                                 | Electronically-controlled vertical-travel focal-plane shutter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Speed                                | $^{1}/_{8000}$ – 30 s in steps of $^{1}/_{3}$ or $^{1}/_{2}$ EV, bulb, time (requires optional ML-L3 remote control), X250                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Flash sync speed                     | $X=^{1}/_{250}$ s; synchronizes with shutter at $^{1}/_{320}$ s or slower (flash range drops at speeds between $^{1}/_{250}$ and $^{1}/_{320}$ s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Release                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Release mode                         | S (single frame), CL (continuous low speed), CH (continuous high speed), Q (quiet shutter-release), ⊘ (self-timer), □ (remote control), MUP (mirror up)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Frame advance rate (CIPA guidelines) | 1–5 fps ( <b>C</b> L) or 6 fps ( <b>C</b> H)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Self-timer                           | 2 s, 5 s, 10 s, 20 s; 1–9 exposures at intervals of 0.5, 1, 2, or 3 s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Remote release modes                 | Delayed remote, quick-response remote, remote mirror-up                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Exposure                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Metering                             | TTL exposure metering using 2,016-pixel RGB sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Metering method                      | <ul> <li>Matrix: 3D color matrix metering II (type G and D lenses); color matrix metering II (other CPU lenses); color matrix metering available with non-CPU lenses if user provides lens data</li> <li>Center-weighted: Weight of 75% given to 8 mm circle in center of frame. Diameter of circle can be changed to 6, 10, or 13 mm, or weighting can be based on average of entire frame (fixed at 8 mm when non-CPU lens is used)</li> <li>Spot: Meters 3.5 mm circle (about 2.5% of frame) centered on selected focus point (on center focus point when non-CPU lens is used)</li> </ul>                                                         |
| Range (ISO 100, f/1.4                | Matrix or center-weighted metering: 0 – 20 EV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| lens, 20 °C/68 °F)                   | • Spot metering: 2–20 EV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Exposure meter coupling              | Combined CPU and Al                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |



| Exposure                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Mode                        | Auto (☆ auto; ♠ auto (flash off)); scene (﴿ portrait; ♠ landscape; ﴿ child; ◄ sports; ♣ close up; ♠ night portrait; ♠ night landscape; ※ party/indoor; ♣ beach/snow; ♠ sunset; ♠ dusk/dawn; ➡ pet portrait; ♠ candlelight; ♠ blossom; ♠ autumn colors; ✝ food; ♠ silhouette; ♠ high key; ♠ low key); programmed auto with flexible program (♠); shutter-priority auto (♠); aperture-priority auto (♠); manual (♠); U1 (user settings 1); U2 (user settings 2) |  |
|                             | 1 –5 – +5 EV in increments of $^{1}/_{3}$ or $^{1}/_{2}$ EV                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| Exposure bracketing         | 2-3 frames in steps of 1/3, 1/2, 2/3, 1, or 2 EV                                                                                                                                                                                                                                                                                                                                                                                                              |  |
| Flash bracketing            | 2-3 frames in steps of <sup>1</sup> / <sub>3</sub> , <sup>1</sup> / <sub>2</sub> , <sup>2</sup> / <sub>3</sub> , 1, or 2 EV                                                                                                                                                                                                                                                                                                                                   |  |
| White balance<br>bracketing | 2–3 frames in steps of 1, 2, or 3                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| ADL bracketing              | 2 frames using selected value for one frame or 3 frames using preset values for all frames                                                                                                                                                                                                                                                                                                                                                                    |  |
| Exposure lock               | Luminosity locked at detected value with AE-L/AF-L button                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| ISO sensitivity             | ISO $100 - 6400$ in steps of $\frac{1}{3}$ or $\frac{1}{2}$ EV. Can also be set to approx. 0.3, 0.5,                                                                                                                                                                                                                                                                                                                                                          |  |
| (Recommended                | 0.7, 1, or 2 EV (ISO 25600 equivalent) above ISO 6400; auto ISO sensitivity                                                                                                                                                                                                                                                                                                                                                                                   |  |
| Exposure Index)             | control available                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| Active D-Lighting           | Auto, Extra high, High, Normal, Low, Off                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| Focus                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| Autofocus                   | Nikon Multi-CAM 4800DX autofocus sensor module with TTL phase detection, fine-tuning, 39 focus points (including 9 cross-type sensors), and AF-assist illuminator (range approx. 0.5–3 m/1 ft. 8 in.–9 ft. 10 in.)                                                                                                                                                                                                                                            |  |
| Detection range             | −1 − +19 EV (ISO 100, 20 °C/68 °F)                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| Lens servo                  | <ul> <li>Autofocus (AF): Single-servo AF (AF-S); continuous-servo AF (AF-C); auto AF-S/AF-C selection (AF-A); predictive focus tracking activated automatically according to subject status</li> <li>Manual focus (M): Electronic rangefinder can be used</li> </ul>                                                                                                                                                                                          |  |
| Focus point                 | Can be selected from 39 or 11 focus points                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| AF-area mode                | Single-point AF; 9-, 21-, or 39-point dynamic-area AF, 3D-tracking, auto-area AF                                                                                                                                                                                                                                                                                                                                                                              |  |
| Focus lock                  | Focus can be locked by pressing shutter-release button halfway (single-servo AF) or by pressing <b>AE-L/AF-L</b> button                                                                                                                                                                                                                                                                                                                                       |  |



