



# Tech Info Library

## Multimedia Glossary: A - F (1 of 3) (10/94)

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TOPIC -----

This article is one of three articles that contain definitions of multimedia terms.

DISCUSSION -----

### A/B roll editing

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Editing from two source VCRs to a third VCR. This allows for transition effects like dissolves from one source tape to another.

### Aliasing

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A term used to describe the unpleasant jaggy appearance of unfiltered angled lines. Aliasing is the "beating" effects caused by sampling frequencies being too low to faithfully reproduce an image. There are several types of aliasing that can affect a video image which include temporal aliasing (e.g. wagon wheel spokes apparently reversing) and raster scan aliasing (e.g. flickering effects on sharp horizontal lines).

### Analog Video

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A video signal that represents an infinite number of smooth gradations between given video levels. By contrast, a digital video signal assigns a number for each level. The Macintosh video board converts computer-created (or digital) video to an analog signal for output to a monitor.

### Analog Recording

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The common form of magnetic recording where the recorded wave-form signal maintains the shape of the original wave-form signal. An example of this is a video tape.

### Animatic

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A limited animation used to work out film or video sequences. It consists of artwork shot on film or videotape and edited to serve as an on screen storyboard. Animatics are often used to plan out film sequences without incurring the expense of the actual shoot.

## ANSI

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Acronym for American National Standards Institute, which sets standards for many technical fields.

## Anti-aliasing

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Anti-aliasing is the manipulation of the edges of an image, graphic or text, to make them appear smoother to the eye. On close inspection, anti-aliased edges appear blurred, but at normal viewing distance, the apparent smoothing is dramatic. Anti-aliasing is important when working with high quality graphics for television use. See aliasing.

## Aspect Ratio

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The ratio of an image's width to its height. For example, a standard video display has an aspect ratio of 4:3.

## Assemble Editing

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Adding new material to the end of a previously recorded portion of a videotape that involves writing a completely new signal (including the control track) onto the tape. Performing an assemble edit in the middle of an existing program will introduce an undesirable glitch on the tape caused by an abrupt change in the sync information of the video signal. Compare insert editing.

## Asynchronous

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Not synchronized by a mutual timing signal or clock. Compare synchronous.

## Audio Effects Board

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The audio effects board is like the switcher, and acts as the main router and mixer for source audio. Here audio levels are adjusted, mixed, and filtered. Usually audio effects are kept to a basic level in a video editing session. More complex audio work is usually performed with a digital audio workstation.

## Authoring System

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Software that helps developers design interactive applications, titles, or courseware more easily than with conventional programming language

## Auto-assemble

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If all the editing decisions are made off-line, and the EDL is loaded into the CMX the actual editing is automatic, executing one event after another. This is called auto-assemble mode. During auto-assembly, the editor monitors video and audio levels, but does not need to control each edit. Loading the EDL into the CMS is typically done manually, however, some Macintosh programs can create CMX disks. The EDL generated by computer based editing systems like the Digital F/X and Avid Media Composer are usually perfectly accurate, therefore, they make auto-assembly a breeze since the opportunity for errors in entering the EDL by

hand are eliminated.

#### Backtiming

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Method of calculating the in point by subtracting the edit duration from the known outpoint.

#### Badge

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a symbol in the corner of a QuickTime movie window which is pressed to bring the standard QuickTime movie controller into view.

#### Bandwidth

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The frequency range of a video signal, measured in MHz. The bandwidth is directly related to horizontal resolution—the higher number of picture elements defined, the higher the frequency required. The bandwidth describes "how much" information is being transferred. The bandwidth of the Macintosh II video signal can be as high as 33MHz, depending on screen size. By comparison, the bandwidth of broadcast television is 4MHz. High resolution images can be displayed on low resolution monitors, with an obvious loss in quality.

#### Black Level

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The level of the video signal that corresponds to the maximum limits of the black areas of the picture.

#### Black, Black Burst

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In video production, black refers to a composite video signal which has composite sync, reference burst, and a black video signal. Used for genlock purposes.

