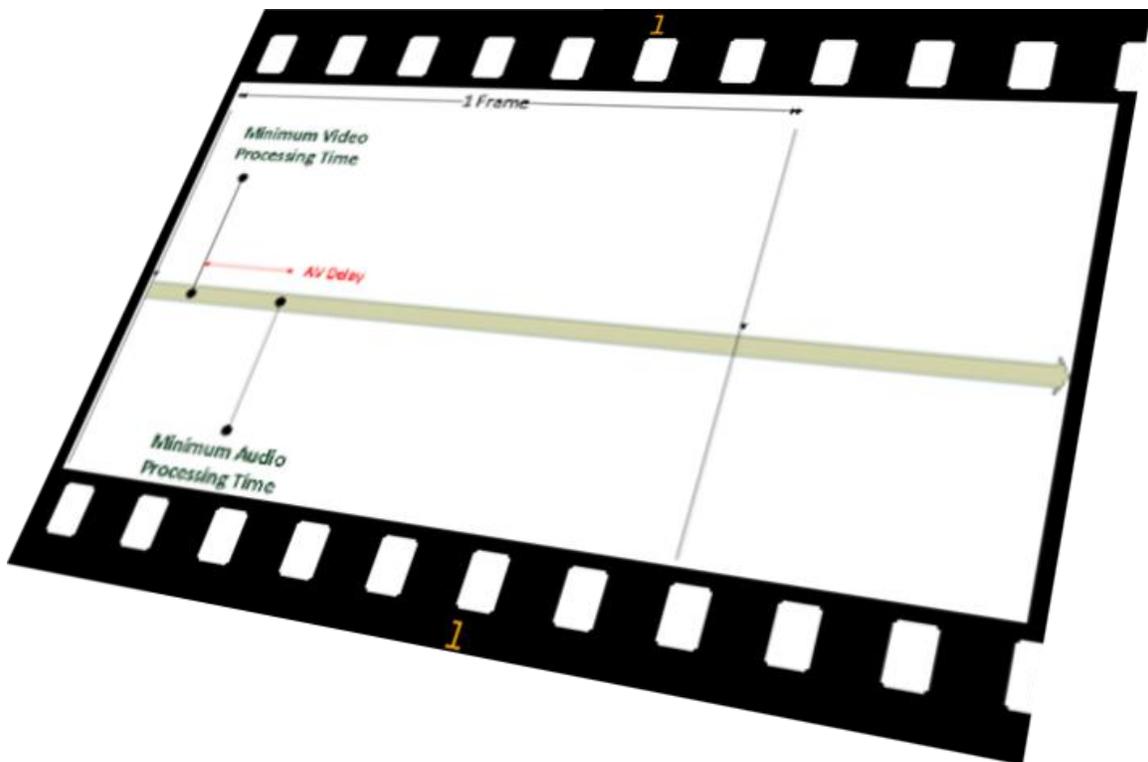


Application Note

PVD Line Sync Mode – AV Delay

Revision 1.0 October 2013



This application note will explain why the audio to video delay (henceforth referred to as AV delay) can vary when using a LYNX PVD in Line Sync Mode for an SDI with embedded audio (de-embedder > embedder, external AES > embedder).

First thing you have to understand is that video and audio signals require different processing times while passing through the device. This is due to the different clock periods and different number of processing stages for video and audio. In Line Sync mode both signals will be passed as fast as possible through the device.

The following Figure 1 will show you the different processing times in an outline (not to scale).

