

CHAPTER 3: THE SHOOTING MODES

So far, I have discussed setting up the camera for quick shots, relying on features such as Auto mode for taking pictures with settings controlled mostly by the camera's automation. As with other sophisticated digital cameras, though, the Coolpix P1000 has a wide range of settings available, particularly for shooting still images. One of the goals of this book is to provide clear guidance about this broad range of features. To get started, I will turn my attention to the P1000's several shooting modes, which provide you with many options for your photography.

To record still images, you need to select one of the available shooting modes: Auto, Program, Shutter Priority, Aperture Priority, Manual exposure, User Settings, Creative, Bird-watching, Moon, or Scene. (There is another mode, Movie Manual, for movies only; I will discuss it in Chapter 8.) So far, I have discussed the use of the Auto and Program modes. Now I will describe the others, after some review of the first two.

Auto Mode

The Auto shooting mode is a good choice if you need to have the camera ready for a quick shot, such as in an environment with fast-paced events when you won't have much time to fuss with settings.



Figure 3-1. Auto Mode Example Image

For example, in Figure 3-1, I used this mode to grab a shot of a couple of people on a pedestrian bridge over the James River. In this shooting mode, the camera does not try to figure out what kind of scene it is photographing, though it will detect human faces and focus on them if possible.

To set this mode, turn the mode dial, on top of the camera to the right of the viewfinder, to the green camera icon, as shown in Figure 3-2.



Figure 3-2. Mode Dial at Auto

With this mode, the camera makes several decisions for you and limits your options in some ways. For example, you can't set ISO or white balance to any value other than Auto, and you can't choose the metering method, use exposure bracketing, or use the Picture Control settings to alter the appearance of your images. In addition, you cannot select continuous shooting.

There are still a few settings you can control, however. For instance, you can choose any options for Image Size and Image Quality, including Raw, you can use exposure compensation, and you can select any of five available flash modes (if you have raised the built-in flash unit or attached a compatible external flash to the hot shoe on top of the camera). You also can select macro (closeup) focus, infinity focus, or manual focus), and you can use the self-timer and smile timer options. My recommendation is to set Image Size to the maximum of 4608 x 3456 pixels and Image Quality to Fine, and use the other available settings (such as exposure compensation and flash mode) as needed.

Program Mode

Choose this option by turning the mode dial to the P position, as shown in Figure 3-3.



Figure 3-3. Mode Dial at Program

In this mode, the camera evaluates the light and selects both shutter speed and aperture to produce an exposure that the camera's programming considers to be normal. The Program shooting mode lets you control many settings, but not shutter speed and aperture. However, even though you can't directly set those two values, you can override the camera's automatic exposure somewhat with exposure compensation, the flexible program feature, and exposure bracketing.

I discussed exposure compensation in Chapter 2, and I'll explain exposure bracketing in Chapter 4. Flexible program is the name Nikon uses for what is called "program shift" for some other cameras. This option lets you adjust the values the camera selects in Program mode for shutter speed and aperture. For example, if the camera selects, say, 1/60 second at f/4.5, the flexible program feature will find equivalent combinations that result in the same exposure, such as 1/50 second at f/5.0, 1/40 second at f/5.6, or 1/30 second at f/6.3. To use this feature, when the camera is in Program mode, aim at your subject and turn the command dial (the wheel at the top right corner of the camera's back) to find an equivalent pair of shutter speed and aperture values.

When the camera is using one of these equivalent match-ups of settings rather than the originally chosen settings, it displays an asterisk at the upper right of the letter P that signifies Program mode in the upper left of the display, as seen in Figure 3-4.

To cancel flexible program, turn the command dial back to reset the original shutter speed and aperture, select a different shooting mode, or turn off the camera.

The flexible program feature is useful in several situations. For example, you may want to see what the "normal" settings are and then see if you can use a wider

aperture to achieve a blurred background, or a faster shutter speed to stop the action or prevent blur from camera motion. And, when you're experimenting with the camera to see what it is capable of, it can be helpful to try various combinations of aperture and shutter speed to see which combinations give you the best results in different situations. With a digital camera, there's no added cost for trying these different approaches, and flexible program is a useful way to experiment.



Figure 3-4. Asterisk on Display for Flexible Program

Program mode greatly expands the choices available through the Shooting menu. You will be able to make choices involving white balance, ISO sensitivity, metering method, autofocus mode, continuous shooting, and others. I discuss those options in Chapter 4.

