SONY

make.believe

NEX-FS700R Handbook

NXCAM

Advanced slow-motion and 4K/2K RAW recording

**RAW recording unit
HXR-IFR5 AXS-R5 BP-FL75**

The NEX-FS700R is a dedicated video camera featuring a powerful 4K Exmor Super35 CMOS sensor in addition to:

- **Less moiré patterning and false coloration, more sensitivity in low-light settings**
  The dedicated video sensor eliminates line skipping during read processing and provides increased sensitivity that helps to minimize noise such as moiré patterns.

- **Full HD 240fps for superior image quality in super slow motion**
  The NEX-FS700R provides up to eight seconds of super slow-motion recording at 240fps, 10 x the standard 24p recording speed. The high-sensitivity sensor enables super slow-motion capture at very high shutter speeds even in normal light conditions.

- **S-Log2 gamma curve for high dynamic range**
  The NEX-FS700R boasts a dynamic range of up to 1,300%. When used with color grading, the extended dynamic range produces excellent gradation in high-intensity portions of the image and can effectively prevent white-out when shooting an outdoor scene from indoors through a window.

- **SELP 18200 powered zoom lens (not available on all models)**
  The powered zoom lens delivers smooth zoom action during video capture from 29 mm through to 322 mm (35-mm equivalent).

- **ND filter complements the high-sensitivity sensor**
  The NEX-FS700R features three built-in ND filters (1/4, 1/16 and 1/64) available at the touch of a button, allowing "bokeh" effects with wide aperture even in bright settings.

- **HDMI / SDI, TC output and Rec Control connectivity**
  The NEX-FS700R supports external recording devices connected via HDMI or SDI with simultaneous recording from the REC button. Recorded clips can be synchronized to the time code.

- **Extended recording and simultaneous recording from the memory recording unit**
  Simultaneous HD recording onto the optional HXR-FMU128 flash memory unit and/or memory card provides memory backup in case of accidental failure. (Super slow motion recording is not supported.)

- **Optional 4K/2K RAW video recording**
  The HXR-IFR5 interface unit and AXS-R5 RAW recorder provide 4K/2K RAW 60p recording onto the AXS memory card.Super slow motion is available at 4K/120fps for four seconds or 2K/240fps continuously, to harness the full potential of the FS700R 4K sensor.

AUTOMATED FUNCTIONS

About automated functions

For documentaries and events requiring maximum mobility, automated functions such as Auto Focus and Auto Exposure reduce the workload so that you can concentrate on tracking the subject.
The 11 x powered zoom lens and E-Mount lens supplied with the NEX-FS700R are compatible with Auto Focus and Auto Exposure. A-Mount lenses also support the following automated functions when used in conjunction with the LA-EA1 or LA-EA2 mount adaptor.

Comparison Chart for LA-EA1 and LA-EA2 (When used with NEX-FS700R)

A-mount Lens Type	LA-EA1						LA-EA2					
	Focus			Iris			Focus			Iris		
	AUTO FOCUS	MANUAL FOCUS	PUSH AUTO	AUTO	MANUAL	IRIS PUSH AUTO	AUTO FOCUS	MANUAL FOCUS	PUSH AUTO	AUTO	MANUAL	IRIS PUSH AUTO
SSM	No	Yes	No	No	Yes	No	Yes*[1]	Yes	Yes*[2]	No	Yes	Yes
SAM	No	Yes	No	No	Yes	No	Yes*[1]	Yes	Yes*[2]	No	Yes	Yes
Coupler	No	Yes	No	No	Yes	No	Yes*[1]	Yes	Yes*[2]	No	Yes	Yes

*1 Iris position moves to either F3.5 or maximum iris in AUTO FOCUS mode.
*2 Iris position moves to either F3.5 or maximum iris in PUSH AUTO focus mode while exposure is adjusted by shutter speed.
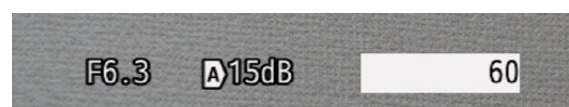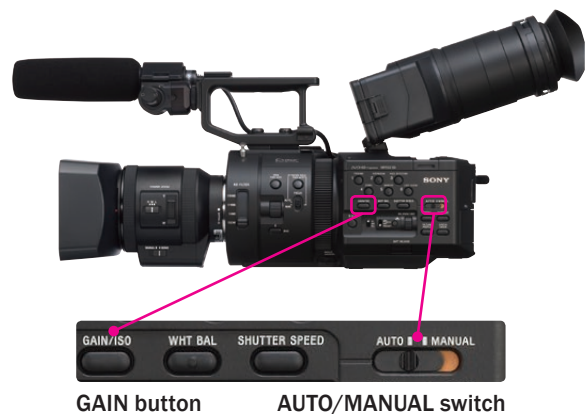
Video Settings

AUTO EXPOSURE (AE) function lets you control image brightness automatically

Moving the AUTO/MANUAL switch to AUTO enables automatic adjustments of the iris, gain, shutter speed and white balance settings. You can start shooting right away without checking those settings.

AUTO EXPOSURE (AE) is a camcorder function that controls all or some of the iris, shutter speed and gain parameters automatically to achieve ideal brightness for videos.
With the NEX-FS700R, the above parameters, as well as white balance, are controlled automatically when the AUTO/MANUAL switch is moved to AUTO. Please note that automatic control of iris is only possible when an E-mount lens is used. When another maker's lens is used, iris remains under manual control, while other parameters are adjusted automatically. When the AUTO/MANUAL switch is in the MANUAL position, pressing the specific button for a particular parameter, such as the GAIN button, lets you switch between the AUTO and MANUAL modes just for that parameter (gain in the case of the button). The [A] icon next to a parameter indicates it is being controlled automatically.

Even when the AE function is used, it cannot produce perfect results under all lighting conditions. But by also utilizing support functions, you can use the AE function effectively.

GAIN button   AUTO/MANUAL switch

AUTO/MANUAL control display

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

AE SHIFT for automatically shooting video a little brighter or darker   ASSIGN

The AE SHIFT function enables you to shoot at an exposure level that is a little higher or lower than the AE function normally selects.

Usage examples

■ When the subject is darker than the background, such as when shooting a person against light, a snowfield or another bright background using the AE function. If you want to capture the subject brightly even if the background becomes extremely bright, you can shift AE toward the + (plus) side.

■ When the subject is too bright compared to the brightness of the background. If you want to tone down the subject's brightness even if the background becomes darker, you can shift AE toward the – (minus) side.
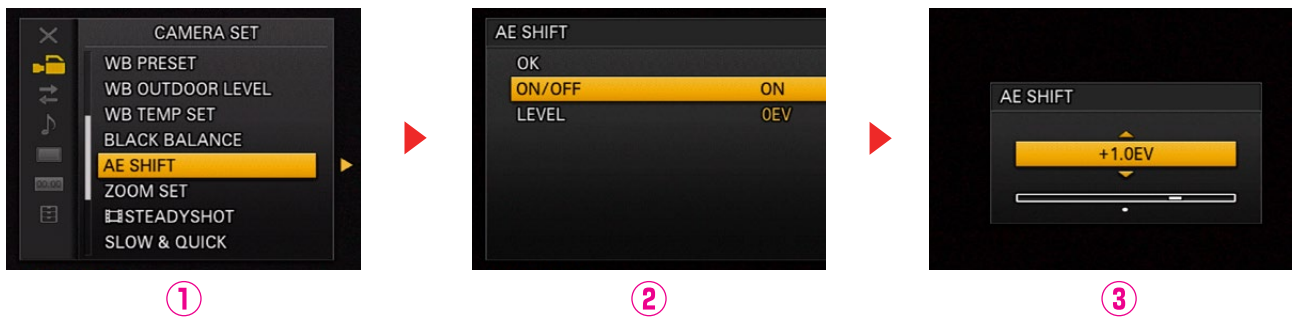

LEVEL = +2.0EV

LEVEL = 0EV

LEVEL = –2.0EV

How to set/operate

- 2.0 (dark) through 0 (normal) to +2.0 (bright)

1. MENU → [CAMERA SET] → [AE SHIFT]
2. Select [ON/OFF].
3. Adjust the shift brightness in the range .Press the SEL/PUSH EXEC dial to enter the new setting.

* This feature is available when auto control is enabled for the iris, shutter speed and/or gain.

① ② ③

AUTO FOCUS function lets you control focus adjustment automatically

With focus, automatic adjustments kick in when the FOCUS switch is moved to [AUTO].

FOCUS switch

Using Manual functions for purposeful shooting

Moving the AUTO/MANUAL switch to [MANUAL] enables manual adjustments of the iris, gain, shutter speed and white balance settings. Please note using this switch will change the settings for all these exposure settings. Regarding focus adjustment, moving the FOCUS switch to MANUAL enables manual adjustment.

AUTOMATED FUNCTIONS

White Balance (WB)

To shoot images in correct colors, you need to adjust your camera so that it can capture a white object as white under lighting conditions with different color temperatures. At the same time, white balance is sometimes used to shoot something that is not white as white for dramatic effects.

One Push White Balance lets you capture white subjects as white

Selecting WHITE BALANCE MEMORY switch A (📷 A) saves a white balance adjustment value in memory A. Choosing switch B (📷 B) enables you to store another white balance adjustment value separately in memory B. Unless you readjust, the saved adjustment values will be held in memory even when the power is turned off. We recommend using this feature when you use ND filters.

How to use/operate

1. Push the WHT BAL button on the camera body.
2. Select A (📷 A) or B (📷 B) with the WHITE BALANCE MEMORY switch located on the camera body.
3. Set the correct exposure under the same lighting conditions as the subject, capture the white subject as large as possible in the screen, and push the 📷 (one push) button.
4. The adjustment value is stored in 📷A or 📷B. The saved color temperature is displayed on the LCD screen for about three seconds.

WHT BAL button

📷 (one push) button

WHITE BALANCE
MEMORY switch
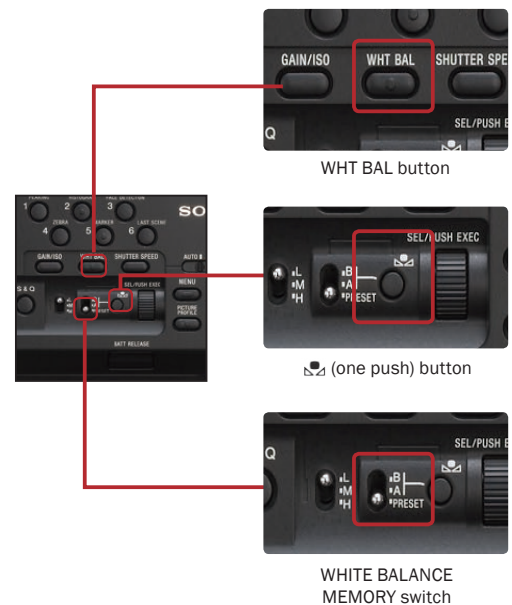
WB TEMP SET (white balance temperature set) lets you directly set color temperature

This function enables you to specify the color temperature in numbers, such as 3,200K and 6,500K.

Usage examples

■ When you want to match white balance with other broadcasting/professional camcorders whose color temperatures can be configured by entering numbers.

■ When you want to keep the numerical values of color temperatures as shooting data when the shooting assignment extends over multiple days, for example.

💡 TIPS

There are times when the correct white balance cannot be obtained by designating a color temperature alone, such as when you are shooting under fluorescent or LED lights. In such cases, we recommend you also use the [WB SHIFT] function under the Picture Profile menu.

How to set/operate

1. [MENU] → [CAMERA SET] → [WB PRESET] → [WB COLOR TEMP] Exit from the menu system.
2. Press the WHT BAL button on the side of the camera and set the memory switch to PRESET.
3. Press the 📷 (one push) button to highlight COLOR TEMP on the display, then use the SEL/PUSH EXEC dial to adjust the color temperature in the range 2,300 K through 15,000 K.
4. Press the 📷 (one push) button or the SEL/PUSH EXEC dial to enter the new setting.

WB OUTDOOR LEVEL (white balance outdoor level)
for controlling an image's color tone with white balance
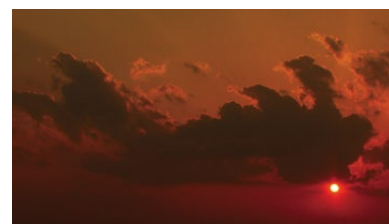
This function lets you change the color temperature (default value at roughly 5,800K) for the OUTDOOR white-balance preset.
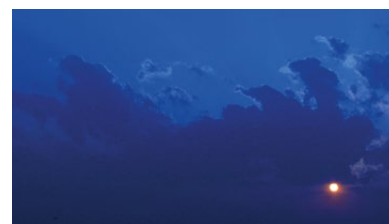
Usage examples
■ When you do not have a white subject for setting white balance.
■ When you want to match the white balance of multiple cameras as much as possible.
■ When you want your image to have an orange tone like during sunsets or a bluish tone like at night and under shade.

How to set/operate
1. MENU → [CAMERA SET] → [WB PRESET] → [OUTDOOR] Exit from the menu system.
2. Press the WHT BAL button on the side of the camera and set the memory switch to PRESET.
3. Press the 📷 (one push) button to highlight the display, then use the SEL/PUSH EXEC dial to adjust the correction level in the range -7 (blue tint) through 0 (normal) to +7 (red tint), in increments of approximately 500 K.
4. Press the 📷 (one push) button or the SEL/PUSH EXEC dial to enter the new setting.

WB OUTDOOR LEVEL = +7

WB OUTDOOR LEVEL = –7

Reference : WB preset and color temperature

WB (White Balance) preset

(K)		WB TEMP SET (Unit: 100K)	WB OUTDOOR LEVEL (Unit: 500K)
30,000			
25,000	Clear skylight	15,000K	+7 (Approx. 9,300K)
10,000			
8,000	Bright overcast skylight		
7,000	Overcast skylight		
6,000	Daylight fluorescent lamp		
	Daylight		0 (Approx. 5,800K)
5,000	Noon		
	2 hours after sunrise		
4,000			
	1 hour after sunrise		
3,200			
3,000	100W tungsten lamp		
		2,300K	–7 (Approx. 2,300K)
1,500			
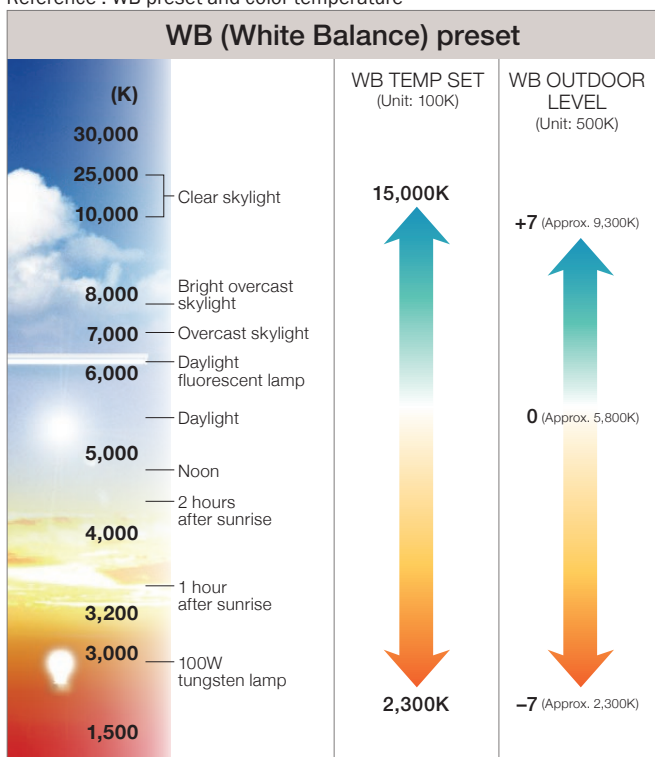
💡 **TIPS**

INDOOR color temperature is 3,200K and OUTDOOR color temperature is 5,800K in WB PRESET setting.

