

DIGITAL GLOSSARY

Achromatic color: A color with no saturation, like light gray.

Additive Primary Color: (Also see RGB) The RGB color model used by emitted imaging devices that allows white to be created by adding all colors, while black is the absence of all colors.

Aliasing: The noticeable repeated patterns, lines, or textures in any photographed or scanned subject that conflict with the pattern of an electronic sensor's pixel arrangement. For example diagonal lines represented by square pixels will produce jagged lines.

Anti-aliasing: The process used to remove "jaggies" or stair stepping in an image. Anti-aliasing smoothes the diagonal lines by placing dots of an in-between tone in appropriate places.

Aspect Ratio: The ratio of length to width. This term can be used to describe an individual pixel, an image sensor, computer display or print. Common aspect ratios for digital camera image sensors are **4:3 and 3:2**. Common aspect ratios for prints are **4:3 3:2 5:4 and 1:1**

Bit: The smallest amount of digital information. Made up of a 1 or 0 representing an on or off state.

Bit Depth: Refers to the gray scale range of an individual pixel. A pixel with 8 bits per color gives a 24-bit image (8 bits X 3 colors is 24 bits). CCD are colored in a pixel-by-pixel method, see CCD. 30/36-bit is billions of colors; 24-bit is 16.7 million colors; 16-bit is 65,535 colors; 8-bit is 256 levels of gray or color; 4-bit is 16 levels of gray or color; 2 bit is black or white.

Bitmap: 1. Originally was the image file using the on or off bit to produce a black or white pixel or dot. This type of image has no color or grayscale. 2. Is the method of storing information that maps an image pixel, bit-by-bit. These bitmapped file formats include .bmp, .pcx, .pict, .pict-2, tiff/.tif, .gif (89a), and so on. Most image files are this type of bit mapped. This type of file gives you stair-stepped edges, the 'jaggies'. When examined closely you can see the line of pixels that creates edges. All computers use Bitmap images. The desktop or screen information for all Windows machines uses .bmp files, Macintosh uses pict files.

Black Noise: Is also know as Dark Current, is the signal charge the pixel develops in the absence of light. This charge is temperature sensitive, and normal in electrical image sensing devices.

Bleeding: The color value of one pixel unintentionally appearing in the adjacent pixel or pixels.

Blooming: Is the bleeding of signal charge from extremely bright pixels to adjoining pixels, over-saturating those pixels. Mask or potential barriers and charge sinks are used to reduce blooming.

.BMP: Windows Bitmap file format was created by Microsoft® as the system standard format.

Brightness: One of the three dimensions of color (HSB). Brightness is the relative lightness or darkness of a color from 0% black to 100% white.

Byte: Computer measurement of storage, memory, file size or information made of 8 bits of information.

CCD: Charged Coupled Device, a light sensitive chip used for image gathering. In their normal condition these are grayscale devices. To create color, a color Bayer pattern is laid down on the sensor pixels, using a color mask like RGBG, (Red, Green, Blue and Green). The extra Green is used to create contrast in the image. The CCD Pixels gather the color from the light and pass it to the shift register for storage. CCDs are analog sensors, the digitizing happens when the electrons are passed through the A to D converter.

CMOS: The integrated circuitry having both digital and analog circuits fabricated on the same substrate allowing for controlling ASIC technology to be embedded into the chip design.

CMY(K): Cyan, Magenta, Yellow, Black; these are the colors used in printing. Color Printers; Ink-Jet, Laser, Dye-Sublimation, Thermal Wax, and Solid Ink printers use CMY as their primary colors. This is a color management problem on computers. Converting RGB files to CMYK files causes color shifts. CMYK is also known as a reflective color since it is printed on paper, or reflective films.

Color Wheel: A color model designed to show all the visible colors. Complementary colors are opposite each other, with secondary colors and so fall between primary colors.

Compact Flash cards: Rewritable removable memory or function card developed by SanDisk in 1994. In contrast with Smart Media technology, it has a built-in controller.

Compression: Software algorithms that reduce the number of binary digits in a digital file by eliminating redundant information. The resulting files are reduced in size. (also see JPEG, LZW and RLE.)

Compression Ratio: The ratio of the size of a compressed digital file to the original uncompressed digital file. Ratios between 15:1 and 8:1 are the most often used in digital cameras. Highest quality ratios are less than 5:1.

Continuous-tone: The smooth infinite gradation of grays from black to white with out banding. This gradation also produces the full range in colors. (photographic quality printing)

Contrast: The visual relationship between each tone in an image. High contrast will produce an abrupt and sharp difference in tones, when low the image will appear flat.

Digital: The measurement and recording of continuously varying values of elements in the physical world, such as sound, light, temperature, etc., corresponding proportionally to values such as electronic voltage. These values are then converted into binary bits of information to be stored, or used on magnetic or optical media. Digital products include CD-players, digital cameras, and computers.

Digital zoom: A digital zoom merely "blows up" the image in the viewfinder (or on the LCD) and crops in on a section of it. Enlarging the image in this way results in the reduction of picture quality, unlike an optical zoom.

DPI: Dots Per Inch, a printing term that describes the number of dots per inch that are used to create an image. The smaller the size and greater the number, the higher the geometric resolution of the display.

DPOF: Digital Print Order Format. A format that enables images stored on Camera Media cards to be accessed directly by supporting printers for a simpler printing solutions at home or by photo labs.

Driver: A small program that allows the communication between the application program and a certain device, such as a printer or digital camera

Dye-Sublimation Printer: The printing system that transfers colors from RGB, CMY, or CMYK computer files onto ribbons containing dyes that are heated and fused onto paper. Dye sublimation printers are continuous-tone printers capable of producing photographic quality images.

