

**OLYMPUS**

THE VISIBLE DIFFERENCE

Digital Library

Volume 4

**F**

**A**



**Q**

**FREQUENTLY  
ASKED QUESTIONS**  
on  
**DIGITAL PHOTOGRAPHY**

**FRAGEN** und  
**ANTWORTEN**  
zur  
**DIGITALFOTOGRAFIE**

**QUESTIONS**  
**FREQUEMMENT**  
posées sur la  
**PHOTOGRAPHIE DE NUMERIQUE**

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## 8. The A to Z of digital photography

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# A

**AC adapter** Mains adapter. Enables the connection of the digital camera to the mains electricity supply.

**ADC** Analogue-Digital Converter. Hardware that converts analogue information into digital data. (→AD-Conversion)

**AD conversion** Analogue-Digital conversion. In order to process an analogue signal (e.g. a photo) in a computer, it must first be digitised (converted into a specific mathematical format of binary code). Pictures are usually digitised with the help of a digital camera or a scanner.

**Additive colour mixing** Describes a colour system that is based upon the addition of the three additive primary colours (red, green and blue). For example, colour televisions and computer monitor displays use the principle of additive colour mixing.

**Add-on / Add-in** Extension to a program such as Excel or Word that increases the available functions. These add-ons/add-ins are developed and distributed by the respective software company or other firms.

**AE** Automatic exposure.

**AF** Autofocus.

**AF metering field** Spot or area in the frame marking the position where the autofocus system takes readings to set the focus.

- Algorithm** A set of processing or working instructions that, because of their high precision, can be carried out independently by a mechanical or electronic device. Algorithms are, for example, the set rules for addition and subtraction etc. However, they are also the instructions that are established in a programming language. Algorithms simply allow the computer to solve particular problems. In image editing, algorithms are used to alter images, e.g. 3-D Cubic Algorithm. (→TruePic)
- Aliasing** Pixel-shaped curves on the diagonal edges of objects. This can sometimes occur since all graphics consist of individual →pixels. Anti-aliasing reduces this unwelcome effect by recalculating the contrast values of the neighbouring pixels and matching them up with each other.
- Altavista** Well-known →search engine in the →internet.
- Analogue** Opposite of →digital. Analogue data merges continuously into each other without clearly defined steps. (E.g. the colours of a rainbow are not obviously separable from one another.)
- Aperture** Mechanism behind the lens that controls the amount of light entering the camera. The aperture not only influences picture brightness but also regulates →depth of focus. Most cameras are equipped with an iris aperture that can be freely adjusted or set according to pre-selected values.
- Aperture Priority** In this mode, the user can adjust the aperture and the camera automatically selects the best shutter speed to match it. In most cameras, the Aperture Priority mode is denoted by the letter "A". →Shutter Priority.

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**AppleTalk** A network protocol used by Macintosh computers.

**APS** Advanced Photo System. Developed together by five companies, this film system is distinguished by simple operation, a new picture format (16 x 30 mm) as well as a choice of three picture formats. Additional information (such as exposure, aperture and date) can be recorded on the magnetic strip of the APS film. However, APS is not digital photography.

**ASCII** American Standard Code for Information Interchange. The commonly used →binary code for a total of 128 symbols (letters, numbers, punctuation and special symbols, though, not for umlauts) enables the correct data transfer between software and hardware. The ASCII-code employs the first seven →bits of a →byte. The first 32 symbols are used as control symbols, e.g. to control a printer.

**ASIC chip** A chip designed for a specific application. They are used by cameras to quickly process the captured image data.

**ATA** AT Attachment. →Interface for →hard drives.

**ATA-Flash-Cards** Space-saving integrated plug-in memory cards.

**Average metering** A special →exposure metering technique that measures the average light intensity across the entire frame.

**Auto bracketing** Using this mode, a series of shots – each adjusted to a different exposure value – is taken in succession. This is very useful in tricky lighting conditions where it is difficult to assess the settings. After all shots have been taken, the best may be selected and the others deleted. (→Exposure correction)

**Autofocus (AF)** Automatic focus adjustment. There are basically two main AF methods: the focus detecting method, (or passive autofocus) usually employs a CCD and works by evaluating the amount of contrast or the phase difference in a scene. Distance metering (or active autofocus) utilises an (infrared) light emitter and receiver in a triangular surveying system. Alternatively, the camera may use ultrasound (sonar) and measure the time taken for the sound signal to return. This data is converted by a microprocessor into information about distance and thereby enables the automatic focusing of the lens.

**Autofocus illuminator** Some cameras are equipped with an AF illuminator which assists the normal autofocus in poor lighting conditions by illuminating the subject. In this way, the regular passive AF system (e.g. contrast detecting / phase differential method) can determine the correct focus settings – even in dark surroundings.

**AVI** Audio Video Interleave. Standard file format from Microsoft (and therefore for Windows computers). It is used for saving video sequences with or without sound.

# B

**Banding** Depiction error often occurring in dark sections of an image when shooting with a high sensitivity setting. Smooth lines of brightness or colour look like bands of brightness or colour.

**Battery pack** Also called power pack. Rechargeable battery protected by casing. It provides camera, external flash, etc, with additional power.

**Baud** Named after the French engineer Baudot. It is the unit used to measure data transfer (1 Baud = 1 bit/sec.). For example, the specification "28,800 Bauds" means that data can be transferred at a rate of 28,800 bits per second.

**Binary** This is the name given to the representation system of numbers consisting solely of the figures 0 and 1. Just like the ten figure decimal system (0-9), in the binary system, larger numbers are made up by combining the numbers 0 and 1.

**BIOS** Stands for Basic Input / Output System and describes the basic program of a computer.

**Bit** Binary digit. The smallest →digital unit that can show only two states, 0 or 1. 8 bits produce one →byte.

**Bit depth** →Colour depth.

**Bitmap** A representational form for a digital image in which each →bit in the computer's memory corresponds to one →dot on the screen or printer.

- Blackboard/Whiteboard** These two picture effects record images using only pure black and white to heighten the image's contrast value. This makes them ideal for capturing text.
- Blooming** The opposite of →noise; an image error that has been more or less eradicated in the newer digital cameras. It describes the "overflow" of electrical charges between the individual sensors on a →CCD element.
- Bluebox** A process from television and movie production. Actors stand in front of a coloured wall, usually painted blue. Later, a different background is put in for the blue areas on the recorded image, giving the impression that the actors are e.g. on top of a mountain, although they never left the studio.
- Bluetooth** Standard introduced by Ericsson, Intel, IBM, Nokia and Toshiba for wireless, radio-wave communication between different devices. Unlike the infrared data transfer method, which is also wireless, Bluetooth does not even require visual contact between the communications devices. It operates on a frequency of 2.4 GHz and offers a regular transfer rate of 1 Mbit/s. Its normal range is 10 metres.
- bps** →Bits per second. Refers to the number of bits transferred in one second. The bps notation is often found on →modems and →serial interfaces.
- Browser** Describes a program used to display information, especially on the internet.

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- Buffer (Buffer memory)** A form of temporary memory (RAM) where images are saved briefly before being written to the storage media. This type of memory is necessary because memory cards are comparably slower due to their architecture and cannot save the files at the speed the camera produces them. Buffer memory is particularly helpful when shooting →sequence photos.
- Bug** Describes a programming error. This can be removed by correction or rewriting the program codes. (→Patch)
- Bug-Fix** Removing a software error by means of a small additional program.
- Bulb mode** Long exposure mode. In bulb mode, the shutter stays open as long as the release is held down. This allows exposure times of several minutes or even hours. However, in some models, the bulb mode is limited to a number of minutes regardless of how long the release is held.
- Burst mode** Another term for sequence mode or continuous shooting.
- Bus** Internal interface for data transfer between individual system components such as micro-processor, memory, etc.
- Byte** →Binary data packet made up of 8 →bits. A byte can represent values between 0 and 255. It can depict 256 symbols, numbers or colours. In the computer field, larger byte size is described using the prefix letter for the abbreviation of the exponent of 2. Therefore:  
1 Kilobyte = 1 KB = 1,024 bytes  
1 Megabyte = 1 MB = 1,048,576 bytes  
1 Gigabyte = 1 GB = 1,073,741,824 bytes  
1 Tera-byte = 1 TB = 1,099,511,627,776 bytes.

