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Digital Lighting Custom Content Preparation Guide

A Step-by-Step guide for creating Custom Content for Axon Servers, DL.3, DL.2 products.

Topics include:

Creating Standard-Size Content

- [Sizing and Formatting Still Images](#)
- [Steps for Preparing Video Footage](#)
- [MPEG-2 Compression Overview](#)
- [Encoding Footage](#)
- [Checking Encoded Footage on a standard computer](#)
- [Uploading Content](#)

Creating Media Content for Special Effects

- [Collage Generator™ Content Preparation Guide](#)

Creating 3D objects (pro modeling skills required)

- [Creating Custom User Objects in 3D Studio MAX](#)
- [Creating Custom User Objects in Lightwave 3D](#)



Still Images - Sizing and Formats

DL3, DL.2 and Axon is recommended to be 1024 x 768 pixels, although sizes up to a maximum of 2048x2048 can be used. There may some internal scaling applied to non-standard resolutions, it is recommended to use 1024 x 768.

Axon HD and HD Pro still image size can range to a much higher 4096 x 4096. No internal scaling is applied until the output stage, where the output will match the display device.

Acceptable still image formats:

.PNG (can include transparent parts of the image) [Video Tutorial](#)

.BMP (24 bit standard)

.JPG (RGB 8 bit standard) (highly compressed .JPG will yield noise, use best quality)

Notes:

The dpi (dots per inch) setting in your paint program are a print media reference.

Digital Lighting uses pixels in references to size.

Scaling bitmap images up will not increase clarity.

Steps for Preparing Video Footage

- Commission or Design High Quality (Visually Clean or Never-Compressed) Video Footage, at a resolution of 1024x768 for DL.3/Axon or 640 x 480 for DL.2.

Axon HD and HD Pro can use custom resolutions, ideally content should be produced to match the display device. If display device is unknown, using 1920x1080 is an acceptable default.

- ["Light Optimizing"](#) (see note at the bottom of the page) your footage in a video editing program if possible, by boosting Levels and Color Saturation.

- Export content using a near lossless format, such as Photo Jpeg 100% or Animation Non-Compressed. Use the .mov format as a container for ease of import in the compression stage.
- Import Video master footage into an Encoder/Compressor.
- Output Encoded Footage.
- Upload Your Custom Content

Axon HD and HD Pro MPEG-2 Video Footage Compression Specification Overview

Standard Footage Size	1920 x 1080 pixels, 16:9 aspect ratio
Bit rate per sec, bps (Visual Quality Setting)	Constant Bit Rate (CBR) 35,000,000 bps -38,000,000 bps
Frames Per Second, fps	24 fps, 25 fps or 29.97 or 30 fps (Set Encoder fps accordingly)
Group Of Pictures, GOP	Closed GOP Structure should be All "I" Frames
Video Stream Type	Elementary Stream (Warning: DO NOT use a Program Stream that may have audio)
Progressive Output	The footage should be encoded as a progressive frame file, not an interlaced file
Color Space	4:2:0 (Warning: DO NOT encode to 4:2:2 or other color spaces)

DL.3 and Axon MPEG-2 Video Footage Compression Specification Overview

Standard Footage Size	1024 x 768 pixels, 4:3 aspect ratio
Bit rate per sec, bps (Visual Quality Setting)	Constant Bit Rate (CBR) 18,000,000 bps -20,000,000 bps
Frames Per Second, fps	24 fps, 25 fps or 29.97 or 30 fps (Set Encoder fps accordingly)
Group Of Pictures, GOP	Closed GOP Structure should be All "I" Frames
Video Stream Type	Elementary Stream (Warning: DO NOT use a Program Stream that may have audio)
Progressive Output	The footage should be encoded as a progressive frame file, not an interlaced file
Color Space	4:2:0 (Warning: DO NOT encode to 4:2:2 or other color spaces)

DL.2 MPEG-2 Video Footage Compression Specification Overview

Standard Footage Size	640 x 480 pixels, 4:3 aspect ratio
Bit rate per sec, bps (Visual Quality Setting)	Constant Bit Rate (CBR) 10,000,000 bps -12,000,000 bps
Frames Per Second, fps	24 fps, 25 fps or 29.97 or 30 fps
Group Of Pictures, GOP	Closed GOP Structure should be All "I" Frames
Video Stream Type	Elementary Stream (Warning: DO NOT use a Program Stream that may have audio)
Progressive Output	The footage should be encoded as a progressive frame file, not an interlaced file