#### Blanking

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The portion of the video signal that is off, or black, during the retrace interval of the scan. Blanking occurs between each horizontal line and during the vertical retrace between each field.

Blanking is important in broadcast production situations since there are strict FCC rules defining the blanking periods. Not all video products for the Macintosh conform to this aspect of the NTSC broadcast standard. Discuss this issue with vendors if broadcast quality is required.

Related to composite sync, this signal has both horizontal and vertical components and is at its negative level whenever video is to be blanked or turned off.

#### Blanking Level

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The level of a video signal that separates the range that contains the picture information from the range that contains the synchronizing information. The level of the front and back porches is 0 IRE units.

## BNC Connector

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A connector typically used with professional video equipment for connecting cables that carry the video signal. Compare RCA connector and XLR connector.

## Brightness

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(1) The luminance of the video signal, or the level of brightness on the scale from black to maximum white. One of the three determinants (with hue and saturation) of the color of an image, and the only one of the three that affects a monochrome image.

(2) The brightness of a monitor or video projector measured in lumens. See luminance.

## Broadcast Quality

-----  
An NTSC composite video signal conforming to FCC rules concerning signal properties like video and sync levels, timing and blanking. Devices providing NTSC signals do not necessarily meet FCC broadcast standards. This is important if the video signal or videotape being recorded is going to be used in a broadcast situation.

## Bump-up

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Making a copy from one recording medium onto a second medium which is more suitable for post-production purposes due to it's higher bandwidth and/or timecode capability. For example, material shot on Hi8 is usually "bumped-up" to 3/4" SP or Betacam SP for editing purposes since these formats feature higher resolution, less generation loss, a more robust tape, timecode, better frame-accuracy and faster shuttle speeds.

## CAV

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Acronym for Component Analog Video.

## CCITT

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Abbreviation for Consultative Committee on International Telegraphy and Telephony; an international committee that sets standards and makes recommendations for international communication.

## CG

--  
Acronym for Character Generator.

## CGI

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Acronym for Computer Graphic Imagery.

## Character Generator

A character generator (CG) is a video device found in on-line editing suites used for titles and credits. A CG is simply a high-end word processor for video with a wide variety of fonts and sizes available. The most common character generator is the Chyron.

#### Chroma

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The color information contained in a video signal, consisting of hue (phase angle) and saturation (amplitude of the color subcarrier).

#### Chroma Keying

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The process of overlaying one video signal over another, the areas of overlay being defined by a specific range of chrominance. For this process to work, the chrominance must have sufficient resolution, or bandwidth. Composite video does not have sufficient bandwidth for acceptable quality chroma keying, therefore analog chroma keyers typically use component sources.

#### Chrominance

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The color part of a signal, relating to the hue and saturation but not to the luminance (brightness) of the signal. Any colored signal has both chrominance and luminance.

#### Clean List (Clean EDL)

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An EDL which does not contain any overlapping or redundant edits. Typically during the off-line editing process changes are made which result in edits that overlap or become redundant. Most computer-based editing systems can clean an EDL automatically. Compare dirty list.

#### Clip

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Small QuickTime Movie. Also used to mean a segment of a larger movie, defined by an in point and an outpoint, usually containing a single scene or take.

#### Clipping

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The process of cutting off the peaks of either the white or the black portions of a video signal.

#### CMX

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The most commonly used editing computer. The EDL is loaded into it and it executes the edits and effects by controlling all of the required video machines. Actually, it may not control all of them. Certain operations may need to be done manually. Most editing computers use the CMX language, which has become an industry standard.

#### Color Bars

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See NTSC color bars.

## Color Burst

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A portion of the composite video signal used for decoding its color information. Burst is several cycles of 3.58 MHz pulses recorded during the horizontal blanking interval and used to establish phase relationships for determining the hue. The color oscillator of a color television receiver is phase locked to the color burst.

## Color Correction

-----  
A process in which the coloring in a video image is altered by electronic means.

## Color Subcarrier

-----  
The 3.58 MHz signal which carries color information. This signal is superimposed on the luminance level. Amplitude of the color sub-carrier represents saturation and phase angle represents hue.