Dynamic Range: Has two distinct and different meanings in digital products.

1. Dynamic range is the ratio of the specific maximum signal level capability of a system or component to its noise level. Usually expressed in decibels and used in engineering specifications. Also know as

signal-to-noise ratio.

2. Dynamic range is the ratio of contrast, tonal range or density in an image between black and white.

EXIF: Compression file format used to store images on flash memory cards and digital cameras. contain JPEG compressed files and can contain addition header information.

Firmware: An often-used microprogram or instruction set stored in ROM. Usually refers to the ROM-based software that controls a unit. Firmware is found in all computer-based products.

GIF: Graphic Interface designed by CompuServe for using images on line. This is a 256 color or 8-bit image.

GUI: Pronounced Goey, stands for Graphic User Interface. Refers to the computer interface with software in a user-friendly appearance.

Image compression: In order to store digital pictures economically, the image data is compressed. However, compression often causes a reduction in picture quality.

Image-editing software: Describes software that allows the user to view and alter digital images. A commonly used image editing program is Adobe Photoshop.

Inkjet Printer: A printing system that sprays fine droplets of CMYK ink through very small nozzles to form dots on papers. The "Photo Inkjet Printers" also use the fine nozzles to spray 6 colors of CMY and pastel versions of CMY to create dots on paper.

ISO: International Standards Organization is a committee of representatives from different countries responsible for the establishment of consistent global standards.

"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.

JPEG: The de facto ISO standard for image compression in digital imaging devices. This is the reason you can get many images into the digital cameras. The name comes from Joint Photographic Experts Group.

Kilobyte: equal to 1024 bytes, written as "KB", used to refer to size of files, which relates to amount of information in a file.

LCD: Liquid Crystal Display. The LCD can be used as a viewfinder when taking pictures and you can also use it to review pictures and decide which ones to keep and which to delete from memory. A good LCD display should be easy to see under a variety of lighting conditions.

Megabyte: The computer measurement for 1024 Kilobytes (or 1,048,576 bytes), written "MB", used to refer to sizes of files and media such as hard drives or RAM.

Megapixel: The imaging term for an Image sensor of one million pixels or more. The higher geometric pixel resolution of these sensors produces higher quality digital photographic images.

MPEG: Motion Picture Expert Group. The abbreviation is used to describe a compression format for digitized video images.

Ni-MH battery: Nickel-Metal Hydride battery. Rechargeable batteries that have an energy density 100% higher than NiCd batteries and can supply high energy levels when required, e.g. when using the flash in quick succession. They can be recharged more than 300 times and are environmentally-friendly (free of cadmium and mercury). Among other devices, Ni-MH are used to power digital cameras.

Noise: The unwanted or uncontrolled electronic buildup in a device. If the noise becomes too high the signal or image is degraded to an unusable condition.

NTSC TV connectivity: National Television Standards Committee. Defined by an image of 640 x 480 pixels.

Optical Zoom: Operates the lens of the camera to move you closer to your subject. Uses conventional lenses to provide the best resolution.

Pixel: The pixel is the smallest part of a digitized or digital image. Pixel comes from the term "picture elements". Also used in measuring image size and geometri resolution, i.e., 640 X 480 is the pixel resolution of most VGA Monitors. (Note pixels are square in computers and rectangular in video.)

PPI: Pixels Per Inch is a term that describes geometric resolution for display purposes.

.PSD: is the Adobe Photoshop file format used on versions 3.0 and higher.

QuickTime: Developed by Apple Computer Inc., this is a standard for digital videos and streaming media. It provides the ability to record and view motion picture video with a digital camera.

Resolution: The sharpness, tonal range and color accuracy of an image. The pixel count determines the geometric resolution and tonal dynamic range of the image. The optical resolution or lens determines the clarity, focus and contrast of the information provided to the image capture material. The dynamic range (tonal shadow and highlight detail), color fidelity and over-all sharpness of the image are its resolution. Geometric display resolution is measured in Pixels Per Inch (PPI)

RGB: Red, Green, Blue; the color model of computers. Computer monitors and digital cameras use these colors to create all the colors seen on the monitor and saved in files. Green gives the color green, but is also used for contrast control.

Saturation: One of the three dimensions of color (HSB). Saturation is the measure of the purity of a color or colors from 0% black to 100% for a fully saturated color.

Signal-to-Noise: Is the ratio or relationship of accurate electrical signals to unwanted signals like static disturbances creating noise.

SVGA: Super Video Graphics Array. Refers to display dimensions of 1280 x 1024 pixels.

TIFF: Tagged Information File Format, is the file for-mat developed for universal transfer between many digital imaging applications and devices.

Thermal Wax Printer: Like a dye-sublimation printer, thermal wax printers transfer colors from RGB, CMY, or CMYK ribbons containing waxes, which are warmed and fused onto special papers. These printers generally have excellent imaging quality with poor text quality.

Tonal range: The maximum range of tones visible in any image or reproduction.

Twain: An acquire interface developed by a consortium of software developers as a standard for communications between scanners, imaging devices and now digital cameras and the computer software. Twain allows you to import (acquire) an image into your software. This is the interface of choice on the Window's platform.

USB connectivity: Universal Serial Bus or USB ports are a type of connection that supports plug-and-play for easier device setup and offers faster data transfers than serial or parallel ports. Plus, more than one device can be connected to the same USB Port. Note: You must be using a PC with a USB port and running Windows98 or higher to use a camera with a USB output.

VGA: Video Graphics Array. Refers to display dimensions of 640 x 480 pixels.

WYSIWYG: Slang for "What You See Is What You Get," refers to accurate screen images to print out. Pronounced "WizzyWig."