Shutter Priority Mode

Select Shutter Priority mode by setting the mode dial to the S indicator, as shown in Figure 3-5.



Figure 3-5. Mode Dial at Shutter Priority

In this shooting mode, you set the shutter speed and the camera will set the corresponding aperture in order to achieve a proper exposure. In Shutter Priority mode, you can set the shutter for intervals ranging from eight full seconds to 1/4000 of a second, although the camera has built-in limitations on the use of the fastest and slowest shutter speeds. For example, if ISO is set to

Auto or 1600, the slowest shutter speed available is one second. If ISO is set to 800, the slowest shutter speed available is two seconds. If the aperture is set to f/2.8, the fastest shutter speed available is 1/2000 second at the wide-angle setting. In addition, the zoom range of the lens has a limiting effect on the availability of the fastest shutter speeds. For example, the fastest shutter speed available when the lens is zoomed fully in to the telephoto position is 1/2500 second. The chart in Table 3-1 sets forth some of these limitations.

Table 3-1. Limits on Shutter Speed Settings - S Mode	
Slowest Shutter Speed	ISO Value
1 second	Auto
8 seconds	100
4 seconds	200 or 400
2 seconds	800
1 second	1600
0.5 second	3200 or 6400
Fastest Shutter Speed	Aperture Value
1/4000 second	f/8.0*
1/2500 second	f/8.0**

* At wide-angle zoom setting

** At telephoto zoom setting

If you are photographing fast action like a baseball swing or a bird in flight and you want to stop the action with a minimum of blur, you will need a fast shutter speed, such as 1/1000 of a second. In other cases, for creative purposes, you may want to use a slow shutter speed of one second or more to achieve a certain effect, such as leaving the shutter open to capture a trail of automobiles' taillights at night.

Figures 3-6 and 3-7 illustrate the effects of different shutter speeds for two shots of the same subject, a group of colorful beads being poured into a bowl. For Figure 3-6, I set the shutter speed to 1/2000 of a second. In that image, you can see the individual beads clearly, as the fast shutter speed froze them in mid-air. In Figure 3-7, where I set the shutter speed to 1/80 second, the beads look more like strings of color, because the shutter speed was not fast enough to freeze them in place without blurring.

To set the shutter speed on the Coolpix P1000, turn the command dial—the ridged dial at the top right of the camera's back. (As discussed in Chapter 7, you can

switch this function to the multi selector dial with the Toggle Av/Tv Selection option on the Setup menu.) The LCD (or viewfinder, if selected) will display the selected shutter speed inside a yellow rectangle at the bottom center of the screen, as shown in Figure 3-8.



Figure 3-6. Shutter Speed Set at 1/2000 Second



Figure 3-7. Shutter Speed Set at 1/80 Second



Figure 3-8. Shooting Screen in Shutter Priority Mode

As you point the camera at scenes with varying lighting, the camera will select and display the appropriate

aperture (such as f/8.0 in this example) to achieve a proper exposure.

Once you’ve pressed the shutter button halfway, watch the shutter speed number on the screen. If that number blinks, that means proper exposure at that shutter speed is not possible at any available aperture, according to the camera’s calculations. For example, with a shutter speed of two seconds in a well-lighted room, the shutter speed number may begin to blink, indicating that proper exposure is not possible.

The camera will still let you take the picture, despite having blinked the number to warn you. The camera is saying, in effect, “Look, maybe you shouldn’t do this, but that’s your business. If you want an overly bright picture for some reason, help yourself.” (This situation is less likely to take place when the camera is in Aperture Priority mode, because in that mode, there is a wide range of shutter speeds for the camera to choose from—a range from eight seconds to 1/4000 second in some situations, depending on factors such as ISO, aperture, and continuous-shooting settings.)

When you are setting shutter speed, the fractions of a second are easy to read because they are displayed as standard fractions, such as 1/5 or 1/200. Some of the longer times are a bit harder to read; the camera displays them using quotation marks. So, for example, two seconds is displayed as 2”, and 1.3 second is displayed as 1.3.”

