CAMERA SETTINGS

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INTRODUCTION

Modern cameras can have a range of adjustments that is complicated. The most important ones to master are the Exposure Mode Settings so you can have full control over exposure, and the focus settings.

To get most control over exposure your camera needs to have a range of exposure modes, so you can select the best for the situation being photographed. All of today's cameras have a built-in exposure meter, even the smartphone camera. What you can't do with a smartphone or basic camera is select the shutter time, aperture value or ISO that optimises photography. For what each of these do, read my article on **EXPOSURE**. To take full control over exposure you need a camera with the ability to take control over the exposure with the SHOOTING MODES Program, Shutter Priority, Aperture Priority and Manual (PASM).

Each camera is different in the controls given to make adjustments described below. Some can be set by buttons and dials; others have to be set from the camera's menu. Each different camera supplier uses their own names for each of these functions, which makes life complicated. READ YOUR CAMERA'S MANUAL TO LEARN HOW YOU CAN MAKE THE ADJUSTMENTS DESCRIBED BELOW.

FOCUS SETTINGS

In my earliest photography, to focus my camera, I measured the distance from the camera to the subject with a tape, or estimated it, and set the feet or metres on the focus ring on the lens. I quickly learned the lens markings for depth of focus, and how to set the hyperfocal distance. Rangefinder and single lens reflex cameras were able to focus accurately without measuring the distance, but were still manual focus. The first Canon EOS autofocus cameras introduced viewfinder focus spots (select one or all), and drive modes. Today's cameras have multiple focus spots and multiple ways of adjusting how they work. See my article **AUTOFOCUS TIPS** for more information.

The most important focus settings are the choice of Single Focus/One Shot and Focus Tracking/Servo (Focus Mode) and the number of focus points (Focus Frame).

In Single Focus mode, (AF-S, One Shot) when you half-press the shutter button, the camera will focus on a set point. If you hold the shutter button half way, the focus distance will be fixed, and you can reframe, before pressing it all the way to take the shot.

Focus Tracking or continuous mode (AF-C, AI Focus) is best where the camera to subject distance can change, such as when photographing a moving subject, or for hand-held macro shots where the photographer's movement affects focus. In this case the camera will continually focus while the shutter button is half pressed, but you have to keep the focus spot on the subject's image in the viewfinder. If the subject moves towards or away from the photographer, the focus will be adjusted to keep the subject sharp.

Manual focusing can be useful for tripod shots of fixed subjects like table top, landscapes and buildings. The zoomed-in view of the LCD monitor is a great aid to focusing. A touch screen is used to choose the point on the subject where focus is required, and the focus ring adjusted until the image is sharp. Some cameras have a bar indicating depth of focus on their LCD screen. This can be used to quickly focus at the hyperfocal distance.

SHUTTER DRIVE MODES

This control adjusts whether single or multiple exposures are taken when the shutter button is held down, and how fast the frames are exposed. The Continuous Shooting, or Burst Mode (Spray and Pray technique) captures a series of images of moving subjects, such as animals and children.

You can also select a self-timer delay usually of 2 or 10 seconds. The 2 second delay is useful for tripod shots without a remote switch to minimise camera shake. The 10 second delay allows the photographer to position themselves in the image.

EXPOSURE METERING MODES

Today's cameras have several adjustments to the way exposure is measured. The in-built exposure meter can be operated in several ways.

Selection of metering mode may be by a menu or a mode dial. Most cameras have two additional dials, a main dial for primary control, and a secondary dial for changing lesser functions.

METERING AREA

The camera's exposure meter is close to and covers most of the focus screen and the photographer can select of how much of the image area metering covers. Images vary in brightness over the image area, and selection of the optimum setting will give best control over the exposure.

Multi-field or *Evaluative* metering will work best most of the time. At this setting the exposure meter will measure the brightness at different regions over the whole image area, and the inbuilt processor will determine an exposure it thinks is best, taking into account the brightness range of the image.

Partial metering and *Spot* metering will meter only the central area of the frame. In the case of partial metering it is a higher percentage (typically 6%) than spot metering (typically 1 to 2%). These metering modes will work best where the subject is against a dark or light background.

