

DIGITAL PHOTOGRAPHY GLOSSARY

ADC – (Analogue to Digital Converter) this takes an electronic analogue output and turns it into a digital format so that it can be manipulated and altered by a DSP (Digital Signal Processor).

Ambient Light – The natural light in a scene.

Aperture – A small, circular opening inside the lens that can change in diameter to control the amount of light reaching the camera's sensor as a picture is taken. The aperture diameter is expressed in f-stops; the lower the number, the larger the aperture. For instance, the aperture opening when set to f/2.8 is larger than at f/8. The aperture and shutter speed together control the total amount of light reaching the sensor. A larger aperture passes more light through to the sensor. See also: Shutter Speed.

Artifacts – Visual digital effects introduced into an image by electrical noise during the capture process or over-compression that do not correspond to the original image being scanned. Artifacts might include pixellation, dotted or straight lines, regularly repeated patterns, moiré, etc.

ASA – (American Standards Association) The speed or specific light-sensitivity of film is rated by ASA numbers such as 100, 400, etc. The higher the number, the more sensitive it is to light. The higher speeds usually induce more grain and reduced sharpness. After 1982 ASA was changed to ISO.

Aspect Ratio – The ratio between the width and height of an image or image sensor.

Aspherical Lens – A specific type of lens that can optically correct for spherical distortions that can occur with wide angle and telephoto lenses. In most cases an aspherical lenses produces a higher quality image.

Autofocus – In this mode the camera automatically focuses the camera lens.

A/V Outputs – Video and audio outputs are fairly common on digital cameras; they let you send an image to a TV for viewing or to a computer for editing. Depending on the camera this could be in the form of a stereo mini plug, HDMI connector, or Firewire cable connection.

Banding – An artifact of color gradation in computer imaging, when graduated colors break into larger blocks of a single color, reducing the "smooth" look of a proper gradation.

Barrel Distortion – A common geometric lens distortion causing an acquired image to pucker toward the center and be "rounded" along the outer edges.

Bit – The smallest unit of memory; a contraction from 'binary' and 'digit'. Binary digits are 0 and 1, also known as ons and offs.

Bit Depth – The number of bits used to hold a pixel. Also called "color depth" and "pixel depth," the bit depth determines the maximum number of colors that can be displayed at one time. A pixel with 8 bits can reproduce a possible 256 variations of color or 256 tones of gray. 24 bit color resolution is made up of 3 layers 8 bits data for red, green and blue (RGB) to create a color depth of 16.7 million colors.

Bluetooth – A wireless standard for connecting cameras, PDAs, laptops, computers and cellphones. Uses very high frequency radio waves. Blue Tooth devices when in-range (less than 30 feet) of each other easily establish a connection.

BMP – (Windows Bitmap) This common file format is used to describe graphic files that are essentially not compressed. Wallpaper images used on a Windows opening screen are most often BMP files.

Buffer – Memory in the camera that stores digital photos before they are written to the memory card.

Burning – Selectively darkening part of a photo with an image editing program.

Byte – A unit of digital information in computing and telecommunications that most commonly consists of eight bits. Historically, the byte was the number of bits used to encode a single character of text in a computer and for this reason it is the smallest addressable unit of memory in many computer architectures. The standard of eight bits is a convenient power of two permitting the values 0 through 255 for one byte.

Calibration – The act of adjusting the color of one device relative to another, such as a monitor to a printer, or a scanner to a film recorder. Or, it may be the process of adjusting the color of one device to some established standard.

CCD – (Charge Coupled Device) one of the two main types of image sensors used in digital cameras. When a picture is taken, the CCD is struck by light coming through the camera's lens. Each of the thousands or millions of tiny pixels that make up the CCD convert this light into electrons. The number of electrons, usually described as the pixel's accumulated charge, is measured, then converted to a digital value. This last step occurs outside the CCD, in a camera component called an analog-to-digital converter.