Some camcorders in the HDV and NXCAM series are equipped with the same function. You can roughly match their color temperatures by setting their WB OUTDOOR LEVEL at the same level.

0 AUTOMATED FUNCTIONS
1 SENSOR AND LENS
2 Performance features
3 FILE BASED
4 PICTURE PROFILE
5 RAW recording

AUTOMATED FUNCTIONS

Audio settings

The NEX-FS700R has two audio input channels and accepts three input sources: built-in stereo microphone, unidirectional mono microphone (supplied) and external line in. There is a +48 V phantom power supply.

Using the supplied ECM-XM1 shotgun microphone (mono only)

The directional shotgun microphone is used to minimize background noise for distant subjects.

Settings and Operation
1. Connect the shotgun microphone to INPUT1 (upper) and set the INPUT1 switch (see ① in diagram above) to [MIC+48V] .
2. Set both the CH1 switch ② and the CH2 switch ⑥ to [INPUT1] position.
3. Set the CH2 AUTO/MAN switch ⑦ [AUTO] .

> 💡 **TIPS**
> This setting configuration will provide mono sound in both left and right channels with automatic level control. To remove the audio from CH1, set switch ① to [LINE] .
>
> If you are using a dynamic external microphone that does not require power, set switches ① and ⑤ to MIC to disable 48V power from the camera.

Adjusting the playback volume

The audio track can be monitored through headphones during recording and playback, and also from the built-in speaker during playback. The volume buttons and channel selector are located on top of the camera at the back.

> 💡 **TIPS**
> A flat mono mix of CH1 and CH2 in the headphones can be used to check the balance between left and right channels while recording. To switch to the mono mix, use the menu system to navigate to [AUDIO SET] → [HEADPHONE OUT] and select [MONO].

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

Wireless and other external microphones

Wireless microphones are often used by reporters who are constantly on the move. The microphone is connected to a transmitter worn by the reporter. The receiver is attached to the camera, providing an audio output feed that is connected to the camera input.

How to set/operate

The wireless microphone is connected in the same way as the shotgun microphone. When using a two-channel system with separate microphones, connect the left channel to INPUT1 and the right channel to INPUT2.

For more information, refer to the manufacturer's instructions for the microphone.

💡 **TIPS Adjusting the input level for external microphones**

TRIM is used to adjust the microphone input level in accordance with the sound volume.

In the menu system, navigate to [AUDIO SET] → [XLR SET] → [INPUT1(2) TRIM] , then select the required trim value (-18 dB, -12 dB, -6 dB, 0 dB, +6 dB and +12 dB).

For high-sensitivity microphones, or when recording very loud sounds, reduce the trim value. For low sensitivity microphones, increase the trim value.

Audio distortion may be caused by input distortion (at the microphone) or recording distortion (within the camera), or a combination of both. To reduce input distortion, adjust the trim as described above. To reduce recording distortion, change to manual audio mode (switches ③ and ⑦) and adjust the input level dials (④ and ⑧) so that the sound level meters remain out of the peak zone.
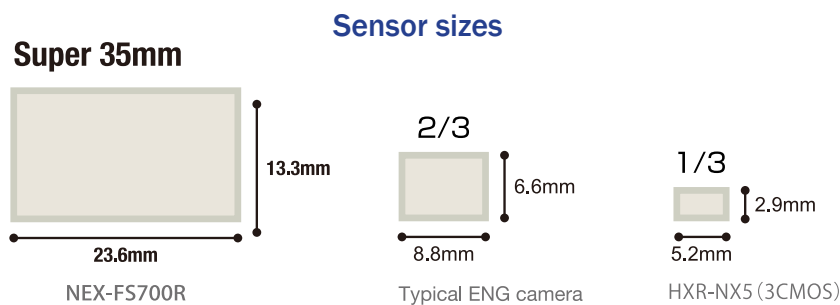
In certain settings the Audio Limiter can help to improve the sound quality when recording in manual audio mode. Use the menu system to navigate to [AUDIO SET] → [AUDIO LIMIT] .

In windy conditions, turn on the wind noise reduction function from the menu ([AUDIO SET] → [XLR SET] → [WIND RED]).

SENSOR AND LENS

11.6 million pixel 4K Exmor HD CMOS sensor

The NEX-FS700R features a large image sensor that produces powerful "bokeh" effects and brings subjects to life while providing excellent sensitivity for clear images with minimal noise in low-light settings in both standard and Full HD 10 x super slow motion modes.

Sensor sizes

Super 35mm

13.3mm

23.6mm

NEX-FS700R

2/3

6.6mm

8.8mm

Typical ENG camera

1/3

2.9mm

5.2mm

HXR-NX5 (3CMOS)

Depth of field

At a given angle of field, a larger sensor with a longer focal length will create more background blurring. When depth of field is relatively shallow, this accentuates the region that is in focus and creates a striking sense of presence.

High sensitivity and low noise

The larger the sensor, the greater the area available for capturing light. More light in turn boosts the sensitivity and the signal-to-noise ratio, allowing the camera to produce clear images with minimal noise even at maximum gain in low-light settings.
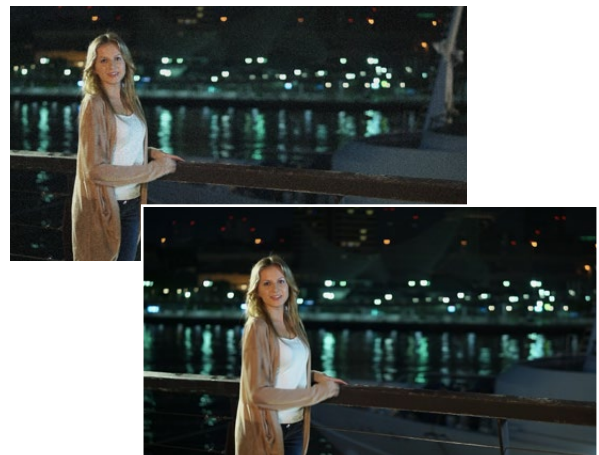
💡 **TIPS**

About depth of field

To capture the entire view from foreground to background in focus, photographers typically use a wide-angle lens with short focal length together with a narrow aperture, and try to get a reasonable distance from the main subject.

Conversely, to accentuate the subject by blurring the background or surrounding scenery, a telephoto lens with longer focal length is used in combination with a wide aperture, and the camera is brought closer to the subject.

In theory, depth of field is governed by three factors: f-stop (aperture), focal length and distance from the subject. In practice, however, the distance between the subject and the background also influences the amount of blurring.

Controlling the brightness

Brightness (or exposure) is closely linked to depth of field. Brightness is governed by three factors: aperture (or iris), shutter speed and gain. In a well-lit setting, an ND filter can be used to control the light level and enhance the "bokeh" effect.

Gain/ISO

Gain/ISO electronically amplifies the image signal level to boost the image brightness for optimum excellent results in low-light settings such as a theater stage, for instance, where a conventional camera would generate too much image noise.

* The gain and ISO settings are independently adjustable, but only one may be adjusted while filming.
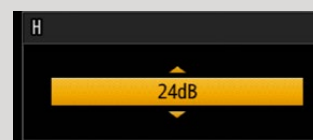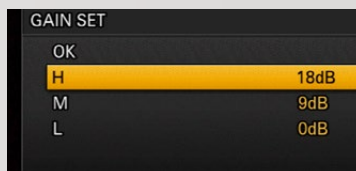
How to set/operate
1. Set the AUTO/MANUAL switch to [MANUAL].
2. Press the GAIN/ISO button to display the gain or ISO value.
3. Set the gain switch to H, M or L as required.

Setting range:

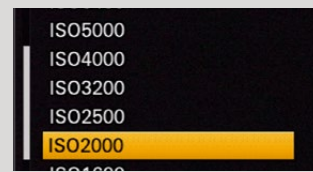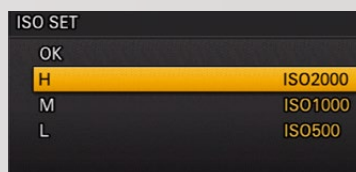|			
Gain	H (18 dB)	M (9 dB)	L (0 dB)
ISO	H (2000)	M (1000)	L (500)

TIPS

The gain and ISO settings can also be modified via the menu system. Navigate to [CAMERA SET] then either [GAIN SET] or [ISO SET] .

Gain range: 0 dB – 30 dB

ISO range: 500 – 16000
* Actual range varies depending on the picture profile.

0 AUTOMATED FUNCTIONS
1 SENSOR AND LENS
2 Performance features
3 FILE BASED
4 PICTURE PROFILE
5 RAW recording

SENSOR AND LENS

Controlling the brightness

Iris

In manual control mode, the iris ring is used to adjust brightness by opening and closing the lens mechanically.

How to set/operate

1. Set the AUTO/MANUAL switch to [MANUAL].
2. Press the IRIS button to display the iris setting.
3. Adjust the iris setting using the iris ring.

* A lower iris setting opens the lens and increases the available light volume.

To engage auto control temporarily

4. Press and hold the PUSH AUTO button.
* Auto control requires an E-Mount lens or an A-Mount lens with LA-E2+A mount adaptor.

To engage auto control permanently, press the IRIS button again.

Shutter speed

The shutter speed can also be used to control the quantity of transmitted light.

In still photography, both the shutter speed and the aperture (iris) are used to control the light volume. With video cameras, however, shutter speed is more problematic. Faster shutter speeds can cause subject movements to appear brittle and unnatural, while slower shutter speeds can make movements and camera panning appear jerky.

How to set/operate

1. Set the AUTO/MANUAL switch to [MANUAL].
2. Press the SHUTTER SPEED button to highlight the shutter speed setting.
3. Adjust the shutter speed using the SEL/PUSH EXEC dial.
* A shutter speed of 1/100 sec is displayed as 100. Thus a higher value indicates a faster shutter speed.

10

Internal ND filter

The NEX-FS700R features a new internal ND filter unit designed to suit the shorter flange back on the E mount lens. No longer is it necessary to carry several different ND filters to suit different lens filter diameters.

ND filters are used to limit the light volume in bright environments without closing the aperture. This is used to achieve shallow depth of field even in daylight outdoor settings, or to reduce the shutter speed to prevent parabolic effect.

Settings
Clear (= OFF), 1/4 (2EV), 1/16 (4EV), 1/64 (6EV)

ND filter correction

The 1/4 ND filter reduces the light volume to 25%, equivalent to closing the aperture two stops (e.g., from F2.8 to F5.6) or increasing the shutter speed by two increments (e.g., from 1/125 to 1/500).

The 1/16 ND filter is equivalent to four aperture stops, while the 1/16 is equivalent to six aperture stops or shutter speed increments.

💡 TIPS

When using a strong ND filter to produce a "bokeh" effect via exposure correction, depth of field will be extremely shallow in the telephoto range, which may affect focus performance on moving subjects.

Significantly altering the aperture and shutter speed can affect the background "bokeh" effect and make movement appear brittle. ND filters can be used to enhance fluidity.

ND filters are particularly effective for certain lenses where contrast levels and image resolution tend to suffer at maximum aperture.

0 AUTOMATED FUNCTIONS
1 SENSOR AND LENS
2 Performance features
3 FILE BASED
4 PICTURE PROFILE
5 RAW recording

SENSOR AND LENS

Brightness adjustment

Zebra display — for checking subject brightness `ASSIGN`

Zebra stripes are superimposed on areas of the image that correspond to the designated brightness level, to provide a guide for brightness adjustment.

To check for whiteout, set the Zebra display to 100+ then adjust the brightness to minimize the stripes visible on the screen. For face close-ups, where a brightness level of 62% – 65% is recommended, set the Zebra display to 75 then adjust the brightness so that the stripes disappear from skin areas.

How to set/operate

1. MENU → [DISPLAY SET] → [ZEBRA]

2. Select ON or OFF.

3. Select a brightness level (70, 75, 80, 85, 90, 95, 100 or 100+).

   Press the SEL/PUSH EXEC dial to enter the new setting.

Histogram — for checking overall light balance `ASSIGN`

The histogram displays brightness levels across the entire image in the form of a bar graph, with brightness on the horizontal axis and pixel count on the vertical axis. The histogram is a useful way to assess the overall exposure balance of an image. For instance, in an image with many bright areas, the distribution will be skewed to the right.

A vertical line denotes the 100% brightness point. Brightness levels over 100% are displayed with a different background color to help locate areas of whiteout.

The ZEBRA POINT option also shows the selected Zebra brightness level on the histogram, providing a visual indication of brightness levels during filming.

How to set/operate

1. MENU → [DISPLAY SET] → [HISTOGRAM]

2. Select ON or ON [ZEBRA POINT].

   Press the SEL/PUSH EXEC dial to confirm.
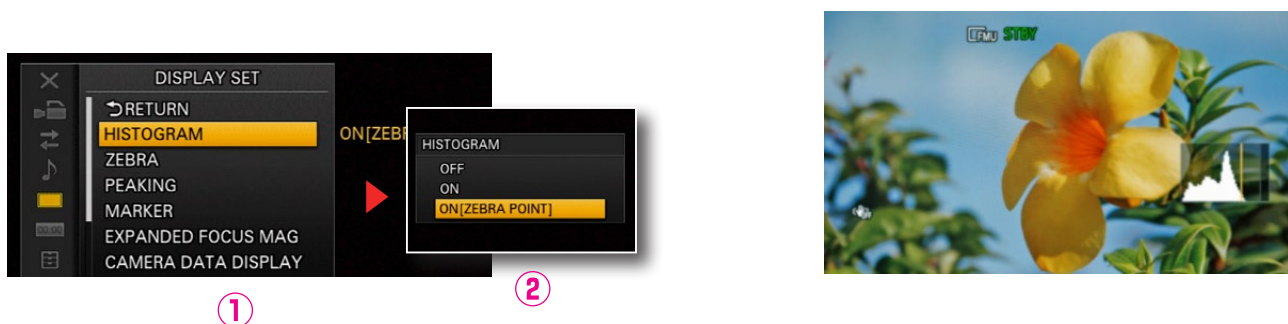
Focus Assist

PUSH AUTO — for temporary Auto Focus (AF)

When filming in manual focus mode, press and hold the PUSH AUTO button to temporarily engage Auto Focus. Release the button to revert to manual focus. Switching temporarily to Auto Focus is a good way to ensure smooth focus transition when shifting from one subject to another.

How to set/operate

1. Set the FOCUS switch to MAN.

2. Press the PUSH AUTO button to engage Auto Focus. Release the button to revert to manual focus.
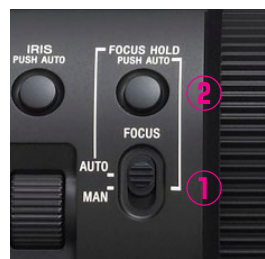
Expanded focus — for precision focusing

The display can be expanded by 4 x or 8 x for more precise focusing, using the dedicated EXPANDED FOCUS button conveniently located on the lens ring.
* Use the + cursor keys to navigate within the expanded image.

How to set/operate

1. Press the EXPANDED FOCUS button on the lens ring to cycle through the expanded display options.
2. Use the arrow buttons at the top of the camera screen to move around the display, or press the EXEC button to return to the center of the display.

