

What Does This Button Do?

When we make an image, we are usually hoping for two things – a good exposure and a sharp image (unless of course we are attempting to purposefully use motion for creative effects).

A correct exposure means that the image is not too dark or too bright. The highlights are not blown out and the shadow areas have some detail. A correct exposure is the result of balancing two factors – aperture and shutter speed. If we change one, we must change the other to attain a correct exposure.

Aperture (the hole in the lens) settings range from f2.0 up to f32. Specifically, they are 2.0, 2.8, 5.6, 8, 11, 16, 22 and 32. The smaller the f stop, the larger the opening and the more light that enters the camera. Most digital cameras do allow for finer tuning such as 7.1 but the list above represents what are referred to as full stops. Each f stop allows exactly twice or half of the amount of light that the setting above or below it allows. For example, if we pick f8, then f5.6 (larger opening) allows exactly twice as much light into the camera and f11 (smaller opening) allows exactly half as much light into the camera.

Similarly, each full change in our shutter speed, allows twice or half of the amount of light into the camera. For example, 1/60 of a second allows half of the amount of light to enter the camera than enters at 1/30 of a second while 1/15 of a second allows twice as much light to enter the camera.

The chart below shows that if we start with one “correct exposure”, we can then attain several correct exposures by changing the aperture setting and the shutter speed at the same time.

f2.0 - 1/1000 f11 - 1/60

f2.8 - 1/500 f16 - 1/30

f4.0 - 1/250 f22 - 1/15

f5.6 - 1/125 f32 - 1/8

A third factor also affects the correct exposure... ISO. ISO indicates the sensitivity of your sensor to light. Lower ISO settings, mean that your sensor is not very sensitive and therefore you need a fairly bright day to shoot especially if you are shooting hand held. Higher ISO settings mean that you can shoot in dimmer conditions such as on overcast days or inside a large cathedral. The trade off is that at higher ISO settings, we introduce digital noise into our images. Again each ISO setting doubles or halves your shutter speed. Settings range 100, 200, 400, 800, 1600 ... 12800.

So why bother to change the settings? When we are making an image, we need to be concerned with two things – motion as in camera jiggle and depth of field.

If we want to stop action, we want the highest shutter speed possible. If you want to see detail in the hummingbird's wings then you need a shutter speed in the 1/1000 of a second range or if you want the football frozen in the air, then you are going to need at least 1/250 of a second. To achieve these speeds, we may need to choose a bright day or use two, three or four flashes but there are buttons on your camera that we can use to help get us there without bright conditions or flash.

Button #1 – Program Mode Selection - Choose Tv -Shutter Speed Priority or Av Aperture Priority. I usually choose Av since the camera will choose the correct shutter speed for the exposure. Since the camera has a larger range of shutter speeds to choose from (compared to aperture options), there is less chance of a flashing number in the view finder indicating that the camera cannot create a properly exposed image.

Button #2 - Selection Wheel- Use this control to select the shutter speed that you desire. If your selection flashes, it indicates that the camera cannot select an aperture that will allow a correct exposure at the chosen shutter speed. You now have two choices – select another shutter speed or change the ISO.

Button #3 – ISO selection – When you push this button, a range of ISO numbers will appear on your

LCD screen. Use the selection wheel to select a higher or lower ISO and press the “set” button to lock in your new ISO setting.

Conversely, we may want to show motion. To do this, we choose slow shutter speeds and low ISO settings. If we are shooting a waterfall and if we want “milky” water or if we are panning a runner in a race, we will select shutter speeds in the 1 second to 1/30 second and we will choose ISO settings -100 or 200.

Depth of field refers to the section of an image that is in sharp focus. When we have shallow depth of field, only a small slice of the image is in sharp focus. At other times, everything from the front of the image to the back is in sharp focus. To achieve changes in depth of field, we must change the aperture setting using button #1, the program selection dial. Most nature and landscape photographers choose the aperture priority setting, Av. If you are shooting a broad landscape, you will want your image to be sharp from one metre from your camera to infinity so to achieve this kind of depth of field, you will use the selection dial to choose an aperture in the f16 to f22 range. This will mean that your camera will choose a slow shutter speed and in low light situations you will have to use your tripod.

If you want to use selective focus to draw the viewer's attention to a specific area of the image such as one flower blossom or a bird on a branch, you may want your depth of field to be quite shallow.