Center-Weighted – A term used to describe an auto exposure system that uses the center portion of the image to adjust the overall exposure value. See also "Spot Metering" and "Matrix metering"

Chromatic Aberration - Also known as the "purple fringe effect." It is common in two Megapixel and higher resolution digital cameras (especially those with long telephoto zoom lenses) when a dark area is surrounded by a highlight. Along the edge between dark and light you will see a line or two of purple or violet colored pixels that shouldn't be there.

CMOS – (Complementary Metal-Oxide Semiconductor) one of the two main types of image sensors used in digital cameras. Its basic function is the same as that of a CCD. CMOS image sensors are not as common as the CCD image sensors found in most consumer digital cameras.

CMYK – (Cyan, Magenta, Yellow, Black) The four colors in the inksets of many photo-quality printers. Some printers use six ink colors (or more) to achieve smoother, more photographic prints. The two additional colors are often lighter shades of cyan and magenta.

Codec – A device or computer program capable of encoding or decoding a digital data stream or signal. Codec is a portmanteau of coder-decoder or, less commonly, compressor-decompressor. A codec encodes a data stream or signal for transmission, storage or encryption, or decodes it for playback or editing. Codecs are often designed to emphasize certain aspects of the media to be encoded. There are thousands of audio, image, and video codecs, eg. JPG, MPG, MP3, MP4, etc.

Color Depth – The number of bits assigned to each pixel in the image and the number of colors that can be created from those bits. True Color uses 24 bits per pixel to render 16.7 million colors.

Color Filter Array (CFA) or Color Filter Mosaic (CFM) – a mosaic of tiny color filters placed over the pixel sensors of an image sensor to capture color information. Color filters are needed because the typical photosensors detect light intensity but not color information. See also: Demosaicing

Color Space – Digital cameras use known color profiles to generate their images. The most common is sRGB or AdobeRGB and this information along with the camera and exposure data is stored in Exif header of the JPEG file. This color space information ensures that graphic programs and printers have a reference to the color profile the camera used at the time of exposure. See ICC Profile for more information.

Color Temperature – A characteristic of visible light that radiates a specific color equivalent the type of light source, eg. daylight, incandescent light bulbs, electronic flash, etc. The kelvin (K) temperature scale is primarily used in the measurement of light sources. Color temperatures over 5,000K are called cool colors (bluish white), while lower color temperatures (2,700–3,000 K) are called warm colors (yellowish white through red). See also: White Balance.

CompactFlash – A common type of digital camera memory card, about the size of a matchbook. There are two types of cards, Type I and Type II. They vary only in their thickness, with Type I being slightly thinner. A CompactFlash memory card can contain either flash memory or a miniature hard drive. The flash memory type is more common.

Compression – An algorithm used to reduce the size of a digital file. Examples of compressed file formats are JPEG, LZW, MPEG, RAR, ZIP, etc. See also: Codec, Lossless Compression, and Lossy Compression.

Demosaicing – An algorithm in digital image processing used to reconstruct a full color image from the incomplete color samples output from an image sensor overlaid with a Color Filter Array (CFA). Most modern digital cameras acquire images using a single image sensor overlaid with a CFA, so demosaicing is part of the processing required to render these images into full color. Digital cameras that can save images in a raw format allow the user to demosaic them using software, rather than relying on the camera's built-in firmware. See also: Color Filter Array.

Digital Zoom – The camera uses software rather than a true optical lens to zoom in on a subject. The camera discards pixels on the edge of the picture and enlarges the center subject area.

Digital Watermark – A visible or invisible watermark that is applied to a digital image such that ownership of the image is known.

DPI – (Dots per inch) A measurement of the scanning resolution of an image or the quality of an output device. DPI expresses the number of dots a printer can print per inch, or that a monitor can display, both horizontally and vertically.

DPOF – (Digital Print Order Format) A feature that lets you tag your photos on the camera's removable memory. When you decide to have digital prints made at a photo kiosk or store, the DPOF information automatically tells your photofinisher which images to print and how many.