Encoding Video footage*

Episode 6™ (MAC and PC)

Episode 6 is Telestream, Inc's latest application for both Mac and PC computers

DL.3/Axon HD size Episode 6 User Encoder Templates: [Download](#)

DL.3/Axon Standard size Episode 6 User Encoder Templates: [Download](#)

DL.2 Standard size Episode 6 User Encoder Templates: [Download](#)

Episode 5™ (MAC and PC)

Episode 5 is a previously available encoding application for both Mac and PC computers
([Click here for an example movie of footage being encoded](#))

Note: Episode 5 is no longer available from Telestream, Inc. The tutorial video remains here for legacy support purposes.

TMPGEnc Video Mastering Works 5 (PC only)

How to Encode Footage using TMPGEnc VMW 5* [Example Tutorial](#) (pdf)

Axon HD / HD Pro standard size TMPGEnc (v5) encoder templates [Download](#)

Axon HD / HD Pro Audio Only Encoder Template for TMPGEnc (v5) [Download](#)

DL.3/Axon standard size TMPGEnc VMW5 encoder templates: [Download](#)

DL.2 standard size TMPGEnc VMW5 encoder templates: [Download](#)

([TMPGEnc Video Mastering Works 5](#))

* Limited to a maximum 1920 pixel wide output

TMPGEnc 4.0 Xpress (PC only)

How to Encode Footage using TMPGEnc 4.0 Xpress* [Example Tutorial](#)

DL.3/Axon standard size TMPGEnc encoder templates: [Download](#)

DL.2 standard size TMPGEnc encoder templates: [Download](#)

* Limited to a maximum 1920 pixel wide output

Note: TMPGEnc 4.0 Express is no longer available from Pegasys, Inc. The tutorial and templates remain here for legacy support purposes.

*At this time we do not endorse Apple's, Compressor 3 or Autodesk's Cleaner software as they cannot produce all "I" frames mpeg-2 files compliant with all DL's/Axon's.

Checking Encoded Footage on a standard computer

Checking Encoded Footage Using Window OS:

[Windows Media Player](#) will let you view your encoded footage.

To Check file dimensions go to the arrow down tab in the upper right hand corner of the player window, tab down to file/properties.

Helpful Utilities for checking encoded Footage using Windows OS:

[Bit rate Viewer](#) is a very helpful tool that can check the bit rate level, size and gives information about other MPEG-2 properties. Simply drag your file onto the program shortcut or icon to view relevant information.

[Download free version](#)

[Gspot](#) is a PC utility that gives you expanded information about your encoded files. Simply drag your file onto the program shortcut or icon to launch and view relevant information.

[Download here](#)

Checking Encoded Footage Using MAC OS X:

After encoding your file you can easily view your footage with the free [Quicktime](#) or [VLC Media Player](#), [Download here http://www.videolan.org/vlc/](http://www.videolan.org/vlc/). While VLC does not display the aspect ratio correctly it is very effective for determining image quality on PC MAC or Linux. To determine if the file has been encoded at the correct size [Download DiVA here](#). Then simply open a file in the DiVA and it will display the dimensions.

Uploading Encoded Files

You will use the Content Management Application (CMA) on your computer to upload and organize your encoded files to a User Content folder you create and then assign DMX values. You can also download the CMA and a .pdf version of the User Manual for more information on your specific products support page.

Important note:

High End Systems Digital Lighting Products utilize RGB lighting projection devices, and are NOT hindered by the darker NTSC or PAL broadcast video color gamut limitations. Footage you acquire often utilizes this dimmer, darker color space designed for viewing on TV screens.

It's very simple to adjust the Levels and Hue/Saturation of your content for lighting projection. This will dramatically increase light output and your footage will automatically come up at full intensity when programming your production. We refer to this as [Light Optimizing](#). The best time to [Light Optimize](#) footage or still images is in post production. This can easily be done with most image or video editing packages.100% brightness and saturation in the reds? Feel free.

Downloads also Available:

[CMA Application](#)

[DL.2 User Manual.PDF](#)

[DL.2 Software](#)



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