TECH NOTE

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Title:	**CHANGE VIDEO COMPRESSION TYPE WITH i-SPEED VIEWER**
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Overview

i-SPEED Viewer is iX Cameras free playback software which allows you to quickly and easily play, alter and save your captured high-speed video, allowing you to share it world-wide. By default, clips created within i-SPEED Control have only spatial jpeg compression performed on them during saving. This results in highly accurate and clear images perfect for motion extrapolation, but also tends to result in very large file sizes. Sometimes having spatial and temporal compression on a video has no discernible effect on the appearance of the video itself and the storage saved can be significant.

Note: iX Cameras does not recommend any compression on videos which are to be analyzed with motion analysis software like ProAnalyst. Both spatial and temporal video compression use algorithms which simplify the image to save space. These algorithms are likely to change the analysis results.

Resave your Video with a Different Compression Type

To change the compression type of your video, you must resave the video and re-encode it with the new compression type. To resave the video click **File Save As...** This opens the save window:

In this window you are able to resave your video in a different save format using a different compression type. First, select the **Save Format** which you would like to use, then change the compression type in the **Compression** pull down menu.

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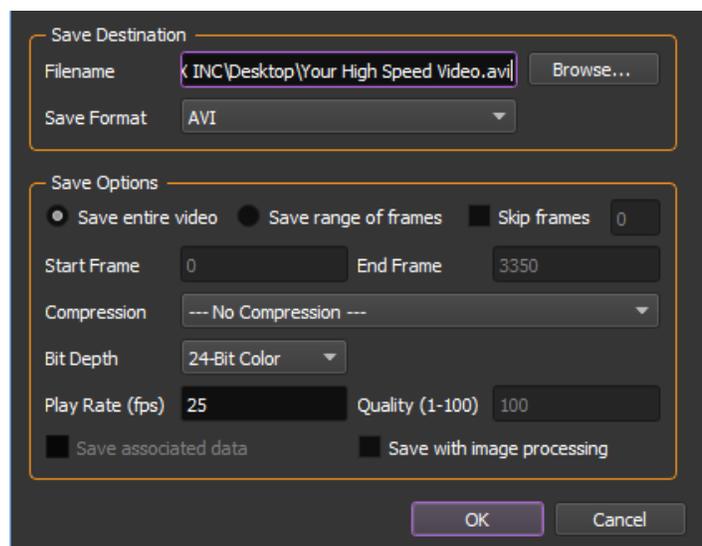
Save Format

The video save format can be thought of as the instructions to play the video and is typically expressed with the file extension for the video. The Save Format It is essentially a container which tells your computer how to read the file that follows, and within that container, multiple compression types can exist, or the video can exist as an uncompressed or potentially unprocessed video.

i-SPEED Viewer can resave video in the following formats:

AVI   Typical Windows-based video format.

TIF   A series of still lossless image stacks.

JPG   A series of still lossy image stacks.

BMP   A series of still lossless image stacks.

PNG   High compression image stack.

IXV   Unprocessed video image from i-SPEED Cameras.

Compression Types

While saving captured i-SPEED 7 high-speed video there are several compression levels available to choose from. i-SPEED Viewer allows you to resave your video into a different format and apply different types of compressions to your video.

JPG Quality Compression

JPG quality compression represents the percentage of compression to be performed on the image stack. A value of 100 preserves as much image quality as possible and results in the largest file sizes possible. A quality value of 50 preserves 50% of the image quality and results in a significantly smaller file size.

Note: The end quality and effectiveness of the JPG quality compression depends upon the complexity of the image taken. A very busy image with lots of colors won't compress as efficiently as a completely blank image.

AVI Codec Compression

AVI Video can be compressed both spatially and temporally using external compression encoders. The CDU and Control Software can perform JPG spatial compression directly on the

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saved AVI, or the video can be resaved in i-SPEED Viewer to take advantage of temporal encoding.

