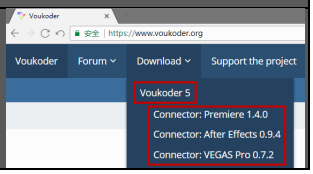
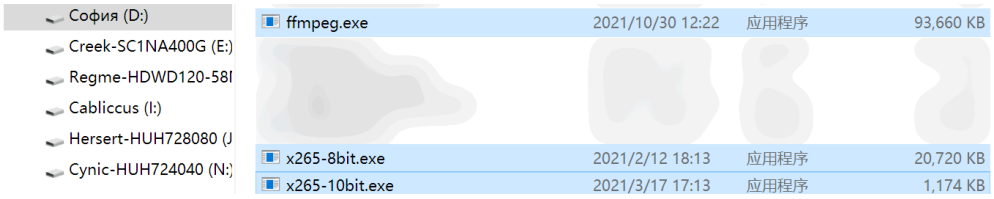
English version is derived from the x264 x265 Ultimate Tutorial Project by same author iAvoe

| | |
|---|---|
| **LigH** | .hevc GCC10 [single .exe 8-10-12bit] w/ x86 w/ libx265.dll |
| **Rigaya** | .hevc GCC 9.3 [8-10-12bit] w/ x86 |
| **Patman** | .hevc GCC 11+MSVC1925 [8-10-12bit] |
| **ShortKatz** | arm64~64e with x86 ? [?] macOS compiling needed |
| **DJATOM-aMod** | Intel, AMD zen1~2 [10bit], zen3 [10-12bit] GCC 10.2.1+GCC10.3 |
| **MeteorRain-yuuki** | lsmash.mkv/mp4 或.hevc [lavf isn't as reliable as pipe acc. rumor] GCC 9.3+ICC 1900+MSVC 1916 [8][10][12bit]+[8-10-12bit] |
| **ffmpeg** all OS compatible. backup link: ottverse.com/ffmpeg-builds | |
| **mpv player** a small sized opensource video player with no color issues afaik | |
| **x265GuiEx (Rigaya)** 日本語, compiles by auto-setup, link for tutorial | |
| **Voukoder; V-Connector** free Premiere/Vegas/AE/Davinci Studio with libx264, libx265 presets from this tutorial loaded, currently the best exp. solution |  |



## x265.exe command line usage for new users

[Download ffmpeg & x265 to a memorable path, in screenshot they are at D:\]





[Open Windows CMD.exe, click Start and punch in c, m, d will do]

[CMD auto-filling] Write some portion of PATH/filename, and hit [Tab] will trigger it

[ffmpeg build ver.] ffmpeg.exe; [x265 build ver.] x265.exe -V

[Export, Import] x265.exe [options] --output C:\folder\export.mp4 C:\folder\import.mp4

- Only possible with x265.exe with lavf decoder built-in, but you are copying completed command anyways, so no worries about this

[Unix pipe formats] Check ffmpeg, VS, avs2yuv pipe

[Use case] D:\ffmpeg.exe -i F:\video.mov -an -pix_fmt yuv420p10 -f yuv4mpegpipe -strict unofficial - | D:\x265-10bit.exe -D 10 --input-csp i444 --allow-non-conformance --rect --ctu 64 --min-cu-size 8 --limit-tu 1 --tu-intra-depth 4 --tu-inter-depth 4 --max-tu-size 16 --me star --subme 6 --merange 48 --analyze-src-pics --max-merge 4 --early-skip --b-intra --no-open-gop --radl 3 --min-keyint 5 --keyint 240 --ref 3 --fades --bframes 14 --b-adapt 2 --crf 16.5 --rdoq-level 2 --psy-rdoq 4 --aq-mode 4 --qg-size 16 --rd 5 --limit-modes --limit-refs 1 --rskip 1 --rd-refine --splitrd-skip --no-sao --tskip --master-display G(8500,39850)B(6550,2300)R(35400,14600)WP(15635,16450)L(10000000,1) --colorprim bt2020 --colormatrix bt2020nc --transfer smpte2084 --y4m - --output F:\done.hevc 2>D:\Desktop\ffmpeg_or_x265_error_logs.txt

