

Digital SLR – BASIC OPERATING GUIDE

EXPOSURE MODES

Exposure is the amount of light which falls upon the sensor of a digital camera. Shutter speed and aperture are adjusted to achieve optimal exposure of a scene. Most digital cameras offer a variety of exposure modes — from fully-automatic to semi-automatic to full manual control. Scene modes have factory optimised settings for different subjects and scenes.

Manual mode

You have complete control by selecting both the shutter speed and the aperture. Digital cameras with manual modes have a manual assist indicator that indicates whether or not exposure is adequate.

Semi-automatic modes:

Aperture priority mode (AV) – Select the aperture (lens opening) and the camera automatically sets the shutter speed.

Shutter priority mode (TV) – Select the shutter speed and the camera automatically sets the aperture.

Automatic modes

In fully automatic mode, when the shutter release button is pressed halfway, the camera selects all settings depending on the type of lighting and brightness of a scene. The camera also focuses automatically. When light is low or insufficient, the flash fires automatically. Digital cameras with Program AE mode (P mode) set the shutter speed and aperture automatically. However, the user can adjust some settings such as ISO and white balance.

Scene modes

Scene modes let you choose from a variety of pre-programmed modes suitable to photograph a given subject such as a portrait, landscape or fireworks. The camera settings change when moving a dial to a mode that matches the scene you plan to photograph.

As a photographer you should be using MANUAL (or semi-auto settings) only.

FOCUS MODES

AUTO FOCUS:

Single (or one) area focus — Camera focuses on a subject in the central area of the screen. Focus adjusts according to the distance of the subject. This focus mode is usually the most accurate because you, not the camera, decides where the camera focuses.

Continuous autofocus — Focuses continually on a subject. Continuous AF can be useful, though not always perfect, when shooting slow moving subjects. On digital cameras with video capabilities, continuous AF is usually the default focus mode.

Spot focus — Camera focuses on a very precise center area of the screen.

Multi area focus — Camera automatically focuses using multiple focus points. The focus positions change according to each subject, focusing on a number of objects within a scene. This mode can be less accurate than single area focus.

Face-priority AF — Face-priority AF is a digital camera detection program that scans for facial details. It controls the auto focus operation based on the location of the detected face in the scene. It may give exposure priority to the face as well. Some digital cameras let you lock focus on a specific face. If the subject moves, or the photographer recomposes the picture, focus remains on the subject's face.

PREFOCUS

Prefocusing can be effective when there is a pre-determined, similar distance between the camera and subject. Focus is fixed until you press the focus button again or switch to a different focus mode. Prefocus allows you to lock focus on a subject, then recompose. Digital cameras have different methods of prefocusing, so check the manual.

MANUAL FOCUS

Manual focus area — Focus on a portion of a scene when not centered in the frame. This method is useful for close-up and macro shots.

Focus ring — Focus manually, from a few feet to infinity, by turning a focus ring near the lens.

METERING MODES

Automatic exposure is a standard feature on all digital cameras. The metering system measures the amount of light in a frame and determines the best exposure. Many cameras have more than one metering mode and each evaluates a scene in a different way.

Center-weighted metering

Center-weighted is the metering system of choice on compact digital cameras that do not offer other metering modes. Currently it is the most common metering system.

Exposure metering is averaged over the entire frame with emphasis placed on the central area. Center-weighted metering is used for general and portrait photography, when it's important to have the central portion of the scene properly exposed

Matrix (evaluative) metering

A complex metering system whereby a scene is split up into a series of zones. Overall exposure is based on evaluating each zone individually and taking an average of the total light readings. After the light is measured, the camera determines the best exposure.

Matrix metering is effective for scenes and subjects that have even lighting.

Spot metering

Spot metering covers just under four percent of the viewfinder area. It takes a precise exposure reading only at the very center of the frame and disregards the rest.

A spot meter is used when there are extremes in the brightness of a scene (high contrast scenes), such as when a subject is back lit or has bright light on it and the background is dark.

Spot metering can also be useful for close-up and macro photography.