# C

**Calendar card** →SmartMedia function card.

**Calibration** The reciprocal balancing or tuning of input and output devices to receive a matching value. In this way, the colours on a monitor can be matched with the printer's colours. (→Colour management)

**CAMEDIA** The name given to the Olympus Digital Imaging products.

**CAMEDIA Master / CAMEDIA Master Pro** CAMEDIA Master software allows easy, straightforward processing, editing, organising and printing of digital still and video images. Using the software, images can be joined together to create panoramic scenes. Thumbnail overviews make it easy to find individual photos. The Pro version offers additional advantages: the creation of presentations with sound effects and music, which can be saved as movies; HTML photo albums for inclusion on websites.

**Candela** Unit of illumination (cd). 1 cd is 1/683W per steradian.

**Card adapter** Device in which the memory card can be inserted for transferring the data on a memory card between a →PC Card slot and →disk drive to the computer.

**Card reader/writer** Device that accepts memory cards and, through connection to a computer, allows data to be transferred between the media and PC.

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**Cast** When a colour of one type is in excess in a picture, such as too much yellow or red. Often appears if the wrong →white balance setting is used.

**CCD** Charge-Coupled Device. A light sensitive semiconductor that converts received light into voltage according to the level of brightness. It is used as a →chip or line sensor in digital cameras and →scanners. (→progressive CCD, →video CCD)

**CD-ROM** Compact-Disc-Read-Only-Memory. A “read only” CD-ROM can hold up to approximately 650 or 700 MB of data, e.g. pictures and text.

**CD-R** Compact Disc Recordable. CD on which data can be saved (at intervals if desired) but not deleted. Besides the standard size of 12 cm diameter, smaller versions of 8 cm are also available.

**CD-RW** Compact Disc Rewritable. Compact disc that can be re-written around 1,000 times. Besides the standard size of 12 cm diameter, smaller versions of 8 cm are also available.

**Centre-weighted average metering** This method of →exposure metering is often used for subjects with an even contrast distribution. (→Digital ESP (selective multi-zone metering); →reflected-light metering; →exposure metering, →light metering, →spot metering)

**CF** →Compact Flash.

**Charger** Battery-charger.

- Chip** General description for →integrated circuits whose components (e.g. transistors, diodes, resistors) are mounted on a small plate of the semiconducting material silicon.
- CIE** Commission Internationale de l’Eclairage. An international standard commission for colour metric measurements. The set standards are the basis for the colour definition in →DTP standards.
- CISC** Complex Instruction Set Computer. A type of →processor that recognises and processes a large number of complex and powerful instructions without the need for additional software.
- CMOS** Complementary Metal Oxide Semiconductor. Light sensitive chip. Different to →CCDs, the pixel elements on the CMOS are read individually.
- CMYK** Cyan, Magenta, Yellow, and Key/Black. These are the printer colours used to create colour prints. (→Subtractive colour mixing)
- Colour depth** This refers to the maximum number of colours that can be recorded by digital cameras and scanners or that can be displayed by graphics cards. A true colour representation can be achieved at a colour depth of 8 bits per primary colour, that is a 24 bit colour depth. In this case, 256 bits are available for one pixel. With an RGB signal, this value is then multiplied by a factor of three so that a total of  $256 \times 256 \times 256 = 16,777,216$  colours can be displayed. High-end scanners, graphic cards etc. provide a minimum colour depth of 24 bit.

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**Colour management** The calibration of all peripheral devices that feature in the production of colour images (monitors, scanners, colour printers etc.). For example, by using a colour management system, the data from a scanner is converted into values for a standard colour range. The data is then arranged so that the printer can produce good colour prints.

**Colour noise** The incorrect reproduction of colour on an image, e.g. dots on an area which is supposed to be pure white. (→Noise)

**Colour temperature** Describes the spectral energy distribution and thereby the colour quality of a light source. The temperature of a colour is given in →Kelvin (K). It is important to choose the correct temperature so that a subject can be photographed in its true colours. The spectrum that can be seen by the human eye lies between approx. 2,790 K and 11,000 K.

**Compact digital camera** Smaller dimensions and reduced weight make these easy to handle models ideal for travel and everyday use.

**CompactFlash card** Rewritable removable memory or function card developed by SanDisk in 1994. In contrast with →SmartMedia or xD-Picture Card technology, it has a built-in controller. The newer CF type II (CF/2) cards are 5 mm thick, the CF type I are only 3.3 mm thick. (→PCMCIA-Cards/PC Cards)

**Compatibility** The ability of data, programs (software), and equipment (hardware) to run and/or work together. This allows for the individual components to be put together to form a system.

**COM port** Describes the →serial interface of a computer. Often used to connect devices such as digital cameras to a computer. (→USB)

- Compression** Data may be compressed to reduce storage (memory) space or transmission times (= reducing the amount of data). Well-known compression standards include →JPEG and →MPEG.
- CompuServe** Commercial data service that offers countless information and discussion panels about an unlimited variety of subjects. A computer, a →modem, and a telephone line are required.
- Computer controlled flash** Almost all compact or grip-type flashes are computer controlled. They set their intensity by directing a →sensor at the subject, thus gathering the information from which the →flash duration can be attained. The light sensor often gathers the data through the camera's lens. (→TTL)
- Converter/ Lens converter** Lens extension that increases or shortens the focal distance. (→Macro-converter, →tele-converter, →wide-angle converter)
- CPU** Central Processing Unit. The main processor of a PC (personal computer).
- Cross-button** Special operating element. By altering the point of pressure, a single button is all that is needed to choose various menus or select and activate functions.
- CRT** Cathode Ray Tube. Electron guns inside the tube send beams onto the front surface of the tube, causing it to glow, creating a display. (→LCD)
- CR123A** 3V lithium battery with a standard size of 34 x 16.5 mm, also called DL123A in America.
- CR-V3** 3V lithium battery with a standard size of 52 x 14 x 28 mm. Olympus description: LB-01E.

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# D

**Data security** A collective term used for any measure to protect and store files as well as programs for an extended period of time.

**Data transmission** The exchange of →digital information between two or more computers. Data is usually transmitted via a direct cable connection, a computer network or telephone lines.

**DCF** Design Rule for Camera File System – an industry standard for saving digital images. This not only determines the file type, but also sets the rule for naming the folder and file structure. It allows the conversion of uncompressed TIFF files into compressed JPEG files. This →JPEG file is of the Exif type and can contain camera information such as the date and shooting parameters. (→Exif, →DPOF)

**Dead pixels** Dead pixels do not react at all (unlike →hot pixels) and can be seen in the resulting image as black spots.

**Depth of field** The spatial area in a shot that is in focus. The depth of field is influenced by the aperture size, the lens' →focal length and the point of focus. Also called depth of focus.

**Digital** Opposite of analogue. Digital information is made up of a limited number of gradations (e.g. 256 colours, 8 →bit). The change from one digital element to the next is always “step by step” and not continuous.

- Digital camera** Usually captures images with the help of a →CCD chip. The image data received is then saved to special memory cards or other storage media. (→SmartMedia, →xD-Picture Card, →Compact Flash, →Memory Stick, →SD Card, →MMC Card)
- Digital ESP** Digital Electro-Selective Pattern. The employment of a selective multi-zone metering system ensures an optimal exposure even in difficult lighting conditions. While simple multi-zone systems work out the average exposure from readings throughout the frame, the digital ESP system analyses the distribution and degree of brightness to see which of a range of scenarios the picture best matches (e.g. a shot with strong backlight or sunset). It then adjusts the settings accordingly. (→Exposure metering, →spot metering, →reflected-light metering, →exposure metering, →light metering)
- Digital flash** →Computer controlled flash. (→Flash)
- Digital Imaging Software** →Image editing software. (→CAMEDIA Master)
- Digitalisation** →AD-conversion.
- Digital tele** Thanks to special →algorithms, some digital cameras are able to provide a zoom effect by re-calculating the captured image data. However, enlarging an image in this way also means reducing its picture quality.