## ffmpeg, VS, avs2yuv pipe

```
ffmpeg -i video_in.mp4 -an -f yuv4mpegpipe -strict unofficial - | x265 --y4m - --output
```

```
ffmpeg -i video_in.mp4 -an -f rawvideo - | x265.exe --input-res <WxH> --fps <int/flo/frac> - --output
```

-format, -an bypass audio, -strict unofficial lift std. restrictions, --y4m for "YUV for MPEG", both "-" passes stream through the Unix pipe

```
VSpipe.exe       VSScript.vpy --y4m - | x265.exe - --y4m --output
VSpipe/avs2yuv   VSScript.vpy - | x265.exe --input-res <WxH> --fps <int/flo/frac> - --output
avs2yuv.exe      AVSScript.avs -raw   - | x265.exe --input-res <WxH> --fps <int/flo/frac> - --output
```

## .ass subtitle rendering

Single font, math operators(∑ ∫ ∞): avs texttosub()

Multi font, math opts, art letters (ℋℜ), super/subscripts($9^{9}_{9}$): ffmpeg -filter_complex "ass='F\:/mySub.ass'"

**Stop encoding & mux encoded frames**: Ctrl+C (x265.exe built-in feature?)

**ffmpeg multiplexing** *(change extension for different formats)*

- ffmpeg.exe -i ".\video_stream.mp4" -an -c:v copy -i ".\audio_stream.aac" -c copy "mux_out.mov"

**ffmpeg replace existing audio** *(itoffset ±seconds to align new audio stream)*

- ffmpeg.exe -i ".\mux_in.mov" -itsoffset 0 -i ".\new_ad_st_in.aac" -c:v copy -map 0:v:0 -map 1:a:0 -c:a copy ".\new_mux_out.mov"

**ffmpeg conv. framerate mode**: -vsync cfr (1) / vfr (2) / drop

**ffmpeg built-in scaling**: -sws_flags bicubic bitexact gauss neighbor bicublin lanczos spline +full_chroma_int +full_chroma_inp +accurate_rnd (e.g.: -sws_flags bitexact+full_chroma_int+full_chroma_inp+accurate_rnd)

**HDR Tags** --master-display <manually tagging for instruct video players or decoders to correctly play HDR sources

DCI-P3: G(13250,34500)B(7500,3000)R(34000,16000)WP(15635,16450)L(?,1)

bt709: G(15000,30000)B(7500,3000)R(32000,16500)WP(15635,16450)L(?,1)

bt2020: G(8500,39850)B(6550,2300)R(35400,14600)WP(15635,16450)L(?,1)

- Check HDR source's metadata for color space，then copy the corresponding settings above as param value
- max for L has no standards，which means every video could be different, check your source stream

DCI-P3: G(x0.265, y0.690), B(x0.150, y0.060), R(x0.680, y0.320), WP(x0.3127, y0.329)

bt709: G(x0.30, y0.60), B(x0.150, y0.060), R(x0.640, y0.330), WP(x0.3127,y0.329)

bt2020: G(x0.170, y0.797), B(x0.131, y0.046), R(x0.708, y0.292), WP(x0.3127,y0.329)>

-- cll <same value as master-display max L>

**Color Primaries** --colormatrix <as src, e.g.: gbr bt709 fcc bt470bg smpte170m YCgCo bt2020nc bt2020c smpte2085 ictcp>

--transfer <as source, e.g.: gbr bt709 fcc bt470bg smpte170m YCgCo bt2020nc bt2020c smpte2085 ictcp>