To create shallow depth of field, you use your selection wheel to choose a small f stop, f2.8 or f4. The camera will then choose a relatively fast shutter speed to allow a properly exposed image to be created.

Button #1 (con't) – The other two selections that you may want to use from the program selection dial are the manual setting M and the Program setting P. The manual setting allows you to choose both the aperture and the shutter speed. This is most useful in special circumstances such as when shooting at night or when shooting inside where there are great variations in the light within the space. By changing the aperture or the shutter speed and by continually checking the image on the LCD screen, you will be able to attain a compromise that you are happy with. Some advanced photographers use the M setting only but most people prefer to choose either the aperture (Av) or the shutter speed (Tv) and to let the camera choose the other setting so as to achieve a proper exposure.

The program (P) setting chooses both the aperture and the shutter speed for you. It tries to select an aperture setting that will allow a shutter speed of 1/30 of a second or higher. It tries to select this speed because it is generally thought that most people can hand hold a camera at speeds of 1/30 of a second or higher. I only use this setting when I am using my flash. The P setting generally gives me good exposures without me having to think much about it.

Button #4 Depth of Field Preview – When you are looking through your view finder, you are seeing through your lens at its widest aperture, f2.0, 4.0 or 5.6 depending on the lens. This allows the maximum amount of light into the camera and gives you a bright view of your subject. If you choose a smaller aperture, f16 or 22, amazing technology happens when you create the image. Literally, in the blink of an eye, the mirror flips up, the aperture closes down and the shutter opens and closes. However, what the camera sees in that fraction of a second is quite different than what you saw through the view finder because the small aperture changes the depth of field.

So if you want to see what the camera is going to see, you must push the depth of field preview button. This closes down the aperture. The view finder becomes much darker because less light is now entering your camera but now you see much greater depth of field. Instead of the beautiful purple violet with a nice soft background that you saw before, you now see more detail in the petals and the pistil but you also see many distracting blades of grass and twigs and leaves. You are seeing what the camera will see when you take the picture.

To improve your violet image you have several options. You can dial back to a larger aperture (less depth of field) or you can start picking away the blades of grass and twigs or you can place a large leaf in the background to hide the distractions. Have you thought “tripod” yet. A tripod allows you to check, fix and check again without losing your original composition. Creating great images takes time.

Button #5 – Display (DISP) – By pushing this button twice, you come to a screen that shows the histogram for an image. When in the field, it is good to have the histogram showing. You can immediately tell if your sensor has recorded detail in both the shadow and the highlight areas.

Button #6 – Exposure Compensation – If your histogram shows that your image is under exposed (no shadow detail) or over exposed (no highlight detail), you can immediately fix this problem by holding the exposure compensation button in and then dialing more exposure (+ 1/2, +1.0, +1 ½, +2.0) or less exposure (-1/2, -1, -1 ½, -2.0). After each change, you can take a new image and refer to your histogram again. Continue shooting until your histogram is skewed to the right without clipping the highlights.

Button #7 – White Balance – Another exposure issue is white balance. Most people most of the time leave their white balance set to Auto and most of the time this achieves acceptable results. Most of the time, I leave my white balance set to Cloudy (approx. 6000K). This creates images that have a little warmer colour cast and is a similar effect to using an 81B warming filter.

White balance really becomes an issue when you start to photograph under artificial lighting conditions. Tungsten light bulbs create a yellowish colour cast while florescent lights create a greenish colour cast. The best way to correct for these colour casts is to create a custom white balance. Refer to your manual to do this. I often just refer to my LCD screen and keep selecting a white balance setting until I like the colour cast of the image on the screen. Sometimes the Cloudy setting works well in a cathedral and sometimes the tungsten setting works best.

Button #8 Auto Focus Point Selection – Above I mentioned selective focusing. Most of the time, we leave our camera set to auto focus and we let the camera choose from a number of auto focus points (the Canon XSi has 9). Most of the time this works very well and everything that we want in focus is in focus. However, there are times when the auto focus system can be fooled. You want to focus on the third blossom in but auto focus always assumes that you want the object closest to the camera to be the centre of attention and it focuses on this point or you want to focus on the chickadee in a bush but auto focus wants to focus on the leaf closest to the camera. To get it your way, you have two choices, turn the auto focus button on the lens off and manually focus or use the auto focus point selection button to select the AF point closest to your center of interest.

