

# **Beyond the Manual:** Master your digital camera's features



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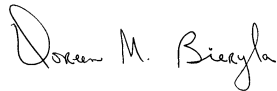
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## A Note from the Editor:

User's manuals can be technical, tiresome, and tedious. I've always found good basic information in them, but never the real juicy tips that can help you get the most from your digital camera. In *Exploring Digital Photography*, I try to use my personal and technical experience with digital cameras to make it easy for our subscribers to get the most from their own digital cameras. I've put together a collection of articles that takes you beyond your user's manual and offers a hands-on approach to learning how to use the advanced features of your camera, from selecting proper exposure settings to correctly framing your shot.

### Editor Bio:

Stephen Dow is the editor of *Exploring Digital Photography* and is an avid photographer, concentrating mostly on digital photography and digital image editing. His enthusiasm for this subject comes from the constant innovation and integration of photography into everyday life.

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# Take better pictures by selecting the correct ISO setting

by Stephen Dow

When digital cameras first hit the consumer market in the 1990s, manufacturers borrowed a bunch of terms from traditional film photography to help potential buyers relate to the new technology. Unfortunately, some of these terms were far from accurate when comparing film exposure to digital capture. One of the greatest offenders is the use of the term ISO to describe a digital camera's sensitivity to light. While ISO value for film is a straightforward concept, understanding how ISO affects your digital camera can be confusing. Selecting the appropriate ISO setting when shooting with your digital camera is crucial for reducing pixel noise and maintaining image quality.

## Digital cameras are so sensitive

In this article, we're going to explain how the ISO setting on your digital camera can be used to produce better images and avoid poor ones. First, we'll go into more detail on what ISO means to your digital camera. Next, we'll explain the technical side of how digital cameras use the ISO setting to control the sensitivity to light. Then, we'll explain the concept of noise and tell you how noise develops during image capture, especially at higher ISO settings. Finally, we'll give you some tips for using ISO settings when shooting in everyday situations, as well as how to select a digital camera that will give you the most ISO flexibility.

## Understanding ISO

The acronym *ISO* stands for *International Organization for Standardization*, a non-governmental collection of worldwide standards agencies that attempts to develop international trade by developing standards. What does this have to do with photography? Well, the ISO has a set of standards for many aspects of photography, the most prevalent of which is the system of using ISO standards to rate film speed. Those of us who still remember film (just kidding) know that you can buy film in a variety of film speeds, such as ISO 100, ISO 200, etc. The lower the number, the less sensitive the film is to light. Therefore, a film rated ISO 800 is much more sensitive to light than an ISO 100 film.

Film manufacturers achieve this light sensitivity by increasing the size of the silver halide grain on the film. The larger the grain, the quicker its reaction time to light. This makes higher ISO films better at capturing action shots, even in low light situations, because the shutter speed can be fast while still achieving a proper exposure. However, this larger grain size comes at a cost, due to the fact that the grains tend to be much more visible to the naked eye. This "graininess" can be avoided by using films with smaller grains, such as ISO 100 or ISO 200, but since these grains need more time to be exposed to light, the amount of time your shutter is open must increase, opening the door for possible blurry images. Higher ISO ratings require less light, so they allow the shutter to be faster, reducing blurring from camera movement.

## The digital side of ISO

Digital cameras follow the same basic idea, but in a completely different way. Since digital cameras don't use film, all ISO adjustments are made on the image sensor. If the camera has been set for a higher ISO setting, the pixels receiving the electronic signal that makes up the image are amplified, increasing the sensitivity to light. The technical term for this is *gain*, and is defined as the amount of electronic signal amplification taking place on the image sensor. Gain is a much better term for describing the light sensitivity of digital camera sensors, but camera manufacturers continue to equate gain capabilities to ISO settings—presumably to help consumers and professionals alike understand how to make adjustments. So keep in mind when using ISO ratings with digital cameras, the number is for reference only.

The range of ISO adjustments depends on your digital camera. Some professional digital cameras offer ISO sensitivity up to a dizzying ISO 3200 and down to sloth-like ISO 80. The mid-level digital cameras, sometimes called "pro-sumers," usually give a narrower range of choices such as ISO 100, ISO 200 and ISO 400. These correspond to the more consumer-aimed film speeds available at any supermarket. But here's the good part—instead of having to pop in a new roll of film when you want to change film speed or even lugging around multiple cameras with different films loaded,