# General Purpose·Simple ---generalized configurable options for simplicity

**splt-trans** --min-cu-size 16 --limit-tu 1 --tu-intra-depth 2 --tu-inter-depth 2 --rdpenalty 1

**srch-cmpn** --me umh --subme 6 --merange 48 --rskip 1 --weightb --mctf

**ref-rateol** --ref 3 --early-skip --no-open-gop --min-keyint 5 --fades --bframes 11 --b-adapt 2

--radl 2 --fast-intra --hist-scenecut

**quantize** --crf 18 --crqpoffs -2

**adpt quant** --aq-mode 4 --qg-size 16

**rdo-mdecs** --rd 5 --splitrd-skip --rdoq-level 1 --limit-modes --rect --tskip-fast

**sao** --limit-sao --sao-non-deblock --deblock 0:-1

**io** --hash crc --allow-non-conformance

**tgt. depth** -D 8/10/12 (default 8bit or lowest built in x265.exe, same or convert to lower depth only w/ --dither)

**multi node** --pools ,,,, (e.g.: "-,+"states a PC w/ 2 CPU nodes & use the 2nd only, using both nodes causes mem. delay)

**crop** --display-window <integer "←, ↑ ,→, ↓ " pixels>

**interlaced** --field

## (ffmpeg pipe) x265 CLI parameters

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -an -f yuv4mpegpipe -strict unofficial - | x265.exe --min-cu-size 16 --limit-tu 1 --tu-intra-depth 2 --tu-inter-depth 2 --

rdpenalty 1 --me umh --subme 4 --merange 48 --rskip 1 --weightb --mctf --ref 3 --early-skip --no-open-gop --max-merge 2 --min-keyint 5 --fades --bframes 11 --b-adapt 2 --radl 2 --fast-intra --hist-scenecut --crf 18 --crqpoffs -2 --aq-mode 4 --qg-size 16 --rd 5 --splitrd-skip --rdoq-level 1 --limit-modes --rect --tskip-fast --limit-sao --sao-non-deblock --deblock 0:-1 --hash crc --allow-non-conformance --y4m - --output ".\v_out.mp4"

### libx265 CLI, compatible w/ libav fork

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -c:v libx265 -x265params "min-cu-size=16:limit-tu=1:tu-intra-depth=2:tu-inter-depth=2:rdpenalty=1:me=umh:subme=4:merange=48:rskip=1:weightb=1:mctf=1:ref=3:early-skip=1:max-merge=2:open-gop=0:min-keyint=5:fades=1:bframes=11:b-adapt=2:radl=2:fast-intra=1:hist-scenecut=1:crf=18:crqpoffs=-2:aq-mode=4:qg-size=16:rd=5:splitrd-skip=1:rdoq-level=1:limit-modes=1:rect=1:tskip-fast=1:limit-sao=1:sao-non-deblock=1:deblock=0:-1:hash=crc:allow-non-conformance=1" -c:a copy ".\v_out.mp4"
- **Depth, colorspace:** -pix_fmts yuv420p / yuv422p / yuv444p / yuv420p10 / yuv422p10 / yuv444p10...

### libkvazaar CLI (in dev, crf mode missing) (libx265 ffmpeg CLI is lacking 85% of params, skipped)

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -c:v libkvazaar -kvazaar-params "limit-tu=1:tr-depth-intra=2:pu-depth-intra=4:pu-depth-inter=3:smp=1:amp=1:bipred=1:me=tz:subme=4:merange=48:me-early-termination=off:max-merge=2:ref=3:open-gop=0:period=360:gop=16:transform-skip=1:qp=16:fast-residual-cost=1:early-skip=1:max-merge=4:rd=3:mv-rdo=1:rdoq-skip=1:intra-rdo-et=1:sao=edge:hash=checksum" -c:a copy ".\v_out.mp4"

