

DPX

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DPX Content (1)

- **log neg encoding**
Cineon Printing Density (CPD/DPX), ARRI log C
- **log RGB encoding or quasi-log encoding**
FilmStream (log₆₀), SI-log (Silicon Imaging, log₉₀), ARRI log F, Panalog, S-log (Sony), REDLOG

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DPX Content (2)

- **gamma encoding or power function encoding**
sRGB, CineGamma, "film rec", hyper-gamma
- **scene-linear encoding**
ACES

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RAWcooked

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A Bridge

RAWcooked (command-line interface)

→ mediaarea.net/RAWcooked

```
# encode
rawcooked input_path_of_folder

# decode
rawcooked rawcooked_input_file.mkv

# get help
rawcooked -h
man rawcooked
```

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RAWcooked

- encoding into Matroska container using FFV1 video codec and FLAC audio codec
- significantly fewer files
- all metadata preserved
- decoding with bit-by-bit reversibility
- possibility to embed sidecar files such as checksum manifest, LUT, XML and PDF
- compatibility with media players

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```
-bash
Licensed DPX flavors:
Yes DPX/Raw/RGB/8bit/U/LE
Yes DPX/Raw/RGB/10bit/U/LE/FilledA
Yes DPX/Raw/RGB/10bit/U/BE/FilledA
Yes DPX/Raw/RGB/12bit/U/LE/FilledA
Yes DPX/Raw/RGB/12bit/U/BE/Packed
Yes DPX/Raw/RGB/12bit/U/BE/FilledA
Yes DPX/Raw/RGB/16bit/U/LE
Yes DPX/Raw/RGB/16bit/U/BE
Yes DPX/Raw/RGBA/8bit/U/LE
Yes DPX/Raw/RGBA/10bit/U/LE/FilledA
Yes DPX/Raw/RGBA/10bit/U/BE/FilledA
Yes DPX/Raw/RGBA/12bit/U/LE/FilledA
Yes DPX/Raw/RGBA/12bit/U/BE/Packed
Yes DPX/Raw/RGBA/12bit/U/BE/FilledA
Yes DPX/Raw/RGBA/16bit/U/LE
Yes DPX/Raw/RGBA/16bit/U/BE
Yes DPX/Raw/Y/8bit/U/LE
Yes DPX/Raw/Y/10bit/U/BE/FilledA
Yes DPX/Raw/Y/10bit/U/BE/FilledB
Yes DPX/Raw/Y/12bit/U/BE/Packed
Yes DPX/Raw/Y/16bit/U/LE
Yes DPX/Raw/Y/16bit/U/BE
Licensed TIFF flavors:
```

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File Size

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Source

- 3K (3072 × 2048 pixels)
- 192 frames
- 8 seconds (at 24 frames/second)

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Master (Single Images)

4.83 GB	Cineon, 10-bit	.cin
7.25 GB	TIFF, RGB, 16-bit	.tif
6.51 GB	PNG, RGB, 16-bit	.png
4.83 GB	DPX, R'G'B', 10-bit	.dpx
5.44 GB	DPX, R'G'B', 12-bit	.dpx
7.25 GB	DPX, R'G'B', 16-bit	.dpx
7.25 GB	OpenEXR, R'G'B', 16-bit	.exr
14.5 GB	OpenEXR, R'G'B', 32-bit	.exr

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Master (Stream)

562.8 MB	ProRes 422 HQ, 10-bit	.mov
531.3 MB	DNxHR HQX, 10-bit	.mxf
1.08 GB	ProRes 4444 XQ, 12-bit	.mov
1.06 GB	DNxHR 444, 12-bit	.xmf
3.23 GB	raw, Y'C _B C _R , 4:2:2, 10-bit	.avi
3.22 GB	raw, Y'C _B C _R , 4:2:2, 10-bit	.mov
939.7 MB	FFV1, Y'C _B C _R , 4:2:2, 10-bit	.mkv

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Access Files

DaVinci Resolve 19.1.3

36.1 MB	3K, H.264	.mkv
18.9 MB	3K, H.265	.mkv

-c:v libx264 -profile veryslow -crf 21

20.4 MB	3K, H.264	.mp4
5.5 MB	HD, H.264	.mp4

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Checksums

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Checksums

cryptographic

- MD5
- SHA-1
- SHA-256
- SHA-512

non-cryptographic

- CRC-32
- xxHash 32
- xxHash 64
- xxHash 128

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Checksum Benchmarking

```
1 #!/usr/bin/env bash
2
3 # This script uses the 'make_manifest' from our open-source set
4 # 'Bash Scripts for Audio-Visual Preservation', available at:
5 # https://avpres.net/Bash_AVpres/
6
7 declare -a list=(md5 sha1 sha256 sha512 crc32 xxh32 xxh64 xxh128)
8
9 for algorithm in "${list[@]}; do
10     echo
11     echo "${algorithm}"
12     date +%T
13     make_manifest -i ~/Desktop/FFmpeg_TEST --algorithm=${algorithm}
14     date +%T
15 done
16
```

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Results

MD5

- 01:55 = 100 %

SHA-1

- 00:43 = 37 %

SHA-256

- 00:43 = 37 %

SHA-512

- 01:02 = 54 %

CRC-32

- 00:17 = 15 %

xxHash 32

- 00:26 = 23 %

xxHash 64

- 00:15 = 13 %

xxHash 128

- 00:15 = 13 %

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