Partial metering

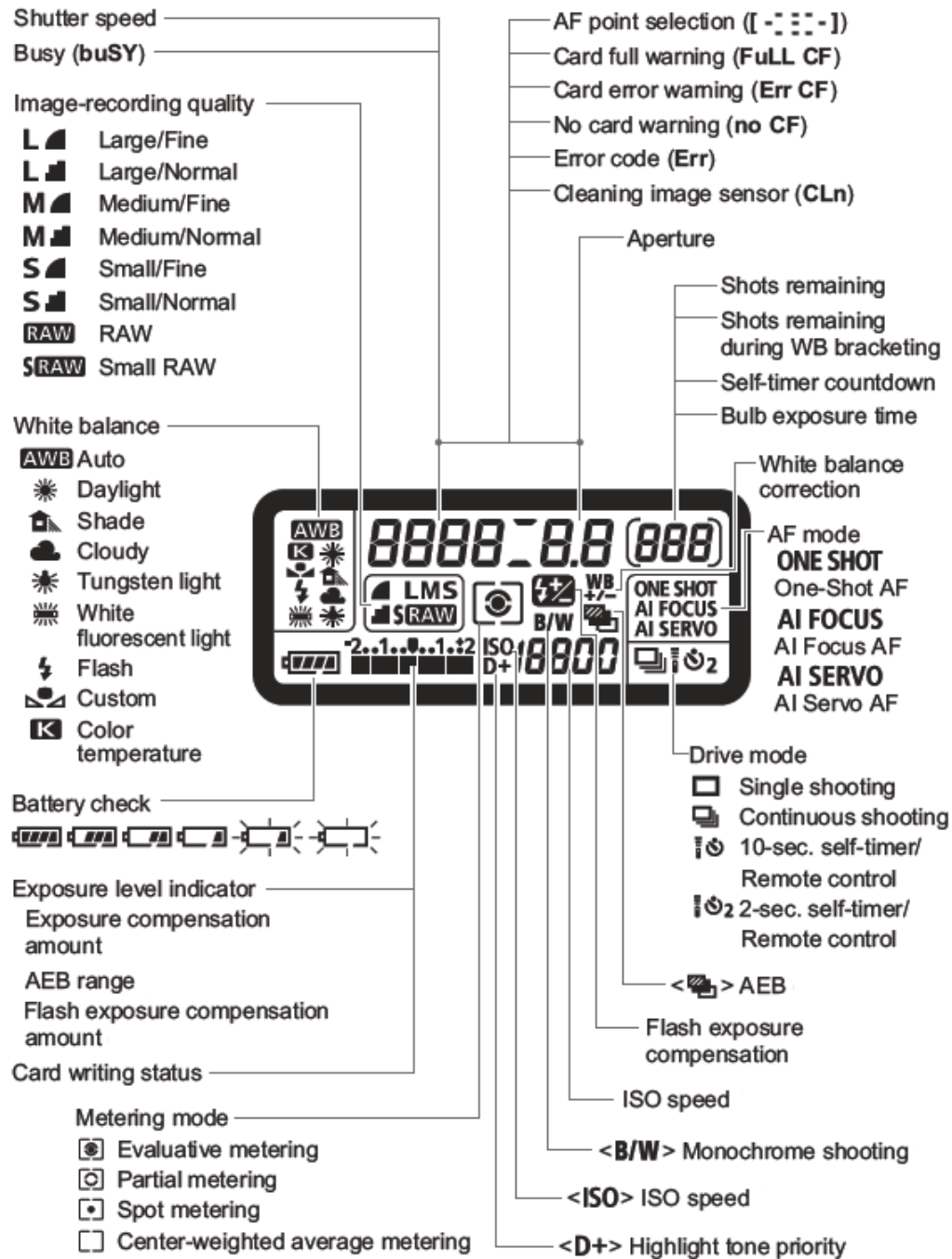
Partial metering is similar to spot metering but covers a larger area of the viewfinder, about 13.5 percent. It is useful for taking portrait photos when the subject is back lit.

Partial metering is also often used when a scene has bright or dark areas around the edges of a subject. Underexposure is minimized by metering on the main subject in a scene.