# General Purpose·Std.

---Contains many custom options for some trade offs

**splt-trans** --tu-intra-depth 3 --tu-inter-depth 3 --limit-tu 1 --rdpenalty 1

**srch-cmpns** --me umh --subme <24fps=3, 48fps=4, 60fps=5, 100fps=6> --merange 48 --analyze-src-pics --weightb --mctf

**ref-rateol** --ref 3 --max-merge <2fast, 3, 4slow> --early-skip --no-open-gop --min-keyint 5 --keyint <9×fps> --fades --bframes 11 --b-adapt 2 --radl 3 <sharp source: --pbratio 1.2>

**intra coding** --hist-scenecut <fast: --fast-intra / mid: 不填 / slow: --b-intra / slower: + --constrained-intra >

**quantization** --crf <16~18less-loss 19 ~20good> --crqpoffs -3 --cbqpoffs -1

**rdoq** --rdoq-level <1fast，2slow>

**adapt quant** <anime source: --hevc-aq, remove aq-mode> --aq-mode 4 --aq-strength <flat=0.8, edgy=1>

**md decision** --rd 5 --limit-modes --limit-refs 1 --rskip <3fast, 2, 1slow> --rc-lookahead <3×fps> --tskip-fast --rect <veryslow: --amp>

**rdo** --psy-rd <film=1.6，anime=0.6, +0.6 if ctu=64, -0.6 if ctu=16> --splitrd-skip <EXP: --qp-adaptation-range 3>

**deblock-sao** --limit-sao --sao-non-deblock --deblock 0:-1

**io** --hash crc --allow-non-conformance <外/内网 NAS 串流: --idr-recovery-sei>

**multi node** --pools ,,,, (e.g.: "-,+"states a PC w/ 2 CPU nodes & use the 2nd only, using both nodes causes mem. delay)

**tgt. depth** -D 8/10/12 (default 8bit or lowest built in x265.exe, same or convert to lower depth only w/ --dither)

**crop** --display-window <整数"←, ↑ ,→, ↓ "像素>

**interlaced** --field

## (ffmpeg pipe) x265 CLI parameters

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -an -f yuv4mpegpipe -strict unofficial - | x265.exe --ctu ◯ --min-cu-size 16 --tu-intra-depth 3 --tu-inter-depth 3 --limit-tu 1 --rdpenalty 1 --me umh --subme ◯ --merange 48 --analyze-src-pics --weightb --mctf --ref 3 --max-merge ◯ --early-skip --no-open-gop --min-keyint 5 --fades --bframes 11 --b-adapt 2 --radl 3 --pbratio 1.2 --hist-scenecut --fast-intra --b-intra --constrained-intra --crf ◯ --crqpoffs -3 --crqpoffs -1 --rdoq-level ◯ --aq-mode 4 --aq-strength ◯ --rd 5 --limit-modes --limit-refs 1 --rskip ◯ --rc-lookahead ◯ --tskip-fast --rect --amp --psy-rd ◯ --splitrd-skip --qp-adaptation-range 4 --limit-sao --sao-non-deblock --deblock 0:-1 --hash crc --allow-non-conformance --y4m - --output ".\v_out.mp4"

## libx265 CLI, compatible w/ libav fork

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -c:v libx265 -x265params "ctu=◯:min-cu-size=16:tu-intra-depth=3:tu-inter-depth=3:limit-tu=1:rdpenalty=1:me=umh:subme=◯:merange=48:analyze-src-pics=1:weightb=1:mctf=1:ref=3:max-merge=◯:early-skip=1:open-gop=0:min-keyint=5:fades=1:bframes=11:b-adapt=2:radl=3:pbratio=1.2: hist-scenecut=1:fast-intra=1:b-intra=1:constrained-intra=1:crf=◯:crqpoffs=-3:cbqpoffs=-1:rdoq-level=◯:aq-mode=4:aq-strength=◯:rd=5:limit-modes=1:limit-refs=1:rskip=◯:rc-lookahead=◯:tskip-fast=1:rect=1:amp=1:psy-rd=◯:splitrd-skip=1:qp-adaptation-range=4:limit-sao=1:sao-non-deblock=1:deblock=0:-1:hash=crc:allow-non-conformance=1" -c:a copy ".\v_out.mp4"
- **Depth, colorspace:** -pix_fmts yuv420p / yuv422p / yuv444p / yuv420p10 / yuv422p10 / yuv444p10...