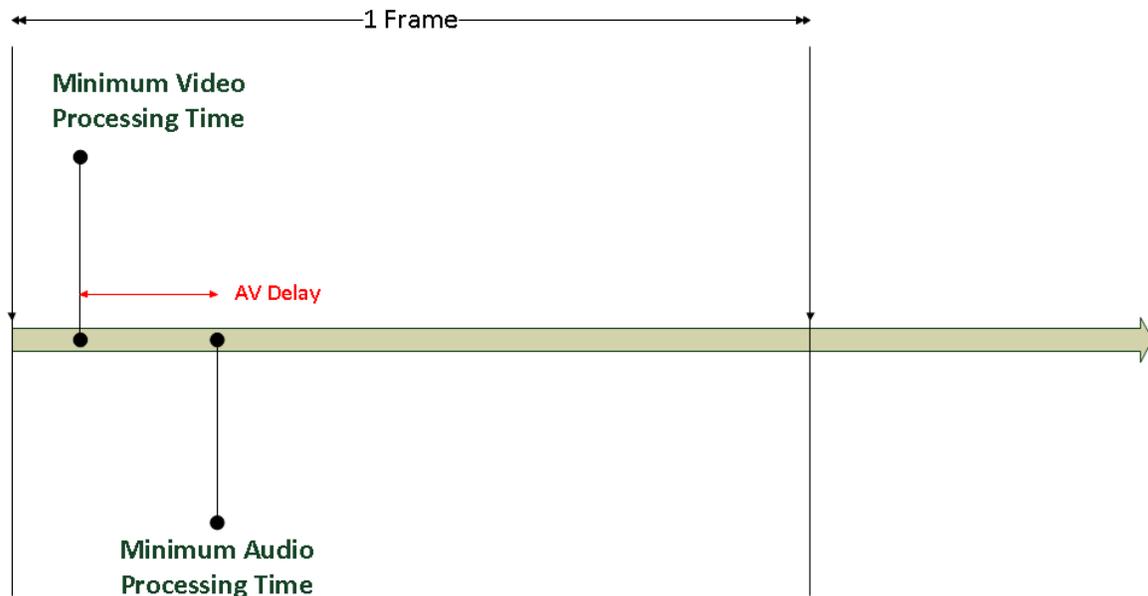


Figure 1: Audio and video processing times

As previously mentioned the module will output both signals as fast as possible, therefore the video signal will be output earlier than the audio signal (which will be embedded into the SDI output signal). In other words, the difference in processing times of the video and audio signals correlates to the AV delay of the output signal (see mark in Figure 1).

The drawing below (Figure 2) shows the schematic view of the video and audio processing time of a video input signal with no offset to the reference signal.

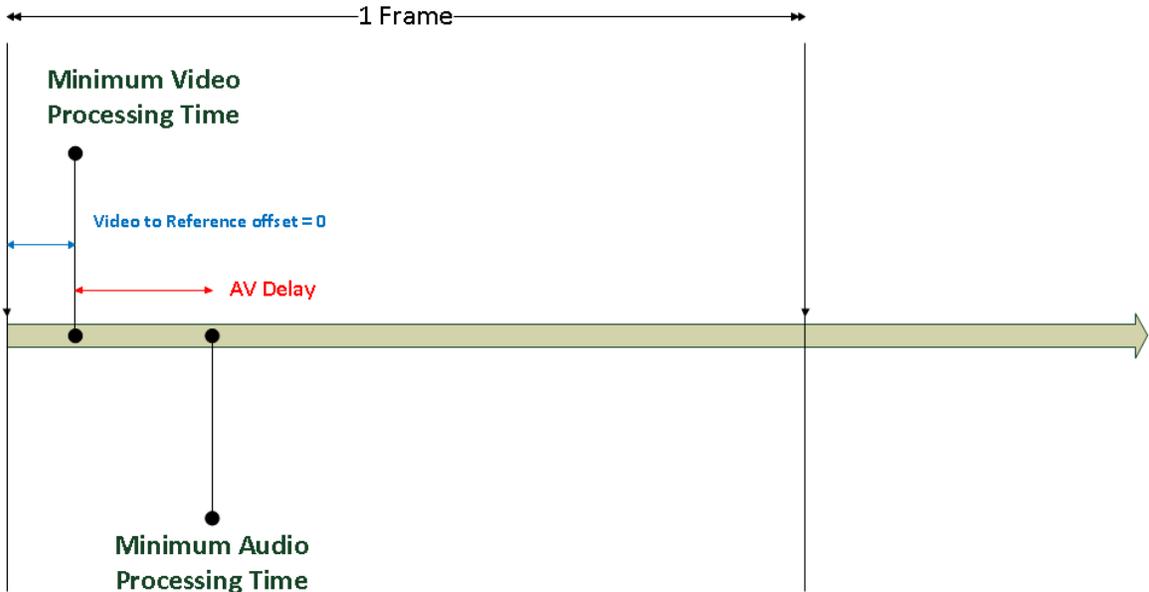


Figure 2: No video to reference offset

The bigger the video to reference offset, the smaller the AV delay – see Figure 3.