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording
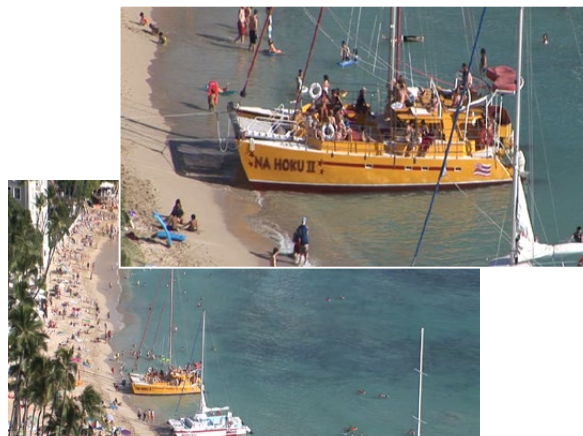
SENSOR AND LENS

Focus Assist

Peaking — to identify focus peaks `ASSIGN`

The peaking display is used to check which areas of the image are in focus. Areas in focus are denoted by accentuated outlines.

How to set/operate
1. MENU → [DISPLAY SET] → [PEAKING] → [ON]
2. Select the [color] and the [level] of accentuation required.
   Press the SEL/PUSH EXEC dial to confirm the settings.

💡 **TIPS**

When the peaking level is set to high, the focused areas are easy to locate but there is also a commensurate increase in noise. Peaking is not suitable for some types of images. For best results, use in combination with expanded focus.

Face detection — to focus automatically on faces `ASSIGN`

Face detection locates and focuses on faces within the field of view. Face detection requires an E-mount lens.

How to set/operate
1. MENU → [CAMERA SET] → [FACE DETECTION]
   Use the SEL/PUSH EXEC dial to position the orange frame on the priority focus face, then press the dial to confirm. The orange frame changes to double lines to indicate that the face has been selected.
   To select a different face, press the SEL/PUSH EXEC dial and repeat step 2.
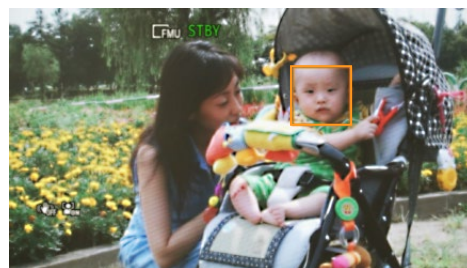
💡 **TIPS**

Face detection may not function correctly in some environments. For best results:
• Ensure that there is plenty of light on the subject
• Avoid obscuring the face with headwear, masks or sunglasses
• Ensure that the subject is facing the camera

0 AUTOMATED FUNCTIONS
1 SENSOR AND LENS
2 Performance features
3 FILE BASED
4 PICTURE PROFILE
5 RAW recording

Spot Focus — focus from the touch screen   ASSIGN

Spot Focus lets you focus on an object simply by tapping it on the touch screen. (Requires an E-Mount lens.) To minimize camera movement, a tripod is recommended when using Spot Focus.

How to set/operate

1. MENU → [CAMERA SET] → [SPOT FOCUS]

2. On the touch screen, tap on the object to focus.

* Press MENU to turn off Spot Focus. Spot Focus is not available in Auto Focus mode.

Display screen
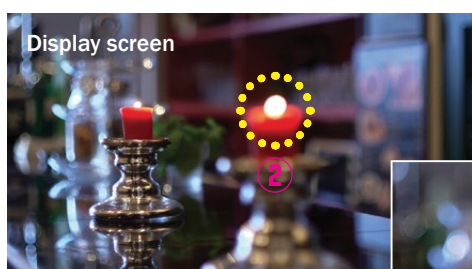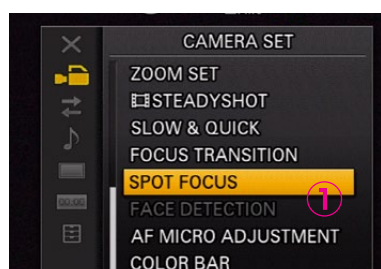
Tap on the closest candle

The focus shifts to the selected subject

💡 **TIPS** Customizing the ASSIGN buttons

ASSIGN buttons 1 through 6 can be individually assigned to different functions. Six functions have been assigned by default. The following procedure shows how to change the assigned function.

How to set/operate

1. MENU → [OTHERS] → [ASSIGN BUTTON]

 Choose an ASSIGN button (1 through 6).

2. Use the SEL/PUSH EXEC dial to highlight the desired function, then press to select.

3. Use the SEL/PUSH EXEC dial to highlight OK, then press to confirm.
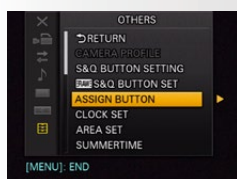
SENSOR AND LENS

Other assist functions

SteadyShot [ASSIGN]

SteadyShot is only available when a SteadyShot compatible lens is fitted.

How to set/operate
1. MENU → [CAMERA SET] → [STEADYSHOT]
2. Choose from [STANDARD and ACTIVE modes].
   Press the SEL/PUSH EXEC dial to confirm.
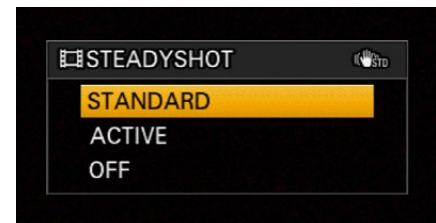
💡 **TIPS**
SteadyShot modes

[Standard]: For relatively stable conditions.
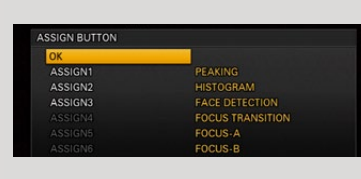
[Active   ]: For situations involving considerable movement, such as walking with a handheld camera.
                (* Active mode is only available during video capture and requires a compatible lens.)

[Off   ]: When using a tripod or equivalent.
                * OSS compatible E-Mount lens required.

Focus Transition — using rack focus to transition between two points [ASSIGN]

Focus Transition shifts the focus automatically between two pre-defined points.
(* Focus Transition is only available during video capture and requires an E-Mount lens.)

How to set/operate

■ Register buttons

1. MENU → [OTHERS] → [ASSIGN BUTTON] → [FOCUS TRANSITION] → ON
2. When [Focus Transition] is [on], buttons 4, 5 and 6 are allocated to the [Focus Transition] function. Press button 4 to cycle through the four modes: STORE, CHECK, EXEC and OFF.

■ Store focus points

3. Press button 4 to display the [STORE] screen, disengage Auto Focus, shift the focus manually to point A, then press button 5.
4. Now do the same at point B and press button 6.
   * The icon flashes during this procedure and operation is disabled.
5. Press button 4 again to switch to [CHECK] mode. Check the focus at point A with button 5, and at point B with button 6.
   * The stored focus points A and B will be automatically deleted in the event of any of the following:
     • The camera is turned [off]
     • The lens is removed
     • Optical zoom is used

■ How to use: focus transition from A to B

6. From the [CHECK] screen, press button 5 to focus on point A. Press button 4 again to switch to [EXEC] mode.
   Start recording, then press button 6 to initiate a smooth focus transition to point B.
   * In [EXEC] mode, press button 5 again to transition back to point A.

■ How to use: focus transition from current position to point A (or point B)

From the [CHECK] screen, start recording with the focus set to the current position, then press button 5 to initiate a smooth focus transition to point A, or button 6 to transition to point B.

Button functions

4	Cycles through the four modes: STORE, CHECK, EXEC and OFF
5 6	In [STORE] mode: stores the focus point. In [CHECK] or [EXEC] mode: initiates the focus transition

💡 **TIPS**

The following transition settings are available under MENU → [CAMERA SET] → [FOCUS TRANSITION]:

[Transition time] : The focus transition time can be set in the range 3.5 – 90 seconds.
[Start timer] : The focus transition can be delayed after pressing button 5 or 6 by 5, 10 or 20 seconds.
[Rec Link] : Focus transition starts when recording commences (choice of Focus A and Focus B).

0 AUTOMATED FUNCTIONS
1 SENSOR AND LENS
2 Performance features
3 FILE BASED
4 PICTURE PROFILE
5 RAW recording

SENSOR AND LENS

E-Mount system — bringing out the best in every lens

E-Mount lenses are compatible with automated functions such as Auto Focus, SteadyShot and Auto Exposure that are particularly useful for zooming in on a subject using shallow depth of field in low-light conditions.

Common E-Mount lenses

Large diamater,sungle facal length	Compact wide-angle, single focal length	Macro	Zoom
24mm F1.8 SEL24F18Z	16mm F2.8 SEL16F28	30mm F3.5 SEL30M35	10-18mm F4.0 SEL1018*
35mm F1.8 SEL35F18*	20mm F2.8 SEL20F28		16-70mm F4.0 SEL1670Z*
50mm F1.8 SEL50F1.8*			18-200mm F3.5-6.3 SELP18200*

*With built-in OSS (Optical SteadyShot)

SELP18200 zoom lens (E PZ 18 – 200 mm, F3.5 – 6.3 OSS) — supplied with NEX-FS700R

The SELP18200 is a powerful E-Mount type zoom lens suitable for a wide range of conditions with a zoom range from 27 mm wide angle (converted to 35-mm format) to 300 mm telephoto. The optical design comprises four aspherical lens groups to provide sharpness and clarity, while the powered zoom boasts a choice of six speeds for smooth fixed-speed zoom operation. The built-in optical stabilization system includes an active stabilization mode to correct camera movement during wide angle video capture. The super-quiet motors ensure smooth AF and aperture movement, and the sleek aluminum alloy finish exudes quality.

SEL35F18 single focal length lens (E35 mm F1.8 OSS)

The SEL35F18 is a wide-aperture E-Mount type single focal point lens with focal length of 52.5 mm equivalent (converted to 35 mm format). Designed to suit a broad range of conditions, it is compact and lightweight with a total length of just 45 mm. The full open at f-stop 1.8 produces beautifully lit images with good focus differentiation. The SEL35F18 features an all-new optical design for sharper images with improved contrast even in close up, while the high-speed super-quiet linear motors ensure faster, smoother focus operation.

SEL1018 zoom lens (E10 – 18 mm F4 OSS)

The SEL1018 is a super wide angle E-Mount type zoom lens with a zoom range from 15 mm super wide angle (converted to 35 mm format) to 27 mm standard wide angle. The optical system, featuring a combination of three aspherical lens groups and super ED glass, corrects aberrations at the super wide angle end to ensure optimum contrast. The full open f-stop 4 is ideal for dynamic scenery as well as limited-light settings such as sunsets. The SEL1018 has built-in optical stabilization and a spherical iris for superior "bokeh" effect.

SEL1670Z Vario-Tessar T ＊ E 16 – 70 mm F4 ZA OSS zoom lens

The SEL1670Z is a compact, high-performance Carl Zeiss standard zoom lens providing excellent contrast and definition with an advanced optical design comprising four aspherical lenses and one ED glass element. One of the aspherical lenses is made with Sony's AA (advanced aspherical) lens forming technology, used to produce compact lenses without compromising imaging performance. The result is a high-performance Carl Zeiss lens that is much more portable. The black metallic exterior conveys a quality feel commensurate with the status of the Carl Zeiss lens.

Carl Zeiss E-Mount lenses

Carl Zeiss E-Mount lenses are also available.

Touit lenses		Compact Prime CP.2	
32mm F1.8	12mm F2.8		15mm /T2.8 18mm /T3.6 21mm /T2.9 25mm /T2.1 28mm /T2.1 35mm /T2.1 50mm /T2.1 85mm /T2.1 100mm /T2.1 135mm /T2.1

The Touit is a compact lens designed to suit APS-C size image sensors, with T* coating delivering improved transmissivity and less internal reflection for improved image definition.
As with the Sony E-mount lens, the dial on the camera body is used for iris adjustment. Auto iris is also available.
* Auto focus not supported on the FS700, 100 or EA50.

Compact Prime CP2 lenses are entry-level cinema lenses with a strong design emphasis on manual control.
The focus and iris rings have good inertia feel, and are physically located in the same position on every model, which makes it easier to set up follow focus.

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

SENSOR AND LENS

Compatible with a wide range of lens types

LA-EA2+A mount lens with phase detection AF

The LA-EA2 mount adaptor boasts the fastest auto focus in the A-Mount class , with a built-in AF drive motor linked to a 15-point AF system with three cross sensors for high-precision focusing.

Sony
E-Mount
lenses

LA-EA2

Sony
A-Mount
lenses

Non-Sony
lenses

Non-Sony mount adaptors

Shorter flange back distance to accommodate wider interchangeable lenses

The distance from the lens mount plane to the image sensor, called the flange back distance, is different for every lens mount. If the flange back distance is too short for the lens mount, a mount adaptor must be fitted. The NXCAM E-Mount lens has a short flange back distance of just 18 mm, which means that it can accommodate a variety of different lenses using mount adaptors.
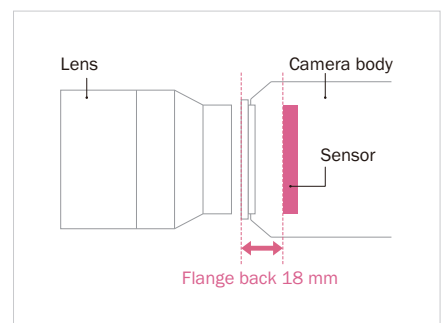
Lens

Camera body

Sensor

Flange back 18 mm

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

Performance features

Super slow motion mode

The super slow motion system on the NEX-FS700R represents a technological evolution from conventional slow and quick motion functions, allowing slow-motion recording at up to 10 x normal speed (i.e., maximum 240fps) in Full HD resolution. Slower speeds (up to 40 x slow motion or 960fps) can be achieved at slightly reduced image quality. The recording frame rate is substantially faster than the playback frame rate, producing incredibly smooth slow-motion playback that is far superior to conventional slowed playback systems.

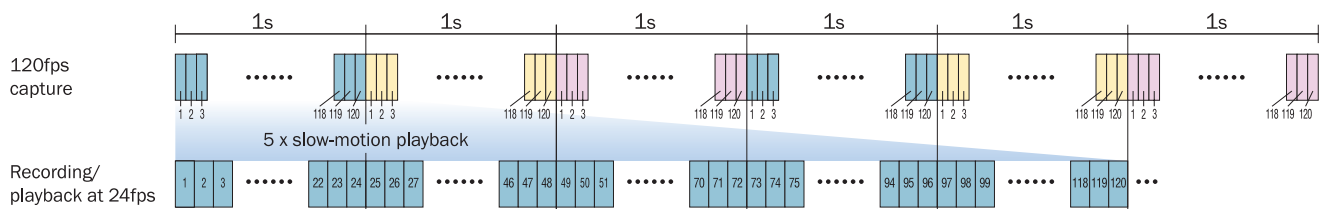In conventional cameras, higher frame rates limit the amount of available light and the picture quality is often poor. But the higher sensitivity and improved noise reduction of the large sensor in the NEX-FS700R ensures excellent image quality even in super slow motion.

■ How super slow motion works

💡 TIPS

- In super slow motion mode, the shutter speed is higher than the frame rate. The higher the frame rate, the darker the image. Aim for well-lit environments (outdoor or indoor) and manually boost the camera gain and aperture settings to maximize the available light.
  Auto aperture, gain/ISO and shutter speed control functions are disabled in super slow motion mode.
  These must be adjusted manually as described in Controlling the brightness on page 9.
  The shutter speed must not be lower than the recording frame rate.
- Higher frame rates can produce a flickering or shuddering effect when used with certain types of lights. It may be necessary to use lighting equipment designed specifically for high-speed filming.
- Super slow motion picture quality may vary from standard picture quality due to differences in the sensor read mode.
  For optimum picture quality at 10 x super slow motion speed, set the recording format to 1080/24p FX mode (24 Mbps), frame rate = 240fps.
  At 480/400fps frame rate, the full recorded vertical resolution is not available.
  At 960/800fps, the recorded image quality is subject to approx. 2 x teleshift and images are displayed and recorded at SD size.
- SDI/HDMI video output is at 1080 60/50p. This signal can be enhanced with third-party equipment for recording and editing purposes.