# High Compression·Film

**splt-trans** --tu-intra-depth 4 --tu-inter-depth 4 --limit-tu 1

**srch-cmpns** --me star --subme <24fps=3, 48fps=4, 60fps=5, 100fps=6> --merange 48 --analyze-src-pics --weightb --mctf

**ref-rateol** --ref 3 --max-merge 4 --no-open-gop --min-keyint 3 --keyint <13×fps> --fades --bframes 14 --b-adapt 2 --radl 3

**intra coding** --hist-scenecut --constrained-intra --b-intra

**quantization** --crf 21.8 --qpmin 8 --crqpoffs -3 --ipratio 1.2 --pbratio 1.5

**rdoq** --rdoq-level 2

**adapt.quant** --aq-mode 4 --aq-strength <clean source=0.8, film=1> --qg-size 8

**md decision** --rd 5 --limit-refs 0 --rskip 0 --rc-lookahead <1.8×fps> --rect --amp

**rdo** --psy-rd <film=1.6, animation=0.6, +0.6 if ctu=64, -0.6 if ctu=16> --rd-refine <EXP: --qp-adaptation-range 3>

**deblock** --deblock 0:0

**sao** --limit-sao --sao-non-deblock --selective-sao 3

**io** --hash crc --allow-non-conformance --nr-inter 8 <NAS streaming: --idr-recovery-sei>

**multi node** --pools ,,,, (e.g.: "-,+"states a PC w/ 2 CPU nodes & use the 2nd only, using extra nodes causes mem. delay)

**crop** --display-window <integer "←, ↑ ,→, ↓ " pixels>

**tgt. depth** -D 8/10/12 (default 8bit or lowest built in x265.exe, same or convert to lower depth only w/ --dither)

### (ffmpeg pipe) x265 CLI parameters

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -an -f yuv4mpegpipe -strict unofficial - | x265.exe --tu-intra-depth 4 --tu-inter-depth 4 --limit-tu 1 --me star --subme ◯ --merange 48 --analyze-src-pics --weightb --mctf --ref 3 --max-merge 4 --no-open-gop --min-keyint 3 --keyint ◯ --fades --bframes 14 --b-adapt 2 --radl 3 --hist-scenecut --constrained-intra --b-intra --crf 21.8 --qpmin 8 --crqpoffs -3 --ipratio 1.2 --pbratio 1.5 --rdoq-level 2 --aq-mode 4 --aq-strength ◯ --qg-size 8 --rd 5 --limit-refs 0 --rskip 0 --rc-lookahead ◯ --rect --amp --psy-rd ◯ --rd-refine --qp-adaptation-range 3 --deblock 0:0 --limit-sao --sao-non-deblock --selective-sao 3 --hash crc --allow-non-conformance --y4m - --output ".\v_out.mp4"

### libx265 CLI, compatible w/ libav fork

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -c:v libx265 -x265params "tu-intra-depth=4:tu-inter-depth=4:limit-tu=1:me=star:subme=
  ◯ :merange=48:weightb=1:mctf=1:ref=3:max-merge=4:open-gop=0:min-keyint=3:keyint=
  ◯ :fades=1:bframes=14:b-adapt=2:radl=3:hist-scenecut=1:constrained-intra=1:b-intra=1:crf=21.8:qpmin=8:crqpoffs=-3:ipratio=1.2:pbratio=1.5:rdoq-level=2:aq-mode=4:aq-strength=
  ◯ :qg-size=8:rd=5:limit-refs=0:rskip=0:rc-lookahead= ◯ :rect=1:amp=1:psy-rd= ◯ :rd-refine=1:qp-adaptation-range=3:deblock=0:0:limit-sao=1:sao-non-deblock=1:selective-sao=3:hash=crc:allow-non-conformance=1" -c:a copy ".\v_out.mp4"
- **Depth, colorspace:** -pix_fmts yuv420p / yuv422p / yuv444p / yuv420p10 / yuv422p10 / yuv444p10...