| Flash                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Built-in flash          | 槛, 尧, 玺, ♥, 區, ※, ♥: Auto flash with auto pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Duilt-iii iiasii        | P, S, A, M, †1: Manual pop-up with button release                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Guide Number            | Approx. 12/39, 12/39 with manual flash (m/ft, ISO 100, 20 °C/68 °F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Flash control           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                         | <ul> <li>TTL: i-TTL balanced fill-flash and standard i-TTL flash for digital SLR using 2,016-pixel RGB sensor are available with built-in flash and SB-900, SB-800, SB-700, SB-600, or SB-400 (i-TTL balanced fill-flash is available when matrix or center-weighted metering is selected)</li> <li>Auto aperture: Available with SB-900/SB-800 and CPU lens</li> <li>Non-TTL auto: Supported flash units include SB-900, SB-800, SB-28, SB-27, and SB-22S</li> <li>Distance-priority manual: Available with SB-900, SB-800, SB-700</li> </ul> |
| Flash mode              | • 📆, 💈, 🗳, 💥, 🐕: Auto, auto with red-eye reduction, off; fill-flash and                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                         | red-eye reduction available with optional flash units                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                         | • Auto slow sync, auto slow sync with red-eye reduction, off; slow                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                         | sync and slow sync with red-eye reduction available with optional                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                         | flash units                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                         | • 🖪, 💐, 🗒, 🐞, 🛎, 🎍, ♦, 🗳, 🚇, 📵 Fill-flash and red-eye reduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                         | available with optional flash units                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                         | • †1: Fill-flash                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                         | • P, A: Fill-flash, rear-curtain with slow sync, slow sync, slow sync with                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                         | red-eye reduction, red-eye reduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                         | • S, M: Fill-flash, rear-curtain sync, red-eye reduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Flash compensation      | -3 - +1 EV in increments of <sup>1</sup> / <sub>3</sub> or <sup>1</sup> / <sub>2</sub> EV                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Flash-ready indicator   | Lights when built-in flash or optional flash unit such as SB-900, SB-800, SB-700, SB-600, SB-400, SB-80DX, SB-28DX, or SB-50DX is fully charged; blinks for 3 s after flash is fired at full output                                                                                                                                                                                                                                                                                                                                            |
| Accessory shoe          | ISO 518 hot-shoe with sync and data contacts and safety lock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Nikon Creative Lighting | Advanced Wireless Lighting supported with built-in flash, SB-900,                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| System (CLS)            | SB-800, SB-700, or SU-800 as commander and SB-900, SB-800, SB-700,                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                         | SB-600, or SB-R200 as remotes; Auto FP high-speed sync and modeling                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                         | illumination supported with all CLS-compatible flash units except                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                         | SB-400; Flash Color Information Communication and FV lock supported                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                         | with all CLS-compatible flash units                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Sync terminal           | AS-15 sync terminal adapter (available separately)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| White balance           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| White balance           | Auto (2 types), incandescent, fluorescent (7 types), direct sunlight, flash,                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                         | cloudy, shade, preset manual (up to 5 values can be stored), choose color                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                         | temperature (2500 K–10000 K), all with fine tuning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



