

# DAC1 HDR

Stereo Pre-Amplifier

with Remote Control / DAC / Headphone Amp / USB

*Benchmark*  
...the measure of excellence!<sup>TM</sup>



## DAC1 HDR - Let the Music Engage You!

The DAC1 HDR is an all-in-one reference-quality stereo pre-amplifier. This stereo pre-amp brings together all the best features and performance of the award-winning DAC1 family with the convenience of an intelligent remote control solution. The DAC1 HDR combines some of Benchmark's finest engineering accomplishments into one device: the DAC1 digital-to-analog audio converter with UltraLock<sup>TM</sup> clock system, AdvancedUSB<sup>TM</sup> computer audio playback interface, and the legendary HPA2<sup>TM</sup> headphone amplifier. The unique remote control solution of the DAC1 HDR is built around Benchmark's new HDR-VC<sup>TM</sup> (high dynamic range volume control).

Benchmark's product designs have achieved unprecedented sonic purity due to an uncompromising engineering philosophy: eliminate digital distortion artifacts, establish a pristine analog path, and maintain sonic integrity regardless of external factors. The DAC1 HDR continues this tradition of excellence.

The remote control solution of the DAC1 HDR has an intelligent implementation of dimming and muting. The 'Dim' (quiet) and 'Soft-Mute' settings of the remote control can be easily adjusted independent of the normal volume setting. The DAC1 HDR remembers and recalls your specified 'Dim' setting. This feature is ideal for HDTV users, as it allows you to set your preferred 'Dim' level for commercials, etc. The 'Soft-Mute' function fades down the volume to the 'Dim' level before muting and smoothly raises the volume to the normal level after un-muting.

With a generous offering of inputs and outputs, the DAC1 HDR serves as the heart of expansive media and entertainment systems, optimizing the signal path from the various sources to the amplifier. The DAC1 HDR will enhance the audio performance of your digital television, digital cable box, DVD/CD player, computer, music/media server, satellite radio, and any other device with a digital audio output. Also, the HDR-VC<sup>TM</sup> will control the pristine path for an analog source, such as a phono stage, FM tuner, iPod, VCR, tape deck, etc.

All digital inputs on the DAC1 HDR (including the USB) feature Benchmark's jitter-immune UltraLock<sup>TM</sup> clock system. The USB interface operates with Benchmark's AdvancedUSB<sup>TM</sup> native 24-bit, 96-kHz USB technology. The DAC1 HDR features a high-current output stage designed to drive even the most difficult loads. Other features include selectable headphone gain ranges and an auto-mute function for muting the main outputs when headphones are being used.

## HDR-VC<sup>TM</sup> High Dynamic Range Volume Control

The DAC1 HDR features Benchmark's HDR-VC<sup>TM</sup> (High Dynamic Range Volume Control). The HDR-VC<sup>TM</sup> is achieved with a custom-built motorized Alps potentiometer. The DAC1 HDR's motor-driven volume control maintains the dynamic range of the converter and audio output. In contrast, digital volume controls reduce dynamic range, and analog volume IC's introduce distortion and noise.



## Performance Specifications:

- **Digital Input Sample Rate Range:**  
28 to 195 kHz
- **THD+N: -107 dB, 0.00045%**  
(w/ -3 dBFS input)
- **SNR - A-weighted: 116 dB**  
(w/ 0 dBFS = +20 to +29 dBu)
- **Maximum Amplitude of Jitter-Induced Sidebands (10 kHz test tone, @ 0 dBFS; 12.75 UI sinusoidal jitter @ 1 kHz): < -141 dB**
- **Maximum Amplitude of AC line related hum & noise: < -126 dB**
- **Headphone amp output impedance: 0.01  $\Omega$**
- **Headphone amp output-level range (@ 0 dBFS into 60- $\Omega$  load): Off-to-+21 dBu**
- **Headphone amp THD+N: -107 dB, 0.00045% (w/ -3 dBFS input)**

Rear Panel:



## The acclaimed DAC1 D-to-A conversion system

Recording studios, mastering engineers and audiophiles have grown to rely on Benchmark for critical digital audio conversion for more than 10 years. The superior performance of the award-winning DAC1 has made it the 'Benchmark' of D-to-A converters. With the DAC1 HDR, this built-in state-of-the-art converter will improve the sonic performance of your digital audio sources, including your computer.

