



At the heart of the image™

D800™ | D800E™

Behind the Scenes



With its overwhelming pixel count of 36.3 megapixels, the D800/D800E realize high resolution, fine description of texture and smooth color gradation that are almost equivalent to those of studio-use cameras, including medium-format cameras. Realizing outstandingly high picture quality without sacrificing the mobility and durability that Nikon FX-format digital SLR cameras offer, the D800/D800E will surely develop the future of image expression for both stills and movies. We talked with the technicians in charge of the camera's development about the inside stories and attractive features of the product.



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D800 DIGITAL SLR CAMERA

This new category camera squeezes medium-format performance into an easy-to-handle package

Tell us what you had in mind during the development process.

Hara: "In terms of high-resolution cameras, Nikon's flagship is the D3X, a 24-megapixel model released in 2008 and since highly evaluated in the marketplace. That was our product to beat in developing the D800: our goal was image quality a step above – far superior to any existing D-SLR

camera – compressed into a compact camera body. We weren't competing with D-SLR cameras; when it came to image quality our rivals were, to put it bluntly, high-resolution medium-format digital cameras or digital camera backs. One of our main design concepts was a camera with image quality, tone reproduction, and sharpness that were a match for high-resolution medium-format cameras."

36.3 megapixels is a pretty incredible spec. When did you realize you could meet it?

Yoshimatsu: "It's not as though we were just designing to specs. Originally we were developing the camera using proven sensor technology, a sensor with an established reputation that allowed us to visualize the kind of image we wanted. We could picture what could be achieved if that level of image quality could be combined with higher resolutions, and that provided us with a clear motivation."

Murakami: "That's right. We didn't see 36.3 megapixels as some astronomical number; we could proceed with confidence because we expected to reach our goal gradually through a series of building blocks: for example, increasing the precision of the image sensor, improving the performance of the optical low-pass filter to match that of a 36.3 megapixel sensor, and developing the high-speed processing technology for the EXPEED 3 image-processing engine and the image-processing software to support high resolutions. In addition, given that Nikon boasts NIKKOR lenses with superior optical performance, we thought that they could be combined with the D800 to get the most from the lenses and camera."

Hara: "And our conceptual foundation was to provide high image quality in a compact body similar to the D700, one that had to handle well, given that it would be used by professionals and advanced amateurs: not a big body like a medium-format camera, but one capable of the mobility

typical of a D-SLR camera. Some may think that the D800 is the successor to the D700, but we were looking to bring the world a whole new category of camera."

So you weren't just aiming for a high pixel count?

Hara: "Striving for the highest image quality of any camera used by professionals or advanced amateurs was of course a powerful motivation, but we didn't want that to be the camera's be all and end all. From the start we wanted to build a camera notable not just for its pixel count, but for image quality founded on a marriage of high performance and ease-of-use."



POLISHED TO PERFECTION

Easy-to-use photographic tool boasts superior controls and performance

Who do you picture using the camera?
What sort of photos do you imagine them taking?

Hara: "A high pixel count and high image quality are givens, but we've crammed it full of tricks that make it easy to take photos, including the layout of the buttons and other controls and the addition of bracketing and live view buttons. We've also provided a Picture Control button for direct setting of your pictures' final finish. So I think it's suited to all types of users from professionals working in studios or in the field, through advanced amateurs with near pro-level mastery of technique, to amateurs who do photography as a hobby."

Murakami: "Whatever else, I want photographers to be methodical. In our design we pictured a user who pays conscientious attention to each shot, so we handpicked easy-to-use features for inclusion without worrying whether



they came from high- or low-end models. We included features that permit photo lovers of all kinds to express themselves: not only a viewfinder with approx. 100% frame coverage and an easy-to-view 3.2-inch LCD monitor, but also a virtual horizon that indicates both pitch and roll, HDR, and retouch options. I think this one model will be enough to satisfy a wide range of users. In order to improve portability, we've also reduced the weight by about 10% compared to D700. We reviewed the design over and over and have repeatedly gone back over the specs to ensure performance."