# Editing footage·Render & Reuse

| | |
|---|---|
| **block/unit spitting** | --ctu 32 |
| **motion search** | --me star --subme <24fps=3, 48fps=4, 60fps=5, 100fps=6> --merange 48 --analyze-src-pics |
| **intraframe search** | --max-merge 4 --early-skip --b-intra |
| **rate control** | --hist-scenecut --no-open-gop --min-keyint 1 --keyint <7×帧率>--ref 3 --fades --bframes 7 --b-adapt 2 |
| **quantization** | --crf 17 --crqpoffs -3 --cbqpoffs -2 |
| **mode decision** | --rd 5 --limit-modes --limit-refs 1 --rskip 1 --rc-lookahead <4×帧率> |
| **rate distortion optimization** | --splitrd-skip --rd-refine |
| **deblock** | --deblock 0:-1 |
| **input output** | --hash crc --allow-non-conformance |
| **tuning** | --tune grain |
| **target pixel bit depth** | -D 8/10/12 (default 8bit or lowest built in x265.exe, same or convert to lower depth only w/ --dither) |

**(ffmpeg pipe) x265 CLI parameters**

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -an -f yuv4mpegpipe -strict unofficial - | x265.exe --ctu 32 --me star --subme ◯ --merange 48 --analyze-src-pics --max-merge 4 --early-skip --b-intra --hist-scenecut --no-open-gop --min-keyint 1 --keyint ◯ --ref 3 --fades --bframes 7 --b-adapt 2 --crf 17 --crqpoffs -3 --cbqpoffs -2 --rd 5 --limit-modes --limit-refs 1 --rskip 1 --rc-lookahead ◯ --splitrd-skip --deblock -1:-1 --hash crc --allow-non-conformance --tune grain --y4m - --output ".\v_out.mp4"

### libx265 CLI, compatible w/ libav fork

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -c:v libx265 -x265params "ctu=32:me=star:subme=◯:merange=48:analyze-src-pics=1:max-merge=4:early-skip=1:hist-scenecut=1:open-gop=0:min-keyint=1:keyint=◯:ref=3:fades=1:bframes=7:b-adapt=2:radl=3:constrained-intra=1:b-intra=1:crf=17:crqpoffs =-3:cbqpoffs=-2:rd=5:limit-modes=1:limit-refs=1:rskip=1:rc-lookahead=◯:splitrd-skip=1:deblock=-1:-1:hash=crc:allow-non-conformance=1:tune=grain" -c:a copy ".\v_out.mp4"
- **Depth, colorspace:** -pix_fmts yuv420p / yuv422p / yuv444p / yuv420p10 / yuv422p10 / yuv444p10...

# Anime·High Compression·Subtitle Groups

**splt-trans** --tu-intra-depth 4 --tu-inter-depth 4 --max-tu-size 16

**srch-cmpns** --me umh --merange 48 --subme <24fps=3, 48fps=4, 60fps=5, 100fps=6> --weightb <remove weightb for 80's anime that doesn't have lighting fades> --max-merge 4 --early-skip --mctf

**ref-rateol** --ref 3 --no-open-gop --min-keyint 5 --keyint <12×fps> --fades --bframes 16 --b-adapt 2 --radl 3 --bframe-bias 20

