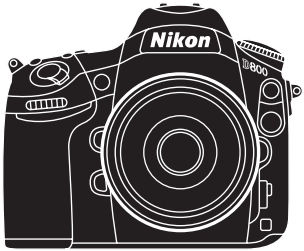
Nikon



Technical Guide

D800
D800E

En

Introduction

This "Technical Guide" details the principal techniques used to create two of the more technically advanced photographs in the D800/D800E catalog. Enjoy this opportunity to admire the skills of professional photographers who have mastered the D800/D800E.

While its high pixel count of 36 megapixels gives the D800/D800E resolution unrivalled by previous digital SLR cameras, a side effect is that *bokeh* and blur are made that much more obvious. Realizing the full potential of a camera with over 30 million pixels involves a thorough appreciation of *bokeh* and blur, careful selection of settings and of tools (such as lenses and tripods), and working with the best possible subjects.

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Shooting Techniques

Static Subjects

—Keeping Blur to a Minimum—

At the high resolutions offered by the D800/D800E, even the slightest camera motion can result in blur. The technique revealed in this section minimizes blur through a combination of live view photography and a tripod.

Technical Data

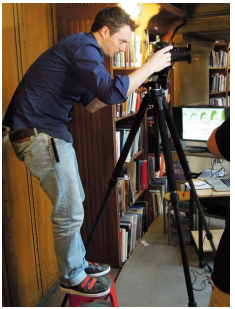
■ **Lens**: AF-S NIKKOR 14–24mm f/2.8G ED ■ **Exposure mode**: Manual ■ **Shutter speed**: 1 s ■ **Aperture**: f/8 ■ **White balance**: Choose color temp. (5000 K) ■ **ISO sensitivity**: 100 ■ **Picture control**: Standard

Note: This photo was shot in 14-bit NEF (RAW) and processed using Capture NX 2.

Photo © Benjamin Anthony Monn

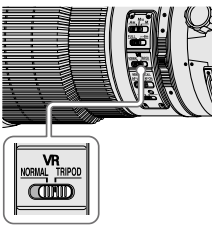
Lesson 1: Use a Tripod

Use a tripod to reduce blur when photographing static subjects. It should be as sturdy as possible; avoid extending the legs or center column farther than necessary. A large head helps keep the camera steady.



Tripod Mode

Some lenses, such as the AF-S NIKKOR 200–400mm f/4G ED VR II, offer vibration reduction with a **TRIPOD** option that is particularly effective in reducing blur at shutter speeds of 1/15–1 s and is generally recommended when the camera is mounted on a tripod. **NORMAL** is however preferred if the tripod head is not fixed or you are using a monopod.

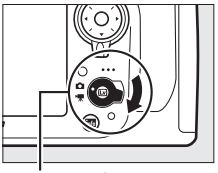


Lesson 2: Use Live View

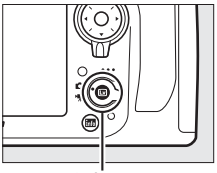
Live view can be used to improve focus and prevent blur.

Live View Photography

Rotate the live view selector to 📷 and press Lv to raise the mirror and display the view through the lens in the monitor.



Live view selector



Lv button

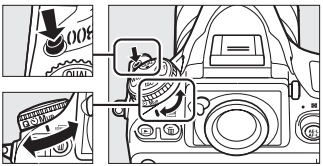
Why Use Live View?

1. The mirror is raised prior to shooting, reducing blur.

At the high resolutions offered by the D800/D800E, even the slap of the mirror can sometimes be enough to blur photographs. In live view, the mirror is raised well before the shutter is released, helping keep blur to a minimum.

Reducing Blur During Viewfinder Photography

If you have trouble seeing the display in the monitor outdoors or in bright ambient light, you can use mirror-up mode to reduce blur while framing photographs in the viewfinder. Press the release mode dial lock release and rotate the release mode dial to **MUP**.

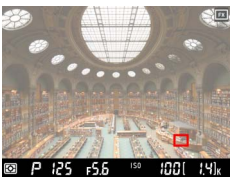


After focusing, press the shutter-release button all the way down once to raise the mirror and again to release the shutter. An optional remote cord can be used to prevent the camera moving when you press the shutter-release button, or you can select an option other than **Off** for Custom Setting d4 (**Exposure delay mode**) to delay shutter release until about 1–3 s after the button is pressed. Use of a tripod is recommended.

Why Use Live View?
2. You can focus anywhere in the frame.

In live view, you can use the multi selector to position the focus point anywhere in the frame, regardless of the options selected for AF/MF and autofocus.