DSP – (Digital Signal Processor) The processing the raw image data before it is stored on the camera's memory card or viewed.

DSLR – (Digital Single Lens Reflex) A camera that uses a mirror and prism system that permits the photographer to view through the lens and see exactly what will be captured.

DVI – (Digital Visual Interface) A video interface standard designed to provide very high visual quality on digital display devices such as flat panel LCD computer displays and digital projectors.

Effective Pixels – This is the number of pixels of the CCD used to make up the final image.

EXIF – (Exchangeable Image File) the file format used by most digital cameras. For example, when a typical camera is set to record a JPEG, it's actually recording an EXIF file that uses JPEG compression to compress the photo data within the file.

Fill Flash – A flash technique used to brighten deep shadow areas, typically outdoors on sunny days. Some digital cameras include a fill flash mode that forces the flash to fire, even in bright light.

FireWire – A type of cabling technology for transferring data to and from digital devices at high speed. Some professional digital cameras and memory card readers connect to the computer over FireWire. FireWire card readers are typically faster than those that connect via USB. Also known as IEEE 1394, FireWire was invented by Apple Computer but is commonly used with PCs as well.

Flash Memory – A form of memory using chips instead of magnetic media. The data in the device isn't lost when the power is turned off.

Focus Assist – Many cameras employ a visible or invisible (infrared) lamp to illuminate the subject so the autofocus can work in low light or total darkness.

Focus Peaking – A feature in a Mirrorless camera or DSLR in Live View mode that is used as a focusing aid to highlight peak contrast areas with a false-color overlay in your viewfinder. When manually focusing this feature can help you determine what part of the image is in sharp focus before you shoot

Focus Lock – Pre-focusing the camera and then moving it to re-compose the image before capturing it. Accomplished by half-pressing the shutter button and keeping it held at that position while moving the camera to another point before pressing it all the way to capture the image.

Gamma – A measure of the amount of contrast found in an image according to the properties of a gradation curve. High contrast has high gamma and low contrast low gamma.

Gamma Correction – In reference to displaying an image accurately on a computer screen, Gamma correction controls the overall brightness of an image. Images which are not properly corrected can look either bleached out, or too dark. For more info on gamma, go [here](#)

Gamut – The range of colors that are available in an image or output process. It is generally used in describing the capabilities of a printer to reproduce colors faithfully and vibrantly.

GIF – A graphic file format used mainly for Web graphic or small animated files. Not good for photos as it only contains a maximum of 256 colors.

Gigabyte (GB) – A measure of computer memory or disk space consisting of about one thousand million bytes (a thousand megabytes). The actual value is 1,073,741,824 bytes (1024 megabytes).

Golden Hour – The golden hours are (roughly) the first hour after sunrise and the last hour before sunset. The length of the golden hours can vary depending upon your geographical location and the current season. When the Sun is close to the horizon on a sunny day, its light appears warmer and softer. This makes the golden hour (a.k.a. magic hour) popular with photographers and filmmakers.

Grayscale – A photo made up of varying tones of black and white. Grayscale is synonymous with black and white.

HDMI – (High-Definition Multimedia Interface) is a compact audio/video interface for transmitting uncompressed digital data. It is a digital alternative to consumer analog standards, such as coaxial cable, composite video, S-Video, or component video.

HDR– (High Dynamic Range) A technique that produce a greater dynamic range of exposure (the range of values between light and dark areas) than normal digital imaging techniques. HDR images require a higher number of bits per color channel than traditional images because they need to represent the range of visible luminance values.

HEIF – (High-Efficiency Image File a.k.a. **HEIC**) file format for image and image sequences with Apple mobile devices. This file format is used as higher quality alternative to the more commonly used JPG file format. **HEVC** (High-Efficiency Video Coding) a.k.a. **H.265** is for videos.

Histogram – A bar graph analysis tool that can be used to identify contrast and dynamic range of an image. Histograms are found in the more advanced digicams and software programs (graphic editors) used to manipulate digital images. The histogram shows a scale of 0 - 255 (left to right) with 0 being black and 255 being white.

