Enabling HD-SDI (BNC) Output on the Sony PMW-F3 with the S-Log Gamma Curve Option

This wiki is designed to help you understand the recording functionality and versatility of the SONY PMW-F3.

The Technical Overview: the Sony F3 camera has a superior quality image sensor (Exmor Super 35mm equivalent CMOS) and is designed to record this image to internal SxS cards (2 card slots) with a frame raster of up to 1920x1080 with the following supported frame rates: 59.94i(29.97i), 50i, 29.97P (30p), 25P, & 23.98P(23.976.). When recording to the SxS card the video data is compressed using a high-end MPEG-2 HD (Long GOP, variable bit rate) encoder referred to as XDCAM EX (with an overall data rate of 35Mbps) codec. The chroma subsampling ratio of the XDCAM EX codec is 8-Bit, YUV 4:2:0.

The Problem: for general shooting purposes all of the above details are fine...a great image with robust colors and solid playback is achieved. However, for more complicated productions that include fast-moving shots or heavy visual effects postwork (like greenscreen chromakeying or intensive motion tracking) you may desire a less compressed video stream to prevent data loss or artifacting in your video.

The Solution: the F3 has Dual-Link HD-SDI (Serial Digital Interface) BNC outputs to allow for the video stream to be captured as uncompressed (directly from the image sensor rather than compressed to the SxS cards) video. Furthermore, there is also a functionality where the camera can utilize a powerful S-Logarithmic Gamma Curve, allowing the most amount of light and luminance information to be preserved during recording via the HD-SDI outputs. This is often referred to as shooting it "flat."

To setup the HD-SDI Output Signal review the following steps:

1. Access the VIDEO SET Icon from the Camera Menu. VIDEO SET options should now be listed on the LCD menu screen.

2. Scroll to the option SDI/HDMI/iLink I/O Select. Select this option and from the secondary menu select HD-SDI.

3. Scroll down further in the VIDEO SET options and select the Dual-Link & Gamma Select option.

4. From the secondary menu select 1.5G YPbPr422 & S-Log option. This will make the "A" HD-SDI outputs on the camera active as Single-Link HD-SDI and will allow any 10-Bit HD-SDI external recorder to capture the best possible uncompressed video image at a full HD raster (1920x1080) with superior chroma subsampling (at YUV422.) Connection can be established via a BNC cable to the SDI input of your external recording device.

Currently, our qualified external recording devices include the AJA KiPro, the AJA KiPro Mini, and the Sound Devices PIX 240 series. (Please refer to their specific documentation to learn more on their operation and setup)

5. For educational purposes, instructors may want to send the SDI signal out to a classroom projector. The instructors often desire the menus they interact with in the view finder to be displayed out of the SDI signal as well. This helps demonstrate the menus, displays, and overall camera functionality. To enable this function, scroll down further in the VIDEO SET options and select the YPbPr/SDI Out Display Select option.
6. From the secondary menu select the **ON** option. This will make the menu display (as seen in the view finder) also visible through the SDI connection.

**NOTE:** The display of the settings is only available out of the SDI output on the Sony F3. The HD-SDI A/B outputs will not send out display data. Please connect your BNC cable to the SDI Out of the Sony F3.

• **IMPORTANT** - For true 12-bit RGB444 & S-Log output from the Sony F3 you will need a Dual-Link (requires two x 1.5G SDI cables) external recording device. An example of such a device is the Gemini444 recorder. To enable you would need to follow Steps 1-3 and then select the **3 G RGB444 & Video** option. **NOTE:** S-Log capability is not available in the 3G RGB444 setting. Furthermore, you'd also need to ensure your Gemini was setup to record properly. Arguably, if true 12-bit RGB444 recording was actually necessary and crucial to the production you may want to consider using a different camera altogether such as the Sony PMW-F5 or the ARRI ALEXA series.

For more information on types of transportation for uncompressed video streams visit AJA HD-SDI Overview