

The Best Ways to Avoid Unnecessary Digital and Analog Conversions

Adding vs removing DACs and ADCs in your audio system

This tech blog addresses the “Double Conversion Conundrum,” a common issue for owners of high-end audio systems wishing to utilize Dirac Live room correction. The solution offered below is centered on the [miniDSP SHD](#) and Flex series of products.

Dirac Live room correction can be a game changer, especially for high fidelity stereo systems. But what if you already own high-end streaming and digital to analog converter (DAC) components that you truly enjoy? It can be done, once you understand how to integrate all the elements to create a seamless conversion.

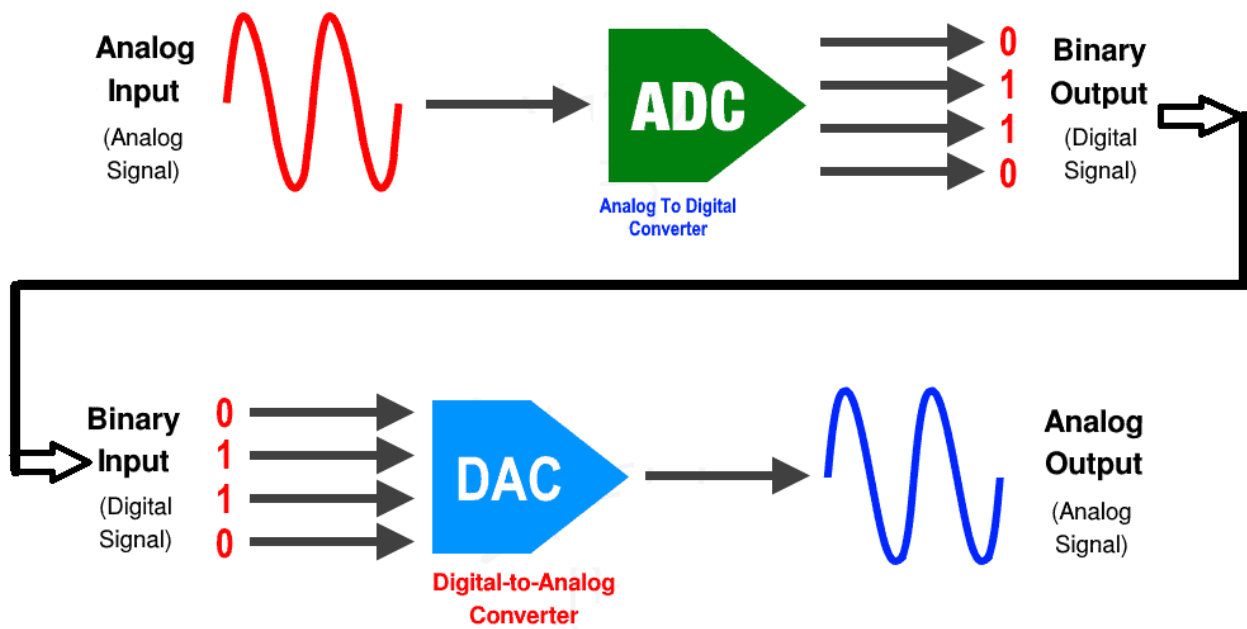


Diagram 1

The question arises to where in the system your DAC should be placed, and what's the best way to get the maximum performance out of your favorite DAC.

The diagram below shows the double conversion that results from placing a DAC prior to the digital signal processing (DSP) engine. This is not the preferred method, as the additional conversion (ADC > DSP > DAC) adds distortion.

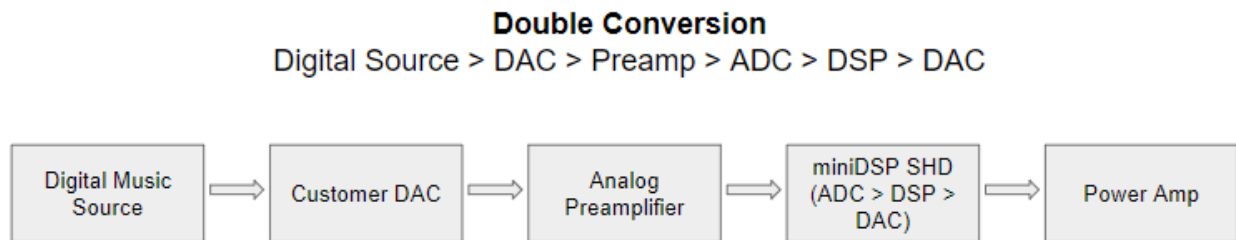


Diagram 2. Double Conversion - Digital Source > DAC > Preamp > ADC > DSP > DAC

To avoid a double conversion, you need to maintain the digital signal stream through the DSP core and then on to your existing DAC.

The single conversion solution maintains a bit-perfect stream that can be further refined in the miniDSP SHD with Dirac Live. When combined with proper implementation of Dirac Live room correction, the result is world class image layering and clarity. The single conversion is the preferred solution of Deer Creek Audio.

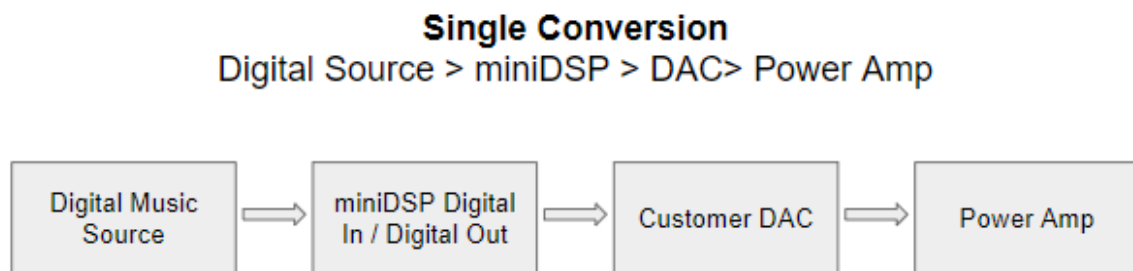


Diagram 3. Single Conversion - Digital Source > miniDSP > DAC > Power Amp

This example of the single conversion solution uses Roon as the digital source into the miniDSP SHD via LAN. The digital signal remains bit-perfect through all the DSP / Dirac Live processing. This signal is then delivered over the I²S Bus to the SHD's internal DAC and premium analog output stage, ready to drive your power amplifier.

Single Conversion

Roon Digital Signal Source > miniDSP SHD > Power Amp

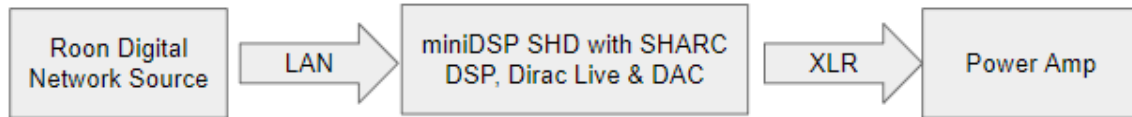


Diagram 4. Single Conversion - Roon - miniDSP SHD - Power Amp

Support

[Deer Creek Audio](#) is here to help! Please feel free to [contact us](#) with any questions: email at staff@deercreekaudio.com or call (720) 726-9272.