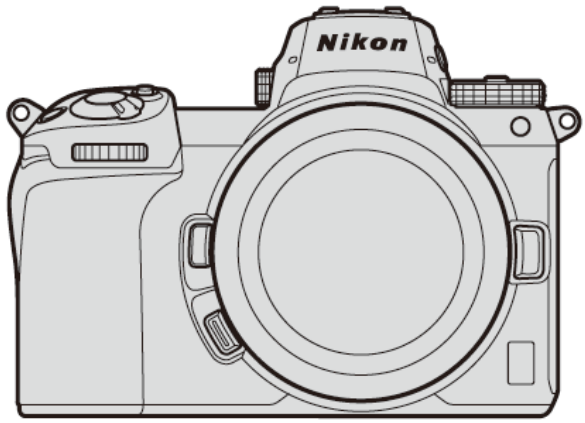
Nikon

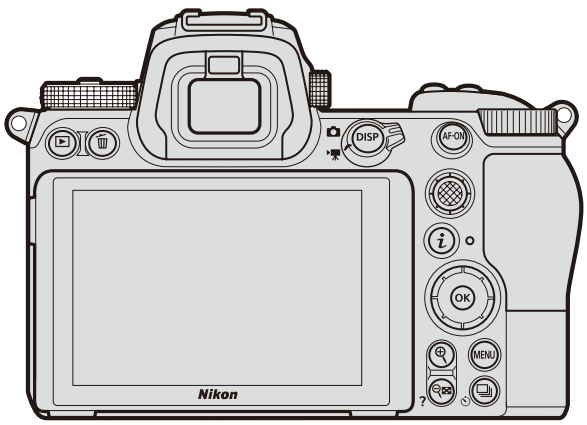


Z 7 / Z 6 Professional

Technical Guide

— RAW Video Recording —

Revision 1.0



En

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About RAW video

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. This makes them ideal for shoots where post-production is going to be required.

* Noise reduction, lens aberration compensation and electronic VR are generally performed by in-camera processing. Since RAW video files are not subject to in-camera processing, users need to apply these adjustments as necessary during post-production, by using third-party software.

RAW video output with the Nikon Z series

Nikon's RAW video output function outputs 12-bit RAW data via HDMI connector. The recording format depends on the specifications of the external recorder connected via HDMI. Recording to the camera's memory card is not available.
RAW video output is compatible with the Atomos Ninja V ver.10.2 (hereinafter called "Ninja V") and Blackmagic Design Video Assist 12G ver.3.3 (hereinafter called "Video Assist 12G"). Recording file formats are ProRes RAW*[1] and Blackmagic RAW*[2]. (As of October 2020)

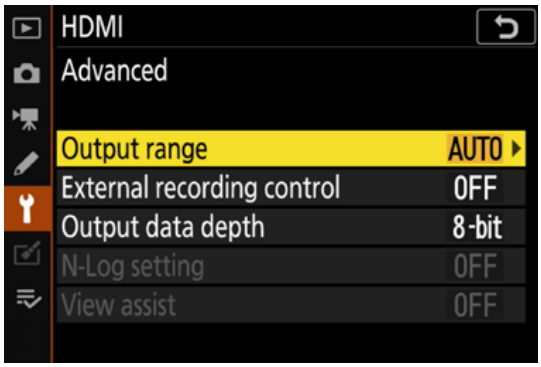
*1 ProRes RAW: RAW video format for general use, introduced by Apple Inc. in 2018.
*2 Blackmagic RAW: RAW video format for general use, introduced by Blackmagic Design Pty. Ltd. in 2018.

RAW output options activation service

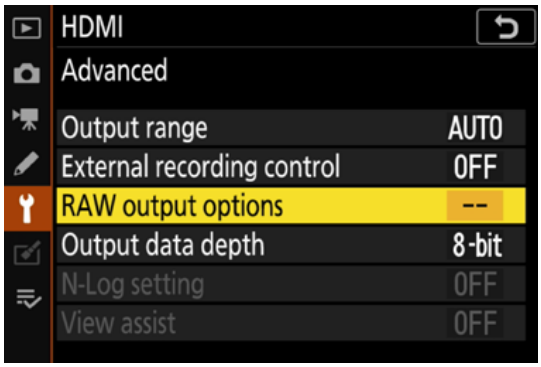
In order to use RAW video output with the Z 7/Z 6, it is necessary to activate **RAW output options**. Please contact your nearest Nikon-authorized service representative to receive this service*.

* This is a paid service. Please refer to products' websites for details.

After activation, a **RAW output options** item will be added to the camera's **SETUP MENU** > **HDMI** > **Advanced.**



Before **RAW output options** activation



RAW output options activated

RAW output options can be displayed in either English or Japanese. (When languages other than Japanese are selected, the menu will be displayed in English.)