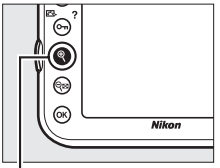
The ability to position the focus point anywhere in the monitor's angle of view greatly increases the range of locations on which the camera can focus.



In autofocus mode, you can focus on the subject in the selected focus point by pressing the shutter-release button halfway or pressing the **AF-ON** button. In manual focus mode, focus can be adjusted by rotating the lens focus ring.

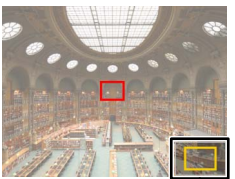
Why Use Live View?
3. You can zoom in for precise focus.

Press the 🔍 button to magnify the view in the monitor by up to 23× for precise focus during live view. You will find this particularly effective with manual focus.



🔍 *button*

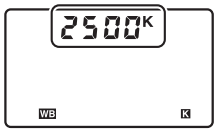
A navigation window will appear in a gray frame at the bottom of the display. Use the multi selector to scroll to areas of the frame not visible in the monitor.



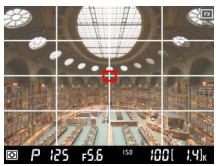
Navigation window

Suggested Settings

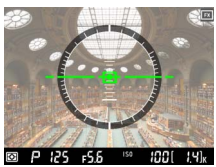
White balance > Choose color temp.: White balance can be adjusted in steps as small as 10 K. To adjust white balance on the amber (A) – blue (B) axis, hold the **WB** button and press ◀ or ▶ to highlight a digit and ▲ or ▼ to change.



Framing guide: Using the **info** button, you can display a framing guide that helps compose photographs during live view.

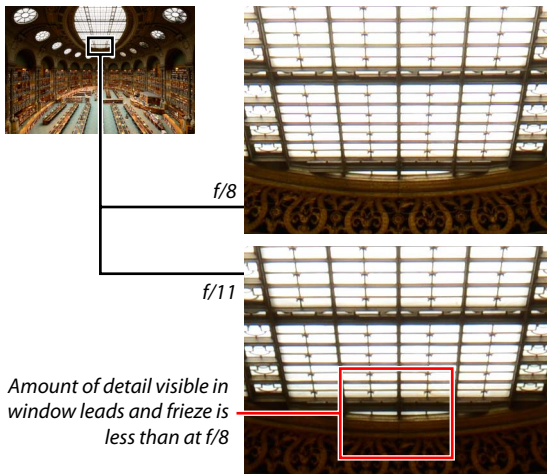


Virtual horizon: Alternatively, the **info** button can be used to display pitch and roll indicators to help you keep the camera level during live view.



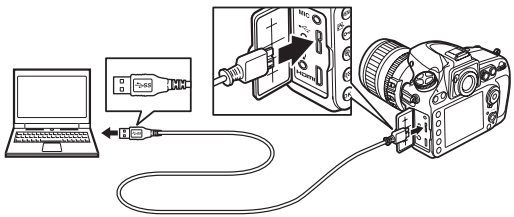
Lesson 3: Don't Stop Aperture Down Too Far

Stopping down aperture in manual (M) and aperture-priority auto (A) exposure modes increases depth of field, bringing both background and foreground into focus. Stop aperture down too far, however, and diffraction will cause the image to actually lose definition. Optimal aperture—the aperture that produces the greatest depth of field with no loss of sharpness—varies from lens to lens. In the case of the AF-S NIKKOR 14–24mm f/2.8G ED lens used in this example, an aperture f/8 will produce the sharpest image.

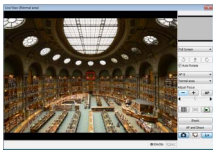


Camera Control Pro 2

Optional Camera Control Pro 2 software can be used to access most camera functions from a computer. To use Camera Control Pro 2, start the computer and connect the camera using the supplied USB cable as shown below.



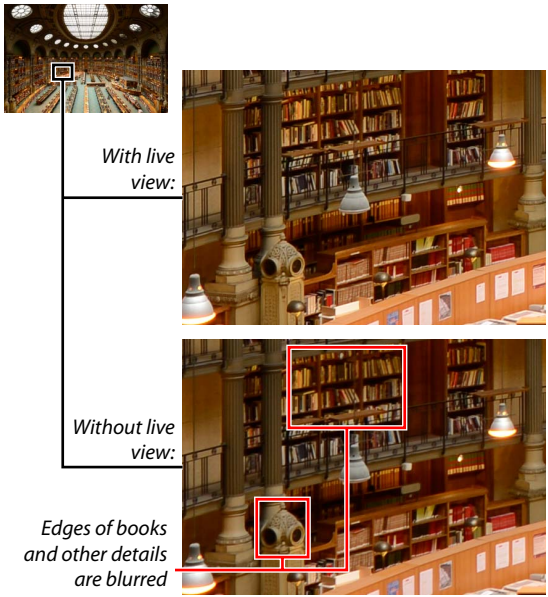
Camera Control Pro 2 supports live view; when used to zoom in on the view through the lens in the monitor, it shows more detail than can be displayed in the camera monitor.



