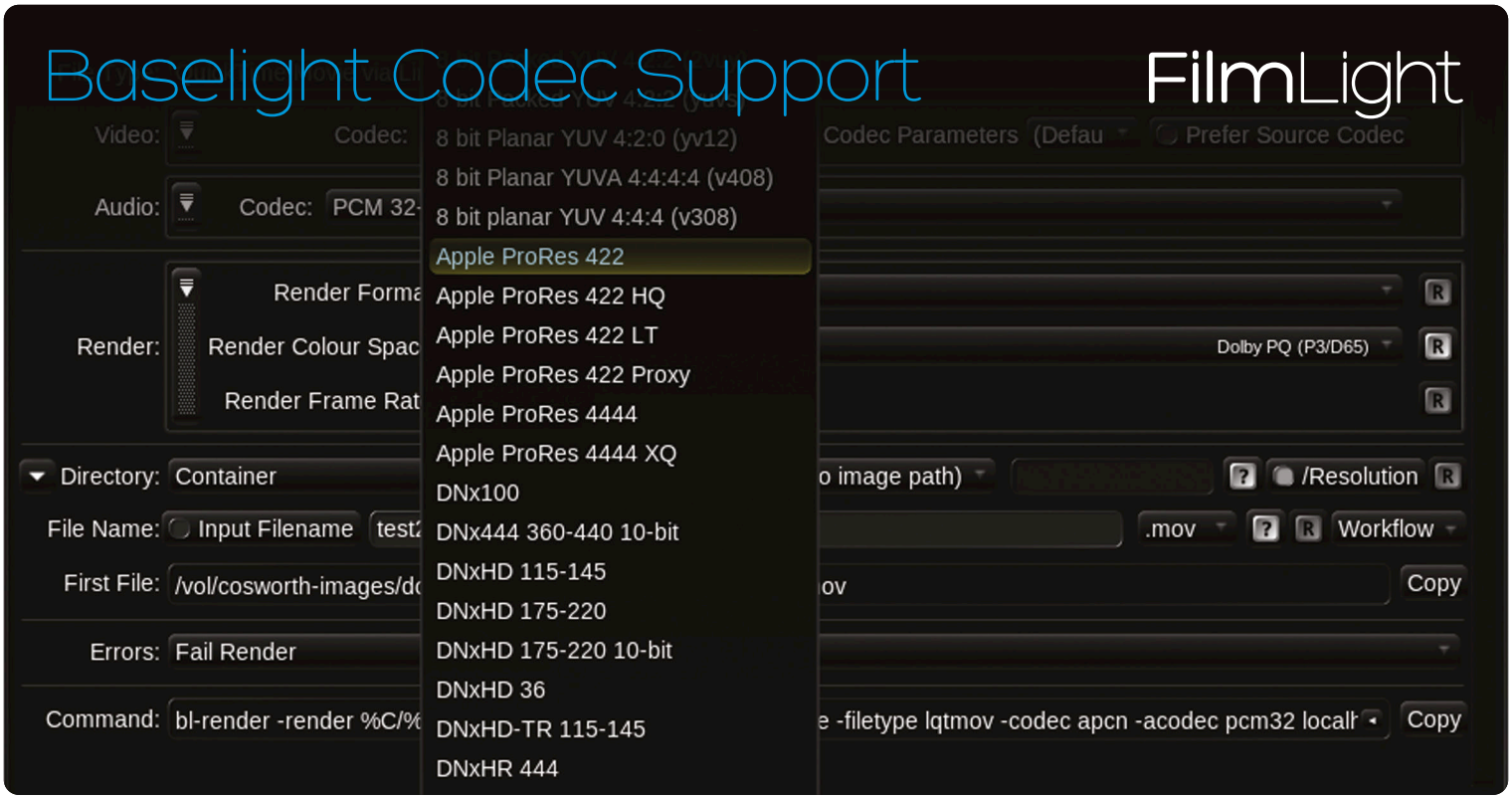
Baselight Codec Support

FilmLight



Whether images are shot on film or using one of the many digital cameras now available, image media is being acquired and stored digitally in a bewildering range of file and movie formats.