Atomos Ninja V

RAW video output settings 1

Connecting the camera with the Atomos Ninja V

Connect an HDMI cable to the camera's HDMI connector

Connect the other end to the Ninja V HDMI video input

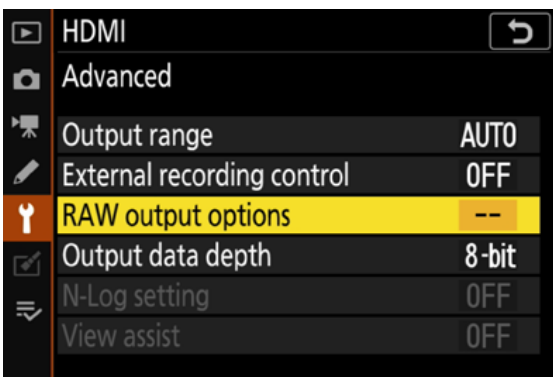
Note:
- Please make sure the camera is turned off before plugging/unplugging the HDMI cable.
- A cable clip is recommended to prevent the HDMI cable from being accidentally detached.
- If the image is not displayed on the Ninja V monitor, please check the HDMI cable connections.
- An SSD drive must be inserted into the Ninja V for recording.
- Please make sure camera's photo/movie selector is rotated to movie mode.

RAW video output settings 2

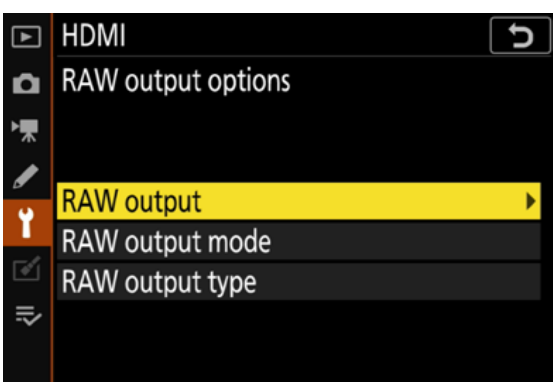
Camera settings

1 Enable RAW output

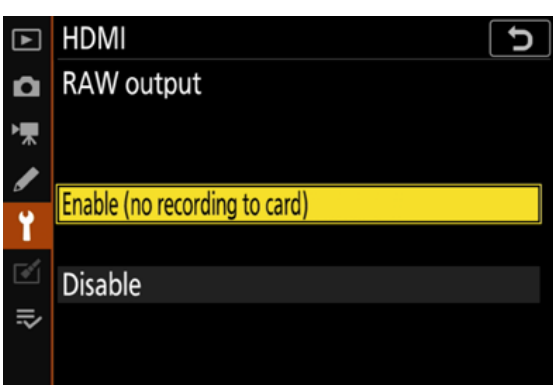
SETUP MENU > **HDMI** > **Advanced** > **RAW output options**



Select **RAW output**



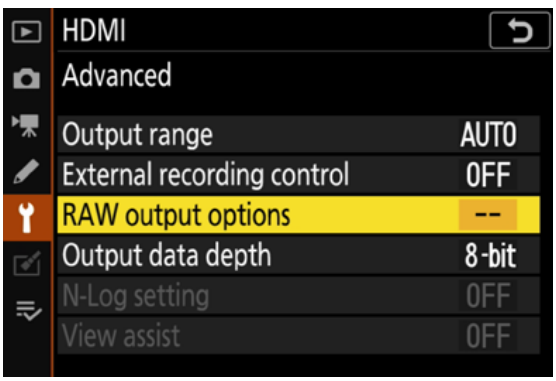
Select **Enable (no recording to card)**



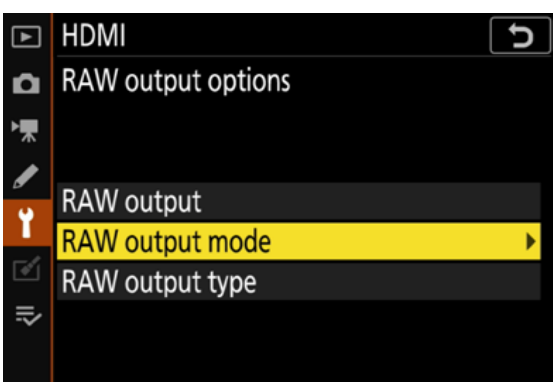
RAW video output settings 2

2 Choose a RAW output mode

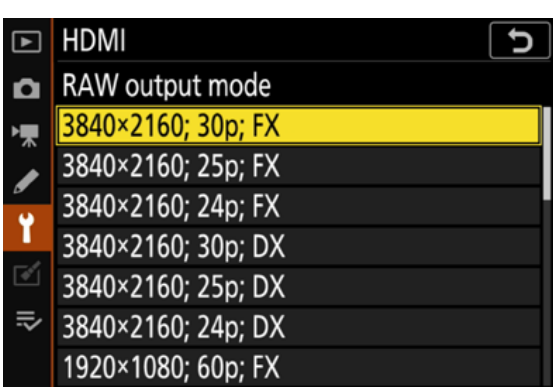
SETUP MENU > **HDMI** > **Advanced** > **RAW output options**