Simultaneous recording onto the memory card and flash memory unit is not supported. Select the media type from the menu system (REC/OUTPUT SET SWITCH MEDIA).
- Audio is not recorded.
- The white balance one-push button is disabled.
- Time code is automatically set to REC RUN.
- The histogram display is disabled. Use the zebra display for checking brightness.

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

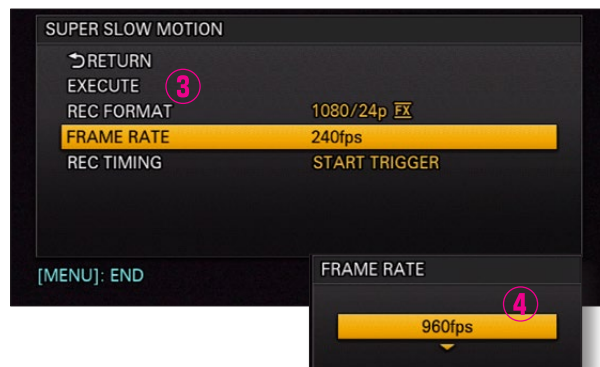5 RAW recording

How to set/operate

■ Recording format

1. MENU → [CAMERA SET] → [SLOW & QUICK] → [SUPER SLOW MOTION]

2. Scroll down to [REC FORMAT] and choose a recording format from the list.

■ Frame rate

3. MENU → [CAMERA SET] → [SLOW & QUICK] → [SUPER SLOW MOTION]

4. Scroll down to FRAME RATE and choose a frame rate from the list.

> [60i] frame rates:
> 120fps, 240fps, 480fps, 960fps
>
> [50i] frame rates:
> 100fps, 200fps, 400fps, 800fps

* Pressing the [S&Q] button on the camera body twice (default setting) switches directly into super slow motion mode.

■ Recording start and stop trigger

5. Select the trigger function.

> **Start trigger**
>
> The START/STOP button starts recording. Maximum recording time at 240fps is eight seconds.
>
> **End trigger**
>
> The START/STOP button stops recording. Material recorded to that point is stored. Maximum recording time at 240fps is eight seconds.
>
> **End trigger half**
>
> Functions in the same way as End Trigger, but with half the recording time (i.e. maximum recording time at 240fps is four seconds).

START/STOP button

Start trigger

End trigger

End trigger half

Elapsed time
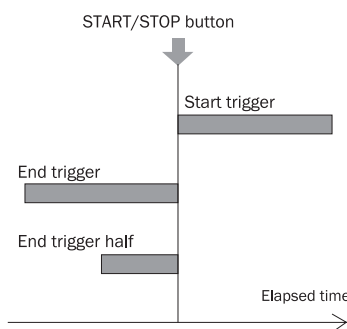
■ Frame rate, recording format and playback speed in super slow motion mode

[60i]

FRAMERATE	REC FORMAT		
	1080/24p	1080/30p	1080/60p
960	2.5% slow	3.125% slow	6.25% slow
480	5% slow	6.25% slow	12.5% slow
240	10% slow	12.5% slow	25% slow
120	20% slow	25% slow	50% slow

[50i]

FRAMERATE	REC FORMAT	
	1080/25p	1080/50p
800	3.125% slow	6.25% slow
400	6.25% slow	12.5% slow
200	12.5% slow	25% slow
100	25% slow	50% slow

23

Performance features

Slow & quick motion mode

Slow motion and quick motion involves shooting at different frame rates to the standard playback frame rate. There are no restrictions on recording time, which is limited only by the maximum capacity of the storage media (equivalent to approximately 13 hours continuous recording).

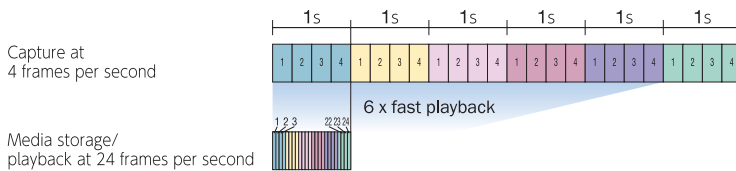In 1080/24p format, for example, a frame rate of 60fps produces slow motion at 2.5 x actual recording speed, while a frame rate of 4fps produces quick motion at 6 x normal speed.

■ Quick motion mode: frame rate of 4fps in 1080/24p format

Capture at
4 frames per second

6 x fast playback

Media storage/
playback at 24 frames per second

■ Recording format, frame rate and playback speed

Playback speed is governed by recording format and frame rate as shown below.

[60i]

FRAMERATE	REC FORMAT		
	1080/24p	1080/30p	1080/60p
60	40% slow	50% slow	100% (normal speed)
30	80% slow	100% (normal speed)	200% quick
15	160% quick	200% quick	400% quick
8	300% quick	375% quick	750% quick
4	600% quick	750% quick	1500% quick
2	1200% quick	1500% quick	3000% quick
1	2400% quick	3000% quick	6000% quick

[50i]

FRAMERATE	REC FORMAT	
	1080/24p	1080/50p
50	50% slow	100% (normal speed)
25	100% (normal speed)	200% quick
12	208% quick	417% quick
6	417% quick	833% quick
3	833% quick	1667% quick
2	1250% quick	2500% quick
1	2500% quick	5000% quick

💡 TIPS

To slow down fast-moving subjects such as sporting events, we recommend a 24p/25p recording format with a frame rate of 60/50fps.

To speed up slow-moving subjects such as clouds, use a 60p/50p recording format with a lower frame rate.

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

How to set/operate

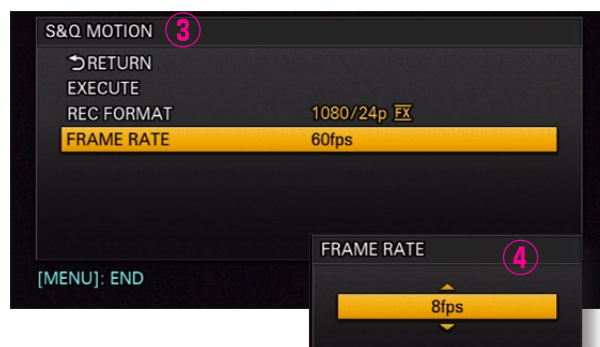## ■ Recording format

1. MENU → [CAMERA SET] → [SLOW&QUICK] → [S&Q MOTION]

2. Scroll down to [REC FORMAT] and choose a recording format from the list.

■ Frame rate

3. MENU → [CAMERA SET] → [SLOW&QUICK] → [S&Q MOTION]

4. Scroll down to [FRAME RATE] and choose a frame rate from the list.

[60i] frame rates:
1fps, 2fps, 4fps, 8fps, 15fps, 30fps, 60fps

[50i] frame rates:
1fps, 2fps, 3fps, 6fps, 8fps, 12fps, 25fps, 50fps
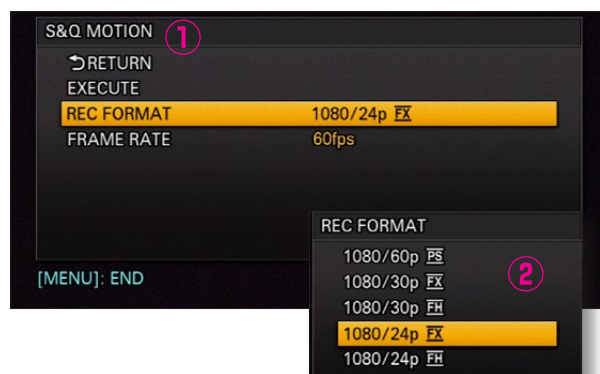
* Pressing the [S&Q] button on the camera body once (default setting) switches directly into slow and quick motion mode.

1. Not available in AUTO mode.

2. When filming in HD, slow & quick motion functions are available in progressive mode only.

3. To preserve continuity, the time code is recorded in [REC RUN].

4. Audio will be recorded only at normal playback speed settings.

5. The frame rate setting cannot be altered while filming.

6. Simultaneous recording to the memory card and flash memory is not supported.

Performance features

Modular design to support different shooting configurations

The NEX-FS700R has a detachable handle, grip and viewfinder as well as 1/4" and 3/8" screw holes for accessories such as mudbox and follow focus.

The rigid handle and grip provide excellent stability for the large sensor during handheld use.

A range of accessories is available for the NEX-FS700R, providing maximum flexibility in a range of different settings.

Handle

Grip

Shoulder rig
(optional extra for RAW mode)

3G/HD/SD
SDI OUT

COMPONENT
OUT

VIDEO OUT

AUDIO OUT

HDMI OUT
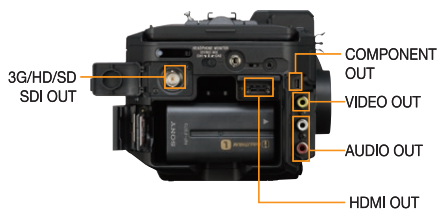
Rear

Side

Front

Data backup / hybrid recording

The [HXR-FMU128] flash memory unit (sold separately) can be used for hybrid recording simultaneously with the memory card, providing a convenient backup solution. In the event of a fault in either one of the recording media during filming, recording will continue onto the other media.

* Hybrid recording is not available in super slow motion mode.

Time code

Editing information such as time code and user bit is recorded as time data. There are two time code modes: [Rec Run] and [Free Run].
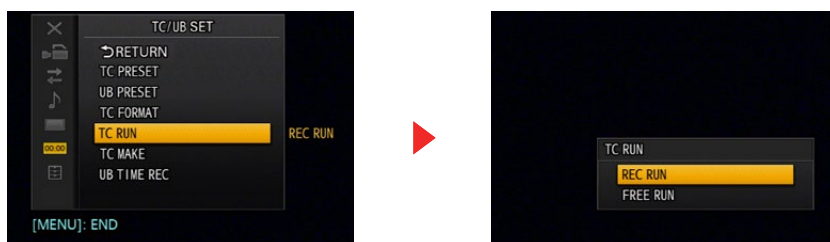
REC RUN

Rec Run is the standard mode, where the time code advances only when recording. The time code also continues during splices, thereby providing a handy guide to remaining recording time.

FREE RUN

In Free Run mode, the time code continues even when recording has stopped, providing in-camera continuity during breaks in recording. Free Run mode is useful when filming with multiple cameras or synching to an external time code.

💡 **TIPS**

The remote control (supplied) has a [TC RESET] button for resetting the time code. This can also be used to synchronize time codes on multiple NXCAM cameras. Set the cameras to [Free Run] mode and line them up facing the remote control, then press [TC RESET] to start all the time codes simultaneously.
* The remote control feature must be enabled on each camera under MENU OTHERS.
* All cameras should have the same [frame rate] and [drop frame] settings.

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

FILE BASED

Flexible file base workflow

Advances in SD and HD technology saw the release of the new [HDV format] in 2003, using cassette tape in DV specifications for HD video and audio recording. Designed to be compatible with DVCAM recorders, the HDV format has become popular in a wide range of fields, from documentary programs to weddings and other events.

The first NXCAM in AVCHD format, released in 2010, brought significant improvements in ambience and picture quality. The AVCHD format uses MPEG-4 AVC/H.264 compression and records onto memory cards and flash memory units. Along with HDTV and Blue-ray, AVCHD can also be used with IT video formats designed for mobile devices and web movies.

Advances in recording media

HDV specifications

Mini-DV tape
63 min

AVCHD specifications

Memory stick	HXR-FMU128
170 min (32 GB)	700 min (128 GB)

Advances in recording formats

HDV specifications

i.LINK

MPEG2

Video data transferred in real time

AVCHD specifications

USB2.0   USB2.0

MPEG4
AVC/H.264

Rapid video data transfer

Recording formats

	Recording mode	Recorded pixels	Frame rate	Aspect ratio	Recording time (min) on 128 GB flash memory unit	
					Linear PCM	Dolby Digital
HD	PS mode: maximum 28 Mbps	1920×1080	60p/50p	16 : 9	600	640
	FX mode: maximum 24 Mbps	1920×1080	60i/50i/30p/25p/24p		700	750
		1280×720	60p/50p			
	FH mode: average 17 Mbps	1920×1080	60i/50i/30p/25p/24p		940	1030
		1280×720	60p/50p			
	HQ mode: average 9 Mbps	1440×1080	60i/50i		1560	1830
		1280×720	60p/50p			
	LP mode: average 5 Mbps	1440×1080	60i/50i		2460	3200
SD	HQ mode: average 9 Mbps	720×480	60i/50i	16 : 9 4 : 3	—	1910

*1. Table does not show frame rate of 59.94p for 60p, 59.94i for 60i, 29.97p for 30p, or 23.98p for 24p.
*2. Recording times may vary slightly due to the use of VBR (variable bit rate) technology, which adjusts the bit rate automatically according in accordance with image content.

Connecting a non-Sony external recording device

The SDI/HDMI Rec Control time code supplies high-resolution output for an external recording device.

The NEX-FS700R supports Rec Control signal for both SDI and HDMI.
This allows recording onto an external device synchronized with in-camera recording and the time code in Rec Run or Free Run modes. The time code (TC) can also be superposed onto HDMI signal output.

SDI/HDMI signal is output as uncompressed digital HD/SD signal during recording. This enables video recording to an external device at maximum quality using an SDI/HDMI cable.
By adding time code (TC) to the HDMI signal, it is effectively the equivalent of SDI signal.

To add time code to the HDMI signal go to:
[MENU] → [REC/OUTPUT SET] → [VIDEO OUTPUT] → [HDMI TC OUTPUT]
Then use the menu system to switch on [SDI/HDMI REC CONTROL].
On an external recorder such as the **ATOMOS NINJA2**, go to Time Code settings and select [Sony] as the camera trigger to synchronize Rec/Stop on the NEX-FS700R and the recorder.
For other recorders, contact the manufacturer directly.

- Recorders that support SDI synchronized recording
  SOUND DEVICE PIX240,
  ATOMOS SAMURAI / SAMURAI BLADE

- Recorders that support HDMI synchronized recording
  ATOMOS NINJA2, Ver. 4.12 or later

SOUND DEVICE PIX240

ATOMOS SAMURAI

ATOMOS NINJA2

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

PICTURE PROFILE

What is PICTURE PROFILE?

PICTURE PROFILE is a menu for adjusting and changing parameters that determine image characteristics. There are many parameters that can be adjusted and changed, but they can be grouped into four types — parameters for selecting basic color tone, parameters for adjusting gradation (darkness-brightness tone), parameters for adjusting coloring, and parameters for correcting white balance.

Users can directly enter into the PICTURE PROFILE setting mode by pressing the PICTURE PROFILE button on the NEX-FS700R. Sporting a wide range of adjustable settings that rival ones found on upper-class camcorders, the NEX-FS700R's PICTURE PROFILE menu allows users to change a variety of settings, such as Gamma Curve , Color and Detail. Up to six sets of setting combinations can be stored in the internal memory banks from PP1 through PP6.

PICTURE PROFILE button

PICTURE PROFILE presets

Using PICTURE PROFILE presets

The NEX-FS700R camcorder comes equipped with multiple PICTURE PROFILE factory presets. By using these presets, you can match the image texture with other types of camcorders, or create an image texture that is similar to that of cinematic film.

