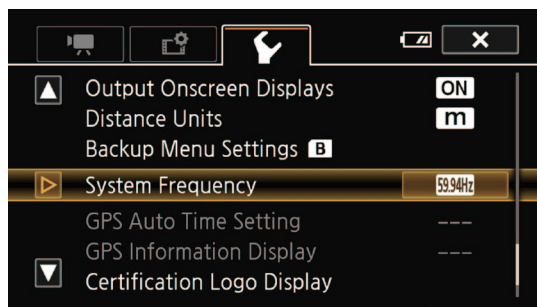


Switching the System Frequency

After upgrading the camcorder, you can use the [FUNC.] ➤ [MENU] ➤ [] ➤ [System Frequency] setting to switch the camcorder's system frequency to [59.94Hz] 59.94 Hz or [50.00Hz] 50.00 Hz. Note that for AVCHD scenes, a memory card can contain recordings of either system frequency but not both. Also, in playback mode, scenes 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 scene to be played back.



Some settings and functions will differ depending on the selected system frequency. The major differences are explained below.

1 Selecting the Frame Rate

Refer to the section below that applies to the system frequency your camcorder is set to.

For a system frequency of 59.94 Hz

You can change the frame rate (the number of frames recorded per second) to change the look of your movies. When the recording mode is set to 28 Mbps LPCM (59.94P) or 28 Mbps (59.94P) for AVCHD movies, or 35 Mbps (59.94P) or 8 Mbps (59.94P) for MP4 movies, the frame rate will automatically be set to 59.94P so you will not be able to select the frame rate.

Options for AVCHD movies (* Default value)

[59.94i] **59.94i*** 59.94 fields per second, interlaced. Standard frame rate of NTSC TV signals.

[PF29.97] **PF29.97** 29.97 frames per second, progressive*.

[23.98P] **23.98P** 23.98 frames per second, progressive.

* Recorded as 60.00i.

Options for MP4 movies (* Default value)

[29.97P] **29.97P*** 29.97 frames per second, progressive.

[23.98P] **23.98P** 23.98 frames per second, progressive.

For a system frequency of 50.00 Hz

You can change the frame rate (the number of frames recorded per second) of AVCHD movies to change the look of your movies. When the recording mode is set to 28 Mbps LPCM (50.00P) or 28 Mbps (50.00P) for AVCHD movies, or 35 Mbps (50.00P) or 8 Mbps (50.00P) for MP4 movies, the frame rate will automatically be set to 50.00P so you will not be able to select the frame rate. In addition, the frame rate for MP4 movies recorded with other recording modes will automatically be set to 25.00P.

Options (* Default value)

[50.00i] 50.00i* 50.00 fields per second, interlaced. Standard frame rate of PAL TV signals.

[PF25.00] PF25.00] 25.00 frames per second, progressive*.

* Recorded as 50.00i.

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

Recording mode	Frame rate	Available slow/fast motion rates
35 Mbps (59.94P), 8 Mbps (59.94P)	-	x2, x2.5
24 Mbps, 17 Mbps	29.97P	x0.5, x1.25, x2, x4, x10, x20, x60, x120, x1200
	23.98P	x0.4, x0.8

For a system frequency of 50.00 Hz

Recording mode	Frame rate	Available slow/fast motion rates
35 Mbps (50.00P), 8 Mbps (50.00P)	-	x2
24 Mbps, 17 Mbps	25.00P	x0.5, x2, x4, x10, x20, x60, x120, x1200

3 Available shutter speed settings

For a system frequency of 59.94 Hz

[1/8]	[1/15]	[1/30]	[1/60]	[1/100]
[1/250]	[1/500]	[1/1000]	[1/2000]	

Available shutter speed settings when the frame rate is set to 23.98P

[1/6]	[1/12]	[1/24]	[1/48]	[1/60]
[1/100]	[1/250]	[1/500]	[1/1000]	[1/2000]

NOTES

- When recording under fluorescent lights and the screen starts to flicker, set the shutter speed to 1/100.

For a system frequency of 50.00 Hz

[1/6]	[1/12]	[1/25]	[1/50]	[1/120]
[1/250]	[1/500]	[1/1000]	[1/2000]	

4 Time code

For a system frequency of 59.94 Hz

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.

1 Open the [DF/NDF] screen.

[FUNC.] ➤ [MENU] ➤ [] ➤ [DF/NDF]

2 Select [DF DF] or [NDF NDF] and then touch [X].

- The time code's display will differ depending on the setting. If you selected [DF DF], the time code will appear as [00:00:00.00]; if you select [NDF NDF], it will appear as [00:00:00:00].

NOTES

- When you mix drop frame and non-drop frame time codes, there might be a discontinuity in the time code at the point where the recordings starts.

For a system frequency of 50.00 Hz

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

5 User bit

For a system frequency of 59.94 Hz

When the frame rate is set to 23.98P and [FUNC.] ➤ [MENU] ➤ [] ➤ [User Bit Output Mode] is set to [Pull-down], the user bit will be 2:3 pull-down data.

For a system frequency of 50.00 Hz

You cannot select the user bit output mode.

6 Color bars

For a system frequency of 59.94 Hz

You can choose between SMPTE standard-definition color bars and ARIB multi-format HDTV color bars.

For a system frequency of 50.00 Hz

You can choose between EBU and SMPTE color bars.

7 Converting movies to MP4 format

For a system frequency of 59.94 Hz

When converting movies with a frame rate of 23.98P, the converted MP4 movie will also have a frame rate of 23.98P. When converting movies with other frame rates, the converted MP4 movie will have a frame rate of 29.97P.

NOTES

- Scenes with a frame rate of 23.98P can be joined only with other scenes with a frame rate of 23.98P. They cannot be joined with scenes with other frame rates.

For a system frequency of 50.00 Hz

When converting movies, the converted MP4 movie will have a frame rate of 25.00P

8 Output options for the HD/SD-SDI (**XA15** only) and HDMI OUT terminals

For a system frequency of 59.94 Hz

Menu item	Setting options
XA15 [HD/SD-SDI Output]	[480i 480i], [720P 720P], [1080i 1080i]
[HDMI Output]	[A Automatic], [480i 480i], [480P 480P], [720P 720P], [1080i 1080i], [1080P 1080P]

For a system frequency of 50.00 Hz

Menu item	Setting options
XA15 [HD/SD-SDI Output]	[576i 576i], [720P 720P], [1080i 1080i]
[HDMI Output]	[A Automatic], [576i 576i], [576P 576P], [720P 720P], [1080i 1080i], [1080P 1080P]

9 Error messages

The following error messages may appear while the camcorder is set to a system frequency of 59.94 Hz.

Cannot join 23.98P and 29.97P scenes to convert them

Cannot join 59.94i and 23.98P scenes to convert them

Cannot join PF29.97 and 23.98P scenes to convert them

- The combination of scenes you are trying to convert does not allow for joining scenes due to the scenes' frame rate settings. Convert the scenes to MP4 without joining them.