

Topic 88

The Video camera- A Comparison

HD or High-definition, sometimes abbreviated as Hi-def or HD, commonly refers to an increase in display or visual resolution over a previously used standard.

Visual technologies

- HD DVD, discontinued optical disc format
- HD Photo, former name for the JPEG XR image file format
- HDV, format for recording high-definition video onto magnetic tape
- HiDef, 24 frames-per-second digital video format
- High-Definition Multimedia Interface (HDMI), all-digital audio/video interface capable of transmitting uncompressed streams
- High-definition television (HDTV), television signals and apparatus with higher resolution than their contemporary counterparts
- High-definition video, used in HDTV broadcasting, digital film, and computer HD video file formats

High-definition video is video of higher resolution and quality than standard-definition. While there is no standardized meaning for high-definition, generally any video image with considerably more than 480 horizontal lines (North America) or 576 horizontal lines (Europe) is considered high-definition. 720 scan lines is generally the minimum even though the majority of systems greatly exceed that.

Images of standard resolution captured at rates faster than normal (60 frames/second North America, 50 fps Europe), by a high-speed camera may be considered high-definition in some contexts. Television series' shot on high-definition video are made to look as if they have been shot on film, a technique which is often known as filmizing.

HD in filmmaking

Film as a medium has inherent limitations, such as difficulty of viewing footage while recording, and suffers other problems, caused by poor film development/processing, or poor monitoring systems. Given that there is increasing use of computer-generated or computer-altered imagery in movies, and that editing picture sequences is often done digitally, some directors have shot their movies using the HD format via high-end digital video cameras. While the quality of HD video is very high compared to SD video, and offers improved signal/noise ratios against comparable sensitivity film, film remains able to resolve more image detail than current HD video formats. In addition some films have a wider dynamic range (ability to resolve extremes of dark and light areas in a scene) than even the best HD cameras. Thus the most persuasive arguments for the use of HD are currently cost savings on film stock and the ease of transfer to editing systems for special effects.

Depending on the year and format in which a movie was filmed, the exposed image can vary greatly in size. Sizes range from as big as 24 mm × 36 mm for VistaVision/Technirama 8 perforation cameras (same as 35 mm still photo film) going down through 18 mm × 24 mm for Silent Films or Full Frame 4 perforations cameras to as small as 9 mm × 21 mm in Academy Sound Aperture cameras modified for the Techniscope 2 perforation format. Movies are also produced using other film gauges, including 70 mm films (22 mm × 48 mm) or the rarely used 55 mm and CINERAMA.

The four major film formats provide pixel resolutions (calculated from pixels per millimeter) roughly as follows:

1. Academy Sound (Sound movies before 1955): 15 mm × 21 mm (1.375) = 2,160 × 2,970
2. Academy camera US Widescreen: 11 mm × 21 mm (1.85) = 1,605 × 2,970
3. Current Anamorphic Panavision ("Scope"): 17.5 mm × 21 mm (2.39) = 2,485 × 2,970
4. Super-35 for Anamorphic prints: 10 mm × 24 mm (2.39) = 1,420 × 3,390

In the process of making prints for exhibition, this negative is copied onto other film (negative → interpositive → internegative → print) causing the resolution to be reduced with each emulsion copying step and when the image passes through a lens (for example, on a projector). In many cases, the resolution can be reduced down to 1/6 of the original negative's resolution (or worse). Note that resolution values for 70 mm film are higher than those listed above.