A competent post-production system needs to be able to handle and transcode all of these to ensure optimal workflows. Baselight supports an extensive range of image and movie formats that employ many different codecs and wrapper formats.

File formats

The table on the following pages shows the formats that are supported natively by Baselight and their common extensions; it also shows whether each format can be read or written, and other relevant details such as bit depth and colour channels.

Reading and writing formats

Some formats can be read and written by Baselight; others can be read only or written only. There are many reasons for this.

Decoders and codecs

A decoder just allows a movie file format to be read, while a codec allows the format to be both read and written.

Camera raw source formats

Some digital cameras produce raw images with the original sensor data saved in a Bayer format. To visualise an image, it must be de-Bayered and converted to RGB. There is no benefit to Baselight writing an image in a Bayer format–raw images are used as source only, and so these formats will be decoded (read) but never written.

Format variations

Some formats are tightly specified so that it is possible to accurately read and write compliant files. Some formats, however, are much looser, and can allow for custom data to be included in proprietary fields. Most professional applications generate compliant files that are read easily within Baselight. As far as possible, Baselight also reads and handles commonly used proprietary format extensions.

Resolution

All Baselight systems are unlimited in terms of input image resolution and output render resolutions.

GPU JPEG 2000 acceleration

The Comprimato JPEG 2000 encode and decode GPU solution (optional) supports acceleration for IMF, DCP, JPEG 2000 codestream files (J2C) and JPEG 2000 encoded MXF movies.

Pixspan compression

Baselight supports reading and rendering Pixspan-compressed files; an additional licence (optional) is required to render Pixspan-compressed files and to make use of GPU acceleration. See the release notes for more details.

Continuing development

Baselight is continually updated with support for new formats and codecs. As new formats arise and become prevalent, they are usually included within Baselight. If you require a format for your workflow that is not available already, contact FilmLight to discuss your needs.

