

Topic 22

Types of Light Meters

What is the Light Meter?

Light meters in cameras react to how intense the light is as seen from the camera. SLRs measure the light (called *metering*) through the lens – TTL. They collect light that has actually passed through the camera's lens and measure its intensity. There are problems when the scene has parts that are much brighter or darker than others, for example shadows on a sunny day. This can trick the light meter into measuring the intensity of the light incorrectly, depending on which part of the scene was illuminating the sensor.

Modern SLR cameras use multi-point light meters, meaning that several light meters are actually scattered around the projected scene, each measuring the light intensity at that point. Very sophisticated cameras may have dozens of metering points. How much the measured intensity of the light at each point influences the final meter reading depends on the metering mode selected by the photographer.

Types of Light Metering

There are two Basic types of light metering

1. Incident Metering
2. Reflected Metering

1. Incident Metering

The incident meter is aimed at the light source and measures the light source falling directly on a scene and is not influenced by the reflectance of the subject being photographed. For more precise control of the photograph, incident meters are also used to measure various levels of light from multiple sources falling on separate parts of a scene.

Using Incident Meters

Incident metering measures the intensity of light falling on the subject and gives accurate and consistent rendition of the tonality and contrast regardless of reflectance, background, color, and shape. Subjects that appear lighter than gray will appear lighter. Subjects that are darker than

gray will appear darker. Colors will be rendered accurately. Highlight and shadow areas will fall naturally into place.

NOTE: Most light meters allow for both reflected and incident light readings.

Advantages of Incident Measurement

Incident meters measure accurately and consistently and are not affected by variances in reflectance of the subject or scene. Because of this, incident meters give the most accurate exposure for the majority of situations and subjects.

2. Reflected Metering

Reflected metering reads the intensity of light reflecting off the subject and may vary according to variances in tonality, color, contrast, background, surface, or shape. Meters are designed to regard all subjects as 18° neutral gray reflectance. Reflected measurement of any single toned area will result in a neutral gray rendition. Subjects that appear lighter than gray will reflect more light and result in an exposure that renders it darker. Subjects that are darker than gray will reflect less light and result in an exposure that renders it lighter.

Using Reflected Measurement

Hand-held reflected light meters and built-in camera meters read the intensity of light reflecting off the subject and measurements are taken from the camera position. Generally, reflected measurement of a wide subject area can include many different reflective surfaces or colors that can bias the meter and result in inconsistent and erroneous readings. Accuracy of a reflected measurement can be improved by reading an 18° neutral gray test card placed in front of the subject.

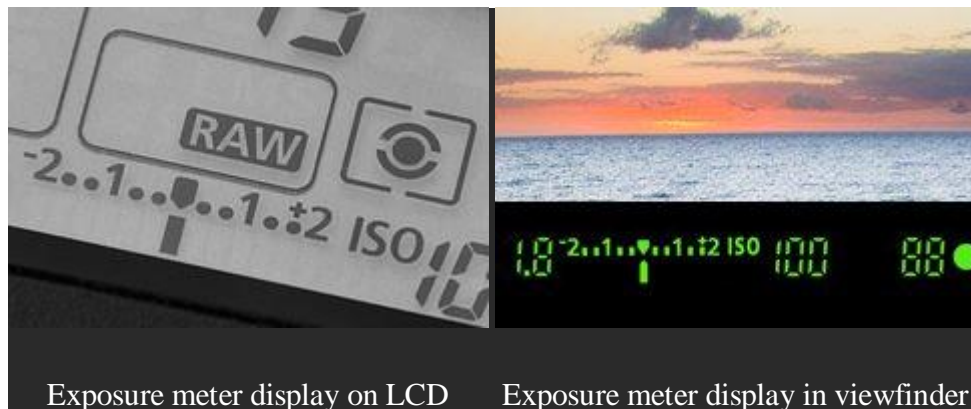
How to Use the Light Meter



As we now know, the correct exposure is created by juggling the three points of the exposure triangle: aperture, shutter and ISO. The light meter is the tool that puts us in the right neighborhood for how these should be set. If you are shooting on full auto, then when you meter the scene – usually done at the same time as focusing, by half pressing the shutter – the light meter gives its best guess for each of these variables.

If you want to take creative control of the photo, you can manually set each of the three variables yourself. Typically ISO is left at the default, or previous setting, and you take control by choosing aperture priority or shutter priority. On most DSLRs that's done by turning the exposure mode dial. If you set the dial to Av – aperture priority, the photographer chooses what the aperture will be, and the light meter adjusts the shutter speed to maintain the correct exposure. The reverse is true for TV – shutter priority.

When using these modes, it's useful to refer to the exposure meter display on the camera. The **exposure meter** (display) shows the result of the measurement taken by the **light meter** (sensor). It will typically look something like this:



Each number represents a stop change in the light, as indicated, with the central mark being the “correct” exposure, as determined by the light meter. Each pip between the numbers represents one third of a stop. The arrow underneath indicates how close the current settings are to the correct exposure. Usually in priority modes, the arrow will stay in the middle as the light meter will be able to set the exposure correctly. However, if for example you set your aperture to 1/400sec in Tv (shutter priority mode) and the light meter indicated that you needed an aperture of f4, but your lens was only capable of f5.8, then the exposure meter will display one stop of underexposure. You will need to compensate for this by setting a longer shutter time, or increasing the ISO.

The juggling act becomes more complicated, and the light meter's assistance more valuable, when you go to full manual control of the exposure. Here the exposure meter simply displays whether the current settings will under or over expose the image, according to the light meter. The photographer can freely change any of the values on the exposure triangle, and see the change to the predicted versus recommended exposure.

Exposure compensation

Even though the light meter in your camera is pretty sophisticated, sometimes it can get it wrong, especially with harsh contrasts, or highly reflective surfaces. Changing metering modes may help this, but a more controlled approach is to use exposure compensation. Imagine you are photographing a person against a large bright sky. The light meter thinks the sky is the most important part, and exposes correctly for that, leaving the person a dark silhouette. By using exposure compensation, you can tell the camera to take the metered exposure and make it brighter by a chosen amount. This will then allow the photographer to correctly expose the person. I'll look at exposure compensation in more detail in a future post.

To show you how the different exposure modes might work in real world situations, here are some scenarios. The settings given below are what they happened to be for the examples shown. Settings for your own photo will be different.