ICC Profile – The International Color Consortium, a group that sets standard guidelines for color management in the imaging world. Most printers, monitors and scanners as well as digital cameras, usually come with a driver disc for Windows and Mac systems that includes ICC profiles for the particular device. Color profiles simply let one piece of hardware or software "know" how another device or image created its colors and how they should be interpreted or reproduced.

Image Browser – An application that enables you to view digital photos. Some browsers also allow you to rename files, convert photos from one file format to another, add text descriptions, and more.

Image Editor – A computer program such as Adobe Photoshop or GIMP that enables you to adjust a photo to improve its appearance. With image editing software, you can darken or lighten a photo, rotate it, adjust its contrast, crop out extraneous detail, etc.

Image Resolution – The number of pixels in a digital photo is commonly referred to as its image resolution.

Image Stabilizer – Some cameras and lenses are equipped with an image stabilizing feature that helps to eliminate camera shake when the shutter speed drops below 1/60 of a second.

Interpolation – A computer software function that will add pixels but will not add any detail to the image.

ISO – (International Standards Organization) The speed or specific light-sensitivity of a camera is rated by ISO numbers such as 100, 400, etc. The higher the number, the more sensitive it is to light. As with film, the

higher speeds usually induce more electronic noise so the image gets grainier. Prior to 1982 this was known as the ASA film speed.

"Jaggies" – Slang term for the stair-stepped appearance of a curved or angled line in digital imaging. The smaller the pixels, and the greater their number the less apparent the "jaggies". Also known as pixelization.

JPG or JPEG – (Joint Photographic Experts Group) A standard for compressing image data. Strictly speaking, JPEG is not a file format, it's a compression method that is used within a file format, such as the EXIF-JPEG format common to digital cameras. It is referred to as a lossy format, which means some quality is lost in achieving JPEG's high compression rates. Usually, if a high-quality, low-compression JPEG setting is chosen on a digital camera, the loss of quality is not detectable to the eye.

Kilobyte (KB) – A measurement of data storage equal to 1024 bytes.

LCD – (Liquid-Crystal Display) is a flat panel computer or video display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. It is an electronically modulated optical device made up of any number of segments filled with liquid crystals and arrayed in front of a light source (backlight) or reflector to produce images in color or monochrome.

LED Display – Is a flat panel display, which uses an array of Light-Emitting Diodes (LED) as pixels for a video display. Their brightness allows them to be used in signs and billboards. Televisions that are marketed as LED TVs are in fact LED-backlit LCD displays.

Li-ion – Lithium-ion battery. More ecologically safe and efficient rechargeable battery.

Live View – A setting on a DSLR camera that shows what your camera sees straight from its image sensor and displays it on the LCD screen. This means locking the mirror up and the shutter open so that the sensor is always exposed to light, bypassing the optical viewfinder entirely.

Lossless Compression – A compression algorithm that reduces the storage space needed for an image file without real loss of data. The uncompressed image can be reconstructed to be identical to the original. Continuous-tone images will on the average be reduced to half the original size.

Lossy Compression – A compression algorithm that reduces file size by actually removing data from the image. The most effective lossy-compression algorithms work by discarding information that is not easily perceptible to the human eye. Effective compression ratios of 10:1 to 50:1 can be attained.

Macro Mode – A lens mode that allows you to focus very close to objects so they appear greatly enlarged in the picture.

Matrix Metering – An exposure system that breaks the scene up into a grid and evaluates each section to determine the exposure.

Megabyte (MB) – A measurement of data storage equal to 1024 kilobytes (KB).

Megapixel – Equal to one million pixels.

Memory Stick – A memory card format by Sony slightly smaller than a single stick of chewing gum. Like CompactFlash and SmartMedia, it is flash-based storage for images.

microSD – A commonly used removable memory card based on the Secure Digital (SD) format used in consumer electronics that is about the size of a fingernail. With an adapter it can be used in any device that accepts a SD memory card. See also: Secure Digital.