Select **RAW output mode**



Pick your desired RAW output mode*

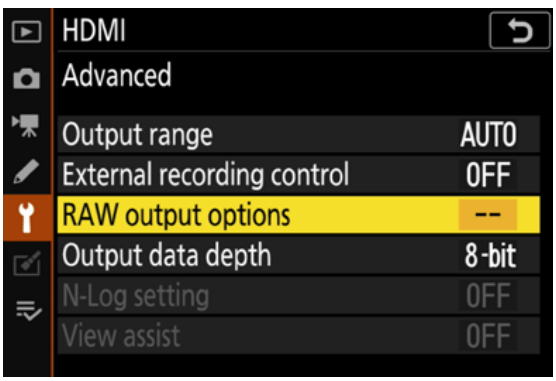


* The menu screen shown here is for the Z 6. There are some differences from the Z 7. Please refer to P.19 for details.

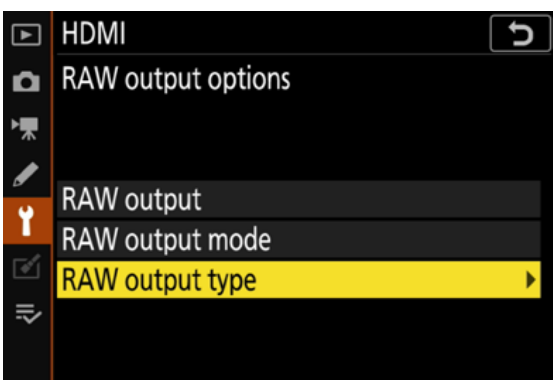
RAW video output settings 2

3 Choose RAW output type A

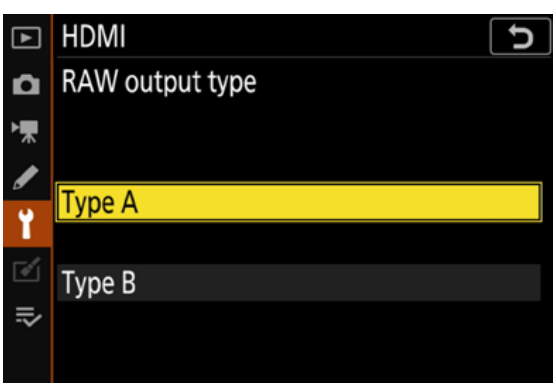
SETUP MENU > **HDMI** > **Advanced** > **RAW output options**



Select **RAW output type**



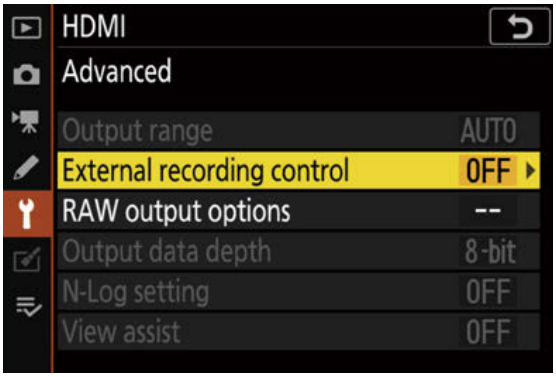
Select **A**



RAW video output settings 2

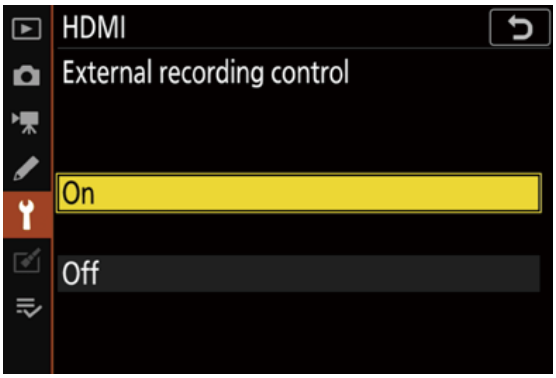
4 Turn on External recording control

SETUP MENU > **HDMI** > **Advanced** > **External recording control**



Select **On**

⇒ You can now start/stop recording by pressing the camera's movie-record button.
REC (recording) or STBY (standby) icon will be displayed on the camera monitor.



