

imersiv

multi-path

What is Multi-Path Audio?

It's been 40 years since the rollout of digital-audio recording. During this period, dynamic range and linearity have seen slow, predictable improvement of 0.8dB per year, on average. But that's about to change. Welcome to the era of multi-path audio.

The **imersiv D1** multi-path D-to-A converter improves today's best DAC dynamic range and linearity performance by **more than 40dB**. That's 28-bit conversion. The **imersiv D1** DAC has a broadband, unweighted self-noise of 40nV.

Multi-path topology can be applied to all elements of the audio signal-path: microphones, preamps, ADC's, workstations (DAWs), DAC's, and power amplifiers. In each application, multi-path will dramatically improve audio performance.

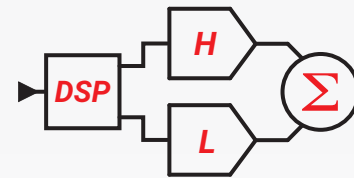
An essential advantage of the **imersiv D1** DAC is its quiet-side behavior. Critical-acoustic recording engineers know that spatial information is conveyed largely in the quiet passages; in the space between the notes; in the decay of a piano chord the moment before we lose perception; in the very last whisper of an orchestra's reverberant tail.

Vanishingly low noise and THD at low program levels translates into profoundly improved spatial and atmospheric imaging. The **imersiv D1** evokes comments like "a realistic feeling of depth" — "a visceral three-dimensional stage" — "I can touch every instrument in 3D space" — "this feels more like being in the original recording environment."

Legacy (single-path) audio architecture has never delivered anything remotely close to **imersiv** levels of THD, threshold noise, broadband linearity, and immersive detail. They said it couldn't be done. Multi-path is the new frontier of audio technology. There is no going back.

The imersiv D1 - How Does it Work?

In brief, 64-bit DSP splits an incoming digital signal (USB, Dante, AES, etc.) into two dynamic paths: a "high-path" and a "low-path." The low-path is up-shifted (zero-padded) by DSP to a desired upper level. This allows ultra-low digital levels to be converted in the highest quality bit-range of a DAC IC.



The low-path DAC analog output ("L") is then passively attenuated by an inverse of the DSP up-shift. This results in inconceivably low broadband quiescent noise (40nV) while perfectly re-establishing the original ultra-low-level signal.

When an incoming signal exceeds a defined low-path level boundary, DSP cross-fades the signal into the high-path ("H"). The signal is dynamically controlled in this manner between the high-path and low-path. The two paths are passively summed to both differential (XLR) and single-ended (RCA) output.

When the program signal remains in the low-path, the high-path is silently removed from the summing node. This prevents the high-path noise from swamping out the low-path noise, resulting in a DAC with -146dBu of broadband quiescent noise, >28-bits of dynamic range, >170dB of linearity, and absolutely pure waveforms maintained during quiet passages.

For a deeper technical overview, see the Audio Engineering Society (AES) Conference paper entitled Dynamic Range Improvement in Digital to Analog Conversion via Multi-Path Topology (AES 21106)

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Once in a generation,
a new audio architecture changes everything.



imersiv

they said it couldn't be done

>170dB **Dynamic Range**

>170dB **Linearity**

-146dBu **Baseline Noise**

>28-bits **True Resolution**

performance specifications are broadband (20Hz - 22kHz) & unweighted

