

Glossary

3 chip	Refers to the number of CCDs in a camera imaging system. A separate chip is used for each of the RGB colour components. Used in DV and high-end cameras. Low-end consumer cameras use only a single CCD, resulting in much inferior picture quality.
3DVE	3-Dimensional Video Effects. In NLE, manipulation of 2D images to give a 3D appearance. Not usually attractive - used in TV.
4:1:1	A set of sampling frequencies in the ratio 4:1:1, used to digitize the luminance and colour difference components (Y,R-Y,B-Y) of a video signal. Used in PAL DVCPRO recording.
4:2:0	A set of sampling frequencies in the ratio 4:2:0, used to digitise the luminance and colour difference components (Y,R-Y,B-Y) of a video signal. Used in PAL DVCAM recording.
4:2:2	A set of sampling frequencies in the ratio 4:2:2, used to digitise the luminance and colour difference components (Y, R-Y, B-Y) of a video signal. It is the highest rate generally available, defined by the CCIR601 standard. Used in D-1, D-5, and Digital Betacam recording.
4:4:4	A set of sampling frequencies in the ratio 4:4:4, used to digitise the luminance and colour components of a video signal. Equivalent to full sampling of the image. Not generally used.
A/D	Analogue to Digital converter. A/D converts analogue to digital form. See 'quantising'.
ADR	Additional Dialogue Recording. The process of replacing actors' lines by re-recording in a studio.
AES/EBU	Two channel digital audio standard - defined by the Audio Engineering Society and the European Broadcasting Union. Typically 32KHz, 44.1KHz and 48KHz sampling up to 24 bits, eg DAT offers 48KHz and CD 44.1KHz recording, both at 16 bit. As a professional standard refers to an interface utilising XLR connectors, whilst the prosumer version uses S/PDIF optical or RCA connectors.
AGC	Automatic Gain Control
aliasing	Defects or distortion in a video image, commonly seen as jagged edges on diagonal lines and twinkling or brightening (beating) in picture detail.
analogue	A continuous signal requiring a finite time to rise (or fall) from one level to another. The signal retains an infinite number of levels between max and min levels, as opposed to the discrete, quantised steps of digital. BetaCam SP, S-VHS, VHS, Betamax, Hi-8 and 8mm are all analogue formats.
anamorphic	Denotes a difference in magnification along mutually perpendicular axes. Typically, a scene is compressed laterally during recording and expanded during playback. Allows 'letterbox' or 'widescreen' images to be captured on standard format cameras. The effect can be obtained either optically or electronically.
anti-aliasing	Reduction of aliasing effects by software techniques. Typically used to smooth the edges of on-screen text.
ARC	Aspect Ratio Conversion. A process that crops or distorts the image to suit different display formats, eg convert 16:9 footage to 4:3. High end versions use software interpolation to compensate for loss of information.
artefact	Undesirable picture elements generated by technical limitations of the system being used. Mosquito noise (or feathering), quilting and motion blocking are three artefact types caused by use of the DCT compression algorithm.
aspect ratio	The ratio of screen width to screen height, eg standard video is 4x3 (1.33:1), widescreen video is 16x9 (1.78:1), 35mm film is 1.85:1
AVI	Audio Video Interleave. A frequently used file format for storing video (and audio, if required) information in computer.
balanced audio	A method that uses three conductors (plus, minus, ground) for a mono audio signal. The ground conductor is for shielding and does not carry any signal. This technique allows cables to be run to any length. Requires XLR connectors.
banding	A video artefact revealing visible breaks in what should be a smooth graduation. Can be caused by poor quality compression. Also, by head problems in a segmented scan system like DV.
bandwidth	A frequency range or capacity within which a system of devices operates. In effect, to transmit video or audio without loss or distortion a system must be able to sustain sufficiently high data rates, eg a critical element in the design of an NLE system is the speed of the hard drives.
batch capture	Automatic capture ('digitising') of multiple video clips based on timecode.

Betacam	Analogue camera/recorder system using 1/2-inch tape, developed by Sony. Betacam uses a version of the Y, R-Y, B-Y colour difference signal set.
Betacam SP	A superior version of Betacam. SP uses metal particle tape and a wider bandwidth recording system.