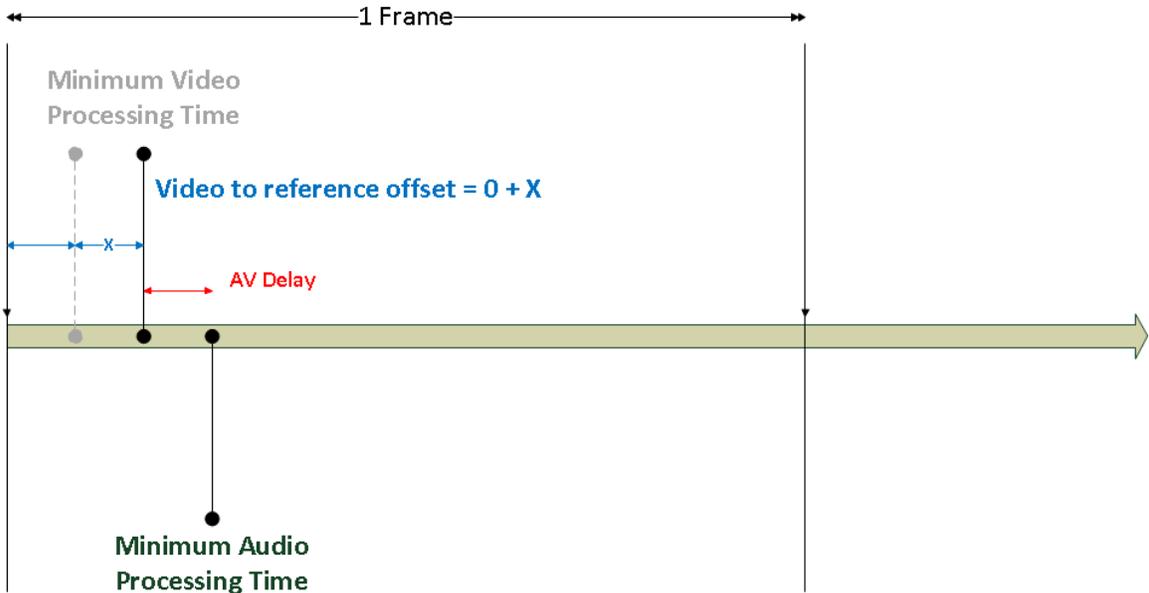


Figure 3: Video to reference offset = 0 + X

The video to reference offset is one of the reasons why the AV delay can vary between different devices of the same type and/or in different systems.

There are two possibilities to avoid/compensate the AV delay.

1. Manual video to reference offset

With LYNX Technik PVD modules it is possible to adjust the output delay. This effectively increases the video to reference offset. The minimum required offset is equal to the AV delay without any video to reference offset (Figure 4). Adding more delay than the minimum required will not introduce an AV delay with delayed video, it will simply increase the total processing delay but with synchronous audio and video.