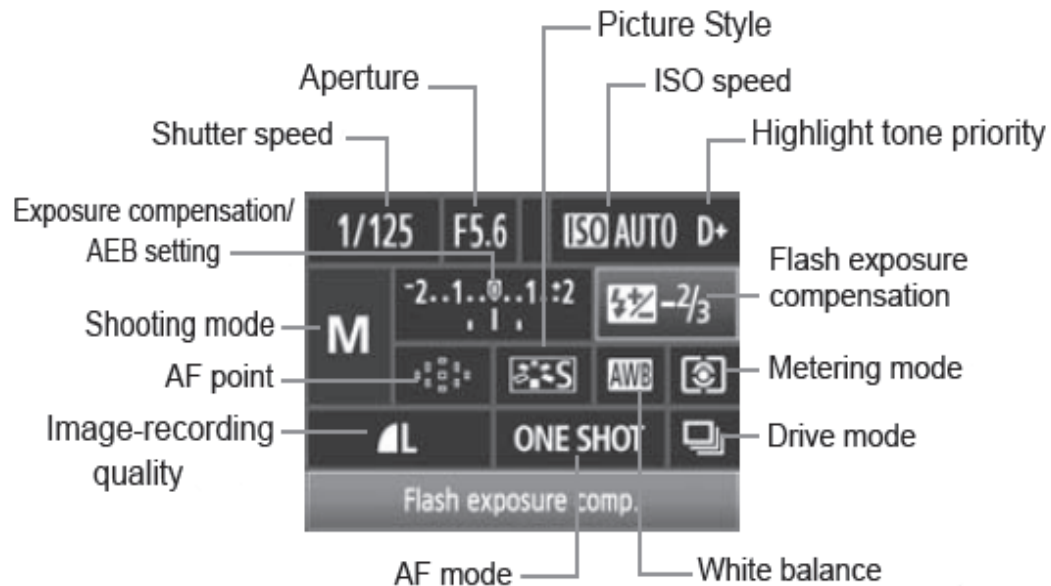
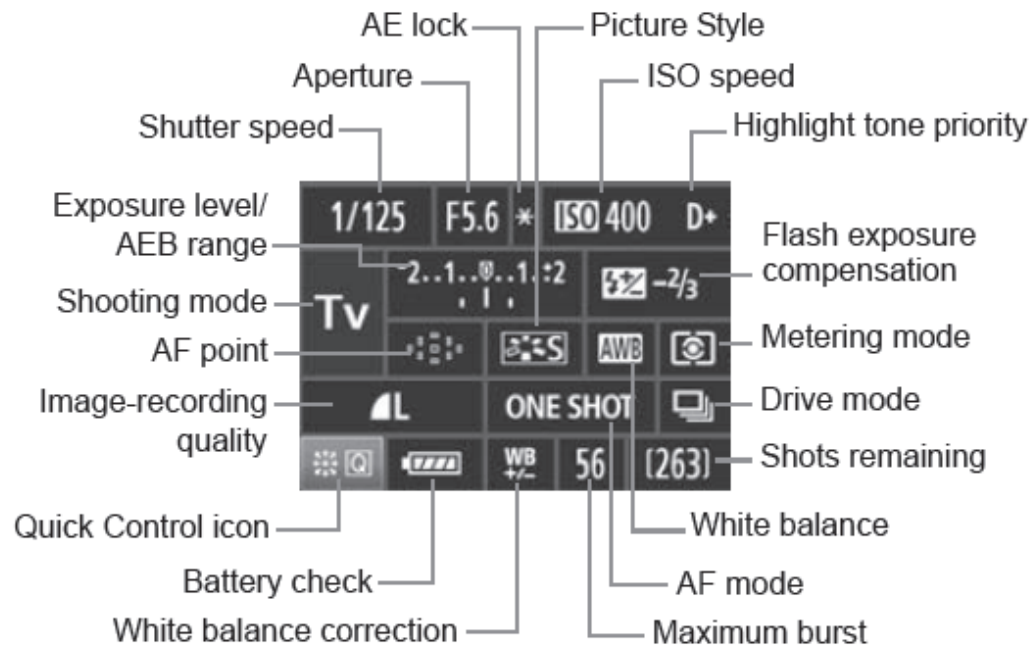
Both spot and partial metering are considered advanced settings. They give the photographer more control over exposure than do matrix and center-weighted metering modes.