One feature of the shutter speed display on the Coolpix P1000 is a bit confusing, at least to me. Some of the camera’s shutter speeds are displayed as fractions whose denominators are decimal numbers, such as 1/1.3. I would have trouble understanding that number without doing some arithmetic, so Table 3-2 provides a brief chart that converts these few values into terms that may be easier to comprehend:

Table 3-2. Shutter Speed Equivalents	
1/2.5	= 0.4 = 2/5 second
1/1.6	= 0.625 = 5/8 second
1/1.3	= 0.77 = 10/13 second (0.8 sec)

Finally, there is one other limitation on available shutter speeds. When you have selected one of the continuous-shooting options from the Continuous

item on the Shooting menu, that setting imposes a restriction on what shutter speeds can be set. For example, if you have selected Continuous H, which causes the camera to shoot in a rapid burst, the slowest shutter speed available is 1/30 second.

Aperture Priority Mode

Aperture Priority mode, represented by the A setting on the mode dial as shown in Figure 3-9, is the inverse of Shutter Priority.



Figure 3-9. Mode Dial at Aperture Priority

In this mode, you select an aperture value and the camera selects a corresponding shutter speed, from 1/4000 second to eight seconds, to achieve a proper exposure. (The available shutter speeds vary according to the settings for ISO, aperture, and zoom position of the lens, as discussed above for Shutter Priority mode.)

The camera’s aperture is a measure of the current width of its opening that lets in light to create the image. This width is stated numerically in f-stops. For the Coolpix P1000, the range of f-stops is from f/2.8 (wide open) to f/8.0 (most narrow), though this range is limited in some circumstances, as discussed below. The amount of light that is let into the camera to create an image is controlled by the combination of aperture (how wide open the lens is) and shutter speed (how long the shutter remains open to let in the light).

For some purposes, you may want to control the width of the aperture, but let the camera choose the corresponding shutter speed, so you can control the depth of field. Depth of field is a measure of how well a camera is able to keep multiple objects or subjects in focus at different distances. For example, say you have three subjects lined up so you can see all of them, but they are standing at different distances—5, 7, and 9 feet (1.5, 2.1, and 2.7 meters) from the camera. If the camera’s depth of field is shallow at a particular focal length, such as five feet (1.5 meters), then, if you focus on the subject at that distance, the other two will be

out of focus and blurry. But if the camera's depth of field when focused at 5 feet is broad, then it may be possible for all three subjects to be in sharp focus in your photograph, even if the focus is set for the subject at 5 feet.

The wider the camera's aperture is, the more shallow its depth of field is at a given focal length. So in the example discussed above, if you have the camera's aperture set to its widest opening, $f/2.8$, the depth of field will be relatively shallow, and it will be possible to keep fewer items in focus at varying distances from the camera. If the aperture is set to the narrowest, $f/8.0$, the depth of field will be greater, and it will be possible to have more items in focus at varying distances.

It is hard to illustrate this effect with a camera like the Coolpix P1000, for a couple of reasons. First, the image sensor, where the light is gathered to form the image, is relatively small, which results in the depth of field being relatively deep at all apertures. Second, the largest aperture available is $f/2.8$, whereas some compact cameras have lenses that open as wide as $f/2.0$, or even $f/1.4$. With such cameras it is easier to achieve a blurred background, because the depth of field can be quite shallow at such a wide aperture.

With the P1000, the widest aperture you can shoot with is $f/2.8$, and that aperture is available only when the lens is zoomed back to its extreme wide-angle setting, where depth of field is greater. If you zoom the lens in to a telephoto setting, the maximum aperture decreases steadily. At the maximum zoom range, the widest aperture available is $f/8.0$, the same as the narrowest aperture.

Despite the difficulty of demonstrating the effects of using different apertures, the images in Figures 3-10 and 3-11 illustrate these effects to some extent with two photos taken at the same time and in the same location, using a model lighthouse in the foreground and a mannequin in the background.

For both images, the lens was zoomed out to its full wide-angle setting of 24mm. The first image was taken at an aperture setting of $f/2.8$, the widest possible setting; the second one was taken at $f/8.0$, the narrowest aperture setting. In both cases, I focused on the model lighthouse in the foreground.



Figure 3-10. Aperture Set to $f/2.8$



Figure 3-11. Aperture Set to $f/8.0$

As you should be able to see, in Figure 3-10, with the wider aperture, the background is noticeably blurred because the depth of field is relatively shallow at that setting. In Figure 3-11, on the other hand, the background is in sharper focus because the depth of field is greater at the narrower aperture setting.

If you want to have the sharpest picture possible, especially when you have subjects at varying distances from the lens and you want them all to be in focus, then you may want to control the aperture and make sure it is set to the highest number (narrowest opening) possible. It also helps to have the lens zoomed back toward its wide-angle setting and to be somewhat distant from the subject.