**intra coding** --hist-scenecut --constrained-intra --b-intra

**quantization** --crf 19 --crqpoffs -4 --cbqpoffs -2 --ipratio 1.6 --pbratio 1.3 --cu-lossless --tskip

**rdoq** --psy-rdoq 2.3 --rdoq-level 2

**aq** --hevc-aq --qg-size 8

**md** --rd 5 --limit-modes --limit-refs 1 --rskip 1 --rc-lookahead <2.5 × fps> --rect --amp

**rdo** --psy-rd 1.5 --rd-refine --splitrd-skip --rdpenalty 2 <EXP: --qp-adaptation-range 4>

**deblock** --deblock 0:-1

**sao** --limit-sao --sao-non-deblock

**io** --hash crc --allow-non-conformance --single-sei <NAS streaming: --idr-recovery-sei>

**multi nodes** --pools ,,,, (e.g.: "-,+"states a PC w/ 2 CPU nodes & use the 2nd only, using extra nodes causes mem. delay)

**tgt. depth** -D 8/10/12 (default 8bit or lowest built in x265.exe, same or convert to lower depth only w/ --dither)

**crop** --display-window <integer "←, ↑ ,→, ↓ " pixels>

--rc-grain

stabilize noisy scene for qp

**(ffmpeg pipe) x265 CLI parameters**

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -an -f yuv4mpegpipe -strict unofficial - | x265.exe --tu-intra-depth 4 --tu-inter-depth 4 --max-tu-size 16 --me umh --subme ◯ --merange 48 --weightb --max-merge 4 --early-skip --mctf --ref 3 --no-open-gop --min-keyint 5 --keyint ◯ --fades --bframes 16 --b-adapt 2 --radl 3 --bframe-bias 20 --hist-scenecut --constrained-intra --b-intra --crf 19 --crqpoffs -4 --cbqpoffs -2 --ipratio 1.6 --pbratio 1.3 --cu-lossless --tskip --psy-rdoq 2.3 --rdoq-level 2 --hevc-aq --qg-size 8 --rd 5 --limit-modes --limit-refs 1 --rskip 1 --rc-lookahead ◯ --rect --amp --psy-rd 1.5 --rd-refine --splitrd-skip --rdpenalty 2 --qp-adaptation-range 4 --deblock -1:0 --limit-sao --sao-non-deblock --hash crc --allow-non-conformance --single-sei --y4m - --output ".\v_out.mp4"

### libx265 CLI, compatible w/ libav fork

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -c:v libx265 -x265params "tu-intra-depth=4:tu-inter-depth=4:max-tu-size=16:me=umh:subme=◯:merange=48:weightb=1:max-merge=4:early-skip=1:mctf=1:ref=3:open-gop=0:min-keyint=5:keyint=◯:fades=1:bframes=16:b-adapt=2:radl=3:bframe-bias=20:hist-scenecut=1:constrained-intra=1:b-intra=1:crf=19:crqpoffs=-4:cbqpoffs=-2:ipratio=1.6:pbratio=1.3:cu-lossless=1:tskip=1:psy-rdoq=2.3:rdoq-level=2:hevc-aq=1:qg-size=8:rd=5:limit-modes=1:limit-refs=1:rskip=1:rc-lookahead=◯:rect=1:amp=1:psy-rd=1.5:rd-refine=1:splitrd-skip=1:rdpenalty=2:qp-adaptation-range=4:deblock=-1:0:limit-sao=1:sao-non-deblock=1:hash=crc:allow-non-conformance=1:single-sei=1" -c:a copy ".\v_out.mp4"
- **Depth, colorspace:** -pix_fmts yuv420p / yuv422p / yuv444p / yuv420p10 / yuv422p10 / yuv444p10...

