

**Introduction**

Modern video cameras are capable of high image quality. When transferring and saving video from a camera to a computer, the quality of the resulting digital video can vary greatly. By being aware of how digital video is structured, the quality of the captured video can be controlled. This Information Sheet provides information on the basic structure of digital video.

**Pixels**

A digital still image is constructed from a number of elements called pixels (short for picture elements). Each pixel can only be one color, and are similar to the dots that make up pictures in newspapers or magazines. The more pixels in an image, the higher the resolution and the better it looks. Compare the high and low resolution versions of the scene below.



630 by 472 pixels  
= 297,360 pixels



63 by 47 pixels  
= 2,961 pixels

**Frame size**

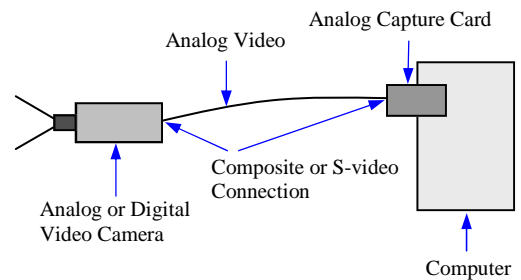
Video is nothing more than a succession of still images. For video cameras that are designed to connect to television sets, the number of images presented every second (the frame rate) is fixed at either 30 (for NTSC) or 25 (for PAL). However, the size of the frame (ie the number of horizontal and vertical pixels) can vary quite a bit. A typical frame size is 320 by 240 pixels– 320 horizontal pixels and 240 vertical pixels.

There are 25 of these frames every second. Each frame is 360 by 288 pixels– a quarter of the original size of 720 by 576 pixels. This causes a significant reduction in image quality.



**Analog Capture**

Because computers only understand digital data, any video that is presented to it must be in digital form. When using an analog video camera, such as VHS, S-VHS, 8 mm or hi-8, the video has to be converted into digital form before a computer can understand it. A video capture device (often called a capture card) is designed to do this conversion. Because this is a complex task, many cheaper capture devices reduce the frame size to simplify it. It is common to reduce the frame size to about a quarter of the original size. USB capture devices fall into this category.



**Digital Capture**

With digital video cameras (mini DV or digital 8), no conversion is necessary because the video is already in digital form in the camera. Digital video cameras have a Firewire socket (sometimes called IEEE 1394 or iLink) which is connected to a computer (via a Firewire cable) to transfer the video to a computer. The computer needs to have a corresponding Firewire connector to do this. Many computers are now being manufactured with Firewire hardware. For those without built-in Firewire hardware, inexpensive Firewire cards are readily available for both desktop and notebook computers.

