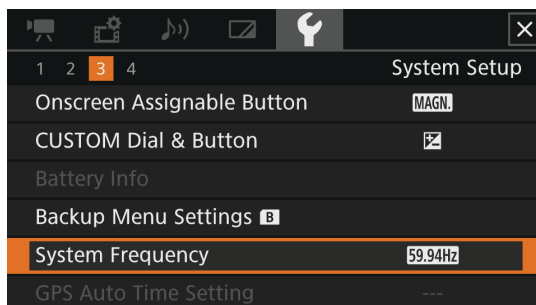


Switching the System Frequency

After upgrading the camcorder, you can use the **MENU** \blacktriangleright [**F** 3] System Setup] \blacktriangleright [System Frequency] setting to switch the camcorder's system frequency to **[59.94Hz]** 59.94 Hz] or **[50.00Hz]** 50.00 Hz]. In playback mode, clips recorded with a system frequency that differs from the camcorder's cannot be played back. Make sure that the camcorder's system frequency is set to that of the clip to be played back.



Some settings and functions will differ depending on the selected system frequency. The major differences are explained below. For details, download the latest version of the instruction manuals for the 59.94 Hz ("NTSC") camcorder or 50.00 Hz ("PAL") camcorder as necessary.

1 Frame Rate

Available frame rates will differ depending on the system frequency your camcorder is set to.

For a system frequency of 59.94 Hz

Resolution (Bit rate)	Frame rate		
	59.94P	29.97P	23.98P
3840x2160 (150 Mbps)	—	●	●
1920x1080 (35 Mbps)	●	●	●
1920x1080 (17 Mbps)	●	●	●
1280x720 (8 Mbps)	●	—	—

For a system frequency of 50.00 Hz

Resolution (Bit rate)	Frame rate	
	50.00P	25.00P
3840x2160 (150 Mbps)	—	●
1920x1080 (35 Mbps)	●	●
1920x1080 (17 Mbps)	●	●

2 Slow & Fast Motion Recording

Available slow/fast motion rates depend on the recording mode and frame rate. Refer to the table below that applies to the system frequency your camcorder is set to.

For a system frequency of 59.94 Hz

Resolution	Frame rate	Available slow/fast motion rates
3840x2160	29.97P	x2, x4, x10, x20, x60, x120, x600, x1200
	23.98P	x0.8
1920x1080	59.94P	x2, x4, x10, x20, x60, x120, x600, x1200
	29.97P	x0.5
	23.98P	x0.4, x0.8
1280x720	59.94P	x2, x4, x10, x20, x60, x120, x600, x1200

For a system frequency of 50.00 Hz

Resolution	Frame rate	Available slow/fast motion rates
3840x2160	25.00P	x2, x4, x10, x20, x60, x120, x600, x1200
1920x1080	50.00P	x2, x4, x10, x20, x60, x120, x600, x1200
	25.00P	x0.5

3 Shutter Speed

The following shutter speeds are available depending on the shooting mode used.

For a system frequency of 59.94 Hz




1/6 (23.98P only), 1/8, 1/9, 1/10, 1/12, 1/15, 1/17, 1/20, 1/24, 1/25, 1/30, 1/34, 1/40, 1/48, 1/50, 1/60, 1/75, 1/90, 1/100, 1/120, 1/150, 1/180, 1/210, 1/250, 1/300, 1/360, 1/420, 1/500, 1/600, 1/720, 1/840, 1/1000, 1/1200, 1/1400, 1/1700, 1/2000

For a system frequency of 50.00 Hz

1/6, 1/7, 1/8, 1/10, 1/12, 1/14, 1/17, 1/20, 1/25, 1/29, 1/30, 1/33, 1/40, 1/50, 1/60, 1/75, 1/90, 1/100, 1/120, 1/150, 1/180, 1/210, 1/250, 1/300, 1/350, 1/400, 1/500, 1/600, 1/700, 1/800, 1/1000, 1/1200, 1/1400, 1/1600, 1/2000

4 Time code

For a system frequency of 59.94 Hz

With the **MENU**   [3] Recording Setup  [DF/NDF] setting, you can select between a drop frame (DF) or non-drop frame (NDF) time code, depending on how you plan to use your recording. When the frame rate is set to 23.98P, the time code will be set to non-drop frame.

For a system frequency of 50.00 Hz

You cannot select between a drop frame or non-drop frame time code.

5 Color bars

For a system frequency of 59.94 Hz

You can choose between SMPTE and ARIB color bars.

For a system frequency of 50.00 Hz

You can choose between EBU and SMPTE color bars.

6 Video Output Configuration

The video signal output from the SDI OUT terminal (**XA45** only) and HDMI OUT terminal depends on the clip's video configuration and on various menu settings.

For a system frequency of 59.94 Hz

Video Output Configuration (Recording)

Recording video configuration		Scan mode setting ¹	Maximum resolution setting ²	Video output configuration		
Resolution	Frame rate			Resolution	Frame rate	Color sampling
3840x2160	29.97P 23.98P	P	1920x1080	1920x1080	Same as that for video configuration ³	YCbCr 4:2:2 8 bit
			1280x720 (59.94P)	1280x720	59.94P	
		Psf	—	1920x1080	SDI output ⁴ : 29.97PsF (59.94i) HDMI output: 59.94i	
1920x1080	59.94P 29.97P 23.98P	P	1920x1080	1920x1080 720x480 ⁵	Same as that for video configuration ³	YCbCr 4:2:2 10 bit
			1280x720 (59.94P)	1280x720	59.94P	
		Psf	—	1920x1080	SDI output ⁴ : 29.97PsF (59.94i) HDMI output: 59.94i	
1280x720	59.94P	—	—	1280x720	59.94P	

¹ **MENU** ➤ [Display Setup] ➤ [SDI/HDMI Scan Mode] (**XA45**) or [HDMI Scan Mode] (**XA40**) setting.