If I'm photographing flowers with a macro lens, I always turn auto focus off and focus manually. This allows me to fine tune my focus on the petal or pistil that I most want in focus. If I'm photographing flitting birds, I choose the center AF point. When the bird moves, I can re-focus quickly by centering the lens on the new position and if I'm lucky, the bird will stay still long enough for me to re-compose and place the bird on the appropriate power point (rule of thirds). If I do shoot the bird dead center in the frame, I can usually create a stronger image later by cropping the image in Photoshop.

Button #10 – Metering Mode – The default setting here is evaluative metering. The camera reads the light intensity at various points in the image and determines an average exposure. This works for most scenes where the light falls on the whole area more or less evenly. However sometimes, the main subject may be lit more brightly than other areas of the scene. To achieve the correct exposure, you can use a different metering mode. There are two options – center weighted metering or spot metering. When you use spot metering, the camera reads the light just from the area in the center of the frame. Center weighted metering works basically the same way except that the camera reads the exposure from a slightly larger area. Recently, I have been using center weighted metering as my default setting and find my exposures to be more consistently accurate.

Button #11 – Menu Selections -When you push the menu button you are presented with a screen full of options and if you push it again and again, you are presented with many more options. Many of the options are pre-set for you. For example, the red-eye reduction mode is generally off but if you shoot a lot of family photos you may want to find this feature and activate it. Once activated, the built in flash will fire three short bursts to close the pupil before the camera actually takes the image.

One function that I use a lot is buried deep under “Custom Functions”. It is referred to as “mirror lock up” mode. When this mode is enabled, you will have to press the shutter button twice to create the image. The first click pops the mirror up and the second click opens the shutter. You are able to create sharper images if you use mirror lock up mode and a cable release because the first click raises the mirror creating a vibration in the camera from mirror slap. The second click opens the shutter after the vibrations are gone. You wait a second or two between the two clicks to allow the vibrations to stop.

Button #11 -Drive Mode Selection Button – When I use mirror lock up mode, I do not use a cable release. I go to the “Drive Mode Selection Button”. Normally, I have this set to the default setting where I push the shutter release button and the camera goes click (single shooting) but when I have mirror lock up enabled, I choose the two second delay option. Now when I push the shutter release button the mirror pops up, the camera counts to two and then the shutter opens to create the image.

This button also allows you to choose a ten second delay. This is the setting to use when you want to be in the family Christmas photo too!

Another option here is “continuous shooting”. This is useful when you are shooting action such as races or a flying bird. All you have to do is to keep the subject positioned in the frame and hold the shutter release button down. On play back, it will look like the osprey is flapping his wings. Your camera will allow you to shoot a burst of images (9 for the Canon Xsi) but eventually it will display a busy mode while images are saved to the memory card.

Button #12 – Auto Focus Selection Mode – Three settings are available here. The default setting and the most commonly used setting is the “one shot” mode. You push the shutter release button and the camera creates one image. The most likely time to change from this mode is when you are shooting action – racing motorcycles or flying birds.

Your second choice here is AI Servo. AI refers to “advanced intelligence”. In this mode, the camera calculates where the subject is moving to and constantly changes the focus based on the movement of the camera. You are able to shoot a continuous burst of images and hopefully some of them will be sharp and correctly exposed.

Button #13 – Pop Up Flash – Your built in flash may not be the greatest light source for taking pictures of your cousin's wedding from the back of the church but as a fill flash it works great. I use it a lot to show detail when I'm photographing back lit flowers and birds and it works great to put a little light in your cousin's face when you finally do get close enough for a portrait shot.

The final button is not a button at all but a wheel. It is the diopter adjustment on your view finder. By turning this wheel you can create a sharp image in your viewfinder and you will be able to use your camera without your glasses on. The only problem is that when someone else looks through your viewfinder, they will see an out of focus image but hey it's your camera customized for your use.

In conclusion, remember that when you go with your camera, you are setting out to create “WOW” images. You are not out to “take pictures” - you are there to “create images”. To create “WOW” images you must work slowly and you must utilize all of the features that you paid for on your expensive camera. Use a tripod, slow down and most important of all – THINK !