## Jitter-Immune UltraLock™ Clock System

Benchmark's proprietary UltraLock™ clock system achieves an unprecedented immunity to jitter. Many modern (and expensive) converters suffer from significant jitter-induced distortion, generating non-musical sideband tones and digital distortion. Benchmark's highly-regarded UltraLock™ clock system ensures that jitter is never a problem, even under extreme conditions.

Even in the presence of extremely high input jitter, no jitter-induced artifacts can be detected on the outputs of the DAC1 HDR (using state-of-the-art testing equipment by Audio Precision). UltraLock™ will block more than 12.5 UI of jitter (@ 1 kHz). The UltraLock™ clock system easily outperforms even the best-designed two-stage PLL designs.

The bottom line is this: Benchmark converters will consistently and faithfully deliver truthful audio without jitter-induced artifacts, no matter what variables are present.

## AdvancedUSB™ Audio Technology

The USB interface of the DAC1 HDR operates with Benchmark's unique AdvancedUSB™ technology. Unlike many USB-equipped D/A converters, Benchmark's AdvancedUSB™ technology supports 24-bit audio at sample rates up to 96 kHz without the installation of any drivers or other special software. Benchmark's UltraLock™ clock system isolates the converter from the high levels of jitter that are found on USB interfaces. The DAC1 HDR achieves transparent, audiophile-quality playback through a true plug-and-play solution.

Audio streamed via USB is subject to significant amounts of jitter. The AdvancedUSB™ interface utilizes the UltraLock™ clock system. Consequently, the performance of the USB input is equal to the performance of the other inputs, regardless of the jitter present.

The DAC1 HDR is natively compatible with Windows Vista/XP/2000 and Mac OS X. As a native device, there are no drivers or other software required to install or configure.

## HPA2™ Headphone Amplifier

The DAC1 HDR includes the HPA2™ - Benchmark's signature high-current, 0-Ohm headphone amplifier. The HPA2™ is the ultimate reference headphone amplifier. It will deliver the full rated performance of the DAC1 to the headphones. The HPA2™ maintains less than 0.0003% THD+N under a full load from two sets of headphones. The DAC1 HDR has two 1/4" headphone jacks on the front panel.

# DAC1 HDR

## Stereo Pre-Amplifier

with Remote Control / DAC / Headphone Amp / USB

### Features:

- IR remote control with adjustable 'Dim' and 'Soft-Mute'
- High-Dynamic Range Volume Control w/ custom-built, motor-driven Alps volume pot
- Six Stereo Inputs: Analog RCA, USB, TOSLINK optical, and three digital coaxial
- Utilizes 24-bit, 192-kHz DAC1 D/A conversion system
- Benchmark's phase-accurate UltraLock™ technology provides total jitter immunity
- AdvancedUSB™ computer audio interface for native 24-bit / 96-kHz USB audio
- Compatible with Windows Vista/XP/2000 and Mac OS X without driver installation
- State-of-the-art LM4562 high-current, low-distortion opamps in critical analog circuits
- Stereo outputs: XLR balanced, RCA unbalanced, HPA2™ headphone jacks
- Built-in HPA2™ headphone amplifier - 0-Ohm, high-output, two output jacks
- HPA2™ headphone amplifier has selectable gain ranges to match headphone sensitivity
- Left-most headphone jack mutes XLR and RCA outputs (this feature is defeatable)
- On/Off button and rotary source selector
- "Calibrated/Variable" switch determines gain control for main analog outputs
- Internal trim-pots control gain of XLR and RCA outputs (in "Calibrated" mode)
- Selectable, low-impedance attenuators (0, 10, 20, or 30 db) on XLR outputs
- Front-panel LEDs display input and status
- International power supply with voltage selection on rear panel
- Low radiation toroidal power transformer significantly reduces hum and line-related interference

*Benchmark*  
...the measure of excellence!™

## Benchmark Media Systems

203 E Hampton Pl, STE 2  
Syracuse, NY 13206 USA  
Tel: 315-437-6300  
US Toll-Free: 800-262-4675  
Fax: 315-437-8119  
www.BenchmarkMedia.com