² For HDMI output: **MENU** ➤ [Display Setup] ➤ [HDMI Max Resolution] setting.

XA45 For SDI output: **MENU** ➤ [Display Setup] ➤ [SDI Output] setting.

³ The frame rate is 59.97P during slow & fast motion recording.

⁴ **XA45** only.

⁵ HDMI output only. Only when the frame rate is set to 59.97P. Automatically selected depending on the capabilities of the connected monitor.

Video Output Configuration (Playback)

Video configuration of the clip		Scan mode setting ¹	Maximum resolution setting ²	Video output configuration		
Resolution	Frame rate			Resolution	Frame rate	Color sampling
3840x2160	29.97P 23.98P	P	3840x2160	3840x2160 ³	Same as that for video configuration ³	YCbCr 4:2:2 8 bit ⁵
			1920x1080	1920x1080 ³	Same as that for video configuration ³	
			1280x720 (59.94P)	1280x720	59.94P	
1920x1080	59.94P 29.97P 23.98P	P	3840x2160	1920x1080 ³	Same as that for video configuration	
			1920x1080	1920x1080 ³	Same as that for video configuration	
			1280x720 (59.94P)	1280x720	59.94P	
1280x720	59.94P	PsF	—	1920x1080	SDI output ⁴ : 29.97PsF (59.94i) HDMI output: 59.94i	
			—	—	—	
			—	—	—	

¹ **MENU** **▶** [Display Setup] **▶** [SDI/HDMI Scan Mode] (**XA45**) or [HDMI Scan Mode] (**XA40**) setting.

² For HDMI output: **MENU** **▶** [Display Setup] **▶** [HDMI Max Resolution] setting.

XA45 For SDI output: **MENU** **▶** [Display Setup] **▶** [SDI Output] setting.

³ **XA45** Only HDMI output is available for this video configuration.

⁴ **XA45** only.

⁵ YCbCr 4:2:0 video recorded on the card is output as a YCbCr 4:2:2 signal.

For a system frequency of 50.00 Hz

Video Output Configuration (Recording)

Recording video configuration		Scan mode setting ¹	Maximum resolution setting ²	Video output configuration		
Resolution	Frame rate			Resolution	Frame rate	Color sampling
3840x2160	25.00P	P	1920x1080	1920x1080	Same as that for video configuration ³	YCbCr 4:2:2 8 bit
			1280x720 (50.00P)	1280x720	50.00P	
		PsF	—	1920x1080	SDI output ⁴ : 25.00PsF (50.00i) HDMI output: 50.00i	
1920x1080	50.00P 25.00P	P	1920x1080	1920x1080 720x576 ⁵	Same as that for video configuration ³	YCbCr 4:2:2 10 bit
			1280x720 (50.00P)	1280x720	50.00P	
		PsF	—	1920x1080	SDI output ⁴ : 25.00PsF (50.00i) HDMI output: 50.00i	

¹ **MENU** ➤ [Display Setup] ➤ [SDI/HDMI Scan Mode] (**XA45**) or [HDMI Scan Mode] (**XA40**) setting.

² For HDMI output: **MENU** ➤ [Display Setup] ➤ [HDMI Max Resolution] setting.

XA45 For SDI output: **MENU** ➤ [Display Setup] ➤ [SDI Output] setting.

³ The frame rate is 50.00P during slow & fast motion recording.

⁴ **XA45** only.

⁵ HDMI output only. Only when the frame rate is set to 50.00P. Automatically selected depending on the capabilities of the connected monitor.

Video Output Configuration (Playback)

Video configuration of the clip		Scan mode setting ¹	Maximum resolution setting ²	Video output configuration		
Resolution	Frame rate			Resolution	Frame rate	Color sampling
3840x2160	25.00P	P	3840x2160	3840x2160 ³	Same as that for video configuration ³	YCbCr 4:2:2 8 bit ⁵
			1920x1080	1920x1080 ³	Same as that for video configuration ³	
			1280x720 (50.00P)	1280x720	50.00P	
1920x1080	50.00P 25.00P	P	—	1920x1080	SDI output ⁴ : 29.97PsF (59.94i) HDMI output: 59.94i	
			3840x2160	1920x1080 ³	Same as that for video configuration	
			1920x1080	1920x1080 ³	Same as that for video configuration	
1920x1080	50.00P 25.00P	PsF	—	1920x1080	SDI output ⁴ : 25.00PsF (50.00i) HDMI output: 50.00i	
			1280x720 (50.00P)	1280x720	50.00P	
			—	1920x1080	50.00P	

¹ **MENU** ➤ [**Display Setup**] ➤ [SDI/HDMI Scan Mode] (**XA45**) or [HDMI Scan Mode] (**XA40**) setting.

² For HDMI output: **MENU** ➤ [**Display Setup**] ➤ [HDMI Max Resolution] setting.

XA45 For SDI output: **MENU** ➤ [**Display Setup**] ➤ [SDI Output] setting.

³ **XA45** Only HDMI output is available for this video configuration.

⁴ **XA45** only.

⁵ YCbCr 4:2:0 video recorded on the card is output as a YCbCr 4:2:2 signal.