On the other hand, there are times when photographers prize a shallow depth of field. This situation arises often in the case of outdoor portraits. For example, you may want to take a photo of a person standing outdoors

with a background of trees and bushes, and possibly some other, more distracting objects, such as a swing set or a tool shed. If you can achieve a narrow depth of field, you can have the person's face in sharp focus, but leave the background quite blurry and indistinct. This effect is sometimes called "bokeh," a Japanese term describing an aesthetically pleasing blurriness of the background.

To achieve the greatest blurring of the background, you should try to use a wide aperture, zoom the lens in as much as possible, and get as close to the subject as possible. It also is helpful to have as much distance as possible between the main subject and the background.



Figure 3-12. Blurred Background from Use of Long Zoom Setting

Figure 3-12 is an example using this effect. The blurriness of the background can reduce the distraction factor from unwanted objects and highlight the sharply focused image of your subject.

To set the aperture, once you have moved the mode dial to the A setting, aim the camera at your subject and turn the multi selector dial to change the aperture. The number of the f-stop will appear inside a yellow rectangle at the bottom center of the screen. The shutter speed chosen by the camera will show up also, to the left of the aperture, as seen in Figure 3-13.

When you press the shutter button halfway, the camera will lock in the shutter speed it has selected.

As I noted above, not all apertures are available at all times. In particular, the widest aperture, f/2.8, is available only when the lens is zoomed out to its wide-angle setting (zoom lever moved toward the W). At

the highest zoom levels, the widest aperture available is f/8.0. To see an illustration of this point, here is a quick test. Zoom the lens out by moving the zoom lever all the way to the left, toward the W. Then select Aperture Priority mode and choose an aperture of f/2.8 by turning the multi selector dial all the way to the left.



Figure 3-13. Shooting Screen in Aperture Priority Mode

Now zoom the lens in by moving the zoom lever to the right, toward the T. When you release the lever, the aperture displayed at the bottom of the screen will change to f/8.0. If you try to reset the aperture to f/2.8 after the zoom action is done, you will see that the lowest aperture number you can set is f/8.0, because that is the widest aperture available on the P1000 at the telephoto zoom level. (The aperture will change back to f/2.8 if you move the zoom back to the wide-angle setting.)

Manual Exposure Mode

The Coolpix P1000 has a fully manual mode for control of aperture and shutter speed, which helps you enjoy creative control over exposure decisions.

This mode is useful when you want to use settings that result in an unusual effect, such as an abnormally dark image. For example, I used Manual exposure mode for Figure 3-14 to produce a darkened image of the conservatory at the local botanical garden. I experimented with various Manual mode settings to find the exposure that resulted in this image, which was shot at f/8.0 and 1/2000 second, with ISO set to 100.

I also often use Manual mode to take a series of photos at different exposures to create HDR (high dynamic range) images using special software. I will discuss that process later in this chapter, in the discussion of the Backlighting/HDR setting of Scene mode.



Figure 3-14. Manual Exposure Example Image

To use Manual exposure mode, set the mode dial to the M indicator, as shown in Figure 3-15. You now have to control both shutter speed and aperture by setting them yourself.



Figure 3-15. Mode Dial at Manual Exposure

To set these values, first look at the camera's display and find where the shutter speed (such as 1/160) and aperture (such as F8.0) are displayed at the bottom of the screen, as shown in Figure 3-16. The shutter speed is on the left, inside a yellow rectangle. Above that value is a curved arrow beneath an icon that represents the command dial.

These icons mean that the shutter speed value is controlled by the command dial (the wheel within reach of your thumb at the upper right of the camera's back). To the right of that value is the number for the aperture, or f-stop, inside another rectangle. Above that number is an icon showing a dial that is oriented vertically; that icon represents the multi selector dial, on the back of the camera surrounding the OK button.

To adjust the settings, turn the command dial until you have selected the shutter speed you want, and turn the multi selector dial to set your desired aperture. As you adjust these values, watch the vertical scale that appears at the right of the screen, as shown in Figure 3-16.

You will see the tick marks turn yellow, either above or below the scale's center point, as the values change.

When the exposure is set as the camera judges to be normal, there will be a lone tick mark in the center of the scale, as shown in Figure 3-16.



