

# ELECTRONIC FLASH

- DESCRIPTION

Electronic flash produces light with a neutral color that lasts from 1/300 of a second to 1 millionth of a second. A single flash mounted on the camera is a poor light source for great photos because of the harsh light, background shadows, and red eye, but special techniques and equipment can provide great results.

- MANUAL AND AUTOMATIC DISCUSSION

Older equipment usually has manual flash that must be set by hand, and some modern automatic equipment provides a manual flash option. Check your owners manuals before attaching your old flash to a new camera. Many older flashes use much more power than new cameras can handle, so they may burn out the circuits of newer cameras.

A photographer using a manual flash needs to calculate how bright the light from the flash will be when it reaches the subject, and set the camera to get the correct exposure. Most manual cameras also need to have the shutter speed set manually. The correct speed (often 1/60 or 1/125 second) varies by camera, so check the owner's manual. An advantage of manual flash is that you can control the exposure to get more or less light if desired.

Automatic flash measures the amount of light that reflects off the subject and sets the camera exposure automatically. The main advantage is that it is simple to use. Most point and shoot cameras have automatic flash. The most modern automatic flashes are dedicated to specific cameras. Together, they measure the light when it reaches the camera and provide accurate exposure even if bounce, off-camera, diffused, or multiple flash (described below) are used.

- FLASH EQUIPMENT VARIATIONS

When we visited Ben Thornal's studio, we saw several variations of flash lighting including off-camera, multiple, and diffused flash. Note that most of these variations cannot be done with a point and shoot camera.

1. Bounce flash – Aim the flash at the ceiling or a white umbrella to change the direction and reduce harshness of the light.

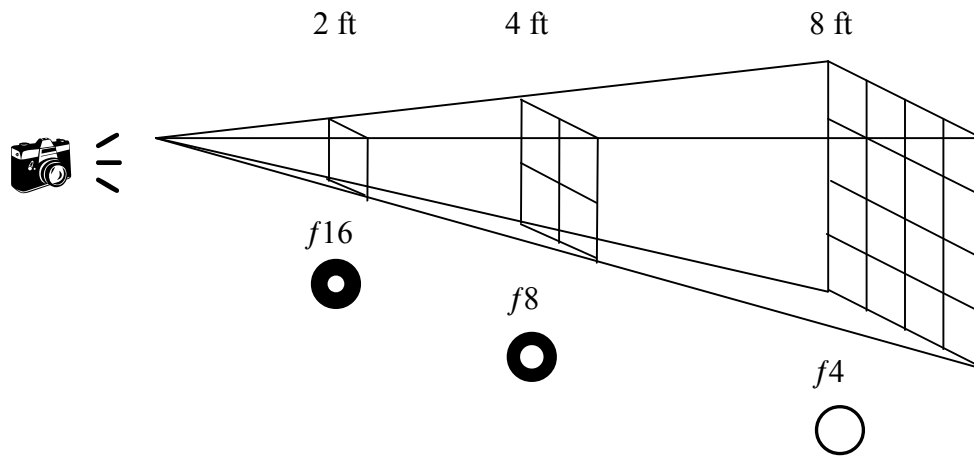
2. Off-camera flash – Connect the flash to the camera with a special cable and point the flash at the subject from a position away from the camera. It creates more interesting light and shadows by changing the angle of the light, and reduces red-eye.

3. Diffused flash – Shoot the flash through translucent material, like a handkerchief, to spread out the light and reduce harshness. The larger the light source, the softer the light, so photo studios often use huge diffused flash light boxes.

4. Multiple flash – Helps reduce shadows. Control multiple flash with special cables or a slave unit. Slaves are remote devices that trigger a flash when the light from another flash is detected.

- LIGHT INTENSITY

All light decreases in intensity as distance increases. For those who enjoy details, this is the inverse square law. When using flash, the aperture must be increased by two  $f$  stops each time the distance between the subject and the light source is doubled. Flash is only  $1/16^{\text{th}}$  as bright 8 feet away as it is 2 feet away.



This illustrates a big problem for small flashes, including flashes on point and shoot cameras. They just do not have enough power to light distant objects. We often see flashes going off in big stadiums that are probably getting great exposures of the back of people's heads, but nothing more.

Partial solutions are:

1. Use fast films (ISO 400 or higher).
2. For cameras that can adjust  $f$  stops, open up to a larger aperture to let in more light.

- RED-EYE

In a dark room the pupils are open further than in a bright room so that a flash penetrates to the back of the eye. Red-eye is caused by photographing the blood vessels in the back of the eye when they are lit by the flash.

Red-eye can be reduced:

1. Use red-eye reduction (a pre-flash that causes the pupils to get smaller). This is available on many point and shoot cameras.
2. Move the flash off the camera so that it misses the back of the eye. This can only be done with cameras that allow the flash to be connected with a special cable.

- **FLASH EXPOSURE**

Exposure is automated by some cameras by measuring the reflected light from the flash as it reaches the subject. That is how a point and shoot and other cameras work with built in flash. Some expensive cameras can even automate exposure when using multiple flash.

For cameras that use manual flash, calculate exposure using the exposure guide that came with the flash, or use a flash meter. Flash meters are the easiest way to get the correct exposure with multiple, reflected, or diffused flash.

- **SAMPLE MANUAL FLASH EXPOSURE GUIDE**

This is a guide from a fairly powerful flash. A guide from a weaker flash would indicate different exposures. The number in each box is the number of feet from the flash to the subject. For example if you are using ISO 400 film and your subject is about 40 feet away, set your camera to *f*5.6.

ISO	<i>f</i> 1.4	<i>f</i> 2	<i>f</i> 2.8	<i>f</i> 4	<i>f</i> 5.6	<i>f</i> 8	<i>f</i> 11	<i>f</i> 16	<i>f</i> 22
100	85	60	45	30	25	15	11	8	5
400			80	55	40	28	19	12	9

- **FILL FLASH**

Shadows caused by hats can obscure faces, so using flash to eliminate the shadows (“fill” flash) can help. So, even if you have a point and shoot camera you can improve your photography as long as you remember to turn the flash on in this situation. An option on adjustable cameras is to use a little less than normal flash to avoid overpowering the natural light. For example, if the correct exposure without flash is 1/125 at *f*11, set the flash to underexpose by one *f* stop to provide just enough light to reduce the shadow.

A subject in strange light may be photographed in equally strange colors. Fill flash can be used to eliminate the color problem. For example, in incandescent light a subject will appear orange and in florescent light will appear green. Flash will correct this as long as it is strong enough to overpower the light in the room. People photographed under a green tree may also appear green because of sunlight filtered through the leaves. It is interesting that our brains compensate for these color shifts so that we don’t normally notice them, but film records the actual color of the light.

- **SUMMARY**

Natural light may be best for photographing scenery and wildlife, but mastering your flash can improve your pictures of people and allow you to create photographs in situations where the natural light is not cooperating.