- PP1 : [Standard] gamma settings
- PP2 : [STILL] gamma settings
- PP3 : [ITU-709] gamma settings for natural color tones
- PP4 : Strict [ITU-709] color tone settings
- PP5 : Settings for shooting on general-purpose color negative films
- PP6 : Settings for playback of general-purpose color print films
- PP7 : Typical S-LOG settings for S-LOG, see page 44.

* The above picture profiles are designed for video settings, and may need to be modified for still photography.

Picture Profile settings

Basic color settings

GAMMA

The basic color settings are defined by the combination of GAMMA (gamma curve) and COLOR MODE (color characteristics) settings as follows.

STANDARD	Standard gamma curve for video
STILL	Standard gamma curve for still images
CINE1	Softens the contrast in darker regions and emphasizes gradation changes in lighter regions, producing a subdued tone overall (equivalent to HG4609G33)
CINE2	Similar to [CINE1] but optimized for editing with up to 100% video signal (equivalent to HG4600G30).
CINE3	Stronger contrast between dark and light regions and greater emphasis on black gradation changes (compared to [CINE1] and [CINE2])
CINE4	Stronger contrast than [CINE3] in darker regions; compared to the standard curve, has less contrast in darker regions and more contrast in lighter regions
ITU709	ITU709 gamma curve (low-light gain of 4.5)
ITU709 (800%)	Used for checking video images during RAW recording
S-LOG2	S-LOG2 gamma curve for checking the full dynamic range during video capture

COLOR MODE

STANDARD	Color tones for video gamma curve
STIL	Color tones for still gamma curve
CINEMA	Color tones for [CINE1] gamma curve
PRO	Color tones similar to standard Sony broadcast camera picture quality (used in combination with ITU-709 gamma curve)
ITU709 MTX	ITU-709 color tones
Level	**Used to select the intensity of the selected color mode from 1 (minimum intensity, similar to STANDARD setting) through 8 (maximum intensity). Not available in STANDARD mode.**

■Settings for adjusting contrast

BLACK LEVEL

LEVEL : -15 to +15

As the name indicates, this setting adjusts the black level of the image. As an image effect, you can emphasize black to create a type of image that would give a hard impression, or you can weaken black to give the image a soft impression.

Shifting BLACK LEVEL toward the minus direction emphasizes the black color in the image, while changing the level toward the plus direction would weaken the black color. For example, if you want to simulate an old film, or capture winter morning fog, the black level set value should be increased. If you decrease the level set value, gradations in dark areas will be discarded, making the areas appear in crisp black.

> 💡 **TIPS**
>
> When using multiple fixed camcorders to shoot the same subject from different angles, the balance between subject and background often varies. This balance variation may cause the black color on the subject to appear different when camcorders are switched. But this is an optical illusion. If it occurs, you can correct it by adjusting BLACK LEVEL to make the black color look the same.

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

PICTURE PROFILE

BLACK GAMMA

The BLACK GAMMA setting lets you alter the shape of the gamma curve and adjust gradations in dark areas in the image.

■ RANGE : LOW / MIDDLE / HIGH

This controls the luminance range that BLACK GAMMA influences. The LOW setting affects the range up to almost black, while the HIGH setting extends the range up to gray. RANGE should be set lower when you want to control the quality of dark areas. If you want to adjust the overall image tone, RANGE should be set higher. At first, it may be a good idea to start from the LOW setting.
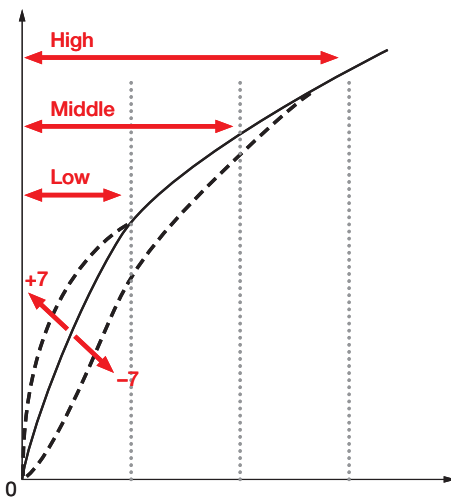
■ LEVEL : -7 to +7

Increasing LEVEL set value brightens the image, whereas decreasing set value makes the image darker. For example, if you set RANGE at LOW and decrease LEVEL set value, you can create an image with dark areas that are similar to the ones seen in films. Unlike BLACK LEVEL, BLACK GAMMA LEVEL adjusts luminance softly.

BLACK GAMMA (+7)

BLACK GAMMA (0)

BLACK GAMMA (–7)

KNEE

This changes the tone expression in high brightness areas.

MODE

- AUTO: Automatically adjusts the KNEE settings based on what is selected in the following AUTO SET function.
- MANUAL: Follows the KNEE settings selected in the following MANUAL SET function.

AUTO SET

- MAX POINT : 90% to 100%

Determines the maximum knee point level (white level).

The knee slope is automatically adjusted according to the MAX POINT setting.

Selecting 100% is ideal under most circumstances. A lower setting will turn white grayish, while a higher setting will discard gradations in high luminance areas.

So, the basic choice for AUTO SET is to keep it at 100%.

- SENSITIVITY : LOW / MIDDLE / HIGH

Changes the luminance level at which KNEE setting automatic adjustment kicks in.

LOW: KNEE setting automatic adjustment starts at lower input signal levels than normal.

HIGH: KNEE setting automatic adjustment starts at higher input signal levels than normal.

MANUAL SET

- POINT : 75% to 105%

Sets the position of the KNEE point output level.

- SLOPE : –5% to +5%

Determines the inclination of the KNEE slope.

A negative SLOPE setting results in a milder KNEE slope angle. This boosts the dynamic range, but reduces the ability to reproduce rich gradations.

A positive SLOPE setting makes the knee slope inclination steeper. This shrinks the dynamic range, but bolsters the ability to express gradations.
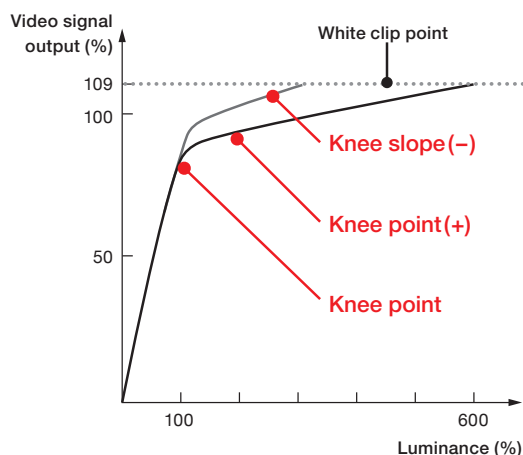
💡 **TIPS**

In general, the KNEE point is set roughly between 85% and 100%, which is said to match the luminance levels of human skin.
The knee point and knee slope should be viewed as a set. In principle, a higher setting for the KNEE point and a milder KNEE slope should be selected for video-like sharp highlights. If softer film-like highlight expressions are desired, the KNEE point should be set lower in combination with a steeper KNEE slope. In practical terms, you should move the KNEE point and the KNEE slope up and down in opposite directions to each other while checking the gradations in high luminance areas until you find the ideal settings.

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

# PICTURE PROFILE

■ Settings for adjusting coloring

COLOR LEVEL

COLOR LEVEL deals with saturation in the color space and makes washed out colors appear more vivid. Settings can be adjusted between −7 (Grow pale in color) to +7 (Grow rich in color) . There is also a −8: Shoot in black & white setting. A higher set value results in more vivid colors, while a lower set value presents faded colors. COLOR LEVEL should be adjusted in tandem with contrast. Bright and vivid settings produce video-like images, while dark and vivid settings result in film-like images. The combination of bright and light creates pastel tones, whereas dark and light settings create artistic finishes.

COLOR PHASE

COLOR PHASE controls Hue in the color space. A single step in Hue amounts to a roughly 1.5-degree rotation in the color wheel. As you rotate the color wheel to the left or right, the colors shift such as from red to yellow, green, aqua, blue and purple. Because this setting affects all colors, it is difficult to use COLOR PHASE for a particular intention. Please refer to this setting when matching coloring strictly between different cameras.

Settings can be adjusted between −7 (Greenish) to +7 (Reddish) .

COLOR PHASE
(−7 ~ +7: 1.5degree/step)

COLOR LEVEL
(−7 ~ +7: −8=B/W)
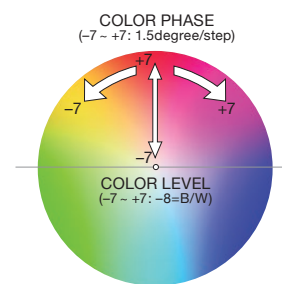
COLOR DEPTH

COLOR DEPTH shifts brightness (luminance) in deep colors (high saturation areas in the color space). A higher set value lowers luminance while deepening the color. A lower set value increases luminance, making the color look paler. The deeper the saturation, the bigger the change will be. Hardly any change can be seen if colors are close to achromatic. You can adjust color depth between −7 and +7 individually for [R (Red)], [G (Green)], [B (Blue)], [C (Cyan)], [M (Magenta)] and [Y (Yellow)].

Color	Range
R	−7 (Shallower red) to +7 (Deeper red)
G	−7 (Shallower green) to +7 (Deeper green)
B	−7 (Shallower blue) to +7 (Deeper blue)
C	−7 (Shallower cyan) to +7 (Deeper cyan)
M	−7 (Shallower magenta) to +7 (Deeper magenta)
Y	−7 (Shallower yellow) to +7 (Deeper yellow)

Luminance

Luminance
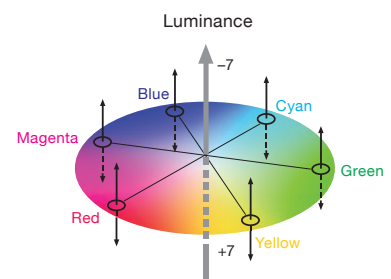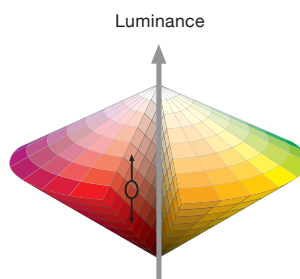
R+

±0

R−

💡 **TIPS**

With previous camcorders, the color strength was changed by adjusting the COLOR LEVEL settings (saturation). But this only enhanced apparent vividness of colors. With the NEX-FS700R, it is possible to express deep, dark colors by using COLOR DEPTH.
Because each of the six colors — R (Red), G (Green), B (Blue), C (Cyan), M (Magenta), Y (Yellow) — can be adjusted individually, you can use COLOR DEPTH to emphasize only the colors you want.

DETAIL

As described in "Information essential for making the most of PICTURE PROFILE," DETAIL is a function that emphasizes image edges. By altering the following manual settings, image processing can be varied to create different impressions from the same subject. Because settings other than LEVEL are quite complex, we recommend you start by adjusting only the LEVEL setting first.

LEVEL

Determines the strength of DETAIL image processing to be applied.

–7 (Weak) to +7 (Strong)

DETAIL / OFF

DETAIL / ON

💡 **TIPS**

- If you apply too much DETAIL, the subject's natural atmosphere may be undermined, as its transparency may be lost or its luster may be altered, for example.
Excessive DETAIL when shooting shiny leaves, for instance, may result in the leaves looking as if they are made of plastic.
It is also advisable to use DETAIL only modestly when shooting paintings. Because DETAIL makes image edges wider, the original texture of a subject consisting of very fine lines may be lost if too much DETAIL processing is applied. (Example: Thin-laced curtains)

- Please also be aware that DETAIL may fatten up the edges of noise particles that appear under a high GAIN setting, and may make such particles highly noticeable. In such cases, however, you can adjust the amount of DETAIL processing on the noise particles by using the later mentioned CRISPENING function.

- The image edges become more visible when viewed on large screens. It may be advisable to ease off on DETAIL if you plan to view the image on large TVs or screens.

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

PICTURE PROFILE

- O N : The DETAIL level can be adjusted by using the following settings.
- OFF: The DETAIL level will be adjusted automatically depending on camera settings.

V/H BALANCE

- Changes the balance between Vertical (V) DETAIL and Horizontal (H) DETAIL.
- Vertical (V) DETAIL boosts image edges by expanding them upward and downward. Horizontal (H) DETAIL emphasizes image outlines by thickening them left and right.
- The results of DETAIL processing may appear differently among TVs, computer displays and other types of display monitors. Please adjust V/H BALANCE as needed.
- To emphasize the impression of a subject that has many horizontal elements, such as a human face (with eyes and mouth), you can increase the proportion of Vertical (V) DETAIL by lowering the setting (selecting a lower set value).
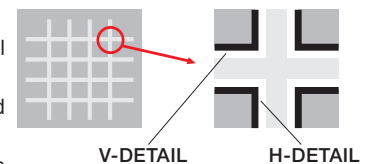
–2 (Stronger Vertical (V) DETAIL) to +2 (Stronger Horizontal (H) DETAIL)

V-DETAIL   **H-DETAIL**

B/W BALANCE

- Changes the balance between the amount of black DETAIL for low-luminance areas and the amount of white DETAIL for high-luminance areas.

TYPE1 (Higher proportion of black DETAIL) to TYPE5 (Higher proportion of white DETAIL)

- B/W BALANCE and LIMIT adjust the amount of black DETAIL and white DETAIL added to image edges.
- Black DETAIL adds such impressions as "power," "hardness," and "presence" to the subject. But it may bring undesirable results because it emphasizes wrinkles and pores.
- White DETAIL gives the subject "clean" and "glossy" impressions.
  You can increase the proportion of white DETAIL and reduce that of black DETAIL when shooting jewelry and glass objects to stress their clear, transparent nature.
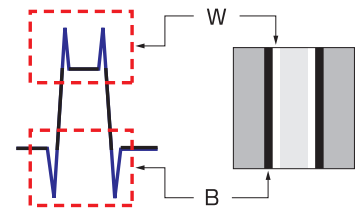
LIMIT

- Restricts the amount of black DETAIL for low-luminance areas and white DETAIL for high-luminance areas by setting a maximum value.
  The LIMIT setting cannot be set independently for black DETAIL and white DETAIL.

0 (Strongly restricted) to 7 (No restriction)

BLACK LIMIT   **WHITE LIMIT**
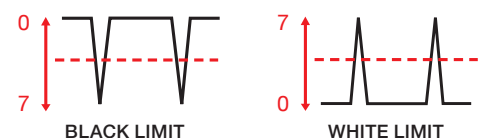
CRISPENING

- Reduces DETAIL that is added to visual noise to prevent noise from being emphasized.
- You can use the CRISPENING function when you want to apply DETAIL to the subject while keeping noise as unnoticeable as possible.
- CRISPENING can be adjusted between 0 to 7 . A larger set value results in less DETAIL.

HI-LIGHT DTL (High Light DETAIL)

- Adjusts the DETAIL level for bright subjects.
- You can use this to emphasize the edges of a bright subject in front of a high-luminance background.

0 (Smaller DETAIL amount) to 4 (Larger DETAIL amount)

■ Settings for correcting white balance
WB SHIFT

Fine-tunes white balance or creates an effect that is similar to using a color filter. Two types of adjustment methods — LB-CC and [R-B] — are available. We recommend you start with the [LB-CC] adjustment method. A higher set vale leads to warmer colors, while a lower setting creates colder colors. Please make sure you adjust white balance first.