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**Diode** →Photodiode.

**Diopter** Unit for measuring a lens' refractive power. In photography, the term is used with close-up lenses and corrections to the viewfinder to adjust it to the user's eyesight.

**Dioptic adjustment** The adjustment of the viewfinder to the photographer's eyesight (unit: dpt).

**Direct print function** The ability to print digital pictures without the need for a computer.

**Diskette Adapter** →FlashPath Adapter.

**Display** →LCD.

**Distortion** Misrepresentation of an image. →Wide angle lenses normally produce more distortion than →tele lenses.

**DOS** Disc Operating System. Usually DOS describes the operating system developed by Microsoft for personal computers. (→MS-DOS)

**Dot** The smallest raster element of an image. Many dots together produce one pixel. For example, in the specification "8 →bit →colour depth", three "layers" of 256 dots each are on top of one another to produce one pixel.

- Dot pitch** Used with monitors, it indicates the distance between individual →dots. The smaller the distance between dots, the sharper the image. Good monitors usually have a dot pitch of between 0.25 and 0.27 mm.
- Download** Describes the process of receiving data, usually via either a →mailbox, the internet or another device like a digital camera to a PC (data transmission).
- dpi** Dots per inch (1 inch = approx. 2.54 cm). A measuring unit in printing to describe the geometric →resolution of an image.
- DPOF** Digital Print Order Format. A format introduced by the photo industry that enables images stored, for example on SmartMedia or xD-Picture Card, to be accessed directly by certain printers and copiers as well as allowing simpler professional treatment by photo labs.
- DRAM** Dynamic RAM. A type of memory chip that is used in most personal computers as the main storage medium. (→RAM)
- Driver** A small program that allows communication between the application program and a certain device, for example a →printer or digital camera.

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## 8. The A to Z of digital photography

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**DTP** Desktop Publishing. This refers to the design and illustration of texts and graphics directly on the monitor screen.

**DVD-ROM** Digital Versatile Disc. A standard for →CD-ROM with a much greater capacity (e.g. 9.4 GB) than a regular CD-ROM.

**Dye-sublimation** Describes a printing method for half-tone images or pictures. This process uses heat to transfer colour from a printer ribbon into paper. The picture quality is exceptional. The CAMEDIA photo printer P-400 ID from →Olympus produces A4 size prints within 90 seconds and at a resolution of 314 →dpi with up to 16.7 million colours.

# E

## **Electronic viewfinder**

The electronic →viewfinder consists of a small LCD which displays the picture seen through the lens, just like with a regular SLR. This is achieved with the help of the →CCD which continually sends the captured image information to the electronic viewfinder. As a result, composition is much easier because the photographer is shown the very same image seen by the camera. Furthermore, shooting data, such as picture number and settings, may also be displayed here.

**Email** A worldwide electronic mail system. Digitised data can be sent almost immediately throughout the world via telephone lines using only a PC. Every email user has his or her own internationally distinct address where he or she can be reached electronically. Files, such as digital pictures, can be sent with any email message.

**EPS** Encapsulated PostScript. A computer →file format based on the →PostScript standard. It is supported by most graphic design and page layout programs. In addition to the PostScript code, the EPS file also contains a low resolution →PICT.

**ESP** →Digital ESP.

**EVF** →Electronic viewfinder.

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**Exif** Exchangeable image format. A standard for image files created with digital cameras and other input devices. Exif files can contain either uncompressed →TIFF or compressed →JPEG images and can hold data about the camera and settings employed. Using special programs, the information saved can be shown. Exif 2.2 saves even more information, such as the shooting mode, white balance and flash settings used. Compatible printers can then intelligently apply this data to produce optimal printed results.

**Explorer** Microsoft →internet →browser.

**Exposure** During exposure, the sensors on the →CCD (or chemicals on the film in analogue models) are subjected to the light outside the camera for a certain time.

**Exposure control** Describes how the shutter speed and aperture are controlled by the camera. This can be either automatic: fully automatic, programmed auto and scene program; as well as semi-automatic: Aperture Priority, Shutter Priority or manual: full control of the →aperture and →shutter.

**Exposure correction (compensation/control)** Conscious deviation from the value ascertained by the light meter. The change can be made manually (→under- and →overexposure) or through the programmed auto exposure control.

**Exposure meter** →Light meter

**Exposure metering** →Light metering

**Exposure time** The length of time for which the shutter is open.

# F

**FAQ** Frequently Asked Questions.

**FDD** Flexible or Floppy Disc Drive. A storage medium with a capacity of 1.44 →megabytes (MB).

**File** A set of data that has been arranged according to specific rules. Files are managed in the computer by the →operating system and can be stored long-term on an external storage medium.

**File format** Describes the contents of files. Common file formats include <txt> for a text file, →<eps> (→Encapsulated PostScript) for →PostScript, and <tif> for →"TIFF"-images.

**Film scanner** Hardware for digitising negatives and slides. (→Flash Film Scanner)

**Film sensitivity** The information is given in an →ISO value, which replaced the earlier DIN and ASA (American Standard Association).

**Filter** 1. A transparent, mostly coloured sheet of glass or plastic that can be placed in front of a lens to create a certain effect. 2. An option in an image editing program that enables certain adjustments to the picture, e.g. colour and brightness or foreshortening.

**Firewire** →Serial data transfer interface with a transfer speed of up to 400 Mbit per seconds (50 MB per second). Sometimes known as an →IEEE1394 interface. Features some of the characteristics of →USB, such as →Plug & Play and the connection of up to 64 devices.

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**Firmware** Software contained in →ROM that manages the camera's operation.

**Fisheye lens** Having a viewing angle of 180°, these lenses can provide a very surreal image. Can be divided into diagonal types which provide a frame-filling picture; or circular lenses which project a round image on the frame.

**Fixed focal length** When the camera's lens has a set →focal length and cannot be moved so →optical zooming is not possible.

**Fixed focus** Fixed focus cameras do not have →autofocus systems. The focus and aperture have been set so that everything within a certain distance is captured clearly. However, the drawback is that they do not have a very close focusing range and only a small →aperture.

**Flash** Produces a large amount of light for a brief moment to illuminate the subject. Modern flashes work with glass discharge tubes. Computerised camera flashes can measure and automatically control their intensity by means of a →sensor directed at the subject. (→Guide number)

**Flash duration** The camera's flash synchronisation ensures the flash is emitted while the shutter is open.

**Flash Film Scanner** Attachment for certain digital cameras that digitises 35 mm negatives, and slides. (→Film scanner)

**FlashPath Adapter** Permits the trouble-free transfer of digital images saved on →SmartMedia cards to a PC. The storage cards are inserted into the adapter and then in the computer's disk drive.

**Flash range** The distance needed to be covered by the flash to give the subject optimal illumination. This can be calculated using Lambert's law. As the distance from the light source is doubled only a quarter of the original amount of light will reach the subject. (→Guide number)

**Flash-ROM** A type of memory storage that can retain information even after the power has been switched off. Unlike conventional →ROM, the contents of a Flash-ROM can be deleted and rewritten with the help of a pre-programmed electrical current. Therefore, a Flash-ROM is a combination of →RAM and ROM.

**Flash synchronisation** Co-ordinates the opening of the camera's shutter with the time and duration of the flash. Some cameras allow you to synchronise the beginning or end of the shutter ("first curtain" and "second curtain" flash respectively).

**Focal length** The distance between the centre of the lens system and the film or CCD sensor, i.e. where the image is in focus. Normal focal length gives an image impression roughly corresponding to that of the human eye (about 50 mm in conventional film cameras and about 7 mm in digital cameras with a 1/3" CCD).

**Focusing** Adjusting the position of the lens elements to bring the image into focus, i.e. so that it is clear and sharp.

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**Format** In computers this refers to the type of file, such as JPEG, TIFF or DOC. In photography and other areas it also refers to the two dimensional size of an image. In compact cameras, the photos typically have a ratio of 3:2 (Format: 36 x 24 mm). With digital images, the ratio is normally 4:3 but can be changed to 3:2 in some cameras. For prints, the format means the size of the print out, such as 9 x 13 cm, 10 x 15 cm, 13 x 18 cm.