Yoshimatsu: "Some of my older relatives enjoy photography, and they tell me that when they're out taking landscapes they see a lot of people with medium-format cameras and think, 'What a lovely camera – I want one of those.' But medium-format cameras are too big, too heavy. And so the oft-heard refrain: 'If only there were a camera that offered high resolution at the right size and weight.' The D800 is the answer to their prayers. And – this is a pretty technical example, but anyway – photographers who use a flash in a studio setting often match white balance to their studio flash units before shooting, but because the actual background lighting in studios usually consists of incandescent bulbs with low color temperatures, the live view preview looks extremely red, which I've been told makes it hard to visualize the results. So this time we've made it so you can choose separate white balance settings for live view and the final photograph. You can match white balance to the background lighting for live view and to the flash for the photograph, which should make a lot of studio photographers happy, given that high resolution is a must in their line of work. We've included a lot of features like this which should make photographers happy."

You say the emphasis was also on basic camera performance, but could you tell us more precisely what points you concentrated on?

Hara: “We spent considerably more time on development than we have for other models, so there were a lot of improvements. We concentrated on polishing the kind of specs you’ll never see in a specifications table: for example, shortening release-time lag, a key factor in all photography, or improving the memory buffer to adapt it for high-volume data – 36.3 megapixels worth. At 36.3 megapixels, the D800 may have a lot of pixels, but that’s not much use if the buffer fills after a few shots in RAW format and it stops recording photographs. We’ve got all the features to the level where they’re convenient to use. It’s the same with autofocus: a high pixel count is meaningless if autofocus lacks precision. We used the improved sensor module, the same as that used by the D4, to make phase-detection AF more sensitive under low light, increasing AF precision. We also bumped the pixel count of the RGB metering sensor up to 91,000 pixels so that faces can be detected even when shooting with the optical viewfinder, making AE even more precise.”

Yoshimatsu: “It was the same with battery endurance. A high pixel count’s no use if it drains half the charge from the battery. Picture it not just as having a lot of pixels, but as upgrading all the associated features to take full advantage of that pixel count.”

Murakami: “We also achieved superb reliability with a magnesium-alloy body sealed to make it dust- and water-resistant. In addition, we

used almost the same shutter, aperture, and mirror mechanisms as the D4, able to withstand 200,000 cycles, and reduced the release time lag to about 0.042 seconds for an enjoyable user experience. In this respect we’ve incorporated a lot of features you might find on high-end models in a camera that I think people will find attractively priced.”

Was your reason for adopting a viewfinder with approx. 100% frame coverage to derive full benefit from the pixel count when framing photographs?

Hara: “The D800 is targeted at users who insist on a methodical approach to photography. We thought people like that would naturally require a viewfinder with around 100% coverage. Another fundamental consideration was the desire to have our customers make full use of all 36.3 million pixels.”

Murakami: “But it wouldn’t make any sense to have around 100% frame coverage if that meant making the camera big and heavy. So we improved manufacturing precision and prism performance to make the viewfinder as small and light as possible. This kind of attention to detail is included in the design.”

Yoshimatsu: “As I think people who’ve used film cameras for a while will understand, it’s easier to frame subjects in a big viewfinder. From this perspective, I think that an FX-format viewfinder with around 100% coverage is an extremely valuable asset.”

FILE SIZE

Image size adjusts to photographers’ needs

While many people have high expectations of the kind of image quality possible with 36.3 megapixels, I think some may worry that it’ll be tough taking full advantage of that potential. What have you done to make the camera accessible to a wide range of users?

Hara: “The D800 has an effective pixel count of 36.3 megapixels, but that doesn’t mean it can take pictures only at that size. There are three image sizes – large, medium, and small – and you can choose the one that suits your needs. In FX format, the large size enables shooting with about

36.3 megapixels, while about 20.3 megapixels are used for the medium size, or maybe if you’re taking snapshots you’ll find you can get by with the small size, which is about 9 megapixels. Both the medium and small settings use data from the full extent of the 36.3-megapixel sensor optimally processed to a smaller size using EXPEED 3. Therefore, we suggest selecting medium or small for normal use and choosing large only for, say, group portraits or very high resolution landscape shots. And just like our high-end D4 model, the D800 offers a choice of four image area settings: FX format, DX format, a nearly square 5:4 format that studio photographers will find easy to use, and a 1.2x format that is slightly narrower than the FX format. Each of these formats is available in the large, medium, and small sizes I mentioned earlier, giving the photographer considerable freedom in choosing a size.”