Mirrorless – Digital Single Lens Mirrorless (DSLM) or Mirrorless Interchangeable-Lens Camera (MILC) is a class of digital cameras. This type of camera provides an interchangeable lens mount, however unlike a DSLR, they do not have a mirror reflex optical viewfinder.

MMC – MultiMedia cards share the same size and shape as Secure Digital (SD) memory card format used in many cameras. MMC and SD cards can be interchangeable in some, but not all cameras and PDAs.

MPG or **MPEG** – A compressed digital video format developed by the Motion Pictures Expert Group.

NiCad – Nickel cadmium battery. Rechargeable battery, more common in older cameras and flashes.

Nifty Fifty – A nickname given to the standard fast 50mm prime lens. These prime would offer wide apertures such as f/1.8 or f/1.4 that are better suited for low light photography, The wide aperture settings can be used for a reduced (shallow) depth of field effect. The 50mm lens is the closest you can get to the human eye offering a similar field of view.

NiMH – Nickel metal hydride battery. More ecologically safe and efficient rechargeable battery.

Noise – Pixels in your digital image that were misinterpreted. Usually occurs when you shoot a long exposure (beyond 1/2-second) or when you use the higher ISO values from 400 or above. It appears as random groups of red, green or blue pixels.

Noise Reduction – Some cameras that offer long shutter speeds (exceeding 1 second) usually have a noise reduction (NR) feature that is either automatic or can be enabled in the menu. This is to help eliminate random "hot" pixels and other image noise.

NTSC – A US video out standard to display images on a TV screen.

Optical Zoom – This is the true measure of the focal length of the lens. The zoom capability of the lens is based on its optical performance rather than digital enlarging or enhancement of the image.

Parallax – An effect seen in close-up photography when the viewfinder is offset by some distance from the lens. The scene through the viewfinder is offset from the scene through the lens.

Parallel Port – A port on the computer that is faster than a serial port but slower than SCSI, USB, or IEEE 1394 ports. Often used by printers and flash card readers.

PC Card or **PCMCIA** – A card, in the case of cameras usually a storage device, that plugs into a slot in a notebook or hand-held computer.

PDF – (Portable Document Format) is a file format developed by Adobe Systems used to present documents in a manner independent of application software, hardware or operating system. Each PDF file contains a complete description of a document's layout, including the text, fonts, graphics and other information needed to display it.

PictBridge – PictBridge is an international direct-print standard recently adopted by most major manufacturers of digital cameras and photo printers. With PictBridge, you can connect a compatible camera to a PictBridge photo printer via a USB cable, for easy direct printing without the use of a computer. The gear doesn't have to be the same brand — it just has to be PictBridge-capable.

Pin-Cushioning – A common geometric lens distortion causing an acquired image to pucker toward the center, usually found at telephoto focal lengths.

Pixel – Picture Element: digital photographs are comprised of thousands or millions of them; they are the building blocks of a digital photo.

Pixel Density – A calculation that returns the number of physical Pixels Per Inch (PPI) on a device screen or display. A device with a higher PPI will show more detail than one with a lower PPI value.

PNG – (Portable Network Graphics) An image file format. It is a compressed file format similar to JPG.

PPI – (Pixels Per Inch) See Pixel Density.

RAM – (Random Access Memory) The most common type of computer memory; where the CPU stores software, programs, and data currently being used. RAM is usually volatile memory, meaning that when the computer is turned off, crashes, or loses power, the contents of the memory are lost. A large amount of RAM usually offers faster manipulation or faster background processing.

RAW – The RAW image format is the data as it comes directly off the CCD, with no in-camera processing is performed. The RAW format specification is unique to the camera type and manufacturer. A software conversion (or decoding) is required to open and make alterations to the image file.

Red-eye – The red glow from a subject's eyes caused by light from a flash reflecting off the blood vessels behind the retina in the eye. The effect is most common when light levels are low, outdoor at night, or indoor in a dimly-lit room.

