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Analog-to-digital and digital-to-analog converters are "gateway" processors--the superaccurate portals that pros rely on in digital audio production. In the studio, a truthful D/A is just as important as proper monitor speakers and a good listening space. The A/D converter is even more important because its audio quality--as constrained by sample rate, bit depth, conversion precision, clock stability, analog input section--is permanently embedded within the produced digital data. As if carved in stone, no matter how fine a D/A is used, you cannot recover audio quality that exceeds the original A/D's capability.

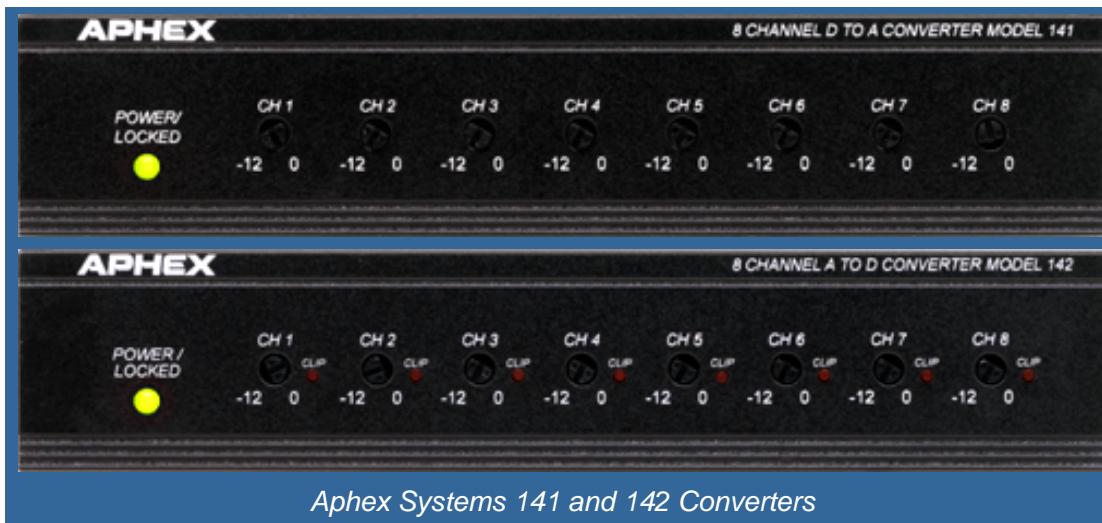


Benchmark Media ADC1 Analog-to-Digital Converter

High-quality conversion is necessary whenever a master recording is being created or repurposed for commercial use. The best converters spare no expense in their designs, with quality components, power supply technology, clocking facilities and flexible control. If you consider that everything you record and everything you hear is running through these circuits, a consummate audio professional would have nothing less than the very finest.

INSIDE THE HIGH-QUALITY CONVERTER

The actual conversion of analog audio to digital data and digital to analog takes place within chips or chipsets. Chip manufacturers offer many versions depending on price, conversion method, number of channels, ancillary chip(s)



ApheX Systems 141 and 142 Converters

required, additional DSP chip-interfacing features, THD/noise floor and dynamic range performance. It's important to note that any converter design that relies solely on the best-rated chips does not necessarily guarantee its high performance. Other factors, such as the specific topology of the analog circuitry that precedes or follows it, or the quality of the clocking facilities, etc., will have a major effect on a converter's sound.

A good A/D converter begins with a great analog front end, one that's capable of wide dynamic range without clipping by using precise, resettable level controls and attenuators. For example, Benchmark Media's ADC1 A/D has a 41-detent variable gain control, a 10-turn calibration trimmer and a three-position (-10/-20/-30dB) first-stage, gain-adjustment switch to preset the converter's analog operating environment.

If the A/D converter design objective would include a characteristic "sound", most of it would come from the analog front end (A/D) or the analog back end (D/A). Burl Audio offers the B2 Bomber A/D with its BX1 transformer in a discrete, Class-A, zero-feedback and DC-coupled (no caps) signal path that is said to complement your mic preamp's sound.

A/D converters that output digital streams to accommodate several formats are another plus. In addition to "future-



dcs 905 DSD/DXD Analog-to-Digital Converter

proofing" your master recordings by using high-sample-rate DSD or dCS Ltd.'s new DXD (Digital Xtreme Definition) format, you may be required to provide simultaneous digital audio for other external uses. For example, the Prism Sound AD-2 and Benchmark's ADC1 converters can output two or more streams at different bit depth/sample rates to make simultaneous copies for 44.1kHz/16-bit CD reference discs or 48kHz/16-bit digital video audio uses.

THE OTHER SIDE: D/A CONVERSION

The modern high-end D/A would be able to convert to analog from a variety of incoming digital streams. A fully equipped D/A converter's back panel would bristle with enough connectors for all of the channels of analog outputs and then more for single, dual and quad-wire AES/EBU inputs for PCM, DSD-4, P3D and DXD, and then S/PDIF RCA jacks, ADAT Lightpipe or Toslink optical spigots, SDIF jacks and MADI BNCs. Like its A/D counterpart, a good D/A would have an internal, low-jitter clock and (if need be) the ability to clock from an external clock (BNC jack), or the embedded clock within the audio stream, or a dedicated AES-reference input XLR jack.

Source selection is a bonus utilitarian feature, and the Troisi Design DC224DAC has selectable inputs. The Prism

Sound DA-2 has a seven-way input source switch.

The audio output should be balanced +4 dBm on XLR, TRS jacks or on DB-25 connectors. Some converters have extensive control over analog level to accommodate the subsequent audio chain's dynamic range, etc. Apogee Digital's Mini-DAC has front panel level controls, while the Lucid DA9624 has a headphone jack and a large meter. Most of the D/A converters surveyed here had headphone jacks, but the Mytek 8X96 also has slots for up to two cards for DAW and analog interfacing options, as well as 8X192 AD/DA as built-in analog summing for all eight channels in four stereo pairs.

The [charts](#) provide at-a-glance comparisons of stand-alone A/D, D/A and AD/DA units designed for pro--rather than consumer--applications. Additionally, we've focused on devices in which the conversion function is the product's main intent, as opposed to mic preamp/signal processor/mixers with digital I/O features, or units on circuit boards, soundcards, etc. For further information, visit that company's Website (listed in the charts).

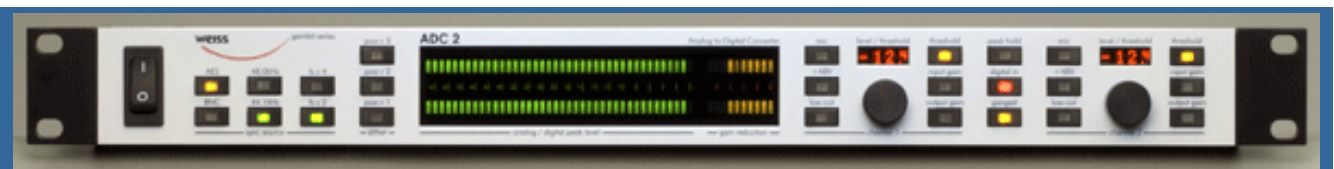
[Converter Comparison Charts](#)



Lynx Aurora 16 Converter



RME ADI-192 DD Converter



Weiss ADC2 A/D Converter



Lucid Audio 88192 A-D/D-A Converter



Prism Sound ADA-8XR DSD Converter



Sonifex RB-SC2 Dual Sample Rate Converter



Universal Audio UA 2192 Master Digital Audio Interface

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