FILTER TYPE → LB-CC (Light Balancing - Color Correcting)

■ LB (COL TEMP): Adds an effect similar to applying a color temperature adjustment filter

−9 (Blue Bluish) to +9(Amber: Reddish)

　* Approx. 100K/step

■ CC (MG/GR): Adds an effect similar to applying a color correction filter

−9 (CCG: Green) to +9(CCM: Magenta)

　* 1 step is equivalent to 2.5 in color correction filter number.

TYPE: LB-CC
CC M
+9
−9
LB B
+9
LB A
−9
CC G

Original

LB−

Original

CC+

0 AUTOMATED FUNCTIONS
1 SENSOR AND LENS
2 Performance features
3 FILE BASED
4 PICTURE PROFILE
5 RAW recording
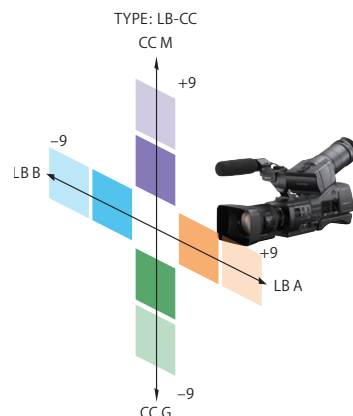
PICTURE PROFILE

FILTER TYPE → R-B

■ Alters the R (Red) or B (Blue) level in the video signal.

−9 (Lowest level) to +9 (Highest level)

FILTER TYPE R-B (±0)

TYPE: R-B

LEVEL

R   G   B
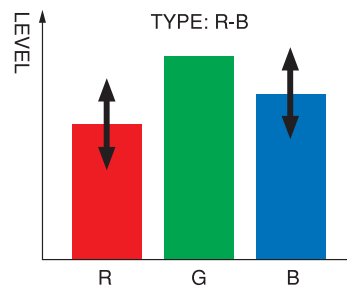
FILTER TYPE R-B (R=+9)

FILTER TYPE R-B (B=+9)

PICTURE PROFILE Settings

PP1

⤺ RETURN
OK
SETTING   ▶

[PICTURE PROFILE]: END

▶

SETTING   PP1

⤺ RETURN
BLACK   ▶
GAMMA   STANDARD
BLACK GAMMA   ▶
KNEE   ▶
COLOR MODE   ▶
COLOR LEVEL   0
COLOR PHASE   0
COLOR DEPTH   ▶
WB SHIFT   ▶
DETAIL   ▶
COPY   ▶
RESET

[PICTURE PROFILE]: END
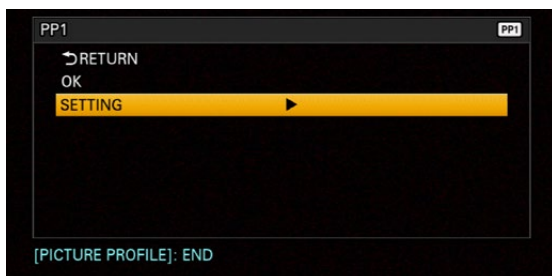
BLACK LEVEL	▶ -15 ~ +15		
GAMMA	▶ STANDARD/STILL/CINEMATONE1/CINEMATONE2/ITU709		
BLACK GAMMA	▶ RANGE	▶ LOW / MIDDLE / HIGH	
	LEVEL	▶ -7 ~ +7	
KNEE	▶ MODE	▶ AUTO / MANUAL	
	AUTO SET	▶ MAX POINT	▶ 90% ~ 100%
		SENSITIVITY	▶ HIGH / MIDDLE / LOW
	MANUAL SET	▶ POINT	▶ 75% ~ 105%
		SLOPE	▶ -5 ~ +5
COLOR MODE	▶ TYPE	▶ STANDARD/STILL/CINEMATONE1/CINEMATONE2/PRO/ITU709 MATRIX	
	LEVEL	▶ 1 ~ 8	
COLOR LEVEL	▶ -7 ~ +7 (-8 BW)		
COLOR PHASE	▶ -7 ~ +7		
COLOR DEPTH	▶ R	▶ -7 ~ +7	
	G	▶ -7 ~ +7	
	B	▶ -7 ~ +7	
	C	▶ -7 ~ +7	
	M	▶ -7 ~ +7	
	Y	▶ -7 ~ +7	
WB SHIFT	▶ FILTER TYPE	▶ LB-CC / R-B	
	LB[COLOR TEMP]	▶ -9 ~ +9	
	CC[MG/GR]	▶ -9 ~ +9	
	R GAIN	▶ -9 ~ +9	
	B GAIN	▶ -9 ~ +9	
DETAIL	▶ LEVEL	▶ -7 ~ +7	
	MANUAL SET	▶ ON/OFF	
		V/H BALANCE	▶ -2 ~ +2
		B/W BALANCE	▶ TYPE1~TYPE5
		LIMIT	▶ 0 ~ 7
		CRISPENING	▶ 0 ~ 7
		HI-LEVEL DETAIL	▶ 0 ~ 4
COPY			
RESET			

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

PICTURE PROFILE

Information essential for making the most of PICTURE PROFILE

Difference from image processing using nonlinear video editing software

PICTURE PROFILE adjusts colors and the vividness of the image upon recording. You can make similar adjustments by using nonlinear editing software after shooting. But there are the following differences.

To fit massive amounts of image data in a limited memory capacity, most camcorders compress image data when recording. No matter how advanced a compression format is, any data compression inevitably deteriorates image quality somewhat. Applying sharpness, gamma curve correction and other video effects to recorded images by using nonlinear editing software worsens the image condition further by processing already deteriorated images. For example, if video compression leaves the image with poor contrast or block noise in some areas, applying video effects often make the problems more noticeable.

Because PICTURE PROFILE processes video signals before compressing, it changes the gamma curve and corrects colors before image quality is damaged by compression. This makes it possible to carry out highly precise image adjustments while keeping the quality of the subject intact.

It should also be noted that recording images with proper contrast is crucial. If image contrast in dark and bright areas is not recorded right, underexposed dark and overexposed white areas will have no gradations. This means you cannot change image contrast properly later on with nonlinear editing software no matter how hard you try because there will be no gradations to work with.

Even if you intend to process your video with nonlinear editing software later, it is important that you record your image in the right way. Nonlinear editing software is a very powerful tool, but can't fix everything. If you adjust various settings to make sure your video is recorded in a way that is as close to your ideal as possible, you will be able to create a video that will be closer to what you have in mind with minimal processing via nonlinear editing software. It will also keep rendering time short and make video editing work more efficient.

What to do on the scene

If you are working on a project with ample time for editing or a short piece, you probably should record the image as flat as possible to allow for all kinds of post-production image processing and color adjustments.

If you are working on a project with a tight deadline or a long piece, on the other hand, you can dramatically reduce the amount of post-production image processing and enable highly efficient production by dialing in settings to record the video as close to the vision of the finished image as possible. Showing the image being recorded to the director and crew as close to the tone of the ideal finished image as possible on a display monitor will greatly boost morale on the scene. By shooting video in a manner that boosts the atmosphere on the scene, you will be able to make a major impact on the quality of the finished work.

In order to avoid the problems with nonlinear editing described in the previous section, and also to create pieces that make the most of the compact camcorder's mobility, please fully utilize PICTURE PROFILE and record the image at proper settings.

Gamma Curve and Knee Point

Gamma curve and knee point are two elements that exert great influence over image characteristics. By understanding these, you'll be able to utilize PICTURE PROFILE efficiently.

What is a gamma curve?

Gamma curves show the relationship between the input signal level and the output signal level. The camera converts the brightness signal from the subject into an electrical signal and sends the electrical signal to the display monitor, which converts that signal back to a brightness signal and reproduces the subject as an image.

The input signal level is the amount of the brightness signals from the subject and the original image overall, whereas the output signal level is the amount of the brightness signal output by the camera or display monitor.

In order to faithfully reproduce a subject in video images, the output signal level needs to be largely proportional to the input signal level, as shown in the straight line below. But the fluorescent material characteristics of a CRT (cathode-ray tube) cause the output signal level from CRT monitors to curve as shown below. This represents the gamma curve of CRT monitors (red curved line). Video cameras' gamma curve (blue curved line) plots the opposite curve. For this reason, the properties of the camera and CRT monitor can be offset to faithfully reproduce and display the original subject.

Nowadays, display monitors based on LCD, plasma and OLED are used widely. Because these monitors have different gamma curve characteristics from those of CRT display monitors, the ITU has set the gamma value for display monitors that are used in broadcasting and video production at 2.4 (ITU-R BT1886). This value was decided by taking into account that the gamma value of actual CRT master monitors used in broadcasting and video production was closer to 2.4, rather than their theoretical value of 2.2.

Sony's LCD and OLED display monitors enable users to choose a gamma curve that simulates that of conventional CRT monitors for smoother continuity from old systems.
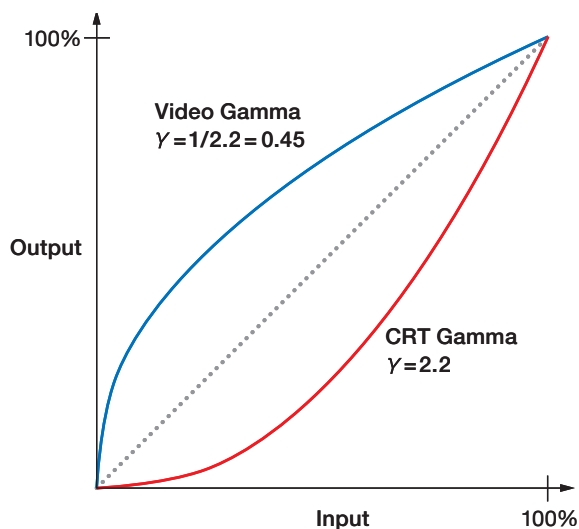
How a gamma curve's shape influences images

Influence on dark areas and contrast

High-end camcorders have a function to slightly change the shape of the gamma curve for dark areas of the image. Known as black gamma, this function lets you dramatically alter the atmosphere of the image by changing the gamma curve shape and strengthening or weakening the shading, or image contrast, of the image.
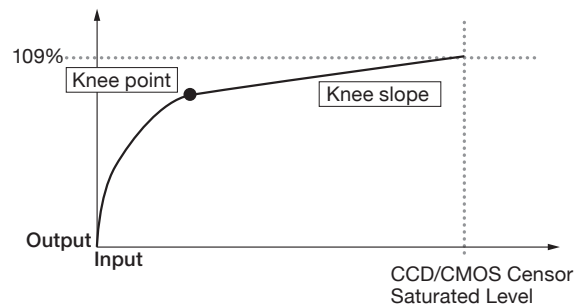
PICTURE PROFILE

What is knee correction?

Cameras are not good at clearly capturing a scene that contains extremely different luminance levels, such as one object under bright sunlight and another in the shade. If you adjust the iris to set the right exposure for the object in the shade, the object under the sun will be captured too brightly and appear as a plain white object without texture or gradation. Knee correction is a function necessary to capture these images with a wide gap in luminance levels within the standard range of video signal levels. Just as black gamma influences contrast in dark image areas, knee correction deals with contrast in image areas with high luminance levels.

CCD and CMOS sensors can handle an extremely bright input signal. To output it as a video signal, however, we need to keep the signal within the standard range for video. For this reason, the signal output level is kept lower than the signal input level in high-luminance areas that generate input signals beyond a certain level. In the chart below, the line bends like a knee at a point in the high-luminance range. This is called the knee point. And the line extending from the knee point is called the knee slope. By changing the position of the knee point and the inclination of the knee slope, contrast in the high-luminance range can be altered.

The breadth of input signal levels that a system can process is called the dynamic range. The input signal should stay within the approximately 109% (white clip point) dynamic range.

Without Knee function

With Knee function

Color Space

The NEX-FS700R's PICTURE PROFILE uses the concept of a color space based on three elements — Hue, Saturation and Luminance.

This color space can be represented as a shape that resembles two cones joined at their bases. When you slice the color space at a certain luminance level, a circular cross section appears. In this cross section, the angle from the circle's center line indicates hue, while the distance from the circle's center represents saturation.

Because some color-related settings in PICTURE PROFILE use this color space concept, familiarizing yourself with this concept will likely make it easier for you to understand how those settings should be used.
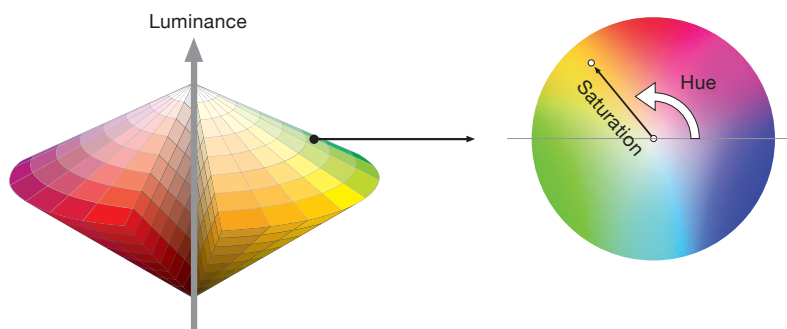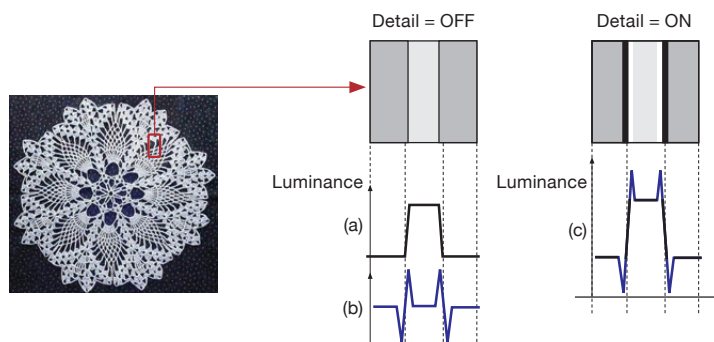

DETAIL

The DETAIL function processes video signals to emphasize image outlines. It can be used to make the subject standout clearly and enhance the fineness of the overall image. The function also deals with the image texture, affecting the appearance of coarse surfaces and transparent materials, for example.

DETAIL is also a very important image setting when shooting people. Its settings can change the atmosphere by determining the way face wrinkles and skin tones look.

But used inappropriately, the DETAIL function may lead to a loss of image texture or highly visible image noise. By understanding the principles of DETAIL signal processing as shown below, you should be able to use this function effectively.

Concept of DETAIL

DETAIL is a type of signal processing that emphasizes image edges. In the example below, there is a large luminance variation between the lace pattern and the background. In the charts below, whose vertical axes represent luminance, (a) shows the change in luminance levels in the image section inside the red square. The DETAIL function generates (b) from (a). (b) serves as the basis of the DETAIL signal and combines with (a). The resulting (c) represents (a) with the DETAIL signal applied, emphasizing both the white and black edges in the image.

Because the DETAIL function emphasizes image outlines and makes the image look sharper, it is sometimes referred to as the sharpness function.

0 AUTOMATED FUNCTIONS
1 SENSOR AND LENS
2 Performance features
3 FILE BASED
4 PICTURE PROFILE
5 RAW recording

PICTURE PROFILE

S-Log

S-Log2 gamma curve

The S-Log2 gamma curve has been added to the NEX-FS700R as the PP7 picture profile.

The S-Log2 gamma curve is optimized to the sensitivity characteristics of the Exmor Super 35 CMOS sensor.

