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HD10AVA

Benefits of AJA's New Dual Rate Converter

Benefits of a Dual Rate Converter

The HD10AVA is a dual rate converter which means that it can convert analog SD to SD-SDI or analog HD to HD-SDI. An obvious benefit of the converter is that it can take analog SD video and analog audio outputs, such as those from a Betacam SP device, and convert these analog outputs to an SD-SDI signal with embedded audio. While the benefit of analog SD conversion to SD-SDI might seem obvious, the analog HD capability of the converter might not be as apparent.

Today the HDV format is rapidly gaining popularity. Cost effective HDV cameras can record a compressed Long GOP MPEG2 HD signal on inexpensive MiniDV tapes. What is often not advantageous about the HDV cameras and decks in a professional environment is their lack of HD-SDI connectivity. However, the cameras almost always have an analog component HD output. The AJA HD10AVA converter can be used to convert component analog HD video and analog audio outputs of HDV devices to an HD-SDI signal with embedded audio. This offers advantages over IEEE1394 connectivity for post production and unique output capabilities from the camera on set.

Why Choose HD-SDI over IEEE1394 aka FireWire?

While the HDV cameras and decks always support a IEEE1394 (aka FireWire connection) not all non-linear editing systems can accept the HDV signal through such a connection. If a non-linear editing system can accept the IEEE1394 signal, the footage can be ingested in its native, highly compressed state. While this seems like a simple solution for post-production, it means that the footage stays in the compressed Long GOP MPEG2 structure in which it was recorded and this structure can be incredibly processor intensive for most non-linear computers to negotiate. The first benefit when ingesting HDV material through an analog to HD-SDI conversion versus ingesting via IEEE1394 for post production is that the structure of the signal will be brought in as an I-Frame based structure common to the non-linear editor as opposed to the HDV's native Long GOP MPEG2 structure, which may prove more difficult to edit.

Additionally, what if the post-production process demands that the HDV acquisition be delivered as a finished product on HD formats such as Panasonic D5, DVCProHD or Sony HDCam? Working with the compressed HDV material would be akin to working with DV natively for SD broadcast; less than ideal. Certain post-production processes would be better performed in a 10 bit (or even 8 bit) 4:2:2 color space than in the 8 bit 4:2:0 color space that is the domain of the compressed HDV format. If the non-linear editing system could ingest via HD-SDI using the AJA HD10AVA converter's HD-SDI output, then digitizing to an uncompressed codec might be a better choice for tasks like color correction and compositing.

Why Choose HD-SDI over Component Analog HD Video and Analog Audio?

As already mentioned, most HDV cameras have a component analog HD output. The advantages of using HD-SDI over analog HD are threefold. HD-SDI can be run for much further distances than component analog video. HD-SDI, as output from the AJA HD10AVA, can support video and embedded audio, so cabling is minimized - one cable can carry the video and audio signal. And finally, if recording to an HD deck, HD-SDI is the standard connection for input, not component analog HD.

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Using the AJA HD10AVA to Avoid Tape Compression

Another advantage of using an HD10AVA is the ability to avoid the heavily compressed Long GOP MPEG2 compression on the tape altogether. Essentially the AJA HD10AVA can provide the benefit of HD-SDI output directly from the camera, thereby bypassing an HDV camera's tape mechanism and the compressed signal it would record. This means that the HD-SDI signal could be sent to HD decks, such as DVCProHD, D5 or HDCam, to produce recordings. In a studio environment, the HD-SDI signal could even be sent directly into a non-linear editing system for further acquisition flexibility.

A Few HDV Analog HD to HD-SDI Examples:

JVC

With the introduction of the JVC GY-HD100U camcorder, JVC brought a new level of user control to the growing HDV format. The camera has garnered such interest due to its impressive feature set, removable lens and perhaps, most significantly, the first implementation of 720P 24p HDV. While the camera can record 24p (23.98) within a 59.94 signal, the component analog HD output from the camera and decks will be 720P 59.94. Therefore, if using the AJA HD10AVA, the HD-SDI output from the converter will be 720P 59.94.

For connecting the camera to the AJA HD10AVA converter, simply connect the component analog output of the camera to the component analog HD input on the converter. Connect the analog audio from the camera to the converter. The converter will then output an HD-SDI signal with embedded audio.

JVC also offers a deck, the BR-HD50U, that offers analog component HD output, analog audio output and a remote connection for the RS422A protocol. Again, simply connect the component analog HD outputs and analog audio outputs to the analog inputs on the AJA HD10AVA. The RS422 connection can be directly connected to a non-linear editor for device control.

Sony

Sony, following it's success with the MiniDV market, introduced it's HDV camcorders to the world after JVC introduced the format. Unlike JVC's 720P implementation, Sony chose to use a format that would output a raster image that would match that of their existing HDCam format, 1920x1080. Like the HDCam products, the Sony HDV camcorders work with images as 1440x1080, but these are scaled to full 1920x1080 for analog output. The analog component output of the Sony devices meets a SMPTE specification of 1080i 29.97.

Sony has begun to produce a number of HDV cameras. The most common one in the marketplace is probably the Sony HVR-Z1U. The camera provides component analog HD output and analog audio output. Again, these analog outputs can be fed to the AJA HD10AVA to produce an HD-SDI signal with embedded audio.

Sony also produces the Sony HVR-M10U HDV deck. This deck, like the camera, can similarly be connected to the AJA HD10AVA converter.

Canon

Canon changed the way many professionals thought about DV and their HDV camera is no exception. At first glance, there might not appear to be an advantage to using an AJA HD10AVA with the Canon XL H1 camera since Canon uniquely offers an HD-SDI output option for their camera. However, the Canon HD-SDI output does not provide embedded audio. For some users of this camera, they may find it advantageous to use the component analog HD output of the camera and the analog audio routed to the AJA HD10AVA to produce an HD-SDI signal with HD video and embedded audio.

Panasonic

While the Panasonic HVX200 is not an HDV recording device, but a DVCProHD camera, it too can work with the AJA HD10AVA. The HVX200 can record HD to P2 solid state, but in some situations, like studio environments, users may want an HD-SDI output. Again, since the HVX200 DVCProHD camera, like the HDV cameras, has component analog HD and analog audio outputs, those outputs can be connected to the AJA HD10AVA converter to produce an HD-SDI output with embedded audio.