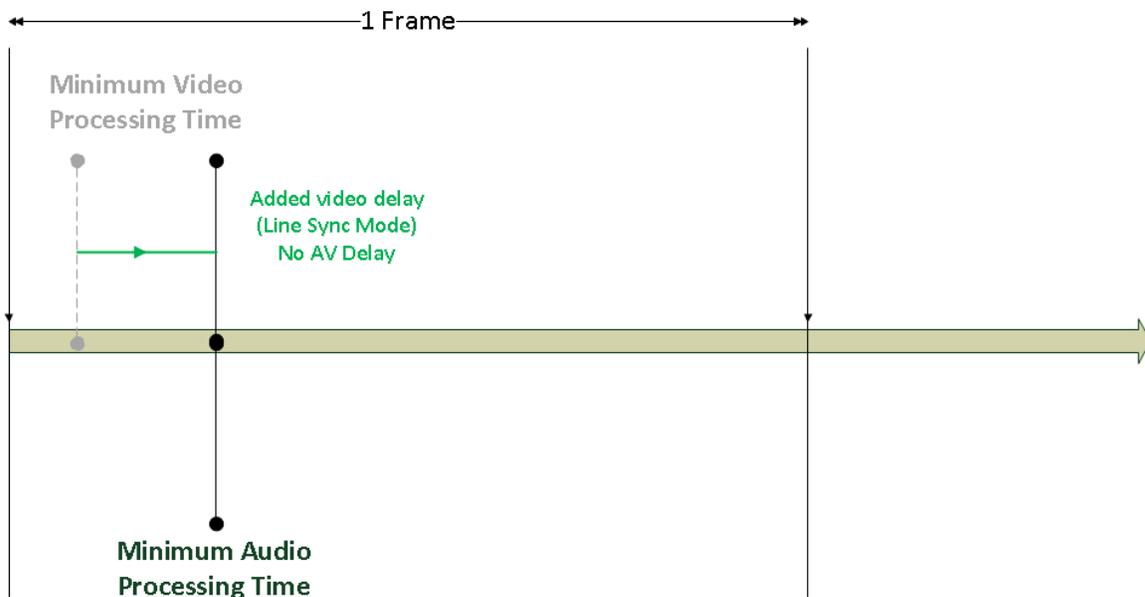


Figure 4: AV Delay compensated by manual video delay

2. Frame Sync Mode

The AV delay will automatically be compensated when using the PVD in Frame Sync mode (in case of synchronous SDI input signals, see LYNX Application Note: LYNX_AppNote_AVdelayFrameSync).

In Frame Sync mode the device will have at least one video frame as buffer. This is by far more than the minimum video and audio processing time making it possible to output an AV synchronous output signal (Figure 5).

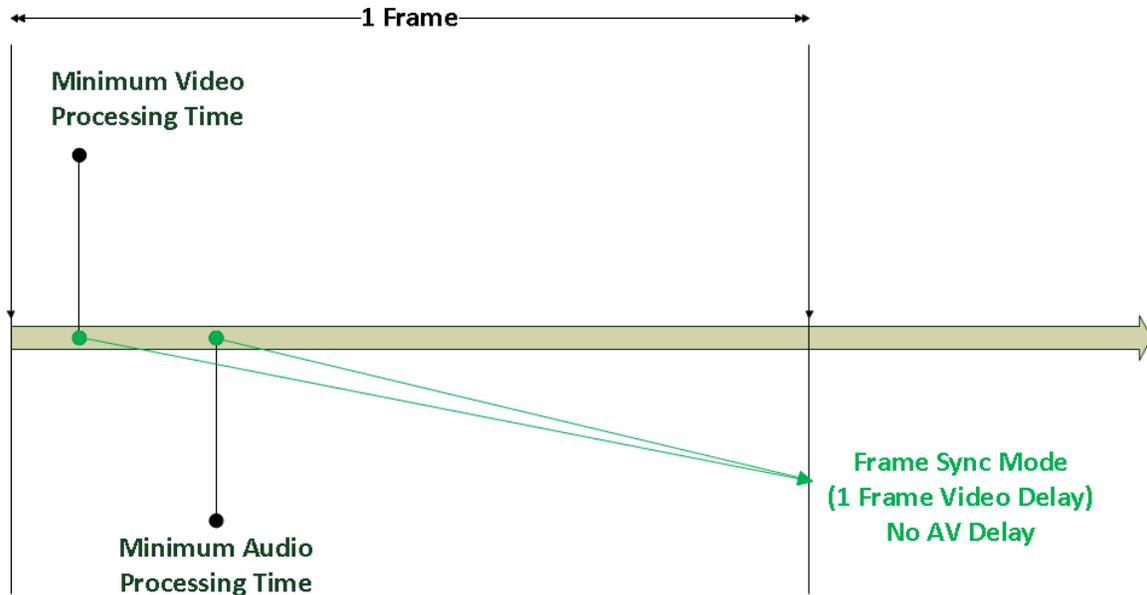


Figure 5 AV Delay compensated by Frame Sync mode

We hope that this document will help to clarify how our modules operate and that you enjoy working with our products.

If you have further questions please contact: support@lynx-technik.com