

# FLASH PHOTOGRAPHY

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Nikon Speedlight Flash System

## Basic Flash

### Power Source

Batteries are the main source of power for the speedlight systems.

### Capacitor

Capacitor temporarily stores electrical energy so that it can be activated and released rapidly.

### Flashtube

The flashtube is a single tube filled with xenon gas. The gas is ionized by a low-level electrical charge and the electrical energy stored in the capacitor is discharged in the flashtube. This creates a high voltage across the gas, which reacts to the sudden change of state, and the energy released in this process is dissipated in the form of light—the flash burst.

### Control Circuit

Manage the shifting of electrical energy from the power source to the capacitor. Also operate with the camera control circuits to control the duration and accuracy of the flash exposure.

### Flash Synchronization Speed

The duration of the pulse of light from the speedlight in conjunction with camera control circuits.

### Flash Recycle Speed

After a discharge the capacitor losses energy. The time required to restore this energy is the flash recycle time.

## Exposure with Flash

Every flash has a maximum useful range. How bright the light from a flash is when it reaches a subject depends on the flash's power and how far the light has to travel. When the flash fires it sends a beam of expanding light out from the camera. The further it goes the weaker it gets. This fall off is described by the Inverse Square Law. If the distance between the flash and subject is doubled, only one quarter of the light will reach the subject. It will need four times as much light to be the same. Conversely, when the distance is halved, four times as much light will fall on the subject.

When subjects are at different distances from the camera the closest will receive the correct exposure. The further they will be the darkest.

## Color Temperature

The various colors of light are described by the term "color temperature," which is measured in units known as Kelvin (K). A piece of iron, called a black body radiator is heated and the colors change from red/orange (low temperature) to blue/white (high Temperature)

Like most flash units, the flash tube in a new Nikon Speedlight emits light with a color temperature of around 6000K; this can change a little with age and level of use.

## Guide Number

The guide number tells us the output of the flash. Factors are the (ISO rating), the units of distance (feet or meters), the angle of coverage of the flash.

**Note:** Regardless of which flash mode you choose on any specific model of speedlight, it will always emit light at the same intensity; the duration of the flash pulse that determines how much light is emitted.

## Nikon Nomenclature

### TTL (Through-the –Lens)

In TTL mode the camera controls the amount of light output by the Speedlight on its assessment of the light passing through the lens. This is measured and calculated by sensors in the camera, although the precise method of control will depend on the functions available with the specific equipment in use.

### TTL+BL (Balanced Fill Flash)

This always appears together with TTL. **Based on the exposure control information**, the flash output level is automatically controlled for a well-balanced exposure of the main subject and background. It does not work in spot metering.

### A –Non TTL-Automatic Flash

A mode, the output of the flash is controlled by its own built-in sensors, which detects light reflected from the scene and use this to assess when the flash should be shut off. It receives no additions information from the camera.

### AA-Auto Aperture Flash

The sensor in the speedlight is still responsible for measuring and controlling the flash output but additional data, including the lens focal length and aperture, ISO sensitivity and any set exposure compensation value is transmitted automatically from compatible cameras and lenses to improve the accuracy of the flash exposure.

## M- Manual Flash

The output of the flash is determined by the user.

## Slow Sync

It is useful in any situation when the level of ambient light is relatively low and you want to shoot with flash, particularly in either P or A modes. Since proper ambient light exposure will usually require a lengthy shutter and if you use a flash in the P or A modes the restricted shutter speed range of normal flash sync can often cause the ambient light to be underexposed. With Slow Sync the flash fires at the beginning of the exposure.

## Rear Curtain Sync

Rear Curtain Sync is similar to Slow Sync but with one significant difference. The flash fires right before the shutter curtain begins to close at the end of the exposure.

## LIGHTING TECHNIQUES

- There should only be one set of shadows, and they should all point in the same direction.
- Whenever possible, the background should be far enough from the subject that it can be lit separately
- Whenever a shadow is unavoidable, it should be treated as part of the composition.

Regardless of the light source you use – daylight, studio, flash, reflectors, mirrors or anything else – all lights can be grouped into three kinds; Key or main, Fill, and Effects (rim or background).

The Key light is the main light. It determines the shadows and the principal highlights.

The fill is the secondary light, which fills the shadows, making them less intense. The fill light is almost always less bright than the key light, in fact about half as bright. It can be controlled in a number of ways. For example, by moving it further away, using a diffuser, or a less powerful light. Also a reflector or spill light from the main or key light can be used.

Effects lights – Rim is used to highlight the subject from behind. It is placed behind the subject so as not to be seen by the camera. Background light controls how light or dark the background behind the subject is. It can help visually separate the subject from the background.