RAW video output settings 3

Atomos Ninja V settings

1 Select Record > CODEC > ProRes RAW > Confirm

⇒ Supports RAW input via HDMI and displays monitor image in color.

Note: Please refer to the Ninja V User Manual for more details about Ninja V settings.

RAW video output settings 3

2 Select Input > TRIGGER > HDMI

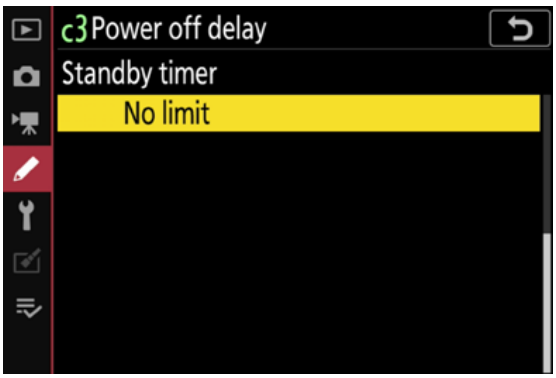
⇒ Now the camera's movie-record button can be used to control the start/stop of recording on the Ninja V.
If this is functioning correctly, a red frame will appear on the Ninja V monitor during recording.

Note: Please refer to the Ninja V User Manual for more details about Ninja V settings.

Other settings

Standby timer settings

The monitor will turn off automatically and stop sending video output to the Ninja V after the length of time set in **CUSTOM SETTING MENU c3 (Power off delay)** > **Standby timer.**



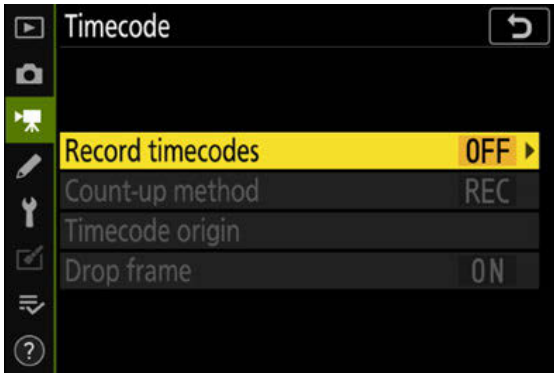
The **Standby timer** should be set to **No Limit** or a time longer than the anticipated recording time. (Default setting: 30 s)

Other settings

Recording timecodes

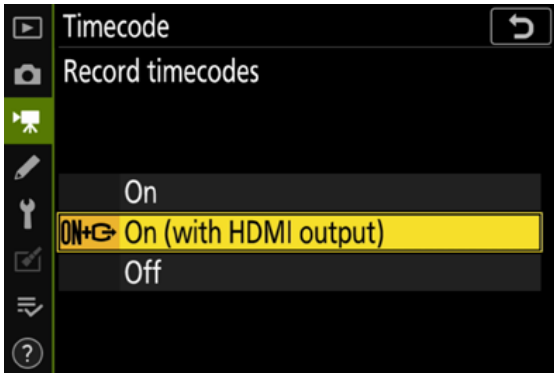
1 Enable Record timecodes in the camera

MOVIE SHOOTING MENU > **Timecode** > **Record timecodes**



Select **On (with HDMI output)**

⇒ The timecode is output from the camera to the Ninja V via HDMI.
Hour, minute, second and frame number will be embedded to each frame during RAW video recording.



Other settings

2 Select Timecode > Source > HDMI on the Ninja V

⇒ The Ninja V receives a timecode from the camera.

Note: Please refer to the Ninja V User Manual for more details about Ninja V settings.

Important notes on RAW output options

- Upon receiving RAW video output functionality, camera firmware will also be updated to the latest available version.
- After the RAW video output is activated, other camera features will continue to function normally.
- Some RAW video output specifications are subject to change with future firmware updates.
- ISO sensitivity can be set up to ISO 25600 with the Z 7 and ISO 51200 with the Z 6.
- The following compensations are not applied to the RAW video file: Electronic VR, Picture Control, Active D-Lighting, high ISO NR, vignette control, diffraction compensation, auto distortion control and lateral chromatic aberration compensation.
- The image is displayed on the camera monitor during recording, regardless of the monitor mode setting. No viewfinder image is available.
- Standard Picture Control is applied to the image displayed on the camera monitor. This does not affect the video being output to the Ninja V.
- The image displayed on the Ninja V monitor also has in-device color correction applied, and does not match the look of the final image after color grading. Please refer to the Ninja V User Manual for details.
- The "zoom in" function on the camera monitor is not available during RAW video recording. It is possible to zoom in using the Ninja V monitor.
- During RAW video recording, the image areas (angle of view) displayed on the camera and the Ninja V monitor differ. The image area displayed on the Ninja V monitor is equivalent to the recorded video.
- Available frame sizes, frame rates and image areas differ between the Z 7 and the Z 6.
- Still images cannot be taken by pressing the shutter-release button during RAW video recording.
- RAW videos can only be recorded to the Ninja V. They cannot be recorded to the in-camera memory card.
- If you experience any problems with other companies' products such as the Ninja V, please contact the manufacturer.