Figure 3-16. Shooting Screen in Manual Exposure Mode



Figure 3-17. Tick Marks Indicating Overexposure

If the marks above the center of the scale turn yellow, as in Figure 3-17, the exposure is too bright; if they turn yellow below the center, it is too dark. If the setting becomes more extreme than the scale can indicate, a yellow triangle appears at the top or bottom of the scale, indicating that the scale's limit has been exceeded, as shown in Figure 3-18.

If you are shooting in dim light, such as indoors or in a shadowed area, you may find it impossible to center the yellow tick mark on the exposure scale by adjusting the shutter speed and aperture unless you use a very slow shutter speed, such as one second or longer. If you are handholding the camera, you won't be able to hold it steady for more than about 1/30 second, so it will be difficult to get a clear exposure.



Figure 3-18. Tick Marks and Triangle Indicating Underexposure

In that situation, you can adjust exposure by changing the ISO sensitivity setting. I will discuss ISO in more detail in Chapter 4, because it is an option found on the Shooting menu. Briefly, ISO is a setting that controls the sensitivity of the camera's digital sensor. The higher the ISO value, the more sensitive the sensor is to light. With higher ISO values, you can achieve a normal exposure with narrower apertures and faster shutter speeds.

With other shooting modes, the P1000 can use the Auto ISO setting, which means the camera will set the ISO value as needed to reach a good exposure level. With Manual exposure mode, though, the camera will not set the ISO automatically. If you select Auto ISO from the ISO menu screen, the camera will set ISO to 100, the lowest value possible.

If you find you need a higher ISO value in Manual exposure mode, you need to go to the ISO Sensitivity item on the Shooting menu and select a value such as ISO 400, 800, or even higher, as shown in Figure 3-19.

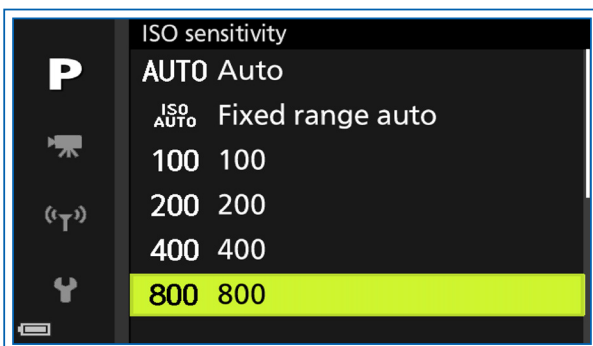


Figure 3-19. ISO Sensitivity Menu

Of course, you don't have to adjust ISO or other values in an effort to center the indicator on the exposure scale; that scale is there only to give you an idea of how

the camera would meter the scene. You may want parts of the scene (or the whole image) to be darker or lighter than the metering system would indicate to be "correct." In Manual mode, the settings for aperture and shutter speed are independent of each other. When you change one, the other one stays unchanged until you change it manually. The camera is leaving the creative decision about exposure entirely up to you, even if the resulting photograph would be washed out by excessive exposure or underexposed to the point of near-blackness.

As with Aperture Priority mode, the range of available apertures in Manual exposure mode varies as the lens is zoomed to various focal lengths. Also, the range of shutter speeds has certain limits, although the camera's slowest shutter speeds of 15, 20, and 30 seconds, as well as the Time setting for time exposures, are available only in this mode. The slowest shutter speed available at ISO 800 is 2 seconds; at ISO 3200, the slowest is 1/2 second.

If ISO is set to 100, shutter speeds of 15, 20, and 30 seconds are available. In addition, as discussed above, if ISO is set to Auto in Manual exposure mode, the camera actually uses an ISO setting of 100, so these slow shutter speeds are available when ISO is set to Auto, in this shooting mode only.

In Manual mode, the shutter speed settings of Time and Bulb are also available, when ISO is set to 100. With the Time setting, the shutter opens when you fully press and release the shutter button, and it closes when you fully press and release the shutter button a second time. With the Bulb setting, the shutter opens when you press the shutter button down, and it stays open until you release. The maximum exposure with either of these settings is 60 seconds. Neither setting is available when continuous shooting is activated.

The Auto Flash and Slow Sync flash modes are not available with Manual exposure mode.

Scene Modes

The Coolpix P1000 offers several of what I will call scene modes. The terminology can be a bit confusing, because the camera's menus and documentation use the word "scene" in several similar and overlapping contexts. First, there are two modes that occupy slots marked by icons on the mode dial: Bird-watching and Moon. Next,