Photographs are saved directly to the computer, where they can be inspected and retouched using optional Capture NX 2 software.

Same Shot, No Live View

Live view photography was not used in creating the second example below; consequently, the mirror was not raised until the photo was taken and the results are blurred.



Shooting Techniques

Portrait Subjects

—Focusing on a Selected Point—

Use this method for sharp focus on selected points when framing portraits in the viewfinder.

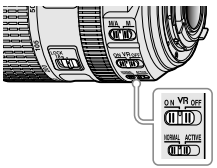
Technical Data

■ **Lens**: AF-S NIKKOR 70-200mm f/2.8G ED VR II ■ **Exposure mode**: Manual ■ **Shutter speed**: 1/200 s ■ **Aperture**: f/4.5 ■ **White balance**: Auto 2 ■ **ISO sensitivity**: 640 ■ **Picture control**: Portrait

Note: This photo was shot in 14-bit NEF (RAW) and processed using Capture NX 2.

Photo © Cliff Mautner

Vibration Reduction (VR)



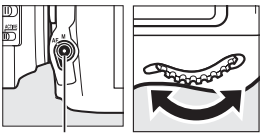
We recommend using VR lenses with the vibration reduction switch in the **ON** position. Vibration reduction takes effect when the shutter-release button is pressed halfway, reducing the effects of camera shake on the image in the viewfinder and making it easier to frame pictures and focus.

If the lens has a vibration mode switch, choose **NORMAL** for hand-held photography or when using a monopod. Vibration reduction should generally be turned off when the camera is on a tripod (exceptions can be made for the AF-S NIKKOR 200mm f/2G ED VR II and other lenses with a **TRIPOD** option).

Lesson 1: Choose the Right Focus Settings

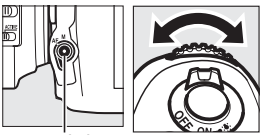
Portrait subjects are mobile and more easily photographed without a tripod, but generally remain in one spot long enough for single-point, single-servo autofocus. This photo shoot shows that a portrait photographer must be able to reliably focus on a selected point; hence the choice of single-point AF, which unlike auto-area and dynamic-area AF, ensures that the camera always focuses on a point selected by the photographer.

To choose an autofocus mode, press the AF-mode button and rotate the main command dial.



AF-mode button

To choose an AF-area mode, press the AF-mode button and rotate the sub-command dial.



AF-mode button

Note

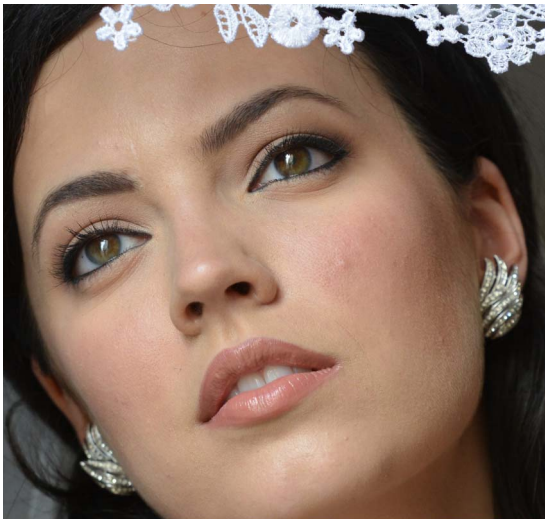
Even slight changes to composition may result in the camera focusing on something other than your intended target. Choose the focus point after composing the photograph.

Lesson 2: Choose the Right Exposure Settings

Aperture

Choose a wide aperture for a softer feel.

Set aperture to f/4 or so to capture facial contours.



Enough depth of field for the lips and the corners of the eyes, but focus gets softer from the earrings back.

Shutter Speed

Choose a speed a bit faster than the limit for camera blur.

The superior resolution of the D800/D800E makes small amounts of focus blur more obvious. Select a shutter speed slightly faster than you would choose when photographing the same subject with other cameras.

A fast shutter speed has captured details of the lace veil and brought out individual eyelashes.

Light Level and ISO Sensitivity
Adjust lighting and ISO sensitivity appropriately.