**FreeHand** Popular graphics program from Macromedia.

**Freeware** Software that is free to use and pass on but not sell. Unlike shareware, there is no need to register the software.

**FTP** File Transfer Protocol. Protocol for transferring files between computers and the →internet.

**Full automatic** In this mode, the camera not only controls the →aperture and →shutter but all other settings (e.g. flash).

# G

**Gamma correction** A process whereby contrast values are optimised.

**GB** →Gigabyte.

**GIF** Graphic Interchange Format. A popular →file format for computer graphics.

**Gigabyte** 1 Gigabyte = 1,024 →Megabytes.

**Glass lens** →Lens

- Google** Well-known internet search engine.
- GPRS** General Packet Radio Service. A mobile communications standard. Seen as a step between GSM and 3G (UMTS), it offers fast data transmission rates via a GSM network within a range between 9.6Kbps and 115Kbps.
- GPS** Global Positioning System. The GPS receiver uses satellites to let you determine the exact longitude, latitude, and height above sea level anywhere on earth.
- Graphics card** Component of a computer that is necessary to display an image on the monitor screen.
- Grey scale** A scale of shades ranging from white to black. Devices that can only display data in black and white translate colour differences into various shades of grey.
- GSM** Global System for Mobile Telecommunications. Standard for the transfer of data by mobile phone.
- Guide Number** Value for the maximum power of a camera flash based on a film with an  $\rightarrow$ ISO of 100. Built-in camera flashes have a  $\rightarrow$ guide number (GN) of approx. 10 – 20, compact flashes between 20 – 40, and the GN for grip-type flashes is between 45 – 60.

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# H

- Hand-held exposure meter** External →exposure meter. (→exposure meter, →reflected-light metering)
- Hard drive /disk** Device for the permanent storage of programs and information that remain after a computer has been turned off.
- Hardware** All actual physical computer components such as the computer itself and →peripheral devices like monitor, mouse, printer, digital camera, etc.
- HDD** Hard Disc Drive. (→Hard drive)
- Hi Colour** Describes an image having at least 32,000 colours. (→True Colour)
- Histogram** A graph that shows the brightness distribution (by depicting the distribution of dark and bright →pixels) for a scene. The data can be used to judge the exposure of the picture. Histograms are sometimes found in high-end digital cameras.
- Homepage** First page of an →internet site.
- Hot pixels** Faulty pixels which are always on, causing a white spot in the image, usually slightly larger than one pixel in size.

- Hot plugging** The connection and uncoupling of external devices while the PC is running. Restarting the computer is unnecessary. Requirements: →USB, and the relevant operating system. (→Plug and Play)
- Hot shoe** A clip-on connector for an external flash system (or accessories like remote controls or flash adapters) usually found on the top of the camera. It has two metal brackets and normally one or several electrical contacts in the centre to allow communication between the camera and flash. If it has no contact, this is an accessory shoe. The flash also features a hot shoe contact and normally a locking mechanism to prevent it falling out of the shoe.
- HQ resolution** High Quality resolution. Description for high digital photo quality.
- HSCSD** High Speed Circuit Switched Data. A mobile communications standard that offers data transmission rates up to 43.2Kbps.
- Html** Hypertext markup language, a →file format used in the →World Wide Web.
- http** Hypertext transfer protocol: transmission format and communication basis for the exchange of data in the internet.

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**IC-Card** →PC-Card.

**IEEE1394** →Firewire.

**Illustrator** Popular graphics program from Adobe.

**Image capacity** The number of images that can be taken before the storage medium needs to be replaced.

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

**Image converter** Semiconductor image converter (CCD chip).

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

**Image plane** The area inside the camera where the object is focused clearly. The image plane can be compared to the film plane in analogue cameras; the difference being that the film is replaced by the →CCD chip.

**Imaging software** Software for the administration and editing of digital images (as well as other multimedia files). (→CAMEDIA Master)

- Image stabiliser** Either opto-mechanical or electronic system that helps prevent camera shake to ensure sharp, clear results even at very high zooming levels. Upon detecting any unintentional movement of the lens, the system compensates optically or electronically to keep the subject steady. While electronic stabilisation systems are fine for video cameras, there are not as suitable for still images.
- Image transmission/transfer** The →digitisation of images means they can be transmitted via data carriers or networks without the loss of quality or copied an infinite number of times. (→Data transmission)
- Index print** Reduced display of several photos on one print.
- Ink jet printer** A printer that by spraying tiny black or coloured ink dots onto paper produces a hardcopy image.
- Integrated Circuit** Integrated Circuit = IC. (→Chip)
- Interface** Connecting point between the computer and an external device, e.g. mouse, →scanner, →modem, digital camera. (→Serial interface, →parallel interface)
- Internal memory** Memory built into a camera that cannot be removed.
- Internet** Worldwide →network of computers that allows for the global exchange of information.

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## 8. The A to Z of digital photography

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**Interpolation** Calculating non-existent image data from captured image data. Interpolation is used by all digital cameras to determine colour data from neighbouring sensors. (The reason, a sensor can only record one colour.) Interpolation can also be used to increase (or decrease) an image's resolution. The quality of the resulting photo depends on the capabilities of the algorithm used. It is important to remember, interpolation cannot produce detail that has not been captured.

**ISDN** Integrated Services Digital Network. Digital network for the fast transmission of voice, data, pictures, etc. between uniformly standardised user interfaces.

**ISO Norm** International Standard Organization.  
(→Film sensitivity)

# J

- 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 pixelisation.
- JAVA** A programming language developed by SUN. Among its features is the possibility to program interactive software for the →internet.
- JEIDA** Japan Electronics Industry Development Association. Japanese standards committee for storage cards.
- JPG** File ending for →JPEG files.
- JPEG** Joint Photographic Experts Group. The de facto standard for image compression in digital imaging devices which enables different levels of compression to be selected. Because brightness information is more important than colour data, most pixels only store the brightness information. When the JPEG file is opened, the missing colour data is automatically calculated from the existing information. (→MPEG)

# K

**KB** →Kilobyte.

**Kbit/s** Kilobits per second. The number of →kilobits transmitted per second. (→Baud)

**Kbyte** →Kilobyte.

**Kelvin scale** Temperature scale beginning at absolute zero (approx.  $-273^{\circ}$  Celsius = 0 Kelvin). Therefore Celsius values can easily be converted into Kelvin by adding 273 degrees to the Celsius value. (→Colour temperature)

**Kilobit** 1 Kilobit = 1,000 →bits.

**Kilobyte** 1 Kilobyte = 1,024 →bytes.

# L

**LAB** LAB colours consist of a luminance or brightness component and two chromatic components.

**Laser printer** A printer that uses a laser beam to project characters and graphics onto a drum, which then electrographically transfers the image, using toner, onto paper. Laser printers are known for their high quality reproduction and printing speed.

**LCD** Liquid Crystal Display. LCDs are commonly used in calculators, watches, digital cameras, and notebook computers.

**LED** A Light Emitting Diode is often used as an indicator lamp.

**LED printer** As opposed to →laser printers, the printed image is not brought on to a drum by a laser beam, but by a row of densely located light diodes.

**Lens** Transparent glass or plastic that has been formed and polished to form a certain shape, usually spherical. When a beam of light reaches the area between the air and the lens, a part of this light is always reflected. The remaining light passes into the lens and alters its propagation direction, i.e. the light is refracted. The incorporation of various lenses (converging and diverging lenses) creates a →lens system. When optimally arranged, they allow the subject to be presented correctly on the →image plane.

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## 8. The A to Z of digital photography

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**Lens adapter** Adapter between the end of the camera's lens and the lens converter. A step-up-ring is also a type of lens adapter.

**Lens hood** Made from metal or plastic, the hood fits on the end of the lens to shade the front lens element from incidental light, which could otherwise cause reflections, glare and ghosting.

**Lens system** Group of →lenses (sometimes just one lens) that enable the sharpest and brightest pictures to be taken. Often simply referred to as the lens or objective. There are various lenses available such as →wide-angle, normal, →macro, and →tele with fixed focal distances as well as zoom lenses with adjustable focal distances.