READING THE DISPLAYS ON CAMERA

Canon EOS 5D Mark II Top-Panel LCD Display

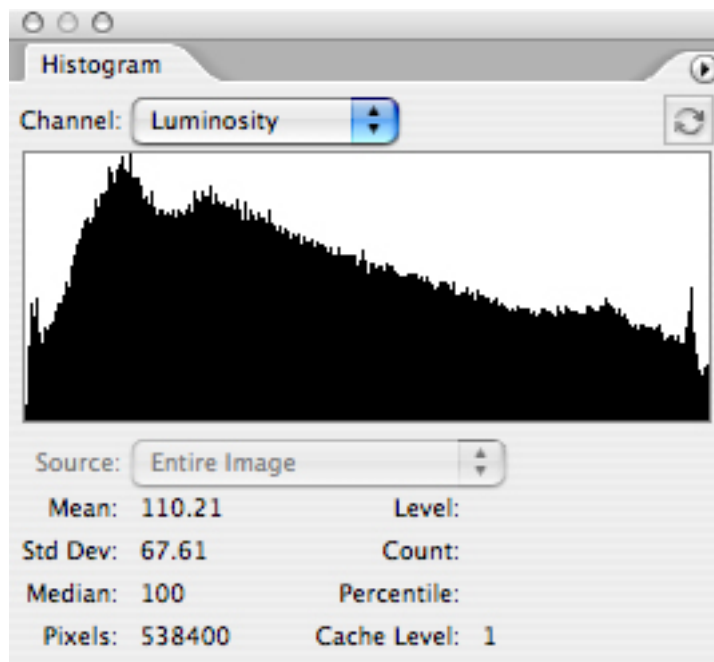


Canon EOS 5D Mark II Record Mode Displays



HISTOGRAMS

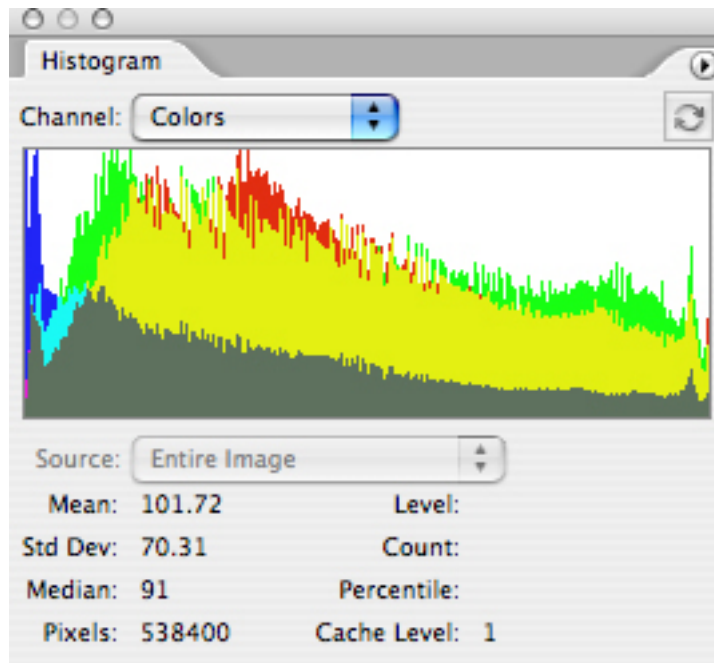
A histogram is a graph that can help you evaluate a digital image. Histograms can be found on digital cameras and in computer software such as Photoshop and Lightroom. A histogram uses a linear scale of 256 levels, and shows the relative distribution of pixel color values in the image, from black to white and everything in between. 0 is solid black and 255 is pure white. The darkest shadow values are shown at the left end of the scale, and the highlight values are at the right end. The height of the vertical line at each position across the graph indicates the amount of pixels at that value, relative to the rest of the pixels in the image. A tall vertical line indicates a large number of pixels, and a short line indicates a relatively small number of pixels at that level. Together, all the vertical lines make up the shape of the histogram.



The luminosity histogram above shows a smooth distribution of tonal values. Shadows are at the left, highlights are at the right. You can see from the histogram that most of the values in this image are found in the 3/4 tones, or the area between mid-tones and shadows, which corresponds to a visual evaluation of the image. The darker parts are represented by the "hump" in the histogram. Learning to see how a histogram correlates to the complete image is very helpful when adjusting tones in your images.

There are two common types of histograms: luminosity (or brightness) and RGB. A luminosity histogram is often the most useful type. It shows the *averaged brightness* values for all the red, blue and green values combined. This is useful for determining how the brightness values are distributed throughout the image.

In an RGB histogram, the values are averaged for the actual RGB colors, and can be displayed as separate overlays on top of one another so you can evaluate individual color channels. Note that brightly saturated colors may often appear clipped in an individual channel; this is normal. Many professional digital cameras can display an overlay RGB histogram; in Photoshop, this option is under the Colors dropdown on the histogram palette.



RAW IMAGE FORMAT

Like a photographic negative, a raw digital image may have a wider **dynamic range** or **color gamut** than the eventual final image format, and it preserves most of the information of the captured image. The purpose of RAW image formats is to save, with minimum loss of information, data obtained from the sensor, and the conditions surrounding the capturing of the image (the metadata).

When shooting RAW, no processing is done in the camera to the file. As a result, the photographer has total control adjusting elements, such as sharpening or white balance, when processing a RAW file during editing.

When editing a RAW image, no changes are made to the actual file. A separate file is created and all adjustments are kept in the associated file.