AUDIOSCIENCE

NOTE 9
ASI6000 Series Phase Shift Errata

This errata applies to all revisions of the ASI60XX, ASI61XX and ASI62XX adapters.

The Cirrus Logic CS4224 analog-to-digital and digital-to-analog converter used in AudioScience's ASI60XX, ASI61XX and ASI62XX family of adapters has a one-sample delay between left and right channels on both its input (ADC) and output (DAC). An errata for this issue has been released by Cirrus Logic (see www.cirrus.com for more information), but the silicon was not corrected.

Assuming a 44.1kHz sample rate, the delay will cause a 22.7us delay between the left and right channel, which will show up as a phase shift between channels. This occurs on BOTH the analog input (Line In) and analog output (Line Out).

On analog only adapters, such as the ASI6012 and ASI6044, the errata can be completely corrected via a driver software update. Any driver version later than 2.95rc19 (including 2.95 final) will fix the issue.

Adapters that have both analog and AES/EBU outputs have an additional complication. Due to the analog and AES/EBU outputs sharing the same signal for transmitting digital samples, either the analog or AES/EBU output can have perfect left/right phase, but not both simultaneously.
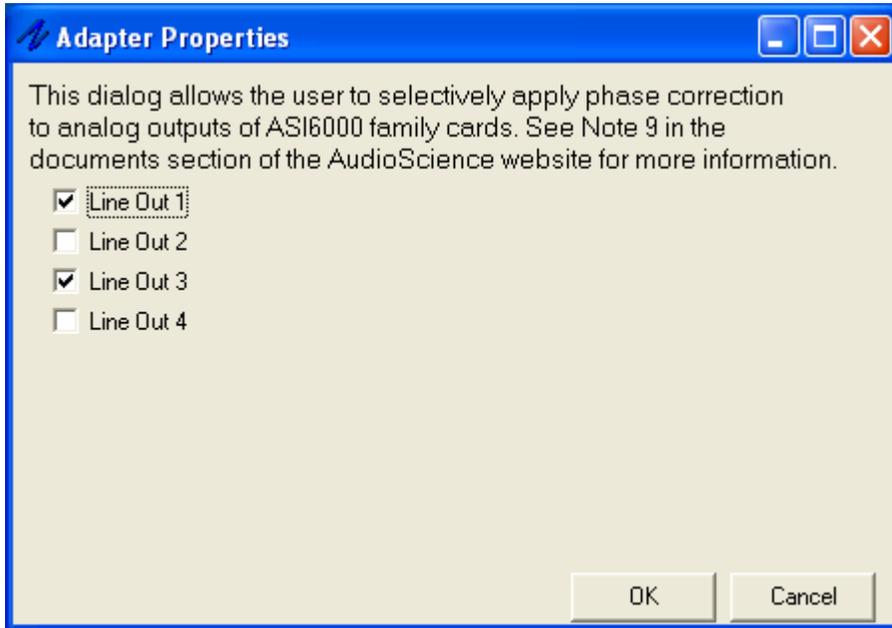
On Adapters that have both analog and AES/EBU inputs, the driver will automatically apply the correction only when the analog input is selected for recording.

Phase correction is applied via an "Adapter Properties" dialog box. This box is opened using different methods, depending on whether the Wave or WDM driver is used.

For the Wave driver, AudioScience has provided an update to ASIMixer (version 2.00rc4 or release v2.00 final) that allows the user to set the phase correction on or off independently for each stereo Line Out. Selecting menu item "Options" and selecting "Adapter Properties" in ASIMixer opens the "Adapter Properties" dialog box.

For the WDM driver, AudioScience has provided an update to ASIControl. Selecting the "Adapter" node from the node tree displayed in the left pane and then clicking the "Advanced..." button on the "Adapter_Property" panel opens the "Adapter Properties" dialog box.

Both ASIMixer and ASIControl present the same "Adapter Properties" dialog box, the operation of which is outlined below.

The above selection specifies output with the following phase alignment between left and right channels.

Output	Analog Output	AES/EBU Output
1	Perfect	1-sample shift
2	1-sample shift	Perfect
3	Perfect	1-sample shift
4	1-sample shift	Perfect

The phase correction, as specified by the "Adapter Properties" dialog box, is stored on the actual adapter and will remain set between reboots and will follow the adapter if it is moved to a different machine.

The user has complete control over the phase correction, allowing it to be correctly configured depending on whether analog or AES/EBU outputs are utilized.