**Light intensity**

1. Relationship of the maximum diameter of an →objective to its →focal distance. It is equal to the smallest →aperture value (i.e. the largest opening). Whereas the zoom lenses on analogue cameras have a light intensity of F4, good digital cameras have lenses with a value less than F3.0.
2. The light intensity from sources of light measured in →Candela. (Flash)

**Light meter** To ensure correct exposure, most analogue and digital cameras feature automatic light metering. Internal or external cells measure light intensity and convert the information into an electrical signal. This is then used by the camera to set the right shutter speed and aperture for the relevant light conditions. Modern exposure metering systems can measure the brightness of just a section of the scene, all areas or give more weight to certain areas. (→Digital ESP/selective multi-zone metering), →centre weighted average metering, →spot metering, →reflected-light metering, →light metering)

**Light metering** Method of →exposure metering by measuring the amount of light reaching an object. (→reflected-light metering, →Digital ESP/selective multi-spot metering, →centre-weighted average metering, →spot metering)

**Light sensitivity** →Film sensitivity.

**Li-Ion rechargeable battery** Very lightweight rechargeable battery with a very high capacity (up to twice that of a →NI-MH rechargeable battery) and one that does not suffer from memory effect problems. While regular lithium ion batteries are available as mignon batteries, the rechargeable versions are only used in custom-made forms requiring special chargers.

**Line sensor** Image sensor that is read line for line and of which the →CCD is a typical example.

**Lpi** lines per inch. Unit of measurement for the resolution of printed images. (Dots per inch)

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## 8. The A to Z of digital photography

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**Li-Po rechargeable battery** The lithium polymer battery represents a new type of technology that unlike →Ni-MH, →NiCd and Li-Ion cells does not need a metal casing. Instead, the electrodes are covered with flexible plastic or aluminium foil. They also have a very high energy density so that they can be smaller but provide higher performance than other rechargeable batteries. Furthermore, they are easier and cheaper to produce in the medium term than →Li-Ion rechargeable batteries but, like the latter they are only available in custom-made forms requiring special chargers.

**Lithium battery** An accumulator type battery with a high energy density making it ideal for mobile phones, still and video cameras. Generally, the lithium battery is the main battery and the lithium ion battery is a secondary, rechargeable battery.

**Lycos** Well-known internet search engine.

**LZW** Developed by Lempel, Zif, and Welsh: a special kind of compression reducing required storage capacity for →Bitmap formats without loss in quality.

# M

**Mac** Abbreviated name of the Apple Macintosh computer. This computer is often used for graphics applications and →image processing.

**Mac OS** The Apple Macintosh computer's operating system.

**Macro converter** Lens attachment that permits fascinating detailed shots. (→Tele converter, →wide-angle converter)

**Macro shooting** Shooting while having the camera just a very short distance from the subject, such as 2 cm or 20 cm away.

**Mailbox** Either an answering machine or a computer service that enables the user to leave voice announcements, text messages, digital images or any other type of file. Ordinarily, mailboxes are accessed via telephone lines through the use of a →modem.

**Mass Storage Class** →USB Mass Storage Class.

**MB** →Megabyte.

**Megabyte** 1 MB = 1,024 →kilobytes.

**Megapixel digital camera** Digital camera equipped with a CCD that can record images with over 1,000,000 pixels. Today, cameras with up to 5 megapixels are in the price range of amateur users.

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## 8. The A to Z of digital photography

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**Memory effect** A problem with NiCd rechargeable batteries where, if the battery is repeatedly charged when not fully empty, the battery just remembers its capacity when it was “topped up” and not its actual capacity. The result: the battery loses power over time.

**Memory Stick** A removable memory medium developed by Sony.

**MF** Manual Focus.

**Microdrive** A miniature hard drive from IBM that fits the →Compact Flash Type II format. To record images to a Microdrive, a digital camera not only needs to be compatible with Compact Flash Type II, but also electronically compatible (able to provide the power required and have the necessary →firmware.)

**Micro processor** The programmable →chip controlling the computer. It is composed of either one or more integrated circuits.

**MiniCards** Small memory cards that are manufactured by Intel (Miniature Cards) or Toshiba (SSFDC).

**MMC** →Multimedia Card.

**Modem** Word derived from Modulation and Demodulation. A device which transforms digital data into analogue signals in order to send the information through a telephone line. A modem is necessary to access the internet or online services.

**Moiré** An interference pattern brought about when images of differing resolution are superimposed. This problem may occur, for example, if small diamond shapes are to be reproduced on a television screen.

- Monochrome** A picture in only one colour or in black and white.
- Motion JPEG** Some digital cameras can record a fast sequence of images in QuickTime Motion JPEG format.
- Movie recording** An increasing number of digital cameras now allow the photographer to capture movie sequences. By taking hundreds of shots over the space of about a minute, a movie effect can be achieved (some cameras allow sound to be recorded to the movies too). These can then be included in presentations or incorporated into internet sites. (→Sound recording.)
- MPEG** Motion Picture Expert Group. The abbreviation is used to describe a compression format for →digitised video images. (→JPEG)
- MPU** Mathematical Processing Unit. Either an integrated or separate component of a →processor, which carries out the mathematical calculations, e.g. for certain image processing tasks.
- MS-DOS** Microsoft Disc Operating System. (→DOS)
- Multimedia card** A flash memory card used in some digital cameras and MP3 players.
- Multi-spot autofocus** An →autofocus system that uses readings from several different points in the frame to determine the proper focus.
- Multi-spot exposure metering** With this system, the user can take readings from a number of freely-definable points. The camera recalculates the average →exposure after each reading.

# N

**Navigator** →Netscape internet →browser.

**Negative** Film coated with a light sensitive emulsion that after exposure and processing produces the images taken with the camera in complementary values. (→Slide)

**Net** Shortened form of →network or internet.

**Netscape** →Navigator.

**Network** The connection of several individual computers to aid data exchange and communication.

**NiCd battery** Nickel-Cadmium battery.

**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 batteries are used to power digital cameras.

**Noise** A term used in the field of audio engineering to describe interference that can lead to impure sounds and distortion. Noise may occur, for example, as a result of faulty microphones or recording equipment. In digital imaging, noise is a term used to describe the visible effect of interference on the CCD sensor. It appears as unwanted colour spots in an image - especially those taken at night with a slow shutter speed. (→Colour noise)

**Noise reduction** In noise reduction mode, the camera takes two shots: the normal shot and one with the same exposure time but with the shutter closed. It is then able to determine the areas of an individual image that are susceptible to noise and compensate for this.

**NTSC** National Television Standards Committee. American television standard for the coding/encoding of colours. Developed in 1953 this US TV norm is defined by an image size of 640 x 480 pixels and a frequency of 60 Hz (interlaced, i.e. 2 x 30 half images per second). (→PAL, →SECAM)

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## 8. The A to Z of digital photography

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# O

**Offline** Describes the state when no data connection exists. (→Online)

**OLE** Object Linking and Embedding: Enables “objects” (graphics, tables, etc.) to be embedded into different files/documents in order to create, for example, a report.

**OLYMPUS** One of the worldwide leaders in the optio-digital market. Olympus entered the field of digital imaging at photokina 1996. From the very beginning, the company offered a complete digital photography system. With its vision, Olympus quickly became, and has remained, a driving force in this booming sector.

**Online** Describes the state when two or more devices are directly connected and are communicating efficiently. (→Offline)

**Operating system** The basic program needed by a computer for operation. Well-known operating systems include →Windows from Microsoft and →Mac OS from Apple.

**Optical real image viewfinder** Shows the actual area that can be photographed.

**Optical zoom** →Zoom lens.

**Overexposure** When a shot receives too much light so that the photo is too bright and colours are bleached out. →Underexposure.