## Compelling Conveyance

-----  
To use appropriate content and data type to communicate with maximum impact on an audience.

## Component Video

-----  
A term given to a recording system which does not require NTSC encoding of RGB signals, but uses a means of recording and routing the luminance and color signals separately. This method does not reduce bandwidth nor compromise the RGB components and results in images of higher resolution and better color quality than composite video. Though designed for high end television production, similar recording methods have recently become available to the consumer market. See S-VHS and Hi8. Compare composite video.

## Composite Blanking

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see blanking.

## Composite Sync

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A signal consisting of horizontal sync pulses, vertical sync pulses, and equalizing pulses only, with a no-signal reference level.

## Composite Video

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A composite video signal is one in which the luminance, chrominance and sync information have been combined into a single signal using one of the coding standards: NTSC, PAL, SECAM, etc. This is the form the signal must take before it can be broadcast or recorded by standard means. Until recently, most monitors and projectors have accepted only composite video signals, although many now available accept RGB. See NTSC. Compare component video.

## Compositing

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Combining two or more video or electronic images into a single frame or display.

Conforming

-----

The process of doing the final editing of a video using an off-line edited master as a guide.

Continuous Branching

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a program that enables the user to modify the presentation at any point rather than at specific branch points.

Contrast

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The range of light and dark values in a picture or the ratio between the maximum and the minimum brightness values.

Controller

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Portion of the QuickTime Movie Playback window with which you interactively control the direction and rate of playback.

Control Track

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The portion along the length of a video tape on which sync control information is placed and used to control the playback of the video signal.

Control Track Editing

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Editing videotape with equipment that reads the control track information in order to synchronize the editing between two decks. Frame accuracy is not certain as the VTRs can go slightly out of sync during pre-roll. Compare time code editing.

control-L

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See LANC.

Convergence

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(1) The beam-position accuracy of the red, green, and blue beams of a color monitor or projector. Color systems require exact accuracy of beams, both for position and speed, to properly produce the desired colors from their phosphors.

(2) The adjustment of the red, green, and blue electron beams in a monitor or video projector to align the red, green and blue images.

Cross Color

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A defect characteristic of NTSC composite video that manifests itself as

spurious rainbow patterns on highly textured objects like the one found on a striped shirt or tweed jacket. Cross-color defect is attributed to the make-up of the signal which mixes the high luminance and chrominance information in the same composite baseband spectrum. Johnny Carson used to wear ties with designs specifically designed to create this effect.

#### Cross Luminance

-----  
A defect characteristic of NTSC composite video that appears as a dot pattern crawling up or hanging on the edges of color areas. This is a result of the signal structure where the color information leaks into the luminance signal. Also referred to as dot crawl.

#### Decoder

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A device used to recover the component signals from a composite (encoded) source. Decoders are used in displays and in various processing hardware where component signals are required from a composite source.

#### Delay Line

-----  
A device designed to delay the video signal for a specific length of time. Required when switching between different types of devices or cameras with significantly different cable lengths.

#### Demodulate

-----  
To recover the information being transmitted by a modulated signal. For example, a conventional TV receiver demodulates an incoming broadcast signal to convert it into the luminance and chrominance information displayed by the CRT and the sound emitted by the speaker. Compare modulate.

#### Demodulator

-----  
A device which strip the video and audio signals from the carrier frequency.

#### Desktop Viewing

-----  
the ability to use the computer screen to view the output of a project of in interpersonal and corporate communication.

#### Dessimation

-----  
The loss of lines of data in a movie window as the size of the frame is reduced. Lack of data for certain lines causes undesirable artifacts during movie playback.

#### Device Interface

-----  
A converter box which separates the RGB and sync signals in order to display computer graphics on an RGB video monitor. Vendors include Covid and Extron. Differential gain (DG) and differential phase (DP).



The distortion characteristics of the chrominance signal expressed as a numerical value which indicates to what degree the amplitude (differential gain as a percentage) and phase (differential phase in degrees) are distorted from the beginning and end of one horizontal scanning line.