Editing the RAW video file

For post-production, optional third-party software is required.
Compatible software: Final Cut Pro X, EDIUS Pro 9, Premiere Pro (As of October 2020)

Frame sizes, etc. for RAW video recording

The following frame sizes, frame rates and image areas are available with RAW video recording.

Z 7	Z 6
—	3840×2160 30p FX
—	3840×2160 25p FX
—	3840×2160 24p FX
3840×2160 30p DX	3840×2160 30p DX
3840×2160 25p DX	3840×2160 25p DX
3840×2160 24p DX	3840×2160 24p DX
1920×1080 60p FX	1920×1080 60p FX
1920×1080 50p FX	1920×1080 50p FX
1920×1080 30p FX	1920×1080 30p FX
1920×1080 25p FX	1920×1080 25p FX
1920×1080 24p FX	1920×1080 24p FX
—	1920×1080 60p DX
—	1920×1080 50p DX
—	1920×1080 30p DX
—	1920×1080 25p DX
—	1920×1080 24p DX

Blackmagic Design
Video Assist 12G

RAW video output settings 1

Connecting the camera with the Video Assist 12G

Connect an HDMI cable to the camera's HDMI connector

Connect the other end to the Video Assist 12G HDMI video input

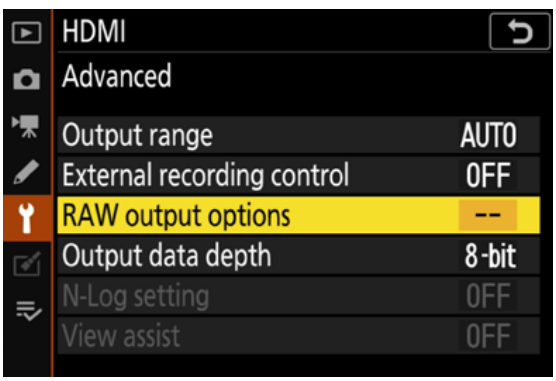
Note:
- Please make sure the camera is turned off before plugging/unplugging the HDMI cable.
- A cable clip is recommended to prevent the HDMI cable from being accidentally detached.
- If the image is not displayed on the Video Assist 12G monitor, please check the HDMI cable connections.
- An SD card must be inserted into the Video Assist 12G for recording.
- Please make sure the camera's photo/movie selector is rotated to movie mode.

RAW video output settings 2

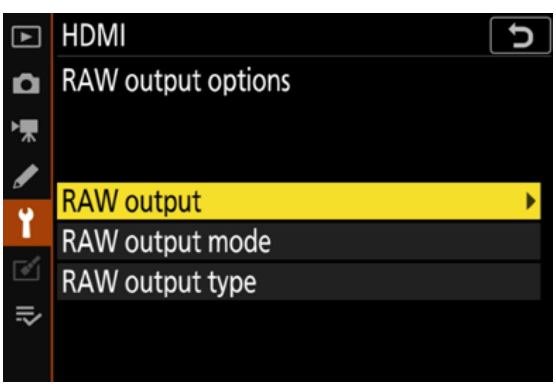
Camera settings

1 Enable RAW output

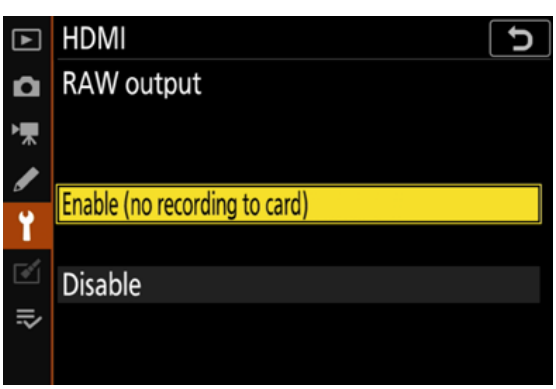
SETUP MENU > **HDMI** > **Advanced** > **RAW output options**



Select **RAW output**



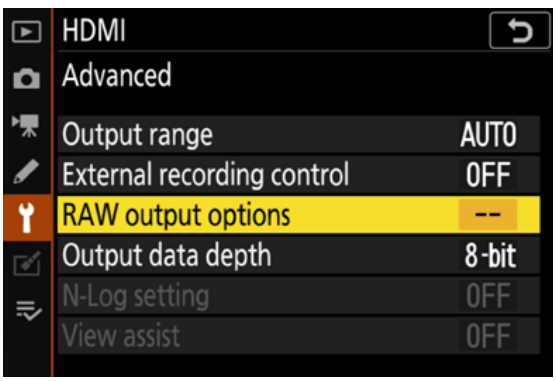
Select **Enable (no recording to card)**