Betacam SX	Digital camera/recorder system from Sony using 10:1 MPEG-2 compression on identical tape stock to Betacam SP.
bit	Binary digit, the smallest part of information in a binary notation system. A bit can be set as '1' or '0'. The more bits per pixel of an image, the greater the number of potential colours.
black chip	Latest generation of the DMD. Central component of Texas Instruments' 'DLP Cinema'. Features higher resolution and increased contrast ratios.
black level	See 'set-up level'.
BNC	Bayonet Neill Concelman. A cylindrical connector system with a twist-locking motion used for high frequency signals in television and digital audio.
B-Y	Also signified by 'Cb'. One of the two colour difference signals in a component video signal, obtained by subtracting luminance from the blue video signal. This is the signal which drives the horizontal axis of a vectorscope.
byte	A collectively processed group of 8 bits.
capture	The process of transferring video footage from an external source to a computer hard drive. For analogue sources this involves an analogue to digital (A/D) conversion process, but with material shot digitally is effectively a file transfer, usually involving 'transcoding'.
capture card	A computer board that allows input (and output) of a video signal by performing the necessary file and signal conversions.
Cb	See 'B-Y'.
CCD	Charge Coupled Device. Used in digital cameras and telecines as an optical scanning mechanism, converting the light input (analogue signal) to an electrical output (digital signal).
chroma	The characteristics of colour information, independent of luminance intensity. Hue and saturation are qualities of chroma. Black, gray, and white objects do not have chroma characteristics.
chrominance	Colour part of a video signal. Conveys hue and saturation information, independent of luminance. Symbolised by 'C'.
clipping	Distortion or loss of a signal caused by overload, ie record level set too high. A notable problem in digital.
Cr	See 'R-Y'.
CODEC	Abbreviation of COmpressor/DECompressor. An algorithm (mathematical method) for translating to and from a file or compression format.
colour bars	A test pattern of six basic colours: yellow, cyan, green, magenta, red, blue. Used to check the chrominance functions of video systems.
component video	A colour video signal composed of three colour components (Red, Green, Blue) or one luminance and two colour difference components (Y, R-Y, B-Y). Provides the highest quality video image generally available.
composite video	A colour video signal derived to be compatible with the earlier monochrome video signal. Composed of one luminance element and one chrominance element. Still used for television broadcasting.
compression	A process that reduces the size of a datastream. Lossless compression enables the original data to be fully reconstituted. Lossy compression removes data, some of which may be considered redundant. Good video compression causes a minimum apparent loss of information to the viewer.
compression rate	The change in file size achieved by the process of compression. This is expressed as a ratio, eg 5:1 compression (DV formats) reduces a file to 20% of its original. The higher the ratio, the greater the potential loss of quality, though the degree of loss cannot be directly related to the compression ratio.
conform	Organisation of master material in an on-line edit according to off-line EDL.

contrast ratio	The ratio of the highlight output level to the shadow output level. In theory the contrast ratio of a video system should be at least 100:1, if not 300:1. In reality there are several limitations. In the CRT the level of a dark element is raised by adjacent elements and by ambient light. Well controlled viewing conditions yield a realistic ratio of 30:1 to 50:1. The minimum standard for DLP based digital cinema is 1000:1
cross colour	In a composite signal, the colour is represented by the phase modulation of a subcarrier frequency. If the representation of an object in the signal replicates the subcarrier it is falsely decoded as colour, resulting in a rainbow patterning or striped effect.
CRT	Cathode Ray Tube. The vacuum tube used in video monitors, comprised of an electron gun aimed at a screen coated with phosphors that glow when hit by the electron beam. The beam is scanned horizontally and vertically revealing the image lines.
CRCC	Cyclic Redundancy Check Code. A polynomial calculation of a checksum across a data track, e.g. on a tape. Averaged across a dedicated number of blocks of data, it ensures the reliability of a recording.
D1-D9	Various digital videotape formats ratified by international agreement. D1 records uncompressed 8 bit component video (Sony, Bosch). D2 records uncompressed composite video (Sony, Ampex). D3 records uncompressed composite video (Panasonic). D5 records uncompressed 10 bit component video (Panasonic). D6 records High Definition (Phillips). D7 is DVCPPro, records compressed 8 bit component video (Panasonic). D9 is Digital-S, records compressed 10 bit component video (JVC).
DAT	Digital Audio Tape. Small format audio recording medium. Can record in 16 bit at 48kHz sampling rate.
dark chip	Latest generation of the DMD. Central component of Texas Instruments' 'DLP Cinema'. Features higher resolution and increased contrast ratios.
data rate	Amount of data that a storage device consistently saves or plays back per second, or the amount of data per second in a video sequence.
dB	Decibel. The standard unit used to express gain or loss of power. It is the logarithmic ratio of output power divided by input power. A reduction of 3 dB in a signal is an attenuation to half of the original power.