# P

**PageMaker** Popular →DTP program.

**PAL** Phase Alternating Line. A colour television standard developed in Germany in 1967 and used in many European and non-European countries. The image size is 786 x 576 pixels with a frequency of 50 Hz interlaced (2 x 25 half images are generated each second). (→NTSC, →SECAM)

**Panorama function** Special function that allows the stitching together of numerous pictures to create a panorama effect. SmartMedia and xD-Picture Cards from Olympus make it particularly easy to create such compositions when used in conjunction with a compatible Olympus digital camera. (→SmartMedia function card)

**Pantone** A colour scale consisting of about 3,000 gradations in tone that is used in editing digital images.

**Parallax error** When the motif seen through the camera's →viewfinder does not correspond with what will be captured by the lens due to the different viewing positions of the two. When shooting close up, the degree of error can lead to incorrectly framed images. Some cameras feature a viewfinder with correction markings to prevent this while others automatically compensate for the parallax effect. In digital cameras, the parallax error can be avoided by framing shots with the LCD monitor (if available).

**Parallel** Simultaneous but independent execution of individual tasks.

## 8. The A to Z of digital photography

**Parallel interface** Allows external devices to be connected to the computer such as printer, external storage media and digital cameras. The data is transmitted →parallel, that is, byte by byte (8 bits at once).

**Patch** A piece of programming code that can be “patched” into an already existing program to correct a →bug. (→Bug-Fix)

**PC Card** Also referred to as a →PCMCIA Card. It is a card that stores information and is often used with notebooks. A PC Card may function as a →modem, or act as a connection between a mobile phone and a notebook. (→Card adapter)

**PCMCIA** Personal Computer Memory Card International Association. Committee for the standardisation of storage cards.

**PCMCIA Card** →PC Card.

**Peripheral device** General term for computer accessories.

**Photo CD** A process developed by Kodak and Philips that enables the digital storage of conventional photographs and slides on a →CD-ROM. As such, the digitised picture may be loaded into a computer and viewed or edited like other digital images.

**Photocell** →Photodiode.

**Photodiode** A semiconductor which measures or converts light into an electrical current. Photodiodes are commonly used in →scanners, →CCD sensors, and →exposure meters.

**PICT file** A →file format developed by Apple.

**Photoshop** Popular →image processing program.

**Picture effects** Allow images to be captured, for example, in black & white, blackboard/whiteboard and sepia to produce a specific look. (→sepia)

**Picture resolution** →Resolution.

**P.I.M.** Print Image Matching technology. Developed by Epson for even more realistic colours in digital photo prints. Information about the colour scale and other relevant data (such as light values, colour saturation, colour balance, contrast etc.) are recorded in the →Exif file header and can then be used by P.I.M. compatible printers when printing.

**Pixel** The pixel is the smallest element of a raster display or digital image and contains information about intensity and colour. A pixel can be either square or rectangular. Generally, monitors or →ink-jet prints consist of pixels with up to 256 dots per colour. Exception: →dye-sublimation printer.

**Pixel mapping** Term for process by which defective pixels on a →CCD are recognised and compensated for. The missing data is calculated by using the values from surrounding pixels.

**Pixel modulation** A process used in printing which changes the brightness of individual →pixels by changing the pixel size.

**PKZIP** →.ZIP.

**Plug and Play** Developed by Intel, this standard allows the installation of extension cards into a computer without the subsequent need to alter the configuration. This is directly supported by →Windows 95 and all newer Windows versions. (→USB)

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## 8. The A to Z of digital photography

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- Plug-In** Additional program for a →browser to extend its functionality. With a plug-in, file formats that are not in →HTML, such as music and video files, can be accessed. Well-known plug-ins are: “QuickTime”, “Flash” (for video), “Shockware” (for multimedia), RealAudio/RealVideo” (for music/video through the Internet), and “Acrobat Reader” (for PDF files).
- PNG** Portable Network Graphics. A lossless compression file format used for storing images. (→JPEG, →MPEG, →LZW, →ZIP)
- Polarisation filter** Filter that only lets light through that is coming from a certain direction and so helps cut out reflections from non-metallic surfaces (like glass and water). Use of the filter also increases colour saturation, making blue skies even bluer, for example.
- Postscript** A standard format for the printing or reproduction of text and graphical documents.
- Ppi** Printing term for pixel per inch. Indicates the number of pixels a →scanner or digital camera can process per inch.
- Primary colours** The basic colours of the additive or subtractive colour system. (→Additive colour system; →subtractive colour system)

**Printer** Some types of printers include: →dot-matrix, →ink-jet, →laser, →LED or →dye-sublimation.

**Print functions** In addition to trimming and image selection, some printers offer users greater independence from the computer by presenting them with more print functions. For example, individual backgrounds may be created and picture effects like sepia used to personalise the print. And if the printer and camera feature →DPOF compatibility, print settings selected on the camera immediately after taking photos will also be recognised. (→Picture effects.)

**Printing media (paper)** For optimum printing results, it is important to choose the best printing media. Olympus not only offers paper and printer ribbons for its →dye-sublimation printers, but also provides print media for the →ink-jet user too. In addition to the specially coated, super high quality InkJet Photomedia, the CAMEDIA series also features other paper types with a variety of finishes, from high-gloss to poly-silk fabric.

**Processor** The “heart” of a computer. All programs and user commands are executed here. →CPU.

**Program automatic** In the program automatic setting, (on most models denoted by “P”) the camera sets the aperture and shutter speed to suit the relevant conditions.

## 8. The A to Z of digital photography

**Progressive CCD** Describes a →CCD specially developed for digital cameras. (→Video CCD)

**Prosumer camera** Term to describe a camera with features of professional models that also appeal to the consumer.

**Protocol** Basis of communication (rules, format, procedures) for passing data between individual devices. It is the “language” devices use to communicate with each other. Well-known protocols are →TCP/IP and →FTP for internet communication and →PTP for exchanging images.

**.PSD** →Photoshop file.

**PTP** Picture Transfer Protocol is an image data transfer →protocol (like the →TCP/IP protocol for the internet) that is intended to do away with the need for special digital camera drivers. PTP compatible devices, such as digital cameras, computers, mobile phones, printers, etc., should be able to transfer data among each other without the user needing to install any drivers.

# Q

**Quark Xpress** Popular →DTP-program.

**Quick shooting mode** This function allows a number of photos to be taken in quick succession (usually with one to two seconds between each shot). With a large memory (→D-RAM) it is even possible to take high resolution shots with only a tenth of a second between them. The images are then later saved onto the cards.

**QuickTime** Developed by Apple, this is a standard for digital videos and streaming media. Many internet videos are in QuickTime format.

**QuickTime Motion JPEG** A file format created by Apple for saving and compressing animated audio/video data (video-clips, for example). Best played with Apple QuickTime-Player.

**QuickTime VR** Addition to QuickTime for saving and displaying panorama images.

**QXGA** Quad Extended Graphics Array. Standard for displaying images on a screen. Typical resolution is 2,048 x 1,536 pixels. (→SXGA, →VGA, →UXGA, →XGA)

# R

**RAM** Random Access Memory. The user can read and write data from/onto this type of memory. RAM is used to temporarily store both data and programs. As opposed to →ROM, all memory stored in RAM is lost when the power is turned off and is therefore called volatile memory. (→SIMM)

**Raster length** The number of raster points that can be displayed per inch. Given in lines per centimetre (L/cm) or per inch (→lpi). A 60 raster is 60 L/cm or 152 lpi.

**RAW** Some cameras allow files to be saved in the RAW format. These contain the image information as it is sent directly from the →CCD, i.e. before the camera has carried out any processing at all. The RAW files are usually smaller than if saved in →TIFF format because the colour information has not been processed at that point. To see and edit the files and then save them in a more conventional format, a special program or →plug-in is required.