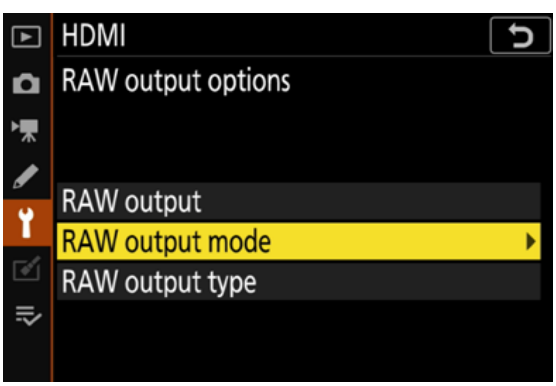
RAW video output settings 2

2 Choose a RAW output mode

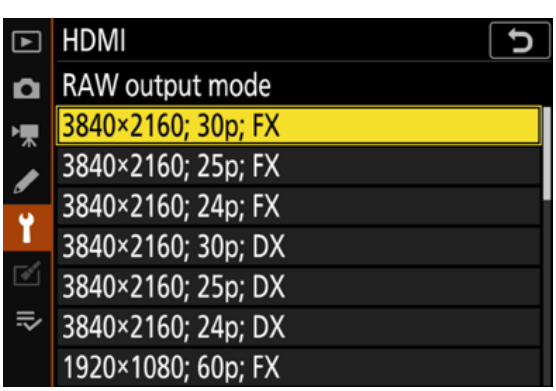
SETUP MENU > **HDMI** > **Advanced** > **RAW output options**



Select **RAW output mode**



Pick your desired RAW output mode*

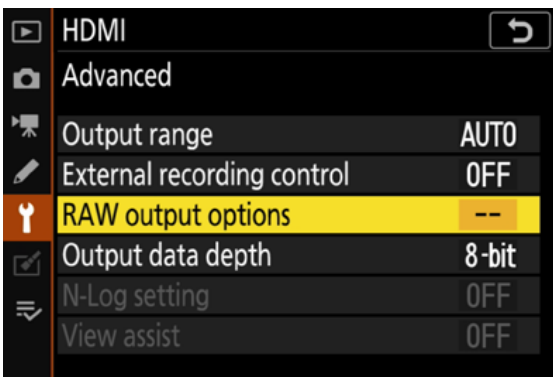


* The menu screen shown here is for the Z 6. There are some differences from the Z 7. Please refer to P.32 for details.

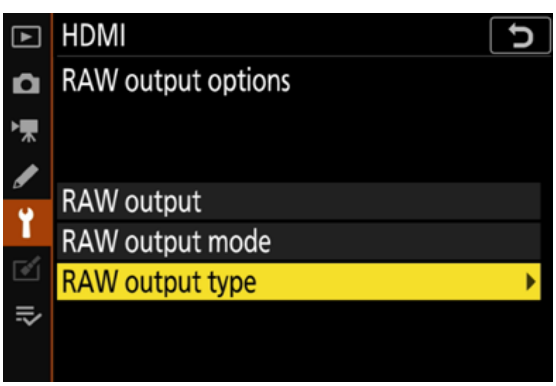
RAW video output settings 2

3 Choose RAW output type B

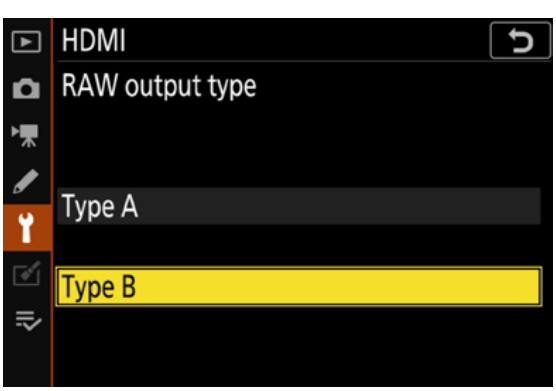
SETUP MENU > **HDMI** > **Advanced** > **RAW output options**