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Codecs

Format	Extension		Depth/channels	Notes
Sequential image files				
ARRIRAW	.ari	Read only	12/16 bit	Raw camera format; including Alexa raw. Decoded with ARRI SDK
ARRIRAW (HDE-compressed)	.arx	Read only		Codex lossless High Density Encoding optimised for Bayer pattern images
Canon RMF	.rmf	Read only		Canon Raw Media Format
Cineon	.cin	•	10 bit RGB	Supports keycode
Cintel RAW	.cri	Read only		Blackmagic Cintel scanner format
DALSA RAW	.dpx	Read only	14 bit	Raw camera format; read only
DPX	.dpx	•	10 bit RGB; 16 bit grey, RGB, 8/10/16 bit 4:2:2/4:4:4 Y'CbCr	Can also read 8 bit grey; 10 bit grey and RGBA; 12 bit; 16 bit RGBA and 10 bit YCC. Supports timecode, keycode Northlight IR matte and Scanity 2-bit dirt matte
DPX-C	.dpx	Read only		Cineform DPX format
HEIC/HEIF	.heic/.heif	Read only		
JPEG	.jpg/.jpeg	•	8 bit RGB	Can also read 8 bit grey and RGBA
JPEG 2000	.jp2	•		
JPEG 2000 Codestream	.j2c/.j2k	•		Writes DCI and IMF-compliant JPEG 2000 Codestream files
OpenEXR	.exr/.sxr/.mxr	•	Unlimited channels/ layers	Read-only support for multi-part and multi-view OpenEXR files
Panasonic V-RAW	.vrw	Read only		
PGM	.pgm	•	8 bit grey	
Photron RAWW	.raww	Read only		Raw camera format; read only
PNG	.png	•	8/16 bit; grey, RGB/A	
PPM	.ppm	•	8/16 bit; RGB	
RGB	.rgb	•	8/16 bit; grey, RGB/A	Compressed or uncompressed
RUST RAW	.dpx	Read only	10 bit	Raw camera format; read only
SGI	.sgi	•	8/16 bit; grey, RGB/A	Compressed or uncompressed
Targa	.tga	•	8 bit; grey, RGB/A	
TIFF	.tif/.tiff	•	32 bit RGB/A ; 8/12/16 bit grey, RGB/A	12 bit conforms to DCI spec
dSLR - Canon raw 2	.cr2	Read only		Raw dSLR stills camera format; read only
dSLR - Canon raw 3	.cr3	Read only		Raw dSLR stills camera format; read only
dSLR - Nikon raw	.nef	Read only		Raw dSLR stills camera format; read only
dSLR - Kodak raw	.dcr/.kdc	Read only		Raw dSLR stills camera format; read only
dSLR - Olympus raw	.orf	Read only		Raw dSLR stills camera format; read only
dSLR - Sony raw	.arw/.sr2	Read only		Raw dSLR stills camera format; read only
dSLR - Adobe Digital Neg.	.dng	Read only		Raw dSLR stills camera format; read only
dSLR - Panasonic raw	.rw2	Read only		Raw dSLR stills camera format; read only
dSLR - Hasselblad raw	.3fr	Read only		Raw dSLR stills camera format; read only
dSLR - Mamiya raw	.mef	Read only		Raw dSLR stills camera format; read only
dSLR - Pentax raw	.pef	Read only		Raw dSLR stills camera format; read only
dSLR - Others	.erf/.mos/ .raw	Read only		Raw dSLR stills camera format; read only
Movie files				
MXF				
1:1 4:2:2	.mxf	•	8/10 bit YCbCr	
1:1 4:4:4	.mxf	•	10 bit 4:4:4 RGB	
ARRIRAW	.mxf	Read only		From Alexa cameras; supports HDE compression
AVC Intra 50/100 (H.264)	.mxf	Read only	Up to 16-bit	From camera or Avid Media Composer

Baselight Codec Support

Format	Extension		Depth/channels	Notes
Movie files (cont.)				
Canon EOS	.mxf	Read only		Including C200, C300, C700; supports split-file media
Canon X3 HEVC	.mxf	Read only		
Cinema DNG	.mxf	Read only		Supports lossy compression (e.g. Blackmagic URSA)
D-10 IMX/MPEG	.mxf	•		MPEG 30, 40, 50
DNx444	.mxf	•		4:4:4 DNxHD
DNxHD	.mxf	•		DNxHD TR+, TR-SQ, LB, SQ, HQ, HQX (10 bit), 444
DNxHR	.mxf	•		DNxHR LB, SQ, HQ, HQX (10 bit), HQX (12 bit), 444
DNxUncompressed	.mxf	•		
Dolby Vision Mezzanine	.mxf			Only appears if Dolby Vision mastering display has been selected in scene settings. Dolby Vision metadata is write-only
DV25/DV50	.mxf	•		
DVCPRO	.mxf	Read only		
DVCPRO HD	.mxf	Read only		
JPEG 2000	.mxf	•		Writes DCI and IMF-compliant MXFs
Motion JPEG (2:1, 4:1 etc.)	.mxf	•		
ProRes	.mxf	Read only		
Panasonic EVA1 RAW	.mxf	Read only		
Panasonic Varicam	.mxf	Read only		Including Varicam LT
Sony RAW	.mxf	Read only		Including F5, F55, F65, FS700, VENICE/CineAltaV; also supports high frame rate (HFR) and F65 RAW-Lite
Sony X-OCN	.mxf	Read only		Including X-OCN XT, X-OCN LT, X-OCN ST; supports 4K 6:5, 4K 2.39:1, 6K 17:9, 6K 1.85:1, 6K 16:9, 6K 2.39:1 bitstreams
Sony XAVC	.mxf	•	12/10/8 bit	Supports long-GOP data; XAVC proxy extension is .mp4
SStP/L2 4:2:2	.mxf	•	4:2:2 YCbCr	Sony HD-CAM SR SStP MPEG-4 codec
SStP/L2 4:4:4	.mxf	•	4:4:4 RGB; 10/12 bit	Sony HD-CAM SR SStP MPEG-4 codec HD, 2K
XDCAM HD, HD 4:2:2, EX (MPEG2)	.mxf	•	YCbCr	
AVI				
Cineform	.avi	Read only		
DV	.avi	•		
Uncompressed 4:2:2	.avi	•	10 bit	
Motion JPEG	.avi	•		
MSMPeg 4v3 (DivX3)	.avi	•		Microsoft DivX 3
MSMPeg 4v3 (WMP)	.avi	•		Microsoft WMP
QuickTime				
Animation (RLE)	.mov	•		
Apple ProRes RAW	.mov	Read only		
AVC Intra	.mov	Read only		
Avid 1:1x	.mov	Read only		
Avid DNxHD	.mov	Read only		DNxHD 36, 115, 120, 145, 175, 185, 220, 220x
Avid IMX	.mov	Read only		
Cineform	.mov	Read only		HD, 2K, 4K
Component Video YUV422	.mov	•		
DNxHR	.mov	•		DNxHR 444, HQX (12 bit), HQ, SQ, LB
DV	.mov	•		PAL and NTSC
DVCPRO	.mov	•		PAL and NTSC
DVCPRO50	.mov	•		PAL and NTSC
H.263	.mov	•		