Red-eye Reduction Mode – A mode that fires a preliminary flash to force the iris of the subject's eye to close before firing the main flash to take the picture. This will minimize or eliminate the glowing red-eye effect but will cause a momentary delay between pressing the shutter and the image being recorded.

Resolution – An indication of the sharpness of images on a printout or the display screen. It is based on the number and density of the pixels used. The more pixels used in an image, the more detail can be seen and the higher the image's resolution. See also: DPI, PPI

RGB – (Red, Green, Blue) the three colors to which the human visual system, digital cameras and many other devices are sensitive.

Scene Mode – Many digicams now have an exposure mode called SCENE where the user selects the best pre-programmed scene to suit the current shooting conditions. The camera will automatically change many settings to capture the best possible image.

SCSI – (Small Computer Systems Interface) A high-speed input/output bus used in early model Macintosh computers (replaced by Firewire and then Thunderbolt). Also available as a PC bus upgrade.

Secure Digital (SD) – A commonly used removable memory card format used in many cameras and consumer electronics that is about the size of a postage stamp. The four types are the original Standard-Capacity (SDSC), the High-Capacity (SDHC), the eXtended-Capacity (SDXC), and the SDIO, which combines input/output functions with data storage.

Sensitivity – See ISO

Serial Port – A method for connecting an external device such as a printer, scanner, or camera, to a computer. It has been all but replaced by USB and FireWire in modern computers.

Shutter Lag – The time between pressing the shutter and actually capturing the image. This is due to the camera having to calculate the exposure, set the white balance and focus the lens.

Shutter Speed – The camera's shutter speed is a measurement of how long its shutter remains open as the picture is taken. When the shutter speed is set to 1/125 or simply 125, this means that the shutter will be open for exactly 1/125th of one second. The shutter speed and aperture together control the total amount of light reaching the sensor. See also: Aperture.

SmartMedia – A removable memory card format used in some cameras that is wafer-thin, matchbook size.

Spot Metering – Auto exposure is based on a meter reading taken from a small circle in the center of the viewfinder, or user selected area of the viewfinder.

Thumbnail – A small version of a photo. Image browsers commonly display thumbnails of photos several or even dozens at a time. In Windows XP's My Pictures, you can view thumbnails of photos in both the Thumbnails and Filmstrip view modes.

TIF or TIFF – (Tagged Image File Format) is a computer file format for storing digital images, popular among graphic artists, the publishing industry, and both amateur and professional photographers.

TWAIN – (Technology Without An Industry Name) A protocol for exchanging information between applications and devices such as scanners and digital cameras. TWAIN makes it possible for digital cameras and software to "talk" with one another.

URL – (Uniform Resource Locator) Numeric or alphanumeric address of a Web site.

USB – (Universal Serial Bus) A protocol for transferring data to and from digital devices. Many digital cameras and memory card readers connect to the USB port on a computer. USB card readers are typically faster than cameras or readers that connect to the serial port, but slower than those that connect via FireWire.

White Balance – A function on the camera to compensate for different colors of light being emitted by different light sources. Common white balance settings on a digital camera are Daylight, Cloudy, Shade, Flash, Fluorescent, Tungsten. See also: Color Temperature.

WiFi – (Wireless Fidelity) A wireless network protocol for computers, digital cameras which can transmit images to a computer, printer or even between cameras.

xD Picture Card – A commonly used removable memory card format used in some cameras that is about the half the size of a postage stamp.

4K Resolution – Refers to a horizontal display resolution of approximately 4,000 pixels. Digital television and digital cinematography commonly use several different 4K resolutions. In television and consumer media, 3840×2160 (4K UHD) is the dominant 4K standard, whereas the movie projection industry uses 4096×2160 (DCI 4K).

8K Resolution – Refers to a horizontal display resolution of approximately 8,000 pixels. 8K UHD (7680×4320) is the highest resolution defined in the recommended 2020 (UHDTV) standard.