Select **RAW output type**



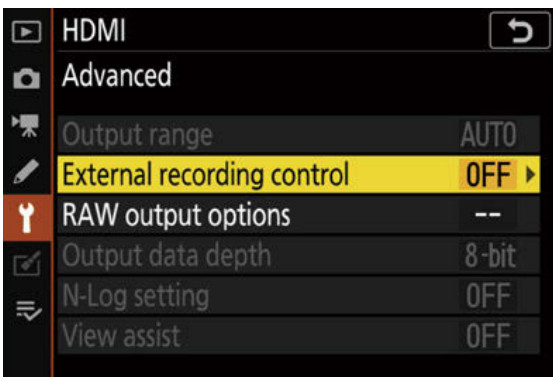
Select **B**



RAW video output settings 2

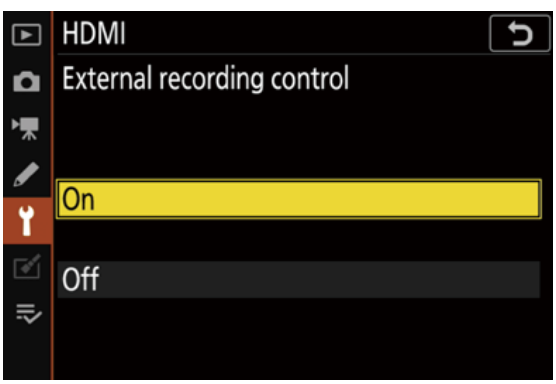
4 Turn on External recording control

SETUP MENU > **HDMI** > **Advanced** > **External recording control**



Select **On**

⇒ You can now start/stop recording by pressing the camera's movie-record button.
REC (recording) or STBY (standby) icon will be displayed on the camera monitor.

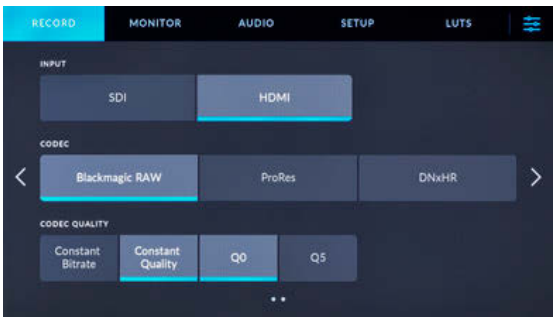


RAW video output settings 3

Video Assist 12G settings

1 Select RECORD > INPUT > HDMI

⇒ Supports RAW input via HDMI.



2 Select RECORD > CODEC > Blackmagic RAW

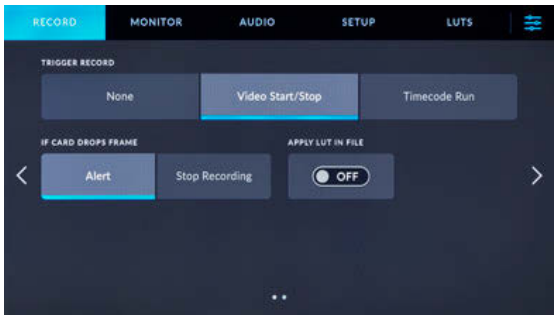
⇒ Records HDMI input image in Blackmagic RAW and displays monitor image in color.

Note: Please refer to the Video Assist 12G manual for more details about Video Assist 12G settings.

RAW video output settings 3

3 Select RECORD > TRIGGER RECORD > Video Start/Stop

⇒ Now the camera's movie-record button can be used to control the start/stop of recording on the Video Assist 12G.
If this is functioning correctly, timecodes will increment in red on the Video Assist 12G monitor during recording.

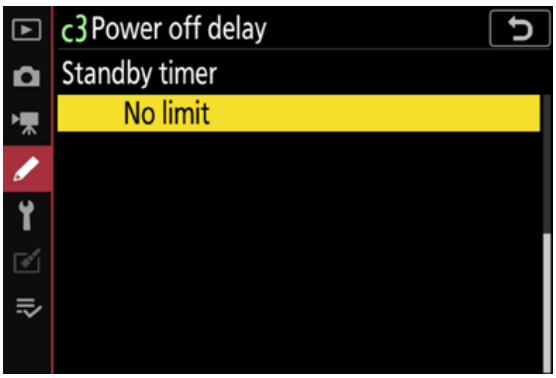


Note: Please refer to the Video Assist 12G manual for more details about Video Assist 12G settings.

Other settings

Standby timer settings

The monitor will turn off automatically and stop sending video output to the Video Assist 12G after the length of time set in **CUSTOM SETTING MENU c3 (Power off delay)** > **Standby timer.**



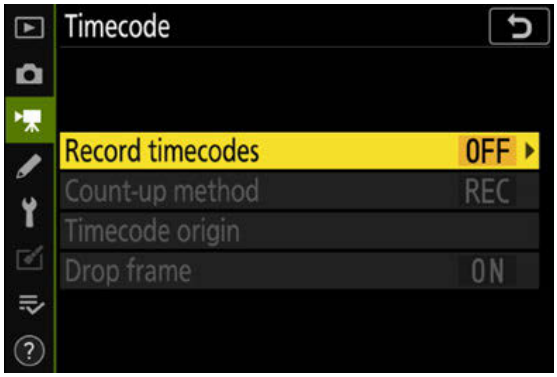
The **Standby timer** should be set to **No Limit** or a time longer than the anticipated recording time. (Default setting: 30 s)