| Live view           |       |                                                                            |  |  |
|---------------------|-------|----------------------------------------------------------------------------|--|--|
| Lens servo          |       | Autofocus (AF): Single-servo AF (AF-S); full-time servo AF (AF-F)          |  |  |
|                     |       | Manual focus (M)                                                           |  |  |
| 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)    |  |  |
| Movie               |       |                                                                            |  |  |
| Metering            |       | TTL exposure metering using main image sensor                              |  |  |
| Metering method     |       | Matrix                                                                     |  |  |
| Frame size          | NTSC  | • 1,920 × 1,080 (24p); 24 (23.976) fps • 1,280 × 720 (30p); 30 (29.97) fps |  |  |
| (pixels) and        | NISC  | • 1,280 × 720 (24p); 24 (23.976) fps • 640 × 424 (30p); 30 (29.97) fps     |  |  |
| frame rate          | PAL   | • 1,920 × 1,080 (24p); 24 (23.976) fps • 1,280 × 720 (25p); 25 fps         |  |  |
|                     | PAL   | • 1,280 × 720 (24p); 24 (23.976) fps • 640 × 424 (25p); 25 fps             |  |  |
|                     |       | Choice of normal and high quality available.                               |  |  |
| Maximum length      |       | Approx. 20 minutes                                                         |  |  |
| File format         |       | MOV                                                                        |  |  |
| Video compression   |       | H.264/MPEG-4 Advanced Video Coding                                         |  |  |
| Audio recording fo  |       |                                                                            |  |  |
| Audio recording d   | evice | Built-in monaural or external stereo microphone; sensitivity adjustable    |  |  |
| Monitor             |       |                                                                            |  |  |
| Monitor             |       | 7.5-cm/3-in., 921k-dot (VGA), low-temperature polysilicon TFT LCD with     |  |  |
|                     |       | 170 ° viewing angle, 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, highlights, histogram           |  |  |
|                     |       | display, auto image rotation, and image comment (up to 36 characters)      |  |  |
| Interface           |       |                                                                            |  |  |
| USB                 |       | Hi-Speed USB                                                               |  |  |
| Video output        |       | NTSC, PAL; images can be displayed on external device while camera         |  |  |
|                     |       | monitor is on                                                              |  |  |
| HDMI output         |       | Type C mini-pin HDMI connector; camera monitor turns off when HDMI         |  |  |
|                     |       | cable is connected                                                         |  |  |
| Accessory terminal  |       | Remote cord: MC-DC2 (available separately)                                 |  |  |
|                     |       | <b>GPS unit</b> : GP-1 (available separately)                              |  |  |
| Audio input         |       | Stereo mini-pin jack (3.5 mm diameter)                                     |  |  |
| Supported langua    | ges   |                                                                            |  |  |
| 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-EL15 battery                                              |
| Battery pack                         | Optional MB-D11 multi-power battery pack with one rechargeable                       |
|                                      | Nikon EN-EL15 Li-ion battery or six AA alkaline, NiMH, or lithium                    |
|                                      | batteries                                                                            |
| AC adapter                           | EH-5a AC adapter; requires EP-5B power connector (available separately)              |
| Tripod socket                        |                                                                                      |
| Tripod socket                        | <sup>1</sup> / <sub>4</sub> in. (ISO 1222)                                           |
| Dimensions/weight                    |                                                                                      |
| Dimensions (W $\times$ H $\times$ D) | Approx. $132 \times 105 \times 77 \text{ mm } (5.2 \times 4.1 \times 3 \text{ in.})$ |
| Weight                               | Approx. 690 g (1 lb. 8.3 oz.; camera body only); approx. 780 g (1 lb.                |
|                                      | 11.5 oz.) with battery and memory card but without body cap                          |
| 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).
- Nikon reserves the right to change the specifications of the hardware and software described in this manual at any time and without prior notice. Nikon will not be held liable for damages that may result from any mistakes that this manual may contain.