DCT	Discrete Cosine Transform. A technique for representing waveform data as a weighted sum of cosine waves. DCT is commonly used for data compression, eg in M-JPEG. The use of DCT is non-lossy. Data compression technologies that rely on DCT, however, may be lossy if they approximate some of the coefficients to reduce the amount of data.
digital	A signal in which information is transmitted as a binary code, ie as a series of 1s and 0s. Unlike an analogue signal, which can be represented as a continuously varying wave, a digital signal is a ultra high density stream of discrete blocks. See 'bit'.
Digital 8	Consumer digital video format.
DigiBeta	Digital Betacam. A 10 bit professional digital video format employing 2:1 compression.
Digital-S	10 bit digital video at 3.3:1 compression and a data rate of 50Mb/s.
DigitalScope	Electronic creation of an 'anamorphic' 35mm negative. HD master is letterboxed then squashed horizontally prior to film transfer. Results in widescreen image without the need for anamorphic lenses.
D-ILA	Direct-drive Image Light Amplifier. Digital development of JVC analogue projector technology based on transmissive LCD.
DLP	Digital Light Processing. The basis for the only commercially available digital cinema projectors. Developed by Texas Instruments and Digital Projection. Combines the Digital Micromirror Device with sophisticated image processing. See 'DMD'
DMD	Digital Micromirror Device. Core technology of DLP Cinema projectors. An array of 500,000+ individually switchable reflective surfaces mounted on a square inch of silicon. Each can be oriented to reflect more or less light replicating the behaviour of the pixels in digital video.
drop frame t/code	NTSC time code format that counts 30 frames per second but drops 2 frames from the count every minute but for each tenth minute (108 frames dropped every hour) to maintain synchronization of time code with clock time. This is necessary because the actual frame rate of NTSC video is 29.94 frames per second rather than an even 30 frames.
dropout	A momentary loss or deterioration of video or audio during playback. Caused by loss of tape contact with the playback head or by flaws in the tape.

dual-stream DV	A video editing system capable of mixing two streams of video in real time to avoid rendering. A generic term for 5:1 compression digital video formats - DVCam, DVCPRO, miniDV. Records 525 lines in PAL. 25Mbps data rate.
DVCam	Sony professional DV format with 4:2:0 sampling (PAL). Evaporated metal 1/4 inch tape allows higher data density and slower tape speed.
DVCPRO	Panasonic professional DV format with 4:1:1 sampling (PAL). Metal particle 1/4 inch tape requires lower data density and higher tape speed.
DVCPRO50	Panasonic rival to Sony Digital Betacam. Uses MPEG-2 compression. Also known as DV50.
EDL	Edit Decision List. A log file that lists the in and out points and source tapes of all video clips (events) in an edit.
field	Two fields (odd and even) comprise one frame of interlaced video. The odd and even sets are alternately recorded, each with 312.5 lines (PAL).
FireWire	Apple registered tradename for the IEEE1394 interface.
fps	Frames per second.
frame	One complete picture which, in PAL video, consists of 625 horizontal scan lines. Each frame is composed of two interlaced fields.
free-run timecode	Timecode generated from a continuous internal clock, ie clock run is not triggered on/off by recording start/stop. Results in discontinuous timecode on tape. See 'record-run timecode'.
gain	Electronic enhancement of the image. Used to brighten low-light scenes. Increasing gain increases picture noise.
gamma	An exponential function modelling the non-linearity of the light output of a CRT with respect to voltage input. Can be manipulated to vary the brightness of an image.
genlock	A device enabling synchronisation of two signals.
generation	Each pass (or recording) of a signal. Generation loss results in artefacting and image deterioration. For digital signals with minimal compression generation loss is effectively eliminated, allowing tapes to be copied many times.
GLV	Grating Light Valve. Digital Projection technology using a laser as the light source.
grading	Adjustment of picture colour, brightness, contrast. Used to fine tune (or completely change) the image. Also known as 'colour correction'.
HDTV	High Definition Television. Not standardised to a particular image resolution. HDTV cameras are not to be confused with those designed for digital cinema.