A *Centre-weighted* setting will measure exposure over the whole frame, but will weigh the centre area more heavily.

FULLY AUTOMATIC EXPOSURE MODES

Many cameras have one or more fully automatic or scene modes (Canon A^{+} mode) at which the camera analyses the scene and selects the focus mode, white balance, shutter, aperture and ISO depending on how the image is analysed. It may also select picture style, a set of colours that suit what it thinks is suitable for the scene. This is the mode to use if you know nothing of photography and have not read the camera manual.

Some cameras have a range of genres that the photographer can select from: people, landscape, close-up, sports, snow and beach, fireworks, candle light, flash on or flash off. Others have a setting that allows some control of camera settings for different picture effects. A complete novice will be able to make an acceptable photograph in most situations. However, the photographer has no control over any of the main camera

settings. The experienced photographer rarely uses these settings and will use the PASM modes nearly all of the time.

In this mode, the camera's menu will have a much-reduced range of parameters that can be adjusted.

PROGRAM MODE – P (AUTOMATIC)

This mode the exposure is automatic, but other camera settings including focus settings, metering mode, picture styles, and white balance can be selected by the photographer. The menu will show the full range of settings that can be adjusted. Pressing the shutter button half way activates the exposure meter and an appropriate combination of shutter time and aperture is selected. The exposure time is based upon the minimum necessary to avoid camera shake. The camera may have a menu adjustment to vary minimum exposure time to the photographer's needs.

You can change the combination of exposure time and aperture that make a correctly exposed image by rotating the main dial. One way increases aperture size and reduces exposure time correspondingly. The other way works the opposite. You can for example reduce the depth of focus by increasing aperture size, or increase DoF by decreasing aperture size, but still have the correct exposure.

This mode is used by expert photographers for grab shots and family shots. It is also great to use with a fill-in flash. Set the flash exposure to -1EV to get optimum shadow detail.

APERTURE PRIORITY – A (AUTOMATIC)

In this mode, the photographer can select an aperture value using the main adjustment dial, and when the shutter is half pressed, a corresponding shutter time is determined by the exposure meter. Exposure is therefore automatic.

I find this mode is the one I use most often, as it gives direct control over depth of focus. To get more background blur – increase the aperture size (reduce the aperture value). To get a deeper depth of focus – reduce the aperture size or increase the f/ value. You can also adjust exposure time indirectly, so to reduce exposure time, increase aperture size.

This mode gives consistent results most of the time. It is great for travel shots. If you want to use exposure compensation, you do this from the other dial.

SHUTTER PRIORITY – S OR TV (TIME VALUE) (AUTOMATIC)

In shutter priority mode, the photographer selects the exposure time with the main adjustment or command dial, and the aperture is set by the exposure meter. This mode is used where exposure time is most important. Exposure determination is automatic, and exposure compensation can be used to make the image lighter or darker. Some would use it for action shots, to freeze subject movement, or in low light to ensure the exposure time is short enough to avoid camera shake when hand holding the camera.

In my opinion this mode is much more useful where you want to show motion blur by using a long exposure time. The amount of blur can be affected quite substantially by a change of 1EV or stop in exposure time. Take successive shots to find the most pleasing blur effect.

MANUAL - M

Using Manual mode requires the photographer to adjust both the shutter and aperture. The exposure level or indicator in the viewfinder or on the Live View screen is used to monitor exposure as the dials are adjusted until balance is achieved. Alternatively, a hand-held exposure meter can be used.

It is worth beginner photographers using this mode for a while, so that they get an understanding of the effects of shutter and aperture settings on their image. But not being automatic does make life more difficult, and Aperture Priority is easiest and quickest to use for most images. I'm not one to make life hard unless it's necessary.

Manual mode is great if you regularly apply exposure compensation, as when photographing in strong, contrasty light; because it is done more quickly than when using aperture priority. You use the exposure level or indicator to set the exposure above or below the balance point.