| MH-25 battery charger    |                                                                                                 |  |  |
|--------------------------|-------------------------------------------------------------------------------------------------|--|--|
| Rated input              |                                                                                                 |  |  |
| (in North America)       | AC 120 V, 60 Hz, 0.2 A                                                                          |  |  |
| Rated input              | AC 100 240 V 50/60 Hz 0.22 0.12 A                                                               |  |  |
| (in other regions)       | AC 100–240 V, 50/60 Hz, 0.23–0.12 A                                                             |  |  |
| Rated output             | DC 8.4 V/1.2 A                                                                                  |  |  |
| Supported batteries      | Nikon rechargeable Li-ion battery EN-EL15                                                       |  |  |
| Charging time            | Approx. 2 hours 35 minutes at an ambient temperature of 25 °C (77 °F)                           |  |  |
|                          | when no charge remains                                                                          |  |  |
|                          | 0–40 °C (+32–104 °F)                                                                            |  |  |
|                          | Approx. $82.5 \times 28 \times 65$ mm ( $3.2 \times 1.1 \times 2.6$ in.), excluding projections |  |  |
| Length of power cable    | Approx. 1.8 m (6 ft.)                                                                           |  |  |
| Weight                   | Approx. 110 g (3.9 oz.), excluding power cable and AC wall adapter                              |  |  |
| EN-EL15 rechargeable Li- |                                                                                                 |  |  |
| Туре                     | Rechargeable lithium-ion battery                                                                |  |  |
| Rated capacity           | 7.0 V/1900 mAh                                                                                  |  |  |
|                          | Approx. $40 \times 56 \times 20.5 \text{ mm} (1.6 \times 2.2 \times 0.8 \text{ in.})$           |  |  |
| Weight                   | Approx. 88 g (3.1 oz.), excluding terminal cover                                                |  |  |
| AF-S DX NIKKOR 18-105 r  | nm f/3.5–5.6G ED VR lens                                                                        |  |  |
| Туре                     | 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             | 18–105mm                                                                                        |  |  |
| Maximum aperture         | f/3.5–5.6                                                                                       |  |  |
| Lens construction        | 15 elements in 11 groups (including 1 aspherical element and 1 ED glass element)                |  |  |
| Angle of view            | 76 °-15 ° 20 ′                                                                                  |  |  |
| Focal length scale       | Graduated in millimeters (18, 24, 35, 50, 70, 105)                                              |  |  |
| Distance information     | Output to camera                                                                                |  |  |
| Zoom                     | Manual zoom using independent zoom ring                                                         |  |  |
| Focusing                 | Nikon Internal Focusing (IF) system with autofocus controlled by Silent                         |  |  |
|                          | Wave Motor; manual focus supported when A-M switch is set to <b>A</b> or <b>M</b> .             |  |  |
|                          | Focus can be adjusted by rotating lens focus ring while focus is locked in                      |  |  |
| 101 41 1 41              | single-servo autofocus. Do not use focus ring while camera is focusing.                         |  |  |
| Vibration reduction      | Lens-shift method using voice coil motors (VCMs)                                                |  |  |
|                          | 0.45 m (1.5 ft.) from focal plane mark (\(\sime\) 100) at all zoom positions                    |  |  |
| Diaphragm blades         | 7 (rounded diaphragm opening)                                                                   |  |  |
| Diaphragm                | Fully automatic                                                                                 |  |  |
| Aperture range           | • 18 mm focal length: f/3.5–22 • 105 mm focal length: f/5.6–38                                  |  |  |
| Metering                 | Full aperture                                                                                   |  |  |
| Filter-attachment size   | 67 mm (P=0.75 mm)                                                                               |  |  |
| Dimensions               | Approx. 76 mm diameter $\times$ 89 mm/3.0 $\times$ 3.5 in. (distance from camera lens-mount     |  |  |
| Woight                   | flange) Approx. 420 g (14.8 oz.)                                                                |  |  |
| Weight                   | 74410 y (14.0 02.)                                                                              |  |  |

Nikon reserves the right to change the specifications of the hardware and software described in this manual at any time and without prior notice. Nikon will not be held liable for damages that may result from any mistakes that this manual may contain.



#### **■■** The AF-S DX NIKKOR 18–105 mm f/3.5–5.6G ED VR

The AF-S DX NIKKOR 18–105 mm f/3.5–5.6G ED VR is for use exclusively with Nikon DX format digital cameras. Superior optical performance and image rendering are ensured by the use of aspherical lens elements and elements made using extra-low dispersion (ED) glass to correct chromatic aberration. A rounded aperture produces soft, esthetically-pleasing blurring of point light sources in out-of-focus areas of the image (bokeh). If the camera is equipped with an AF-ON button, vibration reduction will not be activated when the AF-ON button is pressed.