HD24P	High Definition video format devised by Sony/CineAlta. Defined as a resolution of 1920x1080 pixels, recorded at 24fps in progressive scan mode. Can be converted to a variety of established video formats.
Hi-8	Consumer analogue tape format based on Video8.
IEEE1394	A serial digital protocol for device linking. In video, transmits both DV data and device control instructions.
i-link	Sony version of firewire.
interlaced video	Video, typical of all established systems, with each frame composed of two sets of alternately scanned lines (odd and even fields).
interpolation	A computer-based method of creating values (lines or pixels) between extant known values of a video or audio signal. Can be used to smooth out an image or sound, or simulate an increase/decrease in resolution.
IRE units	A linear scale measuring the relative amplitude of a component of a television signal with a zero reference at the blanking (no signal) level. True black (zero volts) to peak white is 100IRE units.
LANC	An editing protocol enabling two-way communication between recorder and computer.
LCD	Liquid Crystal Display. A fluid crystalline material held between glass. An applied electric charge causes specific areas to turn dark. Combined with dyes or filters a colour display is possible. Used in analogue and, potentially, digital video projectors.
letterboxing	A technique for showing, without distortion, a wide aspect ratio picture on a standard aspect ratio screen. The result is black bars at the top and bottom of the screen.
line doubling	A process that doubles the number of scan lines in a video signal during conversion to a higher resolution format. See Interpolation.
LTC	Linear or Longitudinal timecode. Data is recorded on a tape edge track.

luminance	The part of a video signal that contains the brightness information of an image. The only signal required for black and white. For colour, it is obtained from a weighted sum of the R, G and B components.
Mb/s	Megabits per second - a data transfer rate. Also Mbps.
MB/s	Megabytes per second - a data transfer rate. Also MBps.
ME tape	Metal Evaporated tape. High density tape format. Used for DVCam.
miniDV	The smallest digital video tape format. 25Mbps data rate.
M-JPEG	Motion JPEG, an image compression format based on DCT (Discrete Cosine Transform). M-JPEG compresses each video frame separately to create a sequence of JPEGs (still images). Unlike DV, M-JPEG generates a variable data rate and can't be recorded directly to videotape.
mosquito noise	Artefacting caused by defects in the DCT algorithm.
MP tape	Metal Particle tape. Older, lower density tape format than ME. Used for DVCPro.
MPEG	A variable rate lossy compression routine for video and audio data. Differs from M-JPEG in utilising only critical frames and identifying redundant areas between frames.
non-drop frame timecode	NTSC timecode format that counts a full 30 frames per second. Because NTSC video does not operate at exactly 30 frames per second, non-drop frame timecode will count 108 more frames in one hour than actually occur in the video sequence. The result is incorrect synchronization of time code with clock time.
non-interlaced	See 'progressive scan'.
NLE	Non-Linear Editing. The ability to edit and re-edit video by entering a sequence at any point. Facilitated by the non-linearity of hard disk recording on computer.
NTSC	National Television Systems Committee (USA). Video standard for North America, parts of South America, and Japan. Comprised of 525 lines at 60Hz.
off-line edit	First stage edit frequently using reduced quality copies of master material. An EDL is created which allows 'conform' of masters in the on-line edit.
on-line edit	Final stage edit using EDL from off-line edit and master material.
overscan	On a monitor, revealing only that part of a video image within 'safety' on a standard television.
PAL	Phase Alternate Line. Video standard in the United Kingdom and much of Europe. Comprised of 625 lines at 50Hz. Superior colour stability and resolution compared with NTSC.
pan and scan	A technique for selecting the critical areas of an image when converting from wide screen to standard ratio formats, eg transferring films to video.
pixel	Picture Element. A definable location on a screen, consisting of a triad of phosphor dots (red, green, blue). Also, the resolution of an image is expressed by the number of pixels present, eg high definition video can be 1920x1080 pixels, compared with standard definition video at 720x576 pixels, a 5-fold increase in resolution.
Proc Amp	Processing Amplifier. A device that stabilizes the video signal.
progressive scan	Capturing one frame of video in a single pass, rather than as two passes of interlaced line sets. Approximates the way film is exposed.
quantising	Sampling an analogue signal in an A/D conversion. 8 or 10 bit sampling is standard for video, 16 bit for audio.