FULL HD

36.3 megapixel sensor delivers high-resolution movies

Can you tell us why you added a new live view selector for movies?

Yoshimatsu: “Nowadays movies shot with digital SLR cameras have come to carry considerable weight as a means of cinematographic expression, so we looked at our design from the point of view of how easily it

could be used to film movies, and the type of controls and operations that could be employed. To begin with, because still photography and movies approach shutter speed and aperture from very different perspectives, we thought it necessary to adopt appropriate control for each in achieving accurate preview. Consequently, we came up with the idea of using the live view selector to select between live view photography and movie live

view. This allowed us to clearly separate the settings for each type of live view and adapt them for improved ease-of-use. We have included separate functions for each type of live view: for example, when using live view photography in studio settings the user can employ separate white balance values for background and flash lighting, as I mentioned earlier, while in movie live view we have given the user access to microphone sensitivity and headphone volume settings.”

Are there any points you insisted on in terms of movie specs?

Yoshimatsu: “Although it’s not a movie spec per se, there was some debate internally concerning the specs for photographs taken during movie live view. Specifically, with the D800 you can take a photograph by pressing the shutter-release button during movie live view; the problem was how to handle the photographs in terms of exposure control and picture angle. We concluded that the photographs had to be perfect as photographs, even taken during movie live view, but also that there would be no point if the picture angle wasn’t the same as that used for movie live view. Photographs shot during movie live view would, in other words, have an aspect ratio of 16:9 but use the same exposure program as normal photos. This may have complicated the



control specifications, but as the person responsible I found it a very satisfactory decision in that it produced optimal results for both photographs and movies.”

Where did you get the idea for multi-area mode Full HD D-Movies?

Hara: “The reason movie makers and cinematographers started using D-SLR cameras instead of expensive movie equipment was that D-SLRs can be used to artistically blur backgrounds. One characteristic of the big image sensors used in D-SLR cameras is that they permit extremely shallow field depths for elegant effects, but the flip side of this is that even when you stop them all the way down, adjusting depth of field – or in other words, rack focus – can be a challenge. Consequently one is obliged to say that there are certain aspects of using a D-SLR, such as their unforgiving focusing, that call for advanced techniques. On the other hand, because the DX format produces movies with file sizes very similar to 35 mm movies, there are those in the movie industry who seem to find D-SLR cameras easier to use in terms of photographic sensibility and depth of field. We were motivated by thoughts of how convenient it would be if these elements could be combined into a single camera. Wouldn’t it be great if the ability to record high-resolution Full HD movies in a choice of FX-based or DX-based formats using EXPEED 3 to handle the large number of pixels lead to D-SLRs being more widely used in the movie industry?”

Murakami: “We included this feature because in our opinion it would have been wrong not take advantage of the FX and DX formats Nikon had already made available for still photography.”

Yoshimatsu: “If I may add something from the professional’s point of view: professional cinematographers also want to use uncompressed data from the camera image sensor. I think we may have met this demand by designing the specs for the D800 to make it easy to output the compressed data to a recorder via HDMI.”

D800E Exceptional alternative

The D800E offers resolution superior even to the high-definition D800. What can you tell us about this model?

Hara: “Although the D800 is more than adequate in terms of the resolution it is tuned to provide, we can’t avoid a slight drop in resolution as a side-effect of the optical low-pass filter used to prevent color artifacts and moiré. Nevertheless, there are those who will only use the camera for landscapes or who need photographs with even higher resolution, and it was for these users that we wanted to create a model that went the extra mile in terms of resolution: the D800E.”

Murakami: “The D800E exploits the image sensor’s potential to the full. The D800 is however also more than sufficiently capable of producing sharp images, so we suggest that customers enjoy photography using the model that meets their needs.”