## Using the Built-in Flash

When using the built-in flash, be sure the subject is at a range of at least 0.6 m (2 ft.) and remove lens hoods to prevent vignetting (shadows created where the end of the lens obscures the built-in flash).

| Camera                                       | Zoom position | Minimum distance without vignetting |
|----------------------------------------------|---------------|-------------------------------------|
| D5000, D3100, D3000                          | 18 mm         | 2.5 m/ 8 ft. 2 in.                  |
| D3000, D3100, D3000                          | 24 mm         | 1.0 m/ 3 ft. 3 in.                  |
| D700, D7000, D300 series,<br>D200, D100, D80 | All           | No vignetting at any focus distance |
| D90, D70 series                              | 18 mm         | 1.5 m/ 4 ft. 11 in.                 |
| D90, D70 series                              | 24 mm         | No vignetting at any focus distance |
| D50                                          | 18 mm         | 1.0 m/ 3 ft. 3 in.                  |
| D30                                          | 24 mm         | No vignetting at any focus distance |
|                                              | 18 mm         | 2.5 m/ 8 ft. 2 in.                  |
| D60, D40 series                              | 24 mm         | 1.0 m/ 3 ft. 3 in.                  |
|                                              | 35 mm         | No vignetting at any focus distance |

Because the built-in flash units for the D100 and D70 can only cover the angle of view of a lens with a focal of 20 mm or more; vignetting will occur at a focal length of 18 mm.

#### Lens Care

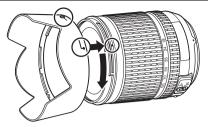
- Keep the CPU contacts clean.
- Use a blower to remove dust and lint from the lens surfaces. To remove smudges and fingerprints, apply a small amount of ethanol or lens cleaner to a soft, clean cotton cloth or lens-cleaning tissue and clean from the center outwards using a circular motion, taking care not to leave smears or touch the glass with your fingers.
- Never use organic solvents such as paint thinner or benzene to clean the lens.
- The lens hood or NC filters can be used to protect the front lens element.
- Attach the front and rear caps before placing the lens in its flexible pouch.
- When a lens hood is attached, do not pick up or hold the lens or camera using only the hood.
- If the lens will not be used for an extended period, store it in a cool, dry location to prevent mold and rust. Do not store in direct sunlight or with naphtha or camphor moth balls.
- Keep the lens dry. Rusting of the internal mechanism can cause irreparable damage.
- Leaving the lens in extremely hot locations could damage or warp parts made from reinforced plastic.

### Supplied Accessories

- 67 mm Snap-on Front Lens Cap LC-67
- Rear Lens Cap
- Flexible Lens Pouch CL-1018
- Bayonet Hood HB-32 (attaches as shown at right)

### **Optional Accessories**

- 67 mm screw-on filters
- Rear Lens Cap LF-1 or Rear Lens Cap LF-4







### A Note on Wide-Angle Lenses

Autofocus may not provide the desired results with wide– and super-wide–angle lenses in the following situations:

#### 1 The subject does not fill the focus point.

If the subject does not fill the focus point, the camera may focus on the background and the subject may be out of focus.



Example: A far-off portrait subject at some distance from the background

### 2 The subject contains many fine details.

The camera may have difficulty focusing on subjects that contain many fine details or that are lacking in contrast.



**Example:** A field of flowers

In these cases, use manual focus, or use focus lock to focus on another subject at the same distance and then recompose the photograph. For more information, see "Getting Good Results with Autofocus" (

93).

## ■■ Supported Standards

- **DCF Version 2.0**: The Design Rule for Camera File Systems (DCF) is a standard widely used in the digital camera industry to ensure compatibility among different makes of camera.
- **DPOF**: Digital Print Order Format (DPOF) is an industry-wide standard that allows pictures to be printed from print orders stored on the memory card.
- Exif version 2.3: The D7000 supports Exif (Exchangeable Image File Format for Digital Still Cameras) version 2.3, a standard in which information stored with photographs is used for optimal color reproduction when the images are output on Exif-compliant printers.
- **PictBridge**: A standard developed through cooperation with the digital camera and printer industries, allowing photographs to be output directly to a printer without first transferring them to a computer.
- HDMI: High-Definition Multimedia Interface is a standard for multimedia interfaces used in consumer electronics and AV devices capable of transmitting audiovisual data and control signals to HDMI-compliant devices via a single cable connection.