QuickTime	A frequently used file format for storing video (and audio, if required) information in computer. Devised by Apple as an alternative to AVI.
quilting	Artefacting revealing visible blocks or boundaries of groups of pixels.
raster	The array of pixels that form an image.
raster transform	An algorithm that allows remapping of the raster from one form of coded representation to another, eg transcoding 4:2:0 video to 4:1:1 video.
real-time	In NLE systems, operations that require negligible time for rendering.
record-run t/code	Timecode triggered on/off by recording start/stop, generally from central clock linked to all devices. Generates continuous timecode values on tape. See 'free-run timecode'.
rendering	Recalculating individual pixels in an image to create effects or transitions during editing. Can be time consuming.
resolution	The density of lines or dots that make up an image. Limits the detail that can be held in the image.
RGB	Red, Green, Blue. One form of expression of a component video signal.
RMS voltage	Root Mean Square voltage. A measure of effective (as opposed to peak) AC voltage.

RS-232	A serial digital interface standard specifying 'unbalanced' voltage communication between D-type connectors. A control cable for a VTR will typically connect to this socket on an NLE computer (the serial port).
RS-422	A serial digital interface standard specifying 'balanced' voltage communication between D-type connectors. Typically used for the control cable socket on a VTR. An adapter is required to connect through to the RS-232 socket on a computer.
RS-422A	A Sony modification of the RS-422 protocol. Not necessary compatible with RS-422.
R-Y	One of the two colour difference signals in a component video signal, obtained by subtracting luminance from the red camera signal. R-Y signal drives the vertical axis of a vectorscope.
safety	The outer edges of a full video frame not seen on an a standard television.
SCSI	Small Computer Systems Interface. High speed computer component connection. Usually required in NLE to ensure smooth video playback. Four main types of increasing capacity: Fast (10MB/s, 8 bit), Ultra (20MB/s, 8 bit), Fast Wide (20MB/s, 16 bit), Ultra Wide (40MB/s, 16 bit).
SDI	Serial Digital Interface, offering uncompressed digital component video, four audio channels, timecode and user data. Supports data rate of 270Mb/s.
SECAM	Sequentiel Couleur Avec Memoire. Video standard in France and parts of Eastern Europe, Africa and Asia. Similar to PAL, but with the potential to eliminate the need for colour control. Comprised of 625 lines at 50Hz.
set-up level	Black Reference or Black Level. The specified voltage base of the active signal. Usually 7.5 IRE units above blanking (zero voltage).
SMPTE	Society of Motion Picture and Television Engineers
S/PDIF	Sony/Phillips Digital InterFace. Transmission format for digital audio, now outdated. Typically unbalanced.
subpixel	A unit smaller than a pixel. Can be significant in enhancing render quality.
S-VHS	Super Video Home System or Super VHS. A higher quality version of VHS.
S-Video	A composite video signal separated into Luminance (Y) and Chrominance (C).
TBC	Time Base Corrector. A device that generates new control pulses in degraded original data. Used to clearly define vertical lines in a frame.
telecine	An expensive device for transferring film to video.
timecode	Recorded time information to allow synchronization of devices. Usually an eight digit number specifying hours: minutes: seconds: frames of a video sequence.
transcoder	A device that converts one form of encoded video to another, eg to convert PAL video to NTSC.
timeline	On a computer, the area of an NLE software interface which displays video and audio clips laid in sequence. It also displays where transitions, effects or titles are laid.
transition	An editing effect which specifies the transition from one video clip to the next.
unbalanced	Unshielded voltage connection suitable only for short cables as it is prone to interference.
underscan	On a monitor, revealing the whole of a recorded video image including the 'safety'.
vectorscope	A generic name for a display allowing visual checking of the phase and amplitude of the colour components of a video signal. Software simulations are available for NLE.
vertical resolution	Chrominance and luminance detail expressed vertically in the image. Limited by the number of scan lines.
VITC	Vertical Interval Time Code. Time code encoded into the vertical interval of the video signal.
VTR	Video Tape Recorder
waveform monitor	An oscilloscope designed for viewing the waveform, and checking the components, of a video signal.
XLR	Generic term for Cannon 3 pin circular connector for balanced audio.
Y, R-Y, B-Y	Components of a the highest quality video signal. 'Y' corresponds to the luminance, 'R-Y' corresponds to the red minus luminance signal, 'B-Y' corresponds to the blue minus luminance signal.
Y/C	Video signal composed of luminance, 'Y', and chrominance, 'C'. S-VHS quality.
YUV	Component video signal composed of luminance, 'Y', and colour difference, 'U' and 'V'. Betacam quality.