Note: Compression codecs are external programs that are not a part of the i-SPEED Viewer software. You may encounter errors or incompatibilities when using a codec. Many require certain resolutions or bit depths to operate properly.

Compression Format Options

WMVideo8 Encoder DMO

Windows Media Video 8 Encoder is a DirectX Media Objects based codec built around MPEG-4 Part 1 profile video compression, popularized by the wmv file extension.

WMVideo 9 Encoder DMO

Similar to WMVideo8 package, WMVideo 9 is more common and widely supported due to Microsoft's Video Compression Manager (VCM) support, but still relies on MPEG-4 Part 1 compression.

MSScreen 9 Encoder DMO

A Microsoft-based DirectX Media Objects based codec designed specifically for screen capture.

DV Video Encoder

A spatial compression type popularized by digital tape recordings. Video is encoded in standardized resolutions of 720 x 480 or 720 x 576 depending upon if the video is NTSC or PAL formatted.

Indeo video 5.10 Compression Filter

A spatial compression format similar to DV Video encoding which has largely gone out of style due to potential security vulnerabilities.

MJPEG Compressor

Great for complex moving scenes, Motion JPEG compression provides spatial JPEG compression on individual frames. As such is a very efficient and reliable compression type capable of preserving a great deal of image quality and motion resolution. An efficient and reliable compression type for video which needs to be compressed, but still must also be analyzed.

Xiph.Org Theora Encoder

A lossy variable bitrate scalable compression type which relies on MPEG-4 and DiVX type compression. Theora compression was popularized by the OOG file extension.

WebM VP8 Encoder Filter

An open-sourced spatial and temporal compression created for and intended to be primarily web-based and to operate with HTML5. WebM works very well at low bandwidth's and has a good compression to quality ratio, but should not be used to compressed analyzed video.

Cinepak Codec by Radius

A simple compression codec that runs on inefficient compression ratios, but which has excellent backwards compatibility due to its pervasive simplicity.

Indeo IYUV codec

A spatial compression format similar to DV Video encoding which has largely gone out of style due to potential security vulnerabilities.

Microsoft RLE

Microsoft's Run Length Encoding data format uses Microsoft's BMP compression to encode AVI videos and therefore produces high quality spatial compression which is good for compressing analyzed video, but which will not save much disk space in terms of compression.

Microsoft Video 1

Microsoft's Video 1 codec is a legacy compression type with one of the earliest and simplest compression algorithms available. It comes in two basic variants; 8-bit palettized encoding or 16-bit color encoding. With Microsoft Video 1 pixels are grouped in blocks of 4 x 4 which can contain up to 8 different colors in varying configurations.

TechSmith Screen Codec 2

TechSmith's proprietary codex used for their Camtasia software package. It makes use of VP6 type video compression popularized by flash video.

TechSmith Screen Capture Codec

TechSmith's proprietary codex used for their Camtasia software package and incorporated in Jing screen capture software. It makes use of VP6 type video compression popularized by flash video.

 Change Video Compression with i-SPEED Viewer

X264vfw – H.264/MPEG-4 AVC codec

Part of the MPEG-4 part 10 subset of compression, x.264 is a highly efficient open source compression codec that performs both spatial and temporal compression of a video. Currently x.264 is the most efficient compression codec available and results in an excellent balance between compression rates and video quality. This compression is not recommended for video that is to be processed.

Xvid MPEG-4 Codec

Xvid MPEG-4 part 2 compression is an open source compression type similar to H.263 and compresses the video both spatially as well as temporally, resulting in a highly efficient video compression where video quality is very high relative to the file size.

## Getting and Updating Codecs

Each Compression Format requires a specific codec to be installed on your computer to properly encode and decode the video, allowing the video to be saved and played back. Many of these common codecs will already be available on most PCs, as they are already included with Windows Media Player's default codecs. If you find a video is not playing properly, check that the correct codec is installed, or try re-installing Windows Media player to update your codecs.