#### Digital Audio Workstations

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Computer-based systems for editing and manipulating digital audio. The audio can be synchronized with video for video post-production applications. Some common systems based on the Macintosh include Dyaxis, Pro Tools, Synclavier, and Dawn.

#### Digital Disk Recorder

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A recorder much like a videotape recorder which uses large digital disk memories instead of tape. They can record and play back in single frame steps (with no pre-roll, since there is no tape involved), at variable speeds or at 30 fps. Digital disk recorders are available as both component and composite machines. Very, very, expensive.

Digital disk recorders can usually mix an incoming video signal with a stored one and record the net result simultaneously. Since everything is digital, this mix can be performed repeatedly, producing layer upon layer of moving images.

#### Digital Video

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A video signal represented by binary numbers describing a finite set of colors and luminance levels. In accordance with "CCIR 601," the international digital video standard for sampling, the conversion from analog to digital suffers virtually no loss.

With current technology, the cost of using digital video to represent the range of levels and colors easily handled by analog videotape is prohibitive. Digital video requires more bandwidth than analog video to produce the same results, unless fancy compression techniques are used. As digital memory capacity and processing speeds become more economical, digital video will eclipse analog video. Standards such as QuickTime, DVI, MPEG, and JPEG for video make digital manipulation of video information possible on today's personal computers. Note: consumer "digital" televisions and camcorders use the term to refer to the use of digital frame buffers for effects or signal processing. The output of these buffers is still converted back into analog signals for display and storage.

#### Digital Video Effects (DVEs)

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A real-time frame buffer that can zoom in and out, reposition, and freeze frame in real time. Some can also warp video frames into trapezoids, cylinders, and spheres to create a variety of special effects. Common trade names include ADO, Encore, Mirage, and Pinnacle.

#### DIN

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Acronym for Deutsche Industrie Normal, a European standards organization.

## Dirty List (Dirty EDL)

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An EDL containing overlapping or redundant edits. See and compare clean list.

## Dither Pattern

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The matrix of color or gray-scale values used to represent colors gray shades in a display system with a limited color palette.

## Dithering

-----  
A technique for alternating the values of adjacent dots or pixels to create the effect of intermediate values. In printing color or displaying color on a computer screen, the technique of making adjacent dots or pixels different colors to give the illusion of a third color. For example, a printed field of alternating cyan and yellow dots appears to be green. Dithering can give the effect of shades of gray on a black-and-white display, or more colors on a color display.

## Dot Crawl

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See cross luminance.

## Dot Pitch

-----  
A measure of the distance between dots on the screen. The closer the dots, the sharper and clearer the image.

## Dot Space

-----  
The horizontal distance between dot centers. This distance depends on the character pitch in effect.

## Drop-out

-----  
Missing information from magnetic tape caused by dust, lack of oxide, etc. Especially noticeable with a format such as Hi8 which packs a tremendous amount of information onto a tiny and fragile tape.

## Dubbing

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Making a copy from one recording medium to another. See bump-up.

## Duration

-----  
The length or persistence of a signal in time. Compare frequency.

## Dynamic Tracking

-----  
The ability for a video head to "bend" back and forth enough to find an adjacent track and follow it. This allows true freeze-frame rather than only freeze-field display. It also allows for variable speed playback, including playing in reverse, which otherwise is not possible.

EBU

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European Broadcasting Union.

Edit Decision Lists (EDL)

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The Edit Decision List, or EDL, is the data controlling the editing computer during an on-line session. It lists "in-points" and "out-points" for both the source playback decks and the record deck. These "events" can be for video, audio, or both. The EDL may control all sources, various effects machines (for fades and dissolves, for example) and the record deck. An EDL may be created manually after the off-line editing is complete or it may be generated by the edit controller used in more sophisticated off-line systems. Computer based editing systems including the Digital F/X and Avid Media Composer will automatically generate an EDL. See off-line, on-line.