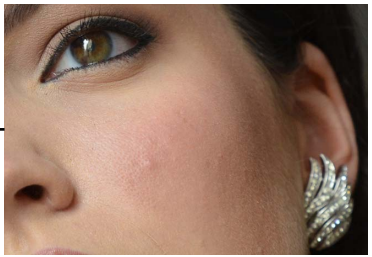
After choosing both shutter speed and aperture manually, you may need adjust lighting or ISO sensitivity.

These photos use soft, natural light instead of flash or studio lighting. Outdoor lighting can be fine-tuned by repositioning the model or photographer (above), indoor lighting by raising or lowering blinds (right).

Learning from Failure: Same Shot, Different Focus

With the D800/D800E, you will notice that photos seem to have less depth of field than pictures shot with other cameras under the same conditions, and that focus consequently requires more attention. As can be seen from the examples below, changing the focus point even slightly can blur important details.

Success



Failure

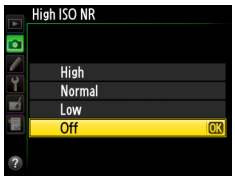
Earring is in focus, iris and eyelashes are blurred

1. High ISO Sensitivity

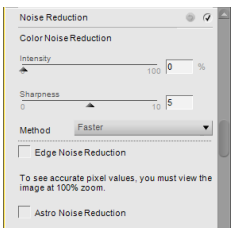
The following sections introduce useful techniques and camera options applicable to a variety of situations.

The D800/D800E keeps noise to a minimum for high-resolution results at even the highest ISO sensitivities.

The **High ISO NR** option in the shooting menu reduces the randomly-spaced bright pixels, fog, and lines characteristic of high-sensitivity noise, but may leave edges less sharp. You may find that settings of **Off** or **Low** offer a good balance between sharpness and noise even at high ISO sensitivities. If you shoot in NEF (RAW) format, you can change the setting later in Capture NX 2 (available separately).



Select the **Noise Reduction** tool in the Capture NX 2 "Develop" section (NEF/RAW images) or **Adjust** menu (JPEG and TIFF images) and adjust **Intensity** and **Sharpness** to achieve the desired result.



Normal

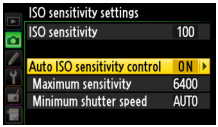
High

Normal

Low

Detail views of a single subject shot at different **High ISO NR** *settings. Higher values reduce the noise visible in the sky but also reduce edge sharpness in the main subject.*

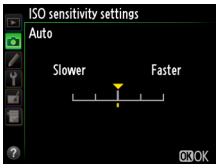
2. Auto ISO Sensitivity Control



Auto ISO sensitivity control automatically adjusts ISO sensitivity if optimal exposure can not be achieved at the value selected by the photographer. If **Auto** is selected for **Minimum shutter speed**, the camera will also adjust the threshold for auto ISO sensitivity control according to the focal length of the lens (CPU lenses only), a feature you will find particularly convenient when using zoom lenses (see sample photos at right).

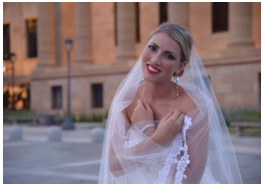
To enable auto ISO sensitivity control, select **On** for **ISO sensitivity settings** > **Auto ISO sensitivity control** in the shooting menu.

Maximum sensitivity	Choose the maximum value available for auto ISO sensitivity control (200–Hi 2). The minimum is ISO 100.
Minimum shutter speed	In exposure modes **P** and **A**, sensitivity will only be adjusted if shutter speed would otherwise be slower than this value (1/4,000–1 s or **Auto**). Highlight **Auto** and press ▶ to choose whether the camera gives priority to shutter speed (**Slower**) or ISO sensitivity (**Faster**) when **Auto** is selected.



Focal length: 24 mm
Shutter speed: 1/25 s
ISO sensitivity: 900

Focal length: 50 mm
Shutter speed: 1/50 s
ISO sensitivity: 2500

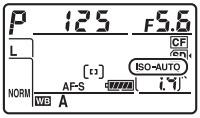


Focal length: 70 mm
Shutter speed: 1/80 s
ISO sensitivity: 4500

Focal length: 100 mm
Shutter speed: 1/100 s
ISO sensitivity: 6400

The ISO Button

Auto ISO sensitivity control can be turned on or off by pressing the **ISO** button and rotating the sub-command dial.



