





Technical guide — N-RAW —





## Photographing

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## DaVinci Resolve

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# EDIUS X Pro

Editing procedure for N-RAW	20
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RAW video is a video file that is output directly from the camera's image sensor without any in-camera image processing (RGB data before demosaicing)\*. Like RAW still images, RAW video files record rich image information (tonal gradation, etc.), meaning they offer greater flexibility in color grading compared to Log video or video recorded in-camera.

N-RAW is a video format that maintains a fine structure preventing color banding from occurring, while achieving a file size approximately half that of ProRes RAW.

\* Since noise reduction, lens aberration compensation and electronic VR are generally performed by in-camera processing, RAW video files that are not subject to in-camera processing do not go through these processing.

# **Camera settings**

1. Select Video file type > N-RAW 12-bit (NEV)

	Video file type	e 🔋 🕤
-	N-RAW 12-bit (NEV)	SDR
-	ProRes RAW HQ 12-bit (MOV)	SDR
•	ProRes 422 HQ 10-bit (MOV)	SDR
	H.265 10-bit (MOV)	SDR
	This format is for video that	
	will be edited on a high-	
	S Tone m	ode 🖸 OK

2. Select Tone mode > SDR or N-Log

۵	Tone mode	<b>?</b> 5
۲ <b>R</b>		
-	SDR	
/	N-Log	

3. Select VIDEO RECORDING MENU > Video quality (N-RAW) > High quality or Normal

۵	VIDEO RECORDING MENU		
-	Destination		>
	Video file type	N-RAW	>
_	Frame size/frame rate	8.3K (2)	>
►	Video quality (N-RAW)	HIGH	>
۲.	Image area		
	Extended oversampling	OFF	
≂∕	ISO sensitivity settings		
۵	Video quality (N-RAW)	Ľ	5
×.			_
	High quality		
_	Normal		
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۲.			
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4. Select

VIDEO RECORDING MENU

> Frame size/frame rate to set your target output mode

۵	VIDEO RECORDING MENU		
-	Destination		>
	Video file type	N-RAW	>
_	Frame size/frame rate	8.3K	>
►	Video quality (N-RAW)	HIGH	
۲.	Image area		
۲	Extended oversampling	() OFF	
⇒	ISO sensitivity settings		

# About tone mode

Before recording in N-RAW, you must select the tone mode from either [SDR] or [N-Log].

Because each tone mode possesses different characteristics that cannot be changed in post-processing, select the tone mode according to your workflow and the expression you desire.

The [SDR] tone mode is optimal for SDR workflows, allowing for shooting at low sensitivities below ISO 800 and offering superior noise performance in dark areas compared to the [N-Log] mode.

The [N-Log] tone mode is appropriate for Log and HDR workflows. The minimum ISO sensitivity that can be set is 800. This mode is recommended for highly flexible color grading because it achieves superior dynamic range performance on the highlight side.

# Restrictions for recording videos in N-RAW format

#### Restrictions on selecting the [SDR] or [N-Log] tone mode are as follows.

#### Restrictions when tone mode is [SDR]

	Selectability	Effectiveness
Image areas	Cannot be set	Disabled
Extended oversampling	Can be set	Disabled
ISO sensitivity settings	Can be set	High range is unavailable
Picture Control	Can be set	Disabled
Active D-Lighting	Cannot be set	Disabled
High ISO NR	Cannot be set	Disabled
Vignette control	Can be set	Disabled
Diffraction compensation	Cannot be set	Disabled
Auto distortion control (forced with lens mounted)	Cannot be set	Disabled
Auto distortion control (can be set with lens mounted)	Can be set	Disabled
Electronic VR	Cannot be set	Disabled

#### Restrictions when tone mode is [N-Log]

	Selectability	Effectiveness
Image areas	Cannot be set	Disabled
Extended oversampling	Can be set	Disabled
ISO sensitivity settings	Can be set	Cannot be set for ISO sensitivity of 800 or lower and high range
Picture Control	Cannot be set	Disabled
Active D-Lighting	Cannot be set	Disabled
High ISO NR	Cannot be set	Disabled
Vignette control	Can be set	Disabled
Diffraction compensation	Cannot be set	Disabled
Auto distortion control (forced with lens mounted)	Cannot be set	Disabled
Auto distortion control (can be set with lens mounted)	Can be set	Disabled
Electronic VR	Cannot be set	Disabled