**Real image viewfinder** →Optical real image viewfinder.

**Rechargeable battery** Type of battery that once empty can be recharged using a charger. The most common types of rechargeable batteries are nickel metal hydride (→Ni-MH) nickel cadmium (→Ni-Cd), lithium ion (→li-ion) and lithium polymer (→li-po) batteries. (→Battery pack)

- Reflected light metering** Method of →exposure metering by which the amount of light reflected from the subject is measured. (Digital ESP/selective multi-zone metering, exposure metering, →light metering, →spot metering, →centre-weighted average metering)
- Removable lens** Lens that is not fixed to the camera but one that can be removed and replaced by another lens.
- Removable memory** Memory card that may be inserted into and taken out of the camera. Examples are →xD-Picture Card, →SmartMedia and →Compact Flash.
- Resolution** Measurement of the image detail (dots per inch/centimetre) that a device can capture or reproduce. With a monitor or printer, the resolution describes the number of pixels that can be shown. When used with devices for image capture, such as digital cameras or scanners, the resolution refers to the number of pixels that record the image. The result is given in dpi (“dots per inch” 1 inch = 2.54 cm), the horizontal and vertical total of pixels (e.g. 2,288 x 1,712 ) or in lpmm (line pairs per millimetre, which describes the highest number of thin black and white lines that can be displayed per millimetre). A good small image film has, for example, a resolution of approximately 150 lpmm (300 dpi rounded out to 118 dots per centimetre). In general, it can be said that the higher the resolution, the better the quality.

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## 8. The A to Z of digital photography

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**RGB** Red, Green, Blue – the three basic colours for  
→additive colour mixing.

**RISC** Reduced Instruction Set Computer. A →processor or system that has extremely fast processing times, but recognises only a small number of commands.

**ROM** Read Only Memory. This type of memory storage only allows the user to “read” the information it contains, i.e. the user cannot store (write) any information on the ROM. Once written, the contents of the ROM cannot be changed. (Flash ROM, →CD-ROM, →RAM)

**RS232C** →Serial interface.

# S

**Scan** The process of reading information through the use of a →scanner.

**Scanner** A device used to →digitise printed information (pictures, graphics, and text).

**Scene program** Modes for certain types of shots. In a scene program, the camera automatically selects the best parameters (such as →aperture, →shutter, flash mode, etc.) for the scene in question. Typical scene modes include night scene, landscape, portrait, sport.

**SCSI** Small Computer System Interface. A general interface standard used, for example, to connect external storage devices or scanners with a computer. It is necessary to differentiate between SCSI I, SCSI II, and SCSI III.

**SD Card** →Secure Digital Card

**Search engine** Helps catalogue and find the huge amount of information available on the internet. (→Altavista, →Google, →Lycos and →Yahoo)

**SECAM** Sequential Couleur Avec Memoire. French television standard. Also used in former Eastern Bloc countries. (→PAL, →NTSC)

**Secure Digital Card** →Removable storage media for images and audio files.

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## 8. The A to Z of digital photography

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- Selective multi-zone metering** →Digital ESP. (→Exposure metering, →spot metering, →reflected-light metering, →exposure metering, →light metering)
- Selective zone metering** As with spot metering, selective zone metering just takes the readings for a specific section in the frame – usually in the centre. However, unlike spot metering, the measurement area covers a larger portion (up to 20% whereas the spot metering just concentrates on an area below 5%.)
- Self-timer** A function that delays the opening of the shutter. This ensures vibration-free operation during long exposure times and enables the photographer to get into the picture.
- Sepia** This picture effect gives images a brown-golden colour that resembles old photographs.
- Sequence mode** Several shots are taken automatically in a row. (→Quick shooting mode)
- Serial interface** Also called →RS232C or RS422 interface. An →interface which allows peripheral devices such as a mouse, →modem, and certain digital cameras to be connected to the computer. Data is transferred serially, which means →bit by bit, one piece after another, via a connection cable. Also called →COM Port.
- Server** The main computer in a →network, responsible for the management/regulation of all other computers.

- Shooting range** The range in which a camera is able to capture sharp, focused images.
- SHQ-resolution** Super High Quality-resolution. A very high resolution digital photo.
- Shutter** Either mechanical and/or electronic shutters are possible. Mechanical systems can use a leaf (or iris) shutter or curtain shutter. In digital cameras a third alternative is also possible: the electronic shutter. This works by activating and then deactivating the →CCD so that no further light can be recorded, regardless of whether light is hitting the CCD. The shutter controls the exposure time, which can range from thousandths of a second to several minutes or more. Fast shutter speeds freeze action, slow speeds are more suited to stationary subjects. A tripod is recommended for slow exposure shots to avoid camera shake. (→Aperture)
- Shutter time lag** Time between the instant the release is fully depressed and the actual moment of capture. This does not include the time when the release is half depressed to activate (if available) the autofocus system, etc.
- Shutter Priority** In this mode, the user can adjust the shutter speed manually and the camera then selects the aperture setting for the best exposure. Often described as “S” mode on the camera.

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## 8. The A to Z of digital photography

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**SIMM** Single In-line Memory Module. A common type of plug-in →RAM memory module for personal computers.

**Single lens reflex camera** Camera type that directs the image coming in through the lens up into the viewfinder by means of a mirror. When the shutter is released the mirror swings up to allow light on the image plane. For fast sequence shooting and to reduce vibrations, some SLR optical systems use a beam splitter (prism) instead of the quick return swinging mirror. The picture seen through the viewfinder is almost 100% identical to the resulting photo.

**Slot** Expansion interface in computers, notebooks and other devices. Expansion cards, e.g. →PC Cards, can be plugged or built in here to increase performance, capacity or the capabilities of the device.

**Slow synchronisation** Flash mode that uses a slow shutter speed in combination with a flash. Since the duration of the flash is far shorter than the selected shutter speed, the flash fires at either the beginning (first curtain) or end (second curtain) of the exposure time. Because the fired flash freezes action in the foreground while capturing background scenes in low light conditions with slow shutter speed, the slow synchronisation mode can produce particularly attractive, atmospheric shots. (The night scene mode found in some cameras acts in a similar fashion.)

**SLR** →Single Lens Reflex.

**SmartMedia storage card** SmartMedia cards are small (45 mm x 37 mm x 0.76 mm) and light (approximately 2 g) storage media. The controller is located in the drive instead of being incorporated in the card to allow simple construction. SmartMedia cards are very affordable and ideal for the storage of digital photos and music. (→xD-Picture Card)

**SmartMedia function cards** Olympus offers various SmartMedia cards with additional functions for compact and compact zoom digital cameras: a template function that allows photos to be combined with 12 different templates, a panorama card which together with a PC permits up to 10/20 images to be fused to create a panoramic photo, a calendar function card that enables the production of personalised calendars, and a title function card for creating birthday and greetings cards.

**Software** General term for all computer programs.

**Sound recording** Some modern digital cameras enable sound to be recorded to either movie sequences or still images. Therefore, through the use of the built-in (or external) microphone, sound effects can be added to images. (→movie recording)

**Spot metering** →Exposure metering method whereby the exposure reading is taken from the centre of the frame. This is often used when working with backlight. (Digital ESP/selective multi zone metering, →reflected-light metering, →exposure metering, →light metering)

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## 8. The A to Z of digital photography

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**SQ-resolution** Standard Quality resolution.

**SRAM** Static RAM. A special type of →RAM that, due to its speed, is particularly suited to tasks where time is a critical factor.

**SSFDC** Solid State Floppy Disc Card.  
(→SmartMedia memory card)

**Standard interface** Standard interfaces include serial, parallel, USB and monitor interfaces. (→Interface)

**Step-up-ring** →Lens adapter, with which a filter/conversion lens with a wider diameter than that of the camera's lens is attached.

**Storage Class** →USB Mass Storage Class.

**Streamer** Internal or external drive for data security involving a so-called Streamer Band.

**Studio flash** Stationary, high power flash that is mostly used by advertising and fashion photographers. Normally consisting of simply a flash tube and pilot lamp that shines continuously to enable the user to check the exposure, they have no automatic metering system and must be adjusted manually. Studio flashes can be equipped with diverse accessories, such as softboxes, filters, reflectors, Fresnel lenses etc. to achieve special lighting or effects. These flash systems are generally much more powerful than compact flashes and their output is measured not by a guide number but by watts per second (Ws). Models over 400 Ws mostly have to be powered by an external power source. The studio flash is connected to the camera via an x-synchronisation cable. If several flashes are used, the other units are activated by an activation light from the first flash unit.