3. Improving Optical Performance

Stopping aperture down increases depth of field, making the foreground and background sharper. Stop aperture down too far, however, and diffraction will actually cause the image to lose definition. The effects of diffraction are partly influenced by the size of the pixels in the camera image sensor, but with the D800/D800E's high resolution the effects generally become noticeable around f/11. When you need more depth of field, don't just immediately stop the lens all the way down; instead, look for the aperture that offers the best balance between sharpness and depth of field. In the examples on this page, you can see the grid lose definition as aperture is stopped down past f/11.

f/8

f/11

f/16

f/22

4. Backlit Portraits

With its 91K (about 91,000) pixel RGB sensor, the D800/D800E offers improved face detection. Used with the viewfinder in modes other than M, it can balance exposure between portrait subjects and the background even when the subject is backlit.

D800/D800E: Using face detection, the camera meters the subject's face for optimal exposure

Earlier cameras: The subject is underexposed; exposure compensation required

Flash Photography

The D800/D800E also automatically optimizes flash output for portrait subjects.

D800/D800E: Flash output is adjusted according to the brightness of the subject's face, producing optimal results even with bright backgrounds

Earlier cameras: Flash output is adjusted according to the brightness of the background, and the portrait subjects are underexposed

1. High Resolution Images with the D800E

The D800E is a good choice when you need high-resolution photos of visually complex subjects.

Case 1: A Subject in Traditional Dress

Preserve fine patterns in your subject's hair and clothing.

Case 2: A Japanese Garden

Capture tiles and other fine details in high resolution.

Case 3: Leaves

Capture individual leaves in crisp detail.

Improving Resolution

Resolution can be improved by disabling high ISO noise reduction (page 11), particularly at low ISO sensitivities.

Movies

When recording movies, the D800E offers similar resolution to the D800. Choose the camera that best suits your style.

2. Adjusting Aperture for Visually Complex Subjects

With cameras like the D800E, which are suited to visually complex subjects, it is important to get as much sharpness from the lens as possible. Contrast at the periphery of the image can generally be increased by choosing an aperture two or three stops from the maximum, although results will vary from lens to lens. Below are some of the lenses you can use for enhanced sharpness:

- AF-S NIKKOR 14–24mm f/2.8G ED
- AF-S NIKKOR 24–70mm f/2.8G ED
- AF-S NIKKOR 70–200mm f/2.8G ED VR II
- AF-S NIKKOR 16–35mm f/4G ED VR
- AF-S NIKKOR 24–120mm f/4G ED VR
- AF-S NIKKOR 200–400mm f/4G ED VR II
- AF-S NIKKOR 24mm f/1.4G ED
- AF-S NIKKOR 35mm f/1.4G
- AF-S NIKKOR 85mm f/1.4G
- AF-S NIKKOR 200mm f/2G ED VR II
- AF-S NIKKOR 300mm f/2.8G ED VR II
- AF-S NIKKOR 400mm f/2.8G ED VR
- AF-S NIKKOR 500mm f/4G ED VR
- AF-S NIKKOR 600mm f/4G ED VR
- AF-S Micro NIKKOR 60mm f/2.8G ED
- AF-S VR Micro-Nikkor 105mm f/2.8G IF-ED

The D800E offers better resolution at apertures where diffraction (page 13) is not an issue. The effects of aperture may therefore be more noticeable than with the D800, and care may be required to avoid loss of definition due to diffraction.

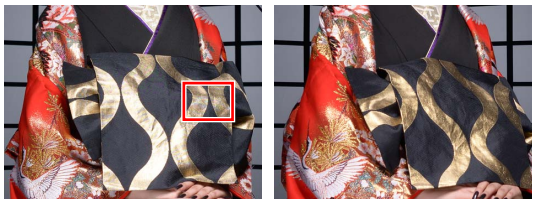
f/8

f/22

Note: These pictures were taken with the D800.

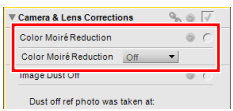
3. Color Artifacts and Moiré

Color artifacts and moiré are less frequent at the high resolutions supported by the D800/D800E, but when they do occur, they tend to be more noticeable in photos taken with D800E. Artifacts and moiré are not visible in the camera monitor but can be viewed by copying photos to a computer and viewing them at 100% zoom.



The photo on the left was taken with the D800E, that on the right with the D800. Color artifacts are visible in the sash.

Moiré can be reduced using Capture NX 2. For NEF (RAW) images, zoom in to 100% and select **Color Moiré Reduction**.



Off

High

Using Diffraction to Combat Color Artifacts and Moiré

Although stopping aperture down makes the effects of diffraction (page 13, 16) more visible, it may also help to reduce color artifacts and moiré. Adjust aperture according to whether your priority is sharpness or suppressing moiré.

f/5.6

f/8

f/11

f/16

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