# Anime·ripper's cold war·HEDT Only

Paused dark flat scenes must look AS-IS, results less & slower compression than sub grps

**splt-trans** --tu-intra-depth 4 --tu-inter-depth 4 --max-tu-size 4 --limit-tu 1

**srch-cmpns** --me star --subme <24fps=3, 48fps=4, 60fps=5, 100fps=6> --merange 52 --analyze-src-pics --weightb --max-merge 4 --mctf

**ref-rateol** --ref 3 --no-open-gop --min-keyint 1 --keyint <12×fps> --fades --bframes 16 --b-adapt 2 --radl 2

**intra coding** --hist-scenecut --b-intra

**quantization** --crf 16 --crqpoffs -t5 --cbqpoffs -2 --ipratio 1.67 --pbratio 1.33

**lossless qnt** --cu-lossless

**rdoq** --psy-rdoq 2.5 --rdoq-level 2

**aq** --hevc-aq --aq-strength 1.4 --qg-size 8

**md** --rd 5 --limit-refs 0 --rskip 0 --rc-lookahead <2.5 × fps> --rect --amp --no-cutree

**rdo** --psy-rd 1.5 --rd-refine --rdpenalty 2 <EXP: --qp-adaptation-range 5>

**deblock** --deblock -2:-2

**sao** --limit-sao --sao-non-deblock --selective-sao 1

**io** --hash crc --allow-non-conformance --single-sei <NAS streaming: --idr-recovery-sei>

**multi nodes** --pools ,,,, (e.g.: "-,+"states a PC w/ 2 CPU nodes & use the 2nd only, using extra nodes causes mem. delay)

**tgt. depth** -D 8/10/12 (default 8bit or lowest built in x265.exe, same or convert to lower depth only w/ --dither)

**(ffmpeg pipe) x265 CLI parameters**

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -an -f yuv4mpegpipe -strict unofficial - | x265.exe --tu-intra-depth 4 --tu-inter-depth 4 --max-tu-size 4 --limit-tu 1 --me star --subme ◯ --merange 52 --analyze-src-pics --weightb --max-merge 4 --mctf --ref 3 --no-open-gop --min-keyint 1 --keyint ◯ --fades --bframes 16 --b-adapt 2 --radl 2 --hist-scenecut --b-intra --crf 16 --crqpoffs -5 --cbqpoffs -2 --ipratio 1.67 --pbratio 1.33 --cu-lossless --psy-rdoq 2.5 --rdoq-level 2 --hevc-aq --aq-strength 1.4 --qg-size 8 --rd 5 --limit-refs 0 --rskip 0 --rc-lookahead ◯ --rect --amp --no-cutree --psy-rd 1.5 --rd-refine --rdpenalty 2 --qp-adaptation-range 5 --deblock -2:-2 --limit-sao --sao-non-deblock --selective-sao 1 --hash crc --allow-non-conformance --single-sei --y4m - --output ".\v_out.mp4"

**libx265 CLI, compatible w/ libav fork**

- ffmpeg.exe -loglevel 16 -hwaccel auto -y -hide_banner -i ".\v_in.mp4" -c:v libx265 -x265params "tu-intra-depth=4:tu-inter-depth=4:max-tu-size=4:limit-tu=1:me=star:subme=◯:merange=52:analyze-src-pics=1:weightb=1:max-merge=4:mctf=1:ref=3:open-gop=0:min-keyint=1:keyint=◯:fades=1:bframes=16:b-adapt=2:radl=2:hist-scenecut=1:b-intra=1:crf=16:crqpoffs=-5:cbqpoffs=-2:ipratio=1.6:pbratio=1.33:cu-lossless=1:psy-rdoq=2.5:rdoq-level=2:hevc-aq=1:aq-strength=1.4:qg-size=8:rd=5:limit-refs=0:rskip=0:rc-lookahead=◯:rect=1:amp=1:cutree=0:psy-rd=1.5:rd-refine=1:rdpenalty=2:qp-adaptation-range=5:deblock=-2:-2:limit-sao=1:sao-non-deblock=1:selective-sao=1:hash=crc:allow-non-conformance=1:single-sei=1" -c:a copy ".\v_out.mp4"
- **Depth, colorspace:** -pix_fmts yuv420p / yuv422p / yuv444p / yuv420p10 / yuv422p10 / yuv444p10...