Effects

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Effects involve any manipulation or processing of the video or audio signal. Though they are often used for gratuitous gimmickry, they can also be used for valid functional and aesthetic design purposes. Video effects seem to change annually, and are heavily technology-driven. Since they sometimes cannot be simulated in an off-line environment, the best way to prepare to use them is to look over the free demos available from various video facilities and vendors. Off-line systems like the Avid Media Composer allow you to preview most of the standard video effects.

EIA

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Electronic Industries Association. The organization which determines recommended audio and video standards in the United States.

EIA sync

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see RS-170.

Encoded video

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The encoded video signal is formed by starting with an RGB signal from the color television camera. This RGB signal is then processed through an encoder, known as the I and Q encoder, which converts the RGB into a composite NTSC signal. The encoded signal has all of the elements of the composite video signal: sync, burst, chroma, and luminance.

Encoder

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A device which transforms NTSC timed red, green and blue signals into a single NTSC composite signal combining luminance, chrominance, and sync information. Compare decoder.

ENG

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Acronym for Electronic News Gathering.

Equalizer

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(1) Equipment designed to compensate for loss and delay frequency effects within a system.

(2) A component, or circuit, which allows for the adjustment of a signal across a given band

FCC

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Federal Communications Commission. A federal bureau that regulates radio and television broadcast standards. FCC regulations carry the force of law.

Field

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One complete vertical scan of the picture, containing 262.5 lines. Two fields make up a complete television frame; the lines of field 1 are vertically interlaced with field 2 for 525 lines of resolution in the NTSC standard.

In many respects, a video signal is best conceptualized as 60 separate images per second. When video is recorded from a video camera, each field represents an independent sample of time. This becomes apparent when video-originated material on a videodisc is still framed, one may see flutter: two different images shot 1/60 of a second apart from each other on the same screen.

Film

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While videotape is simple in structure but requires complex machines for recording, film is complex in structure but requires simple recording machines. Film cameras are simple and elegant machines, and when you think about it, the film itself is the recorder.

Film is often used in the production of video for a variety of reasons, including the high image quality of film transferred to video and the ability to record film at any frame rate the camera allows. There are no technical requirements for a particular frame rate as there are with video, each film frame is simply exposed to light, then advanced. Many film cameras have variable frame-rate capabilities—a concept totally foreign to video.

Film Chain

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A device used to transfer film to video. They are still used by some TV stations to broadcast programming distributed on 16mm film. See telecine.

First Generation

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The first time the signal is recorded on tape, that tape is called a first generation tape. Each time the tape is dubbed, a generation is added. See generation loss.

Fotovix

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The brand-name of a device available from Tamron which provides a relatively inexpensive way to transfer still 35mm film slides and negatives to video.

#### Frame

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The total area of the picture which is scanned while the picture signal is not blanked. A complete NTSC TV picture consisting of two fields; a total scanning of all 525 lines of the raster area; occurs every 1/30 of a second. In other countries where PAL and SECAM are the video standard, a frame consists of 625 lines at 25 frame/sec.

#### Frame Grabber

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A device allowing the real time capture of a single frame of video in a temporary buffer for manipulation or conversion to selected computer file formats. Some frame grabbers have buffers large enough to store several complete frames, allowing rapid capture of a number of images. The distinction between a frame grabber and a digitizer is that a digitizer captures a sequence of complete frames, and therefore must employ some form of compression and/or acceleration in order to operate in real-time.

#### Frames

-----

NTSC video plays at 30 frames per second, and each video frame consists of two half-frames called fields. A field consists of every other horizontal line. When the video image is created on a TV set, the little scanning dot of light first scans across the topmost horizontal line, line 1. Rather than scanning along line 2 next, it scans line 3, then line 5, and so on. When it gets to the bottom (in half of the 1/30 second frame time), it begins at the top again but on line 2, then line 4, and so on. This technique is called interlace, and it was invented because most people see a flickering image if television is scanned sequentially at 30 fps.

#### Frequency

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The number of complete cycles transmitted per second. Frequency is usually expressed in hertz (cycles per second), kilohertz (kilocycles per second), or megahertz (megacycles per second). In acoustics, frequency of vibration determines musical pitch. Compare duration.

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