#### Common restrictions

- Magnification of the display is disabled during video recording
- Video recording cannot be started when a memory card format is "FAT32"
- The maximum resolution of the HDMI output is "1920x1080"
- In-camera video editing is unavailable

# The Image area/frame size/frame rate for N-RAW is as follows:

lmage area	Category	Frame size	Frame rate
			60p
			50p
	8K	8.3K (8256×4644)	30p
		(	25p
			24p
EV			120p
FA I			100p
		4.1K (4128×2322)	60p
			50p
			30p
			25p
	AK		24p
	4K		60p
			50p
DX		5.4K (5392×3032)	30p
		(3372/(3032)	25p
			24p
2.24		3.8K	120p
2.3X		(3840×2160)	100p

# DaVinci Resolve

# Create a new project

\* The following procedure explains how to create a video that can be viewed in Rec.709 Gamma 2.4 using N-RAW data recorded in 8K/60p, tone mode **N-Log**, as a typical example.

\* Paid version of DaVinci Resolve 17.4.6 or later is required for editing work including rendering.

\* Please download and install DaVinci Resolve from the URL below. <URL> https://www.blackmagicdesign.com/products/davinciresolve Note: This URL is as of June, 2022.



1 Select New Project at the bottom of the screen

- 2 Name the new project
- 3 Select Create to create a new project

### 2 Set the master settings for the project you created



# 1) Select File on the menu bar

#### 2 Select Project Settings

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### ③ Select Timeline resolution > 7680 x 4320 8K Ultra HD

4 Select Timeline frame rate > 59.94



Project Settings: NIKON		
Presets Color Space & Transforms		
Master Settings	Colorsdence Davind YRG8	
Image Scaling	Use separate color space and gamma	
Color Management	eline color space Rec.709 Gamma 2.4 🗸 🗸 🗸	
General Options Out	tput color space Same as Timeline 🗸	
Camera RAW	· · · · · · · · · · · · · · · · ·	
Capture and Playback		
Subtiens	extineinative NotHitselenet	
Color science	DaVinci YRGB 🗸 🗸	
	Use separate color space and gamma	
Timolino color coaco	Por 700 Camma 2.4	
nineline color space	Rec.709 Gamma 2.4	
Output color space	Same as Timeline 🗸 🗸	
Breadcas	st safe IRE levels 20 - 120 V	
		5
		Ξ.
	Cancel Save	

- 1 Select Color Management in the project settings
- ② Confirm that Color science is set to the default setting of DaVinci YRGB
- ③ Confirm that Timeline color space is set to the default setting of Rec.709 Gamma 2.4
- ④ Confirm that Output color space is set to the default setting of Same as Timeline
- ⑤ Save the project settings

Import the data recorded in 8K/60p N-RAW



① Open the folder where the data is stored and drag-and-drop to the media pool

### 5 Edit the video



- Select the Edit tab at the bottom of the screen to move to the edit page
- ② Right-click the data and select Create New Timeline Using Selected Clips



- ③ Name the timeline
- 4 Select Create



(5) Drag-and-drop the N-RAW data to the timeline

Change the color space and gamma of the recorded data according to the timeline color space and output color space

#### Conversion pattern 1: Convert from the camera RAW



- Select Decode Using > Clip to allow Color Space and Gamma to be changed for each clip
- ② Set Color Space to Rec.709 and Gamma to Gamma 2.4
- ③ Change the color temperature and exposure as you would when editing RAW stills

#### **Conversion pattern 2: Use N-Log 3D LUT**

\* It is assumed that the N-Log 3D LUT provided by Nikon is registered with DaVinci Resolve.



