

# imersiv

HDR-A

multi-path

## What is HDR-A?

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. We call it **High Dynamic Range - Audio**.

# HDR-A<sup>®</sup>

HIGH DYNAMIC RANGE / 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 **HDR-A** 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, **HDR-A** will improve audio performance by up to **100X (40dB)**.

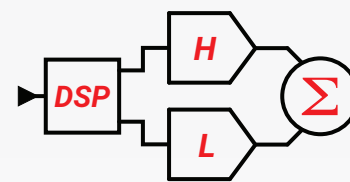
An essential advantage of the **imersiv D1** DAC is its quiet-side behavior. Critical-acoustic recording engineers know that spatial information is conveyed largely in the atmospheric passages; in the space between the notes; in the decay of a piano chord the moment before we lose perception; in the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

Vanishingly low THD+Noise at low program levels translates into profoundly improved spatial imaging and timbre realism. 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."

**HDR-A** 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, SPDIF, 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 DACIC.



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 (40nVrms) 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 differential (XLR) 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 >28-bits of dynamic range, >168dB of linearity, and absolutely pure waveforms maintained during quiet passages (no other DAC comes close).

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.

(so advanced, test equipment can't measure it)

The logo for Imersiv, featuring a stylized blue arc above the word "imersiv" in a lowercase, sans-serif font.

Someday, all audio gear will be designed like this.

**>168dB**

**Dynamic Range**

**>168dB**

**Linearity**

**-146dBu**

**Baseline Noise**

**>28-bits**

**True Resolution**

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

