

advantage of letting you choose RAW quality for your still images. To do that, activate the Function menu by pressing the Func./Set button in the center of the control dial. Using the up and down direction buttons, navigate down to the next-to-bottom item on the list of icons on the left side of the screen. Then use the right button or the control dial to select RAW from the list on the bottom of the screen, as opposed to JPEG.



(JPEG stands for Joint Photographic Experts Group, an industry group that sets standards for photographic file formats.) Or, if you prefer, select RAW+JPEG. With that setting, the camera actually records two images as noted, so you will have both the RAW and the non-Raw image available. This choice can be useful if you won't have immediate access to software for editing the RAW images, and want to be able to use the lesser-quality images quickly.

Aperture Priority Mode



Aperture Priority mode is the inverse of Shutter Priority. You set this shooting mode by turning the mode dial to the Av setting, for Aperture value. Before discussing the nuts and bolts of the settings for this mode, let's talk about what aperture is and why you would want to control it. The camera's aperture is a measure of how wide its opening is to let in light. The

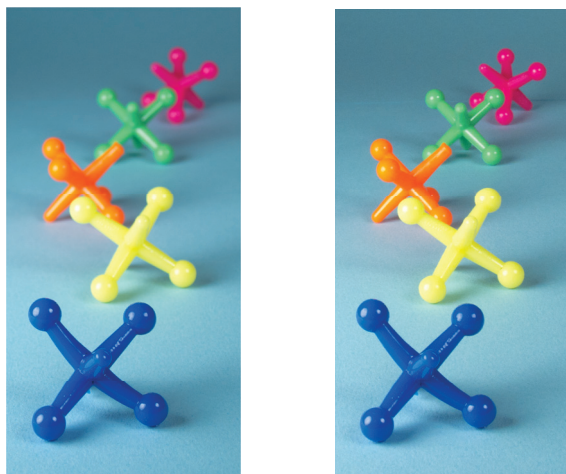
aperture's width is measured numerically in f-stops. For the PowerShot S95, the range of f-stops is from f/2.0 (wide open) to f/8.0 (most narrow). The amount of light that is let into the camera to create an image on the camera's sensor is controlled by the combination of aperture (how wide open the lens is) and shutter speed (how long the shutter remains open to let in the light).

For some purposes, you may want to have control over how wide open the aperture is, but still let the camera choose the corresponding shutter speed. Here are a couple of examples involving 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 (focal lengths). For example, say you have three of your friends lined up so you can see all of them, but they are standing at different distances - five, seven, and nine feet (1.5, 2.1, and 2.7 meters) from the camera. If the camera's depth of field is quite narrow at a particular focal length, such as five feet (1.5 meters), then, in this case, if you focus on the friend at that distance, the other two will be out of focus and blurry. But if the camera's depth of field when focused at five feet is broad, then it may be possible for all three friends to be in sharp focus in your photograph, even if the focus is set for the friend at five feet.

What does all of that have to do with aperture? One of the rules of photographic optics is that the wider the camera's aperture is, the narrower its depth of field is at a given focal length. So in our example above, if you have the camera's aperture set to its widest opening, f/2.0, the depth of field will be narrow, 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.

This effect is not as pronounced with the S95 as with larger cameras, because its small sensor and wide-angle lens give it a

relatively wide depth of field. However, you can get the general idea from the two images below, each one showing a line of jacks at increasing distances from the camera. The image on the left was taken with the PowerShot S95 at $f/3.2$, resulting in slight blurring of the farther jacks. The example on the right was taken at $f/8.0$, resulting in sharper images of all of the jacks.



In practical terms, if you want the sharpest picture possible, especially with subjects at varying distances from the lens, and you want them to be in focus to the greatest extent possible, then you may want to control the aperture, and make sure it is set to the highest number (narrowest opening) possible.

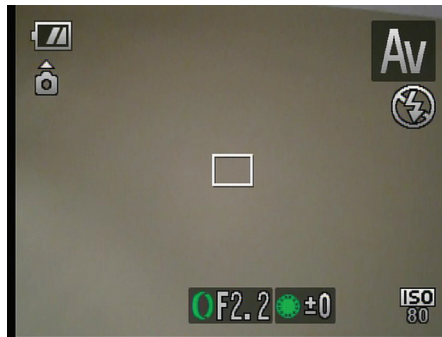
On the other hand, there are occasions when photographers prize a narrow depth of field. This situation arises often in the case of outdoor portraits. For example, you may want to take a photo of a subject outdoors with a background of trees and bushes, and possibly some other, more distracting objects, such as a swing set or a tool shed. If you can achieve a narrow depth of field, you can keep your subject 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. You have undoubtedly seen images using this effect. In this situation,

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the blurriness of the background can be a great asset, reducing the distraction factor of unwanted objects and highlighting the sharply focused portrait of your subject. In the example below the actual subject is the small tree, and the people in the background are purposely blurred.



So with our awareness of the virtues of selecting an aperture, on to the technical steps involved. Once you have moved the mode dial to the Av setting, the next step is quite simple. Aim the camera at your subject, and use the control ring (the large, ridged ring around the lens) to change the aperture.



The number of the f-stop (in this case, f/2.2) will display in the bottom center of the screen next to the green icon showing that you can use the control ring to change the aperture. The shutter speed will show up also, on the left of the bottom of the screen, but not until you have pressed the shutter button half-way down, to let the camera evaluate the lighting conditions.

One more note on Aperture Priority mode that might not be immediately obvious and could easily lead to confusion: Not all apertures are available at all times. In particular, the widest-open aperture, $f/2.0$, is available only when the lens is zoomed out to its wide-angle setting (moved toward the icon of a group of trees). At higher zoom levels, the widest aperture available is $f/4.9$. 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 group-of-trees icon. Then select Aperture Priority mode and select an aperture of 2.0 by turning the control ring all the way in the direction for lower numbers. Now zoom the lens in by moving the zoom lever to the right, toward the single-tree icon. After the zoom action is finished, you will see that the aperture has been changed to $f/4.9$, because that is the limit for the aperture at the telephoto zoom level. (The aperture will change back to $f/2.0$ if you move the zoom back to the wide-angle setting.)

Shutter Priority Mode

In Shutter Priority mode, you choose whatever shutter speed you want, and the camera will set the corresponding aperture



in order to achieve a proper exposure of the image. In this mode, you can set the shutter to be open for a variety of intervals ranging from 15 full seconds to 1/1600 of a second. If you are photographing fast action, such as a baseball swing or a hurdles event at a track

meet and you want to stop the action with a minimum of blur, you will want to select a fast shutter speed, such as 1/1000 of a second. In other cases, for creative purposes, you may want to select a slow shutter speed to achieve a certain effect, such as leaving the shutter open to capture a trail of automobiles' taillights at night. Or, possibly, you might want to photograph a model train whizzing by on its track, and use a slow shutter