- Right-click the image displayed in the Node editor at the top right
- 2 Select LUT > Nikon >

Z\_9\_N-Log-Full\_to\_REC709-Full\_33\_V01-00

③ As with pattern 1, changing Clip from Project, which is the default setting for Decode Using, allows you to change Color Space and Gamma for each clip, and adjust the color temperature as well

# Export the data



- ① Select the **Deliver** tab at the bottom right of the screen
- 2 Type the file name in the Render Settings
- ③ Scroll down and confirm that the resolution and frame rate of the timeline is the same as the project. When the setting is finished, select Add to Render Queue
- ④ When the job is added to the Render Queue, select the objective job and select Render All

# **EDIUS X Pro**

## Create new project

- \* The following procedure explains how to create a video that can be viewed in SDR using N-RAW data recorded in 8K/60p, tone mode N-Log, as a typical example.
- \* Paid version of EDIUS X Pro 10.32 or later is required for editing work including rendering.
- \* Please download and install EDIUS X Pro from the URL below. <URL> https://www.ediusworld.com/products/index.html Note: This URL is as of June, 2022.

		1							
	EDIU	IS File Edit View	Clip Marker	Mod	e Capture R	ender Tools	Settings	Help →	
(2)		New		•	Project	Ctrl + N	3		
-	- C-	Open Project	Ctrl + 0		Sequence	Shift + Ctrl	+ N	-	
		Recent Project							
	6	Save Project							
		Save As	Shift + Ctrl + S						
		Save As Template							
		Exit Project							
		Import Sequence							
		Import Project							
		Export Project							
		Field Editing			Rcd	00:00:	00;00		1
		Restore Offline Clip						CUT WITH	

- 1 Select File on the menu bar
- 2 Select New
- 3 Select Project to create a new project

# Configure the project settings

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	NEKON		
	C:HUsersHUserHDesktopHDE_N_rawWNIKON		
Use Preset/Te	rrplate		
Presets List		Description	
- 🖬 Proj	ect Preset	Video	
<u>8K</u>	8K UHD 7680x4320 59.94p 10bit 2ch	Frame Size : 7680 x 4320 Frame Rate : 59.94	
		Aspect Ratio : 1.0000 Field order : Progressive	
(1)		Video Channels : YCbCr + Alpha Rit Dentiti : 1088	
		Color Space : BT.709	
		Audio	
		Samping Rate : 48000Hz Rit Depth : 24 Rit	
		Channel : 2	
		Render format	
		Grass Valley HQX AVI TC preset : 00:00:00:00	
		TC mode : Drop frame	
Use existing p	roject as template	Total length ::-:-:-:- Show Markers : Sequence marker. Clin marker	
		Over Scan Size : 0 % Audio Reference Level : -20.0 dB	
			Cancel

#### 1 Select an available preset

	Stereoscopic Editing : Disable Audio Sampling Rate : 49009Hz Bt Depth : 24 Bt Channel : 2 Setup Denting Second	
Use existing project as template	Tendo Humasi Grad Valley HQX AVI TC preset : 00:00:000 TC mode : 0:00 for the frame Total length :	
	3 OK Care	9

- 2 Select Customize
- 3 Select OK

Settings	8K UHD 76	580 x 4320 59.94p	
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ideo Preset	ek uno 7680 x 4320 59.94p 🔹	Render format	
	48kHz/2ch 👻	Grass Valley HQK S	itandard 🗸 Detail
Advanced			0 %
ame Size	7680 x 4320 - 769	x 4320 Audio reference leve	6.15 dB
pect Ratio	Pixel Aspect 1:1	Resampling method	Area Average (Past & Share)
ame Rate	59.94 -	HDR/SDR gan 4	) ( <u>6588</u> ),
	Progressive 10bit	Tone mapping	, Cattle
leo Channels	YCbCr + Apha	Sequence setup (Def	sult)
leo Bit Depth	: 2	TC preset	00:00:00;00
	Native v	TC pode	Drop frame
lor Space	ET.709	Total length	
ereoscopic Editing	Visable	Soft Clip	Sequence Marker
mpling Rate	48000H2	, <u> </u>	<ul> <li>Op Maniar</li> </ul>
dio Channels	2ch 🔪 👻	Track (Default)	
do Bt Dooth	264	V Tradis	
and an a supplif	• BT.709	T Trade	
		Tiraod	

- 1 Select Video Preset > 8K UHD 7680 x 4320 59.94p
- 2 Select Video Bit Depth > 10bit
- 3 Select Color Space > BT.709
- ④ Confirm that HDR/SDR gain is set to the default setting of 6.15 dB
- (6) Confirm that Tone mapping is set to the default setting of Soft Clip
- 5 Select OK

\* You can also change the settings of projects that you have previously finished.