Other settings

Recording timecodes

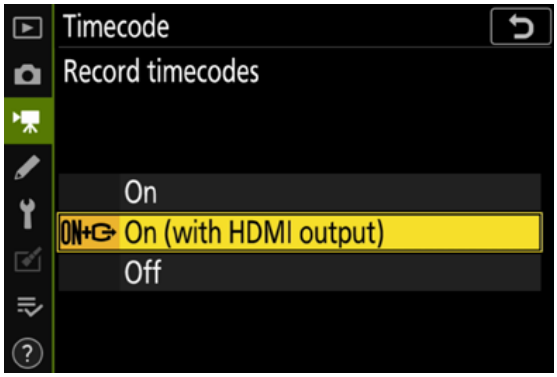
1 Enable Record timecodes in the camera

MOVIE SHOOTING MENU > **Timecode** > **Record timecodes**



Select **On (with HDMI output)**

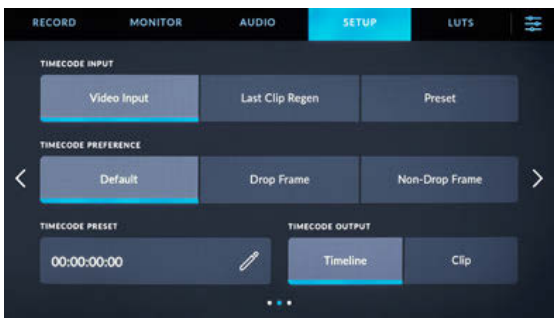
⇒ The timecode is output from the camera to the Video Assist 12G via HDMI.
Hour, minute, second and frame number will be embedded to each frame during RAW video recording.



Other settings

2 Select SETUP > TIMECODE INPUT > Video Input on the Video Assist 12G

⇒ The Video Assist 12G receives a timecode from the camera.



Note: Please refer to the Video Assist 12G manual for more details about Video Assist 12G settings.

Important notes on RAW output options

- Upon receiving RAW video output functionality, camera firmware will also be updated to the latest available version.
- After the RAW video output is activated, other camera features will continue to function normally.
- Some RAW video output specifications are subject to change with future firmware updates.
- ISO sensitivity can be set from ISO 800 up to ISO 25600 with the Z 7 and ISO 51200 with the Z 6.
- The following compensations are not applied to the RAW video file: Electronic VR, Picture Control, Active D-Lighting, high ISO NR, vignette control, diffraction compensation, auto distortion control and lateral chromatic aberration compensation.
- The image is displayed on the camera monitor during recording, regardless of the monitor mode setting. No viewfinder image is available.
- N-Log color is applied to the image displayed on the camera monitor. This does not affect the video being output to the Video Assist 12G.
- The image displayed on the Video Assist 12G monitor also has in-device color correction applied, and does not match the look of the final image after color grading. Please refer to the Video Assist 12G manual for details.
- The "zoom in" function on the camera monitor is not available during RAW video recording. It is possible to zoom in using the Video Assist 12G monitor.
- During RAW video recording, the image areas (angle of view) displayed on the camera and the Video Assist 12G monitor differ. The image area displayed on the Video Assist 12G monitor is equivalent to the recorded video.
- Available frame sizes, frame rates and image areas differ between the Z 7 and the Z 6.
- Still images cannot be taken by pressing the shutter-release button during RAW video recording.
- RAW videos can only be recorded to the Video Assist 12G. They cannot be recorded to the in-camera memory card.
- If you experience any problems with other companies' products such as the Video Assist 12G, please contact the manufacturer.

Editing the RAW video file

For post-production, optional third-party software is required.
Compatible software: Davinci Resolve (As of October 2020)

Frame sizes, etc. for RAW video recording

The following frame sizes, frame rates and image areas are available with RAW video recording.

Z 7	Z 6
—	3840×2160 30p FX
—	3840×2160 25p FX
—	3840×2160 24p FX
3840×2160 30p DX	3840×2160 30p DX
3840×2160 25p DX	3840×2160 25p DX
3840×2160 24p DX	3840×2160 24p DX
1920×1080 60p FX	1920×1080 60p FX
1920×1080 50p FX	1920×1080 50p FX
1920×1080 30p FX	1920×1080 30p FX
1920×1080 25p FX	1920×1080 25p FX
1920×1080 24p FX	1920×1080 24p FX
—	1920×1080 60p DX
—	1920×1080 50p DX
—	1920×1080 30p DX
—	1920×1080 25p DX
—	1920×1080 24p DX

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