

Linear Acoustic Application Note

Multiple Dolby® Digital Encoders in AERO.100/1000/2000/AERO.soft

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Background

A single video program may have multiple audio programs associated with it, and the user may need to encode each audio program into either a Dolby Digital or Dolby Digital Plus stream.

Note!

Linear Acoustic offers Dolby Digital Plus encoders, often as a licensable option, as part of the software in the AERO.100, AERO.1000, AERO.2000 and AERO.soft products.

All Dolby Digital Plus encoders can encode the output stream as either a Dolby Digital Plus or a Dolby Digital bitstream. This is a user configurable setting in the encoder.

The most frequent need is for a 5.1 surround main program and a stereo SAP channel to both be encoded as Dolby Digital Plus programs.

We have also had requests for more than two Dolby Digital Plus encoded outputs simultaneously. Even though Dolby Digital Plus encoding is increasingly available in MPEG encoders there are cases when users want the encoding to be done prior to the transmission MPEG encoder. For instance, distributors may want to QC the Dolby Digital Plus streams before they leave the facility. Another example is when the Dolby Digital encoded streams go to multiple outgoing paths.

The AERO.100, AERO.1000, AERO.2000 and AERO.soft all require an AMX processing instance for each Dolby Digital Plus encoder (or decode/encode pair). In order to have two Dolby Digital Plus encoders, two AMX instances must be installed. This is true even if processing and loudness control for the programs requires only a single AMX Instance.

Configuration

The first Dolby Digital Plus encoder can be licensed to the first AMX instance in the AERO processor. The output of the first loudness control processor (DRC1) is the default input to the Dolby Digital Plus encoder.

To add a second Dolby Digital Plus encoder for a stereo program stream, an AMX 2.0 instance with the Dolby Digital Plus encoder option must be licensed.

There is an Insert point in the audio signal path that provides direct access to the internal Dolby Digital Plus encoder licensed to each instance. Using an AERO.xxx hardware processor as an example, the insert is found here using NfRemote:

Instance 2 > Input > Source > Return A

Each installed AMX Instance will have a return to its Dolby Digital Plus encoder. When a source is chosen in the Return A dropdown this source replaces the output of DRC 1 as the Dolby Digital Plus encoder input. In the example, AES In 7/8 is selected as the source to the Instance 2 Dolby Digital Plus encoder. See figure 1.



Figure 1: Select Instance 2 Dolby Encoder Input: Return A

The SAP audio loudness control (and auto-replace) is done by Instance 1, DRC 2. This audio program must be connected to the Instance 2 Dolby Digital Plus insert. To do this navigate to:

Output Routing > AES/SDI Outputs > AES Outputs

Select AES Out 7/8: Instance 1 Processed 7/8. See Figure 2.



Figure 2: Send SAP/DVS audio program to AES 7/8 output

Connect a short BNC jumper cable from AES 7/8 Output to AES 7/8 Input on the rear of the AERO processor.

If Instance 1, DRC Local is being used for loudness control of the the SAP audio then, in the example above, AES out 7/8: Instance 1 Processed 9/10 would be selected.

Configuring the AERO processor in this way the SAP audio is now Dolby Digital Plus encoded by the Dolby Digital Plus encoder installed in the second AMX Instance and the audio path has the same latency as the main audio program path.

Both Dolby Digital Plus encoded audio programs can be embedded in the SDI output. Navigate to:

Output Routing > AES/SDI Outputs > SDI Outputs

In the example in Figure 3, below, Instance 1 Dolby Digital Plus Out is selected as audio program for SDI Out 1/2, and Instance 2 Dolby Digital Plus Out is selected as the audio program for SDI Out 3/4.

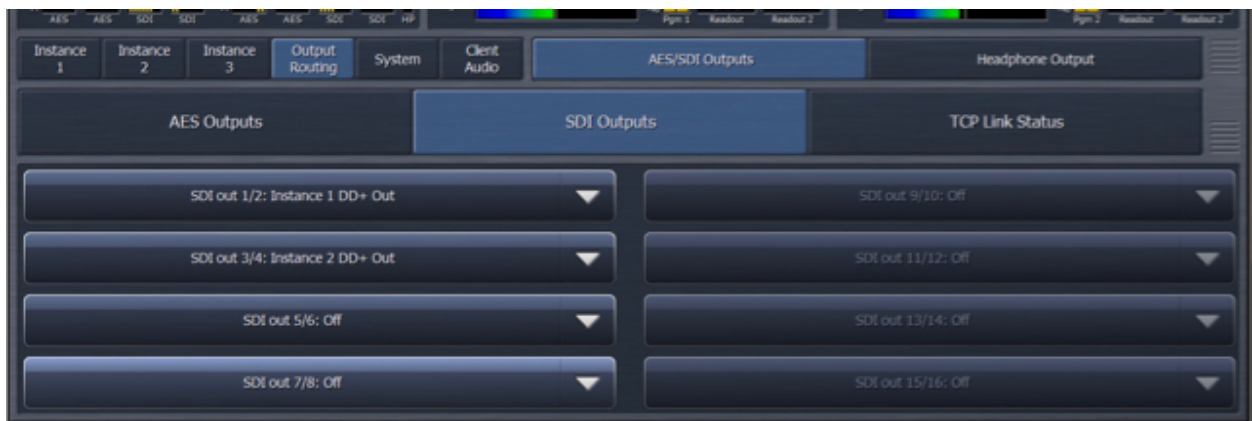


Figure 3: Embed Dolby Digital Encoded Programs in SDI Output

Conclusion

It is quite easy to add additional Dolby Digital (or Dolby Digital Plus) program outputs in an AERO.100, AERO.1000, AERO.2000 or AERO.soft processor. (NfRemote

A Dolby Digital Plus 5.1 encoder is licensed to an AMX5.1 Instance. The 5.1 channel encoder is capable of Dolby Digital Plus 2.0 encoding. This can be changed dynamically or permanently set for either 5.1 or 2.0 modes.

A Dolby Digital Plus 2.0 encoder is licensed to AMX5x2 or AMX2.0 Instances.

The AERO.100 is capable of 2 AMX Instances and 2 x Dolby Digital (Dolby Digital Plus) outputs.

The AERO.2000 is capable of 3 AMX instances and 3 x Dolby Digital (Dolby Digital Plus) outputs.

The AERO.1000 is capable of 8 AMX instances and 8 x Dolby Digital (Dolby Digital Plus) outputs.

AERO.soft is capable of 6 AMX Instances and 6 Dolby Digital (Dolby Digital Plus) outputs.

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