**Subtractive colour mixing** A special method for the production of colour prints that involves layering the colours cyan, magenta, yellow, and black in appropriate proportions, to produce the required colours. (→additive colour mixing)

**SVGA** Super Video Graphics Array. Refers to a display screen resolution of 800 x 600 →pixels. (→QXGA, →SXGA, →VGA, →UXGA, →XGA)

**Super CCD** A CCD type developed by Fujifilm that utilises octagonal-shaped pixels arranged in an interwoven pattern.

**SXGA** Super Extended Graphics Array. Describes a resolution of 1,280 x 1,024 image →pixels. (→QXGA, →SVGA, →VGA, →UXGA, →XGA)

**System camera** Camera that can be used with a wide range of accessories from the same manufacturer (lens converters, external flash, external power source, etc.)

# T

**TCP/IP** Transmission Control Protocol over Internet Protocol. Standard →protocol for sending data packets over the internet or network. The data is automatically broken up into small packets. An error correction procedure takes place automatically.

**Tele** All lenses with a focal length of 80 mm (or in digital cameras, with the equivalent of 80 mm) or over are classified as tele lenses. Typical characteristics of a tele lens are the narrow field of view (30° and below depending on focal length), the short →depth of field and a compression effect where objects far away and near by appear to be on one level. Standard tele lenses are 80 to 200 mm\* and super tele lenses are from 200 mm\* upwards. (→Wide angle, →zoom.)  
(\* Refers to a 35 mm camera)

**Tele converter** Lens attachment that extends the focal length.  
(→Macro converter, →wide-angle converter)

**Template card** →SmartMedia function card.

**TFT** Thin Film Technology. Currently the highest quality of colour LC-Displays. TFT displays are used in notebooks as well as in digital cameras from OLYMPUS.

**Thumbnail** The miniature representation of a digital image that usually serves as a preview function in →image editing programs.

**TIFF** Tagged Image File Format. A specific, high quality →file format used for the storage of →digitised images.

**Title function card** →SmartMedia function card.

**Tripod** Stand to which the camera can be attached to hold it steady, especially during slow exposure shots where camera shake must be avoided. Most tripods have three legs while professionals prefer the more compact but less stable one-legged versions.

**True Colour** Describes the colour output on a monitor or printer. Requires at least 16 million colour nuances.

**TruePic** Developed by Olympus, the TruePic technology optimises the image information captured on the CCD before the data is saved. Employing the algorithm 3-D Cubic, it uses the brightness and colour information of the neighbouring pixels when processing the pixel data. These calculations, only possible with the super-fast Risc and Olympus Asic processor, lead to digital pictures that set standards for picture sharpness, contrast, true colours and gradation.

**TTL metering** Through The Lens metering.

**TTL flash metering** With TTL flash metering the flash light and ambient light is measured through the lens so the intensity of the flash can be set. All work is done by the camera so the flash does not need any metering cells or control circuits. Also, no manual adjustments are necessary.

**TWAIN driver** Allows the transfer of →scans or digital photos into →image editing programs. (TWAIN: Technology Without An Interesting Name.)

# U

**UART** Universal Asynchronous Receiver-Transmitter. Set of chips in a computer regulating data flow over the serial interface.

**Underexposure** When a shot does not receive enough light with the result that the scene is too dark.

**Unsharp Masking** Often abbreviated USM. Describes an image focusing process. The quality of the result depends on the characteristics of the →algorithm used.

**Update** An updated version of a software program.

**Upgrade** A new improved version of hardware or software that is already available.

**Upload** Process of copying a file from a computer to a remote computer. Opposite of download.

**URL** Unified Resource Locator. Address system for internet sites.

**USB** The Universal Serial Bus is probably going to replace the →serial and →parallel interfaces. USB enables the effortless connection of peripheral devices without the need to install cards into the computer or reconfigure parts of the operating system. The most important advantages are: the support of Plug and Play, →hot plugging, automatic configuration of external devices upon connection (no re-start necessary), faster data transfer and the possible operation of up to 127 devices from a single port. USB 2.0 uses a much

higher bandwidth and is up to 40 times faster than the original standard. It further benefits from being backwards compatible with existing USB technology, so older devices will still work with USB 2.0.

**USB AutoConnect** →USB Mass Storage Class.

**USB Mass Storage Class** With USB Mass Storage Class support, the camera (or any other compatible device) is automatically displayed as an external drive. It can then be easily accessed in any program as a regular drive. Since most operating systems contain the generic Mass Storage Class driver, the camera is recognised without any driver having to be installed. Also called USB Storage Class or USB AutoConnect.

**USB Storage Class** →USB Mass Storage Class.

**Utility** A program that performs special tasks for the operating system, for example: file administration, controlling a digital camera, a CD-ROM drive or printer.

**UXGA** Ultra Extended Graphics Array. This refers to images with a resolution of 1,600 x 1,280 →pixels. (→QXGA, →SVGA, →SXGA, →VGA, →XGA)

# V

**VGA** Video Graphics Array. Refers to a display screen with a resolution of 640 x 480 pixels. (→QXGA, →SVGA, →SXGA, →UXGA, →XGA)

**Video output** Interface that connects a digital camera with a TV or video recorder.

**Video CCD** Describes a →CCD specially developed for television and video, also used in digital still cameras. (→Progressive CCD)

**Vignetting** Fading off the sides of a picture into plain white or black instead of having abrupt edges. Also unintentional loss of brightness at the edge of the image. →Wide angle lenses are particularly susceptible. However, the problem can be more or less avoided by removing the elements causing the effect, such as a filter with a frame that is too large or ill-fitting →lens hood.

**Virus** Describes a part of a computer program that usually causes damage or destruction of software and/or data.

# W

**White balance** The adjustment of a digital camera to the respective type of light (→colour temperature) such as daylight, overcast, tungsten, and fluorescent light for even truer colours, or – on the other hand – create a different, striking effect.

**Wide angle** Wide angle lenses are those with focal lengths of 35 mm\* and lower. The typical qualities of these lenses are a wide viewing angle, (60° to 180°) and a large →depth of field. Standard wide angle lenses are classified as having focal lengths of 28 to 35 mm\*; super wide angle lenses have values of 24 mm\* or less. (→Tele, →zoom)  
(\* Refers to a 35 mm camera)

**Wide-angle converter** Lens attachment that reduces the focal length. (→Macro converter, →tele converter)

**Windows (95/98/2000/NT/XP/ME)** Graphic-based operating environment developed by Microsoft.

**World Wide Web** Currently the most popular service offered through the internet. The →WWW provides the possibility to transmit files with multimedia content (texts, sounds, pictures).

**Write cancel** This mode allows image data in the buffer memory to be deleted and cancels the saving process to the memory card. The camera is thereby immediately ready to shoot again. This function is especially useful in cameras with high-speed sequence shooting.

**WWW** →World Wide Web.

# X

**xD-Picture Card** An innovative memory card standard developed by Olympus and Fujifilm, launched in 2002. Particularly small digital memory media for digital cameras that is very durable and robust, and allows speedy data transfer rates. Capacities of up to 8 GB will be possible in the future. (Max. available capacity 2002: 256 MB).

**XGA** Extended Graphics Array. A graphics standard developed by IBM, which allows the display of 1,024 x 768 →pixels with up to 65,535 colours. (→SVGA, →SXGA, →UXGA, →VGA)

**X-synch cable** Cable for connecting a non-dedicated flash or studio flash. The cable only passes the command to fire and no other instructions.

# Y

**Yahoo!** Well-known internet search engine.

# Z

**.ZIP** →File format used for data compression.

**ZIP-Drive** A device that allows the storage of up to 750 MB of data.

**Zoom lens** A type of lens that allows the photographer to get closer (zoom) to a subject. By adjusting the focal length (manually or mechanically), the degree of magnification can be altered. This feature is particularly useful for picking out subjects at a distance. The zooming power of a camera can usually be read on its lens; 3x (e.g. 35 - 105 mm\*) is a common zoom level that provides good magnification. However, other cameras offer up to 10x magnification or more, which increases the focal length ten times (e.g. 38 – 380 mm\*). When using such high magnification lenses, an optical image stabiliser or tripod help to ensure sharp, clear results. (→Lenses, →tele, →wide, →digital zoom, →focal length)  
(\* Refers to a 35 mm camera)