In order to bring out the highlights as much as possible, the sensor output has been extended to 1300% dynamic range. Although some color grading work is required, the S-Log2 gamma curve is an effective way to enhance highlight gradations that would otherwise be lost, thereby providing greater latitude.
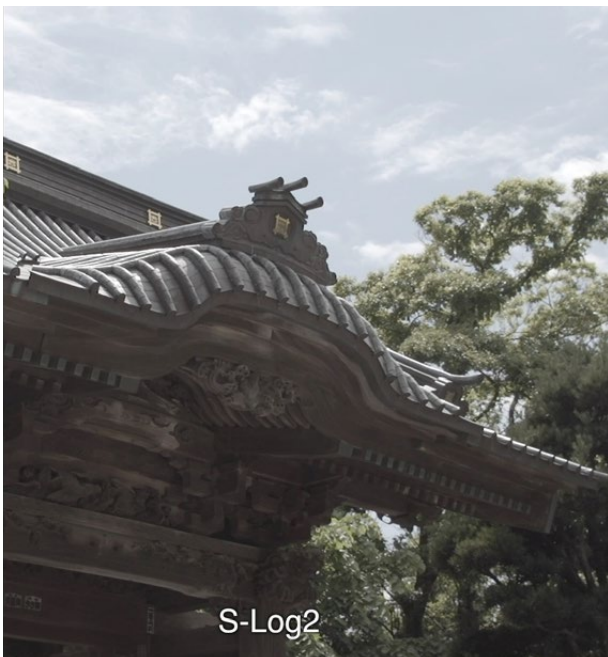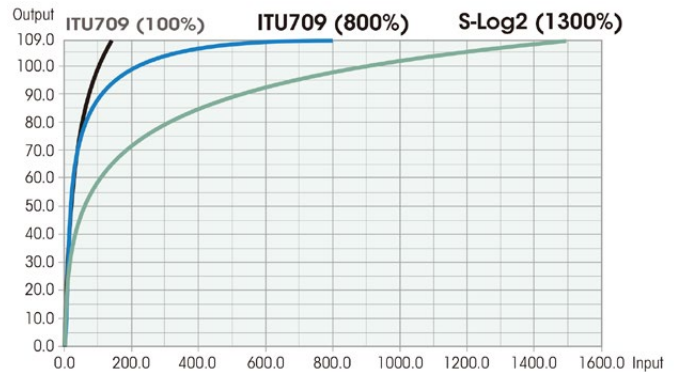
S-Log2

S-Log2 Grading

Camera settings
ISO 2000 24p 1/48
F5.6 + ND 1/64

Grading settings

Exposure	Shadow		- 10%
	Mid		+ 5%
	Highlight		- 4%
Color	Mid	165°	+1%
	Highlight	352°	- 1%
Saturation	Grobal		+ 49%
	Mid		+ 66%
	Highlight		+ 84%

44

Camera settings
ISO 2000 24p 1/48
F8+ND1/4

800% White	+6
	+5
	+4
	+3
100% White	+2
	+1
18% Gray	0
	-1
5% Black	-2

18% Gray

5 2/3 stop   6 1/3 stop   0 stop (f 16)   2/3 stop
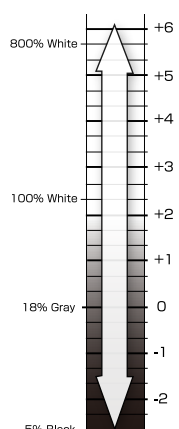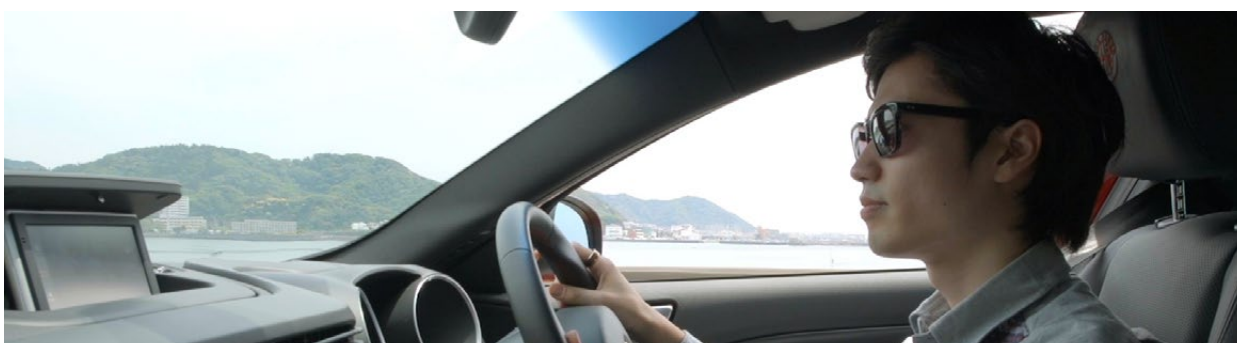
Grading settings

Exposure	Shadow		- 1%
	Mid		-28%
	Highlight		- 4%
Color	Mid	180°	+ 1%
	Highlight	228°	- 2%
Saturation	Grobal		+ 58%
	Mid		+ 53%
	Highlight		+ 47%

💡 **TIPS**
The FS700R mimics the ITU709 gamma curve through to halftones while using the ITU709 (800%) gamma curve with 800% extended dynamic range for bright regions. This is a good option for enhancing the dynamic range of bright regions with a minimum of color grading work.
* S-Log2 has been designed specifically for 10-bit recording, and therefore may not generate sufficient gradation in 8-bit AVCHD

0 AUTOMATED FUNCTIONS
1 SENSOR AND LENS
2 Performance features
3 FILE BASED
4 PICTURE PROFILE
5 RAW recording

RAW recording mode

RAW recording on the FS700R

The FS700R supports RAW data recording when connected to a RAW recording device. The RAW data is the sensor output signal at either 4K or 2K resolution.

RAW video recording, like RAW still data, is based on image data obtained from the sensor. The volume of data is much larger because it contains much more image information, such as color gradation.

The FS700R offers RAW recording in standard mode [**24p, 25p, 30p, 50p and 60p at 4K or 2K**] and super slow motion mode [**100fps and 120fps at 4K** (up to four seconds)] and [**100fps, 120fps, 200fps and 240fps at 2K** (unlimited)].

Only RAW recording mode can fully utilize the power of the FS700R 4K sensor. It is definitely worth the effort.

RAW recording modes

	4K (4096×2160)	2K (2048×1080)
Standard	24p , 25p , 30p , 50p , 60p	24p , 25p , 30p , 50p ,60p
Super slow motion	100p , 120p	100p , 120p , 200p , 240p
Approx. recording time	4sec	Unlimited*

* Maximum clip recording time is 24 hours time code equivalent.

RAW vs. AVCHD data

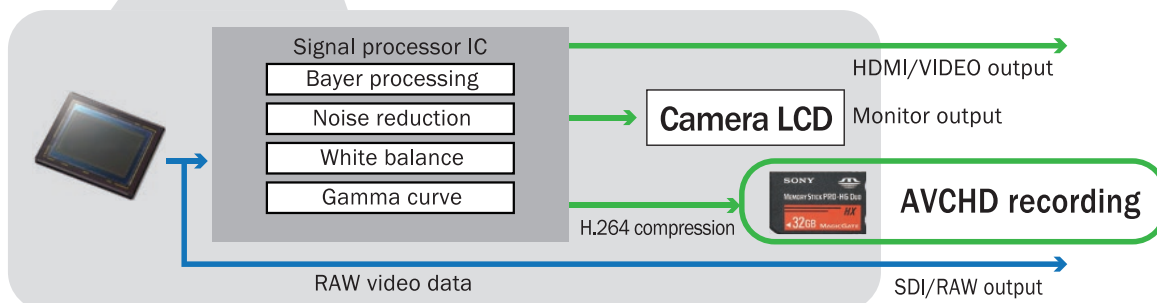### ■ RAW data

The image sensor output data is recorded virtually as is. It is rich with image information such as color gradation.

Image sensor output → **Raw recording**
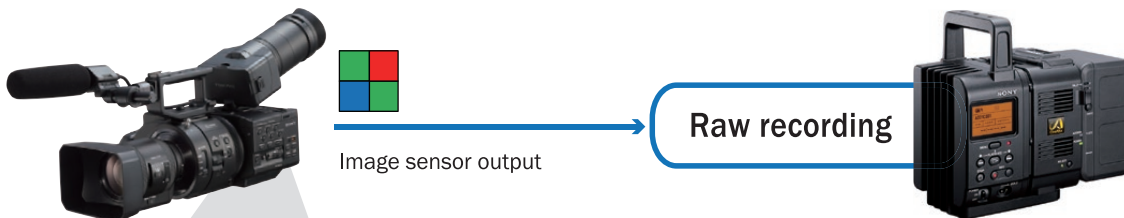
■ AVCHD data

Image sensor output data is converted to video signal and compressed to reduce the recorded data size.

Signal processor IC
- Bayer processing
- Noise reduction
- White balance
- Gamma curve

HDMI/VIDEO output

Camera LCD Monitor output

H.264 compression

AVCHD recording

RAW video data

SDI/RAW output

💡 **TIPS**
- 16-bit linear RAW data, unlike ordinary still image RAW data, has a white balance setting.
- Guide to recording times on a 512GB AXS memory card:
  4K (4096 2160) : 60 minutes at 23.98p, 24 minutes at 59.94p
  2K (2048 1080) : 240 minutes at 23.98p, 96 minutes at 59.94p

System configuration

The optional external RAW recorder system connects to the NEX-FS700R via a single 3G-SDI cable. It can be attached directly to the rig or carried separately as required.
The power source is the BP-FL75 lithium ion battery pack or XLR4 pin wired DC12V.

■ Components

**interface unit
HXR-IFR5**

Docks directly with the AXS-R5 RAW recorder and functions as an external recorder for the FS700.

**recorde
AXS-R5 RAW**

Supports 16-bit linear RAW recording onto AXS memory cards (sold separately).

**lithium ion battery back
BP-FL75**

Rapid-charging long-life olivine iron phosphate lithium ion battery.

**battery charger
BC-L90**

Double battery charger designed specifically for the BP-FL75 battery pack.

**AXS memory card
AXS-512S24**

512GB memory card designed especially for use with the AXS-R5 RAW recorder.

**memory card USB reade
AXS-CR1 AXS**

USB 3.0 reader with data uploading and ingestion speeds of up to 2 Gbps.

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

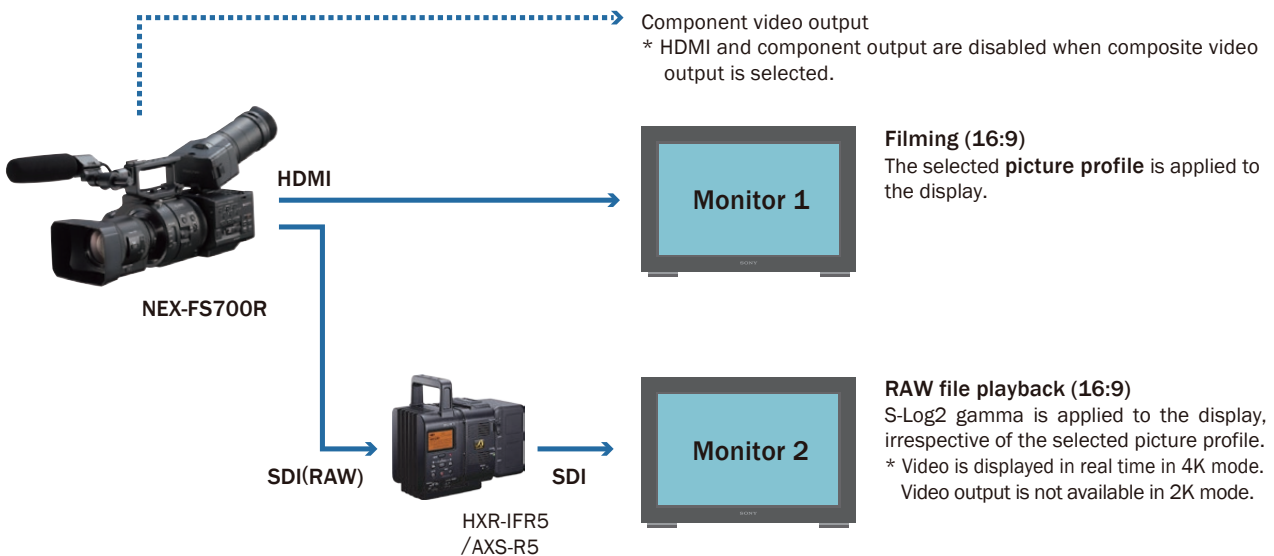3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

RAW recording mode

■ Monitor

Precise focus is particularly important at 4K resolution. Where possible an external monitor should be used to check focus.

In 4K mode, video preview is at HD resolution. Focus precision can be checked on the built-in camera screen using focus assist features such as [Expanded Focus] and [Peaking Display].

Given the very high resolution, even minor variations in focus are noticeable at 4K. For this reason, it is best not to rely solely on auto focus.

Component video output
* HDMI and component output are disabled when composite video output is selected.

HDMI

Monitor 1

Filming (16:9)
The selected **picture profile** is applied to the display.

NEX-FS700R

SDI(RAW)   SDI

Monitor 2

RAW file playback (16:9)
S-Log2 gamma is applied to the display, irrespective of the selected picture profile.
* Video is displayed in real time in 4K mode. Video output is not available in 2K mode.

HXR-IFR5
/AXS-R5

Recommended camera settings

- Set the AUTO/MANU switch to **[MANUAL]**.
- Set SDI output to **[RAW]**. (SDI signal output switches to RAW mode. This is automatically detected by the IFR5.)
- Choose from the following recording modes
  Standard: [**2K** or **4K at 24p, 25p, 30p, 50p or 60p**]

  Super slow motion: [4K at 120fps (four seconds) or 2K at 120/240fps (unlimited)]

- Set the white balance to **3200K, 4300K** or **5500K**.
- Avoid [**S-Log2**] and [**ITU800%**] picture profiles.
- ISO/GAIN [**should be as low as possible**].

FS700R pre-loaded gamma curves and RAW recording dynamic range

Gamma curve	STD	STILL	CINE1	CINE2	CINE3	CINE4	ITU709	709 (800%)	S-log2
Dynamic range	400%	400%	460%	460%	460%	460%	400%	1300%	1300%

Simultaneous AVCHD recording

The NEX-FS700R can record in-camera in AVCHD format while supplying RAW data to an external recorder. The following restrictions apply.
- Simultaneous recording is not supported in super slow motion mode.
- The camera can record to either the MS/SD card or the HXR-FMU128 but not both.
- The RAW and AVCHD files will have different filenames.
- Although the time code is the same, the start time for RAW data recording will be slightly delayed.

Choosing the gamma curve

- The dynamic range of the RAW data depends on the selected gamma curve on the FS700R.
- The [S-Log2] and ITU800% gamma curves produce a dynamic range of 1300% with considerable latitude, but noise levels can be a problem. Noise reduction may be required in post-processing.
- For ordinary RAW recording, we recommend choosing a gamma curve that produces a dynamic range of [400%] or [460%].