This mode can be made automatic if the ISO dial is set to automatic. In this case, the photographer can set the shutter and aperture manually, and the exposure meter will automatically set the ISO. I have a custom function set for this, so I can grab wildlife images with 1/1000 second at f/5.6. The custom setting also includes metering area, focus setup, and quiet motor wind suitable for these shots.

EXPOSURE BRACKETING

Where the contrast is high, you may want to ensure you have a correctly exposed image by taking multiple exposures of the same scene at different exposure settings. The best image can be chosen, or two or more images can be combined with HDR or other methods to reduce scene contrast. Most cameras have a function to allow BRACKETED shots. Several exposures are taken; one with the metered exposure, and others with set levels of over- and under-exposure. The number of bracketed shots can sometimes be selected as 3, 5 or 7 shots. The amount of under and over exposure between each shot can be adjusted, but I recommend always use one stop.

It is best to set aperture priority when using exposure bracketing. Then the images are exposed at a set ISO and aperture, and exposure time is varied to make lighter and darker images. This way the images all have the same depth of focus and image noise. A typical five exposure bracketed set with 1 EV steps might have the following series of shutter times:

1/30 1/60 1/125 1/250 1/500 second

With many cameras, if you set the shutter to continuous shooting, the camera will fire off the set number of exposures and stop when the required number of bracketed shots is completed.

OTHER CAMERA SETTINGS THAT AFFECT IMAGE QUALITY

It is possible to change a number of settings that affect image quality other than the exposure settings. In most cases these settings can be overridden during image development if you take RAW images, but they affect the quality of JPEG images produced in camera.

COLOUR SPACE

Many cameras have the ability to change Colour Space, and the choice is generally sRGB or Adobe RGB. If you shoot RAW, it makes no difference which Colour Space you choose. If you choose the wider Adobe RGB space

and shoot JPEGs, you have to develop them and then convert to sRGB. Very few photographers need to shoot in Adobe RGB space. It is recommended you keep the setting to sRGB.

WHITE BALANCE

This affects the colour balance of the image. In most cases, Automatic White Balance is Ok, but there are situations where setting to some other value should be undertaken. In Automatic mode, the white balance is averaged over the whole scene, with the camera's software making some intelligent adjustment. Where you are photographing in difficult light, or the subject is strongly coloured, a Preset white balance may be best. If using Speedlight as the main illumination source, choose the flash setting. If photographing sunsets, use a cloudy setting for truer colours. Set a fixed white balance if you are shooting a series of shots for a panorama stitch or focus stack.

White balance of a RAW image can be fully adjusted during development, but it is essential to get it right for JPEG capture.

PICTURE QUALITY

You can select the number of pixels, image format (JPEG or RAW); and if JPEG is chosen the amount of JPEG compression, which will determine image quality and file size. It is also possible to shoot RAW + JPEG.

Most photographers shoot full sized images most of the time.

PICTURE STYLES

Many cameras allow the selection of picture styles that make subtle changes to the sharpness and colour in camera. They include one or more monochrome settings, and picture styles for specific genres, such as Landscape and Portrait, or for Fuji cameras, the type of Fuji film it simulates. Again, if you are shooting RAW, these can usually also be chosen during development. However, they affect JPEG capture.

OTHER SETTINGS

Other features that some cameras offer that may be useful are Auto Lighting Optimiser, Noise Reduction, Highlight Tone Priority, Lens Aberration Correction, Reducing Flicker, Multiple exposure, Panorama, ND filter and HDR. Many of these can be fixed on RAW images during development.

Beware particularly of using the camera's Noise Reduction for night photography. The time it takes for the noise reduction software is at least as long as the exposure time. If this is several minutes, you can be waiting a long time between shots. Shoot RAW and reduce noise during image development.

WHICH VIEWFINDER? - EYE LEVEL OR LCD MONITOR (LIVE VIEW)

In my opinion a camera without an eye level viewfinder is seriously lacking. When exposing hand-held shots, being able to brace the camera against your face with the arms tucked in is the best way of ensuring stability, allowing longer exposure times.

The LCD monitor on the back of the camera works best for tripod shots.

The optical eye-level viewfinder of an SLR does not work when shooting video. The mirror locks up, so you can't see anything through the eyepiece.