



Production Technology Support

CAMERA PRODUCTION GUIDE | RED DSMC2 / WEAPON HELIUM 8K S35

Settings and best-practices for capture with the RED DSMC2 / WEAPON HELIUM 8K S35 on Netflix 4k Originals.
Current Ops Manual: [HERE](#)

CAPTURE SETTINGS | 8K REDCODE RAW

Preferred SELECTION setting shown in **YELLOW & BOLD** and alternatives in normal text.

SETTING	MENU NAVIGATION	SELECTION
SHOOTING MODE	Menu → Settings → Recording → Mode	Continuous Record
REDCODE RAW FORMAT	Menu → Settings → Recording → Codec	R3D
REDCODE RAW COMPRESSION	Menu → Settings → Recording → Codec*	5:1 ~ 8:1
IMAGE PIPELINE (COLOR SPACE/GAMMA CURVE)	Menu → Image → Image Pipeline**	IPP2 (REDWideGamutRGB/Log3G10) Legacy (DRAGONcolor2/Log3G10)

Note: HDRX capture is **not** approved by Netflix.

* 5:1 is the lowest REDCODE RAW compression available at 23.98 fps. Lowest possible compression ratio may change depending on the frame rate. 8:1 is the maximum compression allowed for Netflix 4k Originals on the RED DSMC2 / WEAPON HELIUM 8K S35 camera.

** IPP2 is the recommended image pipeline. IPP2 separates out the technical controls, which are standardized references that rarely change, from the creative controls, which are unique to the colorist/production.



Production Technology Support

HIGH SPEED | 8K REDCODE RAW

INTERNAL MEDIA	MAX FPS	MAX RESOLUTION	MIN COMPRESSION
RED MINI-MAG (480GB/960GB)	30 fps	8192 x 4320	7:1

HIGH SPEED | 4K REDCODE RAW*

INTERNAL MEDIA	MAX FPS	MAX RESOLUTION	MIN COMPRESSION
RED MINI-MAG (480GB/960GB)	120 fps	4096 x 2160	6:1

HIGH SPEED | 2K REDCODE RAW*

INTERNAL MEDIA	MAX FPS	MAX RESOLUTION	MIN COMPRESSION
RED MINI-MAG (480GB/960GB)	240 fps	2048 x 1080	4:1

* To change the recording resolution of the camera, go to Menu > Settings > Project > Format, or simply touch the resolution on the control screen. Resolution less than 8K Full Format will utilize a smaller area of the sensor, and consequently change the field of view.



EXPOSURE SETTINGS | **BEST PRACTICES**

Please refer to these exposure settings as a starting point to obtain optimal quality and flexibility of footage. Note that getting the right exposure requires careful balancing of several potentially competing factors. Therefore, if the situation allows, it is important to test before production to avoid any issues that may arise in post-production.

The strategy behind optimal exposure is to record as much light as necessary, without losing texture in important highlights. In general, if the sensor is starved from light, image noise increases. On the other hand, if there is too much light, the exposure will clip in the highlights. Highlight clipping can also occur in one of the individual color channels, which can cause inaccurate coloration.

While image noise and highlight clipping are both undesirable, minor underexposure is often acceptable and recoverable, whereas overexposure is not. Therefore, it is typically safest to err on the side of less light to protect against highlight clipping when there is important information within those highlights. On a RED camera, the balancing between image noise and highlight protection can be done with the ISO setting. ISO does not change the raw image data, but increasing the ISO lifts the perceived exposure. This will usually cause the DP to reduce the light hitting the sensor, and thus increasing the actual highlight protecting capabilities. Decreasing the ISO lowers the perceived exposure, causing the DP to increase the light hitting the sensor, which delivers cleaner shadows but also clips highlight sooner.

Given this, it is good to start from ISO 800, and then adjust the ISO (ISO 640~ISO 1600) if needed. For example, lower contrast scenes don't need as much highlight protection, and may therefore benefit more from ISO settings as low as ISO 320.

Another aspect to keep in mind is the OLPF being used. Most RED camera setups will employ the Standard OLPF (provides the best balance of light gathering and protective qualities), but if the camera is rigged with something other than this, there are some exposure practices to keep in mind.

- Skin-tone Highlight OLPF - Captures and preserves color quality in highlights, bright colors, and well-lit environments. However, if the image is exposed beyond ISO 800, red channel noise may become more prevalent compared to the Standard OLPF.
- Low-Light Optimized OLPF - Provides excellent color and tone reproduction in dim to dark environments. However, it's not recommended to be used in well-lit environments.



OPTIMIZING PERFORMANCE | **BLACK SHADING CALIBRATION**

Black shading maximizes image quality by ensuring that pixel sensitivity remains consistent throughout an image.

SETTING	MENU	STANDARD OPERATING PROCEDURE
CALIBRATE SENSOR:	Menu →	1. Select Create . 2. Select Manual .
MANUAL CAPTURE	Settings → Maintenance → Calibrate → Sensor	3. Select how many calibration maps you want to create from the Number of captures drop-down menu. 4. Select the exposure you want for each calibration map from the Capture drop-down menu. 7. Select Start Capture(s) .

WHEN TO APPLY

After the initial black shading process, keep an eye out on the “Cal: T/E”. A new calibration is required if either the “T” or “E” is no longer green.

For optimal results, please follow the instructions below:

- If shooting in consistent ambient temperatures, it is recommended that black shading calibration is done once a week, usually at the end of the day while cameras are still warm.
- If ambient temperatures vary considerably (+/- 30°F or +/-15°C), black shading should be done consistent with these changes, unless previously calibrated.
- If the shoot environment cannot be replicated during camera prep, make sure the camera's temperature stabilizes at the shoot location, and set aside approximately 10 minutes for the black shade calibration process.



Production Technology Support

- Large changes in exposure time (+/- 1/2 sec) also affects the black balance. For example, if the camera is black balanced for 24 fps, 180° shutter angle but a scene requires the camera to undercrank at 2 fps, then it is recommended to re-balance shade.

For more information, see the [Sensor Calibration Methods](#) article and [this](#) video.