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# **Approved Memory Cards**

The following SD memory cards have been tested and approved for use in the D7000. 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 <sup>2</sup>        | SDXC memory cards <sup>3</sup> |  |
|--------------|-------------------------|---------------------------------------|--------------------------------|--|
| SanDisk      | 1 GB, 2 GB <sup>1</sup> | 4 GB, 8 GB, 16 GB, 32 GB              | 64 GB                          |  |
| Toshiba      |                         | 4 GB, 8 GB, 16 GB, 32 GB              |                                |  |
| Panasonic    |                         | 4 GB, 6 GB, 8 GB, 12 GB, 16 GB, 32 GB | 48 GB, 64 GB                   |  |
| Lexar Media  |                         | 4 GB, 8 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-I.



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

ve cards please

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

# **Memory Card Capacity**

The following table shows the approximate number of pictures that can be stored on a 8 GB SanDisk Extreme SDHC card at different image quality and size settings.

| lmage quality                             | lmage size | File size <sup>1</sup> | No. of images <sup>1</sup> | Buffer capacity <sup>2</sup> |
|-------------------------------------------|------------|------------------------|----------------------------|------------------------------|
| NEF (RAW), Lossless<br>compressed, 12-bit | _          | 15.5 MB                | 291                        | 11                           |
| NEF (RAW), Lossless<br>compressed, 14-bit | _          | 19.4 MB                | 223                        | 10                           |
| NEF (RAW), Compressed, 12-bit             | _          | 13.6 MB                | 398                        | 15                           |
| NEF (RAW), Compressed, 14-bit             | _          | 16.7 MB                | 330                        | 12                           |
|                                           | L          | 7.8 MB                 | 813                        | 31                           |
| JPEG fine <sup>3</sup>                    | M          | 4.4 MB                 | 1400                       | 100                          |
|                                           | S          | 2.0 MB                 | 3100                       | 100                          |
|                                           | L          | 3.9 MB                 | 1600                       | 100                          |
| JPEG normal <sup>3</sup>                  | M          | 2.2 MB                 | 2800                       | 100                          |
|                                           | S          | 1.0 MB                 | 6000                       | 100                          |
|                                           | L          | 2.0 MB                 | 3100                       | 100                          |
| JPEG basic <sup>3</sup>                   | M          | 1.1 MB                 | 5500                       | 100                          |
|                                           | S          | 0.5 MB                 | 11000                      | 100                          |

- 1 All figures are approximate. File size varies with scene recorded.
- 2 Maximum number of exposures that can be stored in memory buffer at ISO 100. Drops if **Optimal quality** is selected for **JPEG compression** or long exposure noise reduction is on.
- 3 Figures assume **JPEG compression** is set to **Size priority**. Selecting **Optimal quality** increases the file size of JPEG images; number of images and buffer capacity drop accordingly.

### 

The maximum number of photographs that can be taken in a single burst can be set to any amount between 1 and 100.

# **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. In the case of AA batteries, capacity also varies with make and storage conditions; some batteries can not be used. Sample figures for the camera and optional MB-D11 multi-power battery pack are given below.

CIPA standard <sup>1</sup>

One EN-EL15 battery (camera): Approximately 1050 shots
One EN-EL15 battery (MB-D11): Approximately 1050 shots
Six AA batteries (MB-D11): Approximately 650 shots
Two EN-EL15 batteries (one in camera and one in MB-D11): Approximately 2100 shots

Nikon standard<sup>2</sup>

One EN-EL15 battery (camera): Approximately 4500 shots One EN-EL15 battery (MB-D11): Approximately 4500 shots Six AA batteries (MB-D11): Approximately 1700 shots

Two EN-EL15 batteries (one in camera and one in MB-D11): Approximately 9000 shots

- 1 Measured at 23 °C/73.4 °F (±2 °C/3.6 °F) with an AF-S DX NIKKOR 18–105 mm f/3.5–5.6G ED 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; flash fired once every other shot. Live view not used.
- 2 Measured at 20 °C/68 °F with an AF-S NIKKOR 70–200mm f/2.8G ED VR II lens under the following test conditions: image quality set to JPEG basic, image size set to **M** (medium), shutter speed <sup>1</sup>/<sub>250</sub> s, shutter-release button pressed halfway for three seconds and focus cycled from infinity to minimum range three times; six shots are then taken in succession and monitor turned on for five seconds 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 the optional WT-4 wireless transmitter
- 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-EL15 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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