Checking the battery level on the HXR-IFR5
- The battery icon on the LCD of the HXR-IFR5 interface unit gives an approximate reading based on voltage level. For a more accurate indication of battery level, use the indicator on the battery pack.
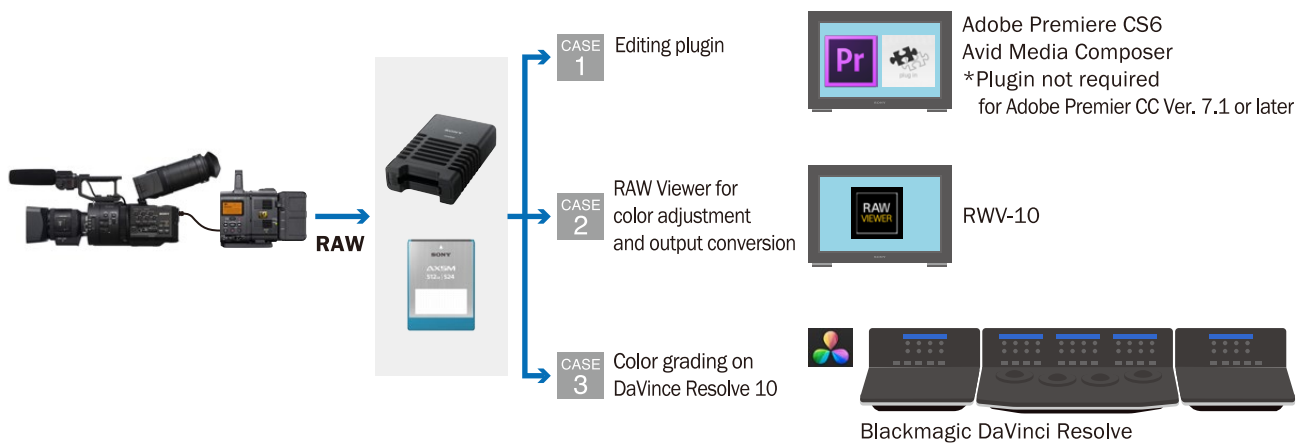
On-screen icon

Battery pack indicator

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

RAW recording mode

Post processing

Connect the AXS memory card reader to a computer (Windows or Mac OS X) and install the card reader drivers.

| CASE 1 | Editing plugin | Adobe Premiere CS6
Avid Media Composer
*Plugin not required
 for Adobe Premier CC Ver. 7.1 or later |

| CASE 2 | RAW Viewer for
color adjustment
and output conversion | RWV-10 |

| CASE 3 | Color grading on
DaVince Resolve 10 | Blackmagic DaVinci Resolve |

CASE 1

PLAV-RW1 plugin

The PLAD-RW1 editing plugin can be used to import RAW data into Adobe Premier CS6/CC and Avid Media Composer, providing a simple means of adjusting gamma and color settings.

■ Installing the plug-in

The plug-in allows RAW video data to be imported directly from the editing application. Download and install the appropriate plug-in from :

AVID plug-in (PLAV-RW1) : http://www.sonycreativesoftware.com/plav-rw1
Adobe plug-in (PLAB-RW1) : http://www.sonycreativesoftware.com/plad-rw1

The plug-in is designed for AVID Media Composer, Adobe Premiere Pro CS6 and Symphony Ver. 6.0.3 and later.
The plug-in is not required when using Adobe Premiere Pro CC 7.1 and later versions.

■ Importing RAW data

(The example shown here is for Adobe Premiere CS6.)

The [PLAD-RW1] plugin allows Sony RAW MXF files to be recognized as native format without the need for transcoding.
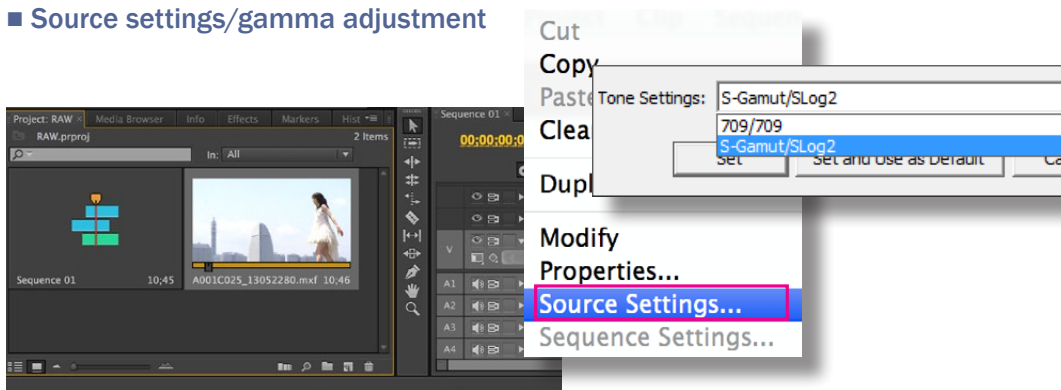
When setting up a new project, the [Sony RAW] folder appears in the presets list. Select the appropriate frame rate from the folder.

RAW data files are very large due to the high data rates. Source clips should be stored on a high-speed RAID system drive.
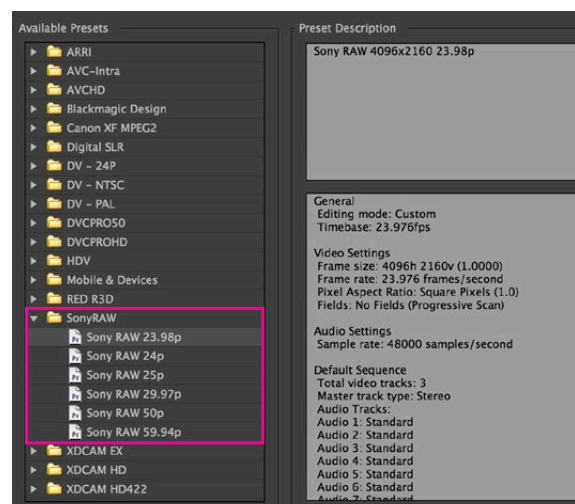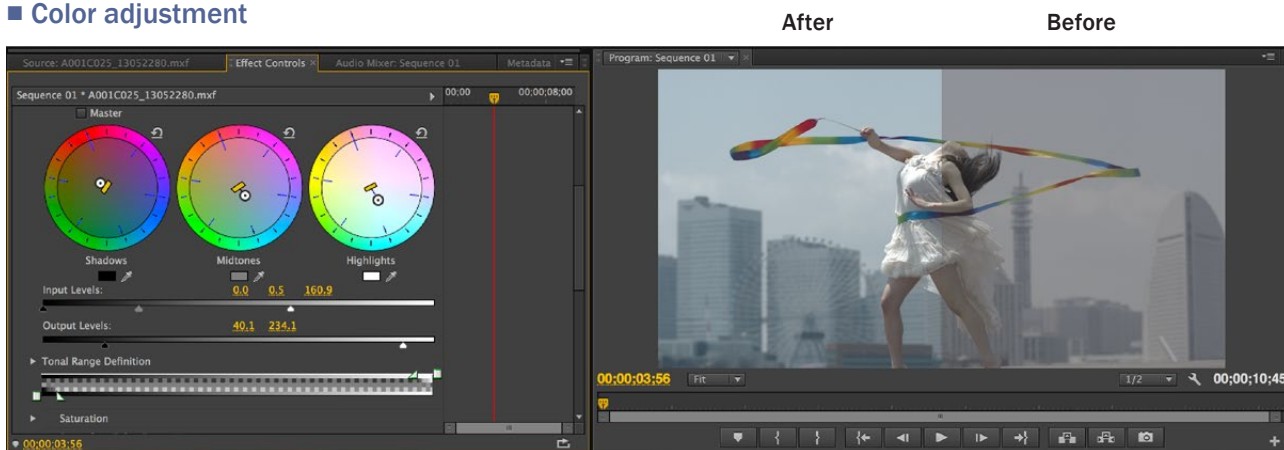
■ Source settings/gamma adjustment

In Adobe Premiere, the project window is displayed once the Sony RAW MXF file has finished importing. Right-click the source thumbnail and choose [Source Settings] from the list, then select the appropriate setting under [Tone Settings].

* The default source setting is [709/709].

■ Color adjustment

After   Before

IThe source data is displayed in the timeline window. Three-way color correction provides detailed contrast and hue settings for selected clips to achieve maximum usage of the color field and minimize problems such as white-out and loss of black detail.

Go to Video Effects Color Adjustment Three-way Color Correction

In the example above, the white lace pattern is more visible and the blue of the sky has been properly accentuated.

> 💡 TIPS   **Applying color adjustment across multiple clips**
>
> In Adobe Premiere, the adjustment layer can be used to apply the same effect to multiple clips on the timeline.
>
> Any effect applied to the adjustment layer will be applied to all clips in the layer. This is a simple and convenient way to color adjustment to multiple clips.
>
> Consult the Adobe Premiere Help function on setting up the adjustment layer.

Adobe Premier is a trademark of Adobe Systems Incorporated.
Media Composer and Symphony are trademarks of Avid Technology Incorporated.
DaVinci Resolve is a trademark of Blackmagic Design Incorporated.

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

RAW recording mode
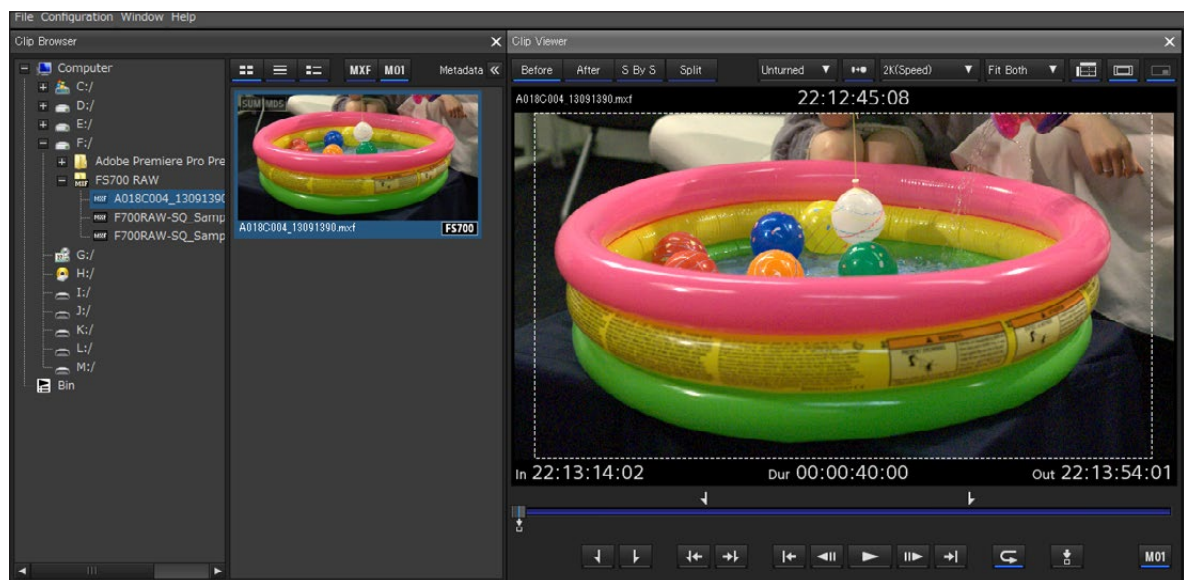
Post processing

RAW Viewer for color adjustment and output conversion

The RWV-10 RAW Viewer application performs four key functions on Sony RAW MXF files: viewing, trimming, grading and output conversion.

■ Installing the [RWV-10] RAW Viewer

The RAW Viewer is available for download from :
http://www.sonycreativesoftware.com/rawviewer

■ Viewing and trimming

Select a thumbnail to display the imported source material in the Clip Viewer. Use the playback buttons or slider control to mark in and out points for trimming.

■ Grading

The Clip Viewer provides before and after windows side by side so you can see how your clip looks with grading applied.

In addition to the presets there are color adjustment wheels for gamma, gain and other settings. The waveform and histogram displays can be used to check the results.

■ Output formats
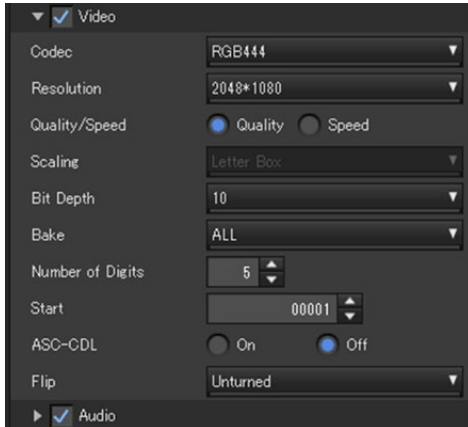
- DPX16/10-bit (consecutive numbered still image files)
- Open EXR
- Apple ProRes 422 Proxy, 422 LT, 422, 422 HQ and 4444 (Mac OS X only)
- SStP 880, 440 and 220 Mbps (HD only)

CASE 3

Color grading on DaVinci Resolve 10

DaVinci Resolve 10 from Blackmagic Design provides a suite of powerful color correction features to enable color grading that harnesses the full potential of all the image information present in RAW video data.
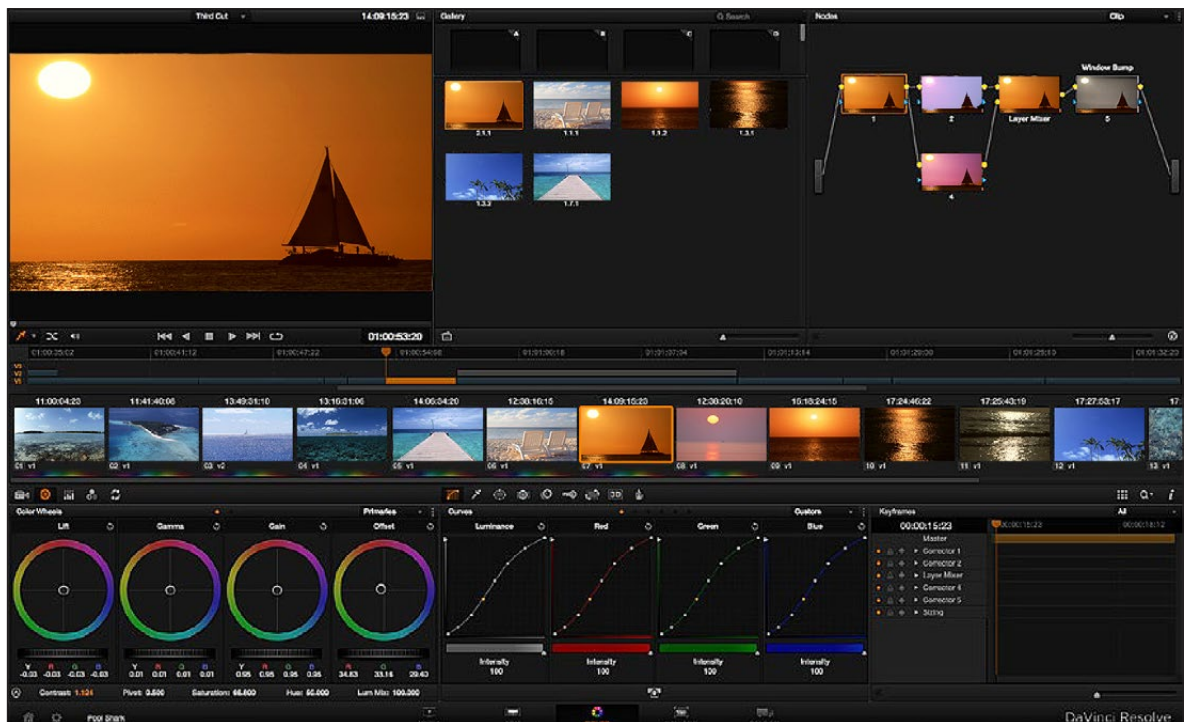
Timeline data edited on Adobe Premiere Pro is written in AAF format, which can be imported directly into DaVinci Resolve. In this way, Adobe Premiere Pro editing information is migrated to DaVinci Resolve without having to create intermediary files.

53

0 AUTOMATED FUNCTIONS

1 SENSOR AND LENS

2 Performance features

3 FILE BASED

4 PICTURE PROFILE

5 RAW recording

SONY

make.believe

2013.11