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Format	Extension		Depth/channels	Notes
Movie files (cont.)				
H.263+	.mov	•		
H.264	.mov	•		
HEVC	.mov	•		
JPEG	.mov	•		
Motion JPEG A	.mov	•		
MPEG4	.mov	•		
Packed YUV	.mov	•	8 bit YCbCr	
Planar YUV	.mov	•	4:2:0/4:4:4 YUV; 4:4:4:4 YUVA	
PNG	.mov	•		With alpha
ProRes 422	.mov	•		LT/Proxy/HQ; uses Apple's ProRes library to encode/decode
ProRes 4444	.mov	•		XQ; uses Apple's ProRes library to encode/decode
UT Video	.mov	Read only		
XDCAM EX	.mov	Read only		720p 24/25/30/50/60; 1080i 50/60; 1080p 24/25/30
XDCAM HD	.mov	Read only		1080i 50/60; 1080p 24/25/30
XDCAM HD422	.mov	•		720p 50/60; 1080i 50/60; 1080p 24/25/30
XF-AVC	.mov	Read only	12-bit 4:4:4	
3GP				
H.263	.3gp	•		
MPEG-4	.3gp	•		
MP4				
AVC Intra	.mp4	Read only		
H.263	.mp4	•		
H.264	.mp4	•		
HEVC	.mp4	•		
MPEG-4	.mp4	•		
MPEG-2	.mp4	Read only		Supports long-GOP MPEG2 data; e.g. from Sony F3 camera
Sony XAVC S	.mp4	Read only		
Other				
BRAW	.braw	Read only		Blackmagic raw camera format
Canon CRM	.crm	Read only		Canon RAW Light file
IMF	n/a	•		Supports complete and supplemental IMF packages
Phantom	.cine	Read only	Raw, RGB	
RED	.R3D	Read only	All	
Silicon Imaging	.siv	Read only	10 bit log/12 bit linear	SIV Raw
Subtitles	.xml	Read only		CineCanvas and SMPTE ST 428-7 subtitle XML
Digital Cinema Package (DCP)				
SMPTE	n/a	•		Supports encrypted and unencrypted packages.
Interop	n/a	•		Supports encrypted and unencrypted packages.

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