- 1) Select Settings on the menu bar
- 2 Select Project Settings



③ Change the settings from Current setting

## Import the data recorded in 8K/60p N-RAW

\* Proxy files need to be imported at the same time, assuming editing utilizing the EDIUS proxy mode.

\* Editing RAW videos of 8K/60p requires high CPU processing power. Therefore, the EDIUS proxy mode is recommended for editing.





 Right-click any empty space in the Bin panel at the top right where you manage imported clips

2 Select Add File

- 3 When you record RAW videos with the Z 9, both N-RAW and proxy files are generated in the same folder. Select the proxy file as well as the N-RAW file
- ④ Select Open



- (5) When the proxy file that is paired with the N-RAW file is imported to EDIUS, a temporary editing clip mark appears at the top right corner on the image displayed in the **Bin** panel
- 6 Drag-and-drop the N-RAW file to the timeline



⑦ Select Mode on the menu bar

#### 8 Select Proxy Mode

\* When the display of the clip shows a grid-like display appearing on the timeline, the system has switched from the original N-RAW to a proxy-handling state.

### 5 Convert the color space and gamma of the recorded data according to the project settings

- \* As previously set up, it is assumed that the video will be viewed in SDR and color space BT.709.
- \* When N-RAW data is imported to EDIUS, it is decoded as N-Log, so that color space is set to rec.2020 and the gamma is set to N-Log.



For the conversion, apply color grading to the clip recorded in Log format and use the primary color correction that allows you to adjust brightness and color.

- ① Change the tab of the panel at the top right from **Bin** to **Effect**
- 2 Select Video Filters > Color Correction
- ③ Open the folder, select Primary Color Correction, and drag and drop the effect to the clip in the timeline

# ④ Confirm that the display of the preview window changes



(5) Double-click the Primary Color Correction in the Information panel to open the Primary Color Correction



- 6 Confirm that Color Space > Source is set to N-log
- ⑦ Confirm that Destination/LUT is set to Project Color Space (BT.709)
- (8) Confirm that HDR/SDR Gain is the same as the project settings, and that N-Log (decoded from N-RAW) as source file is converted to SDR BT.709

#### **Conversion pattern 2: Use N-Log 3D LUT**

\* It is assumed that the 3D-LUT provided by Nikon is registered with EDIUS.



① Select Destination/LUT > Z\_9\_N-Log-Full\_to\_ REC709-Full\_33\_V01-00(Full/Video)

2 Select OK

### Export the video in the timeline

\* It can be assumed that an actual workflow has editing and color grading before the following steps, however, this manual omits the explanation.



① Select Mode on the menu bar and uncheck Proxy Mode



- 2 Select Export at the bottom of the preview window
- ③ Select Print to File

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DV	Grass Valley HQX MOV	Exporter Plug-in for Grass Valley HQX	
Export Between In and Out Enable Conversion Captions None	Display Timecode  Export in 16bit/2ch  Not Output File	Add to Bin Search	
Job setting Priority Normal - C	omment		
		(0)	

- 4 Select an exporter
- Select Export



6 Name the file7 Select Save

⊳ fin Q fi	II W A V III Progress Philiphed V E	nter 🖌 Canceled 🗸	Ourrent F	troject Only Export/Batch Export,	Waveform Cache, Prox		Col	umrs	
	Job Name	Export File Path	Priority	Submitted	Started	Ended	Prop	tress	
9	Waveform Cache: C:\Users\Us	C:\Users\User\Deskto	Normal	05/13/2022, 18:07	06/13/2022, 18:07	06/13/2022, 18:07		100%	
0	Proxy: C:\Users\User\Desktop\	C:\Users\User\Deskto	Normal	05/13/2022, 18:09	06/13/2022, 18:09	06/13/2022, 18:12		100%	
Ð	NIKON_Sequence1_2022-06-1	C:\Users\User\Deskto	Normal	05/13/2022, 18:33	06/13/2022, 18:33				
		0							

# 8 Select the Job tab and check the rendering progress

# Nikon

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