



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 by Baselight, either natively or within one of the options described below, 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.

## Format options

Many image and movie formats are supported natively within Baselight, and there are some options that extend this range:

- » **Baselight Kompressor:** A hardware option that provides a native QuickTime environment and support for many standard QuickTime wrapped codecs.
- » **Advanced Codec Support:** An additional software option that requires Baselight Kompressor and adds to its list of codecs, providing read and write support for a wide range of broadcast codecs such as Apple ProRes.

## 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.

### Camera acquisition formats

Some digital camera acquisition codecs use interframe (temporal) compression over multiple images. These formats are not necessarily easy to edit or use for grading or VFX work, which require whole frames to operate on. Consequently, intermediate codecs are often employed that only use compression on each single frame (intraframe). For this reason, Baselight generally supports writing to intraframe formats, but not interframe formats.

## 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.

## Codecs

Format	Extension	Baselight	Baselight Kompressor	Advanced Codec Support	Depth/channels	Notes
<b>Sequential image files</b>						
ARRIRAW	.ari	Read only			12/16 bit	Raw camera format; read only; including Alexa raw. Decoded with ARRI SDK
Canon RMF	.rmf	Read only				Canon Raw Media Format
Cineon	.cin	•			10 bit RGB	Supports keycode
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 422/444 YCbCr	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 Scanimity 2-bit dirt matte
DPX-C	.dpx	Read only				Cineform DPX format
JPEG	.jpg/.jpeg	•			8 bit RGB	Can also read 8 bit grey and RGBA
JPEG 2000	.jp2	•				
JPEG 2000 Codestream	.j2c/.j2k	•				Writes DCI-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	.vrv	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
SGL	.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	.cr2	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
<b>Movie files</b>						
<b>MXF</b>						
11 4:2:2	.mxf	•			8/10 bit YCbCr	
11 4:4:4	.mxf	•			10 bit 444 RGB	
ARRIRAW	.mxf	Read only				From Alexa Mini camera
AVC Intra 50/100 (H.264)	.mxf	Read only			Up to 16-bit	From camera or Avid Media Composer
Canon EOS C300	.mxf	Read-only				Supports split-file media
Cinema DNG	.mxf	Read only				Supports lossy compression (e.g. Blackmagic URSA)
D-10 IMX/MPEG	.mxf	•				MPEG 30, 40, 50
DNx444	.mxf	•				444 DNxHD
DNxHD	.mxf	•				DNxHD 36,100, 115, 120, 145, 175, 185, 220, 220x
DNxHR	.mxf	•				DNxHR 444, HQX (12 bit), HQ, SQ, LB
DV25/DV50	.mxf	•				
DVCPRO	.mxf	Read only				
DVCPRO HD	.mxf	Read only				
Motion JPEG (2:1, 4:1 etc)	.mxf	•				

Format	Extension	Baselight	Baselight Kompressor	Adv. Codec Support	Depth/channels	Notes
<b>Movie files (cont)</b>						
ProRes	.mxf	Read only				
Panasonic Varicam	.mxf	Read only				
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				
Sony XAVC	.mxf	•			12/10/8 bit	Supports long-GOP data; XAVC proxy extension is .mp4
SSStP/L2 422	.mxf	Read only			422 YCbCr	Sony HD-CAM SR SSStP MPEG-4 codec
SSStP/L2 444	.mxf	Read only			444 RGB 10/12 bit	Sony HD-CAM SR SSStP MPEG-4 codec HD, 2K
XDCAM HD, HD 422, EX (MPEG2)	.mxf	•			YCbCr	
<b>AVI</b>						
Cineform	.avi	Read only				
DV	.avi	•				
Uncompressed 422	.avi	•			10 bit	
Motion JPEG	.avi	•				
MSMPeg 4v3 (DivX3)	.avi	•				Microsoft DivX 3
MSMPeg 4v3 (WMP)	.avi	•				Microsoft WMP
<b>QuickTime</b>						
Animation (RLE)	.mov	•				
Apple Intermediate Codec	.mov		Read only	•		
Apple Raw	.mov		•			
AVC Intra	.mov	Read only				
Avid t1	.mov			•		
Avid DNxHD	.mov	Read only				DNxHD 36, 115, 120, 145, 175, 185, 220, 220x
Avid DV	.mov			•		
Avid DV100	.mov			•		
Avid IMX	.mov	Read only				
Avid Meridien	.mov			•		Compressed and uncompressed
Avid Packed	.mov			•		
BMP	.mov		•			
Cineform	.mov	Read only				HD, 2K, 4K
Cinepak	.mov		•			
Component Video YUV422	.mov	•	•			
DNxHR	.mov	•				DNxHR 444, HQX (12 bit), HQ, SQ, LB
DV	.mov	•	•			PAL and NTSC
DVCPRO	.mov	•	•			PAL and NTSC
DVCPRO HD	.mov			•		720p and 1080i 50/60, 1080p 25/30
DVCPRO50	.mov	•	•			PAL and NTSC
FCP Uncompressed	.mov			•	8 bit 422	
H.261	.mov		•			
H.263	.mov	•	•			
H.263+	.mov	•				
H.264	.mov	•	•			
H.265	.mov	Read only				
HDV	.mov			•		720p 24/25/30/50/60, 1080i 50/60, 1080p 25/30
JPEG	.mov	•	•			
JPEG 2000	.mov		•			
Motion JPEG A	.mov	•	•			
Motion JPEG B	.mov		•			
MPEG IMX	.mov			•		525/60 and 625/50, 30/40/50mb/s
MPEG4	.mov	•	•			
Packed YUV	.mov	•			8 bit YCbCr	
Pixlet	.mov		•			
Planar RGB	.mov		•			

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<b>Movie files (cont.)</b>						
Planar YUV	.mov	•			420/444 YUV, 4444 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
Sorenson Video 2	.mov		•			
Sorenson Video 3	.mov		•			
Targa	.mov		•			
Tiff	.mov		•			
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
<b>3GP</b>						
H.263	.3gp	•				
MPEG-4	.3gp	•				
<b>MP4</b>						
H.263	.mp4	•				
H.264	.mp4	•				
H.265	.mp4	Read only				
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				
<b>Other</b>						
Phantom	.cine	Read only			Raw, RGB	
RED	.R3D	Read only			All	Can be accelerated with RED Rocket
Silicon Imaging	.siv	Read only			10 bit log/ 12 bit linear	SIV Raw
<b>Digital Cinema Package (DCP)</b>						
SMPTE	n/a	•				Supports encrypted and unencrypted packages
Interop	n/a	•				Supports encrypted and unencrypted packages

## Resolution

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

## R3D hardware acceleration

The RED .R3D compressed format can be decoded in hardware using the RED Rocket accelerator card (user-supplied). The RED Rocket card requires FLOS 2.1 or higher.

## 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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