The x264vfw codec can be obtained from the Sourceforge website:
http://sourceforge.net/projects/x264vfw/files

Note: For use with iX Viewer, make sure that you are downloading x264vfw. This is the 32-bit version of the codec. If you are installing on a 64-bit system, you can also install the 64-bit version (x264vfw64).

We recommend changing some of the default settings for better playback performance in ProAnalyst. To change the configuration, go to **Start**, **All Programs**, **x264vfw**, **Configure x264vfw**. Set the configuration to the following:
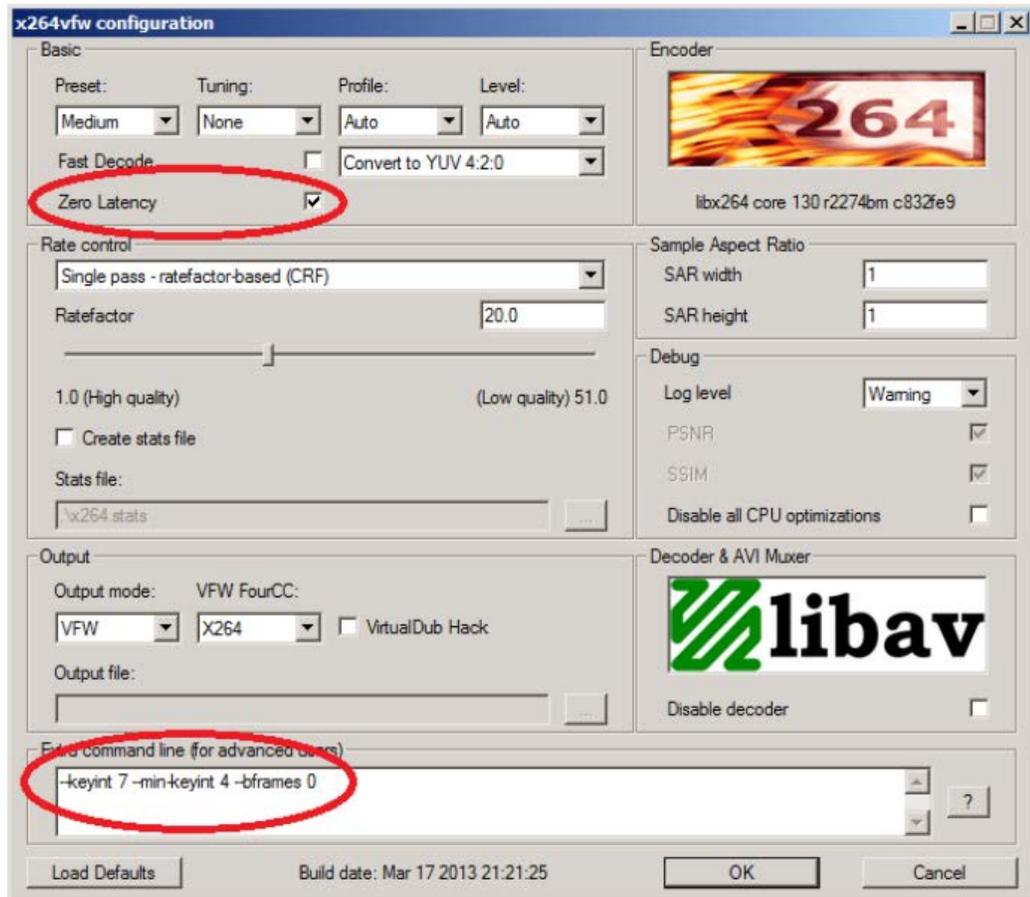
Additional Codecs, such as the TechSmith codec's can be downloaded off of the manufacture's website. iX Cameras can not verify the contents of any files your download from a third party location and therefore can not host 3rd party codec files, or recommend 3rd party sites to download the codec. Whenever possible, download the codec directly from the manufacturer's website.