

# AHB2 - High Resolution Amplifier



## It's time for *you* to experience the full potential of high-resolution audio playback.

The AHB2 stereo power amplifier introduces *groundbreaking advances* in power amplifier design and performance. Its entirely new patented technology eliminates most sources of distortion while extending the dynamic range *well beyond that of most high-end amplifiers*. High-resolution audio recordings are now available in a variety of digital formats, but none of these formats can be experienced to their full potential using a typical power amplifier. Only the AHB2 power amplifier is designed to deliver the details, texture, and dynamic range of the finest best high-resolution recordings.

There's a huge problem with HD music today. Recent advances in high-resolution digital formats have well outpaced most existing amplifier technologies. It is now possible to produce and distribute recordings that have dynamic ranges that **exceed 120 to 125 dB**. However, it is hard to find a power amplifier that can deliver more than **100 to 105 dB** of dynamic range. Most of the advantages of the high-resolution formats are lost in even high-end setups. Benchmark saw clearly that *the differences between a 16-bit recording and a 24-bit recording cannot be fully appreciated through a power amplifier that can only achieve 16 to 18-bit performance*.

That's why we created the AHB2, a perfect match to the new high-resolution digital formats.

Benchmark's AHB2 power amplifier delivers musical details without introducing the masking effects of amplifier noise. The dynamic range of the AHB2 approaches 130 dB, making it 10 to 30 dB quieter than the typical audiophile power amplifier. You will discover previously overlooked nuances, dynamics, and detail in your favorite recordings and experience the full potential of the latest high-resolution 24-bit PCM and 1-bit DSD audio formats.

The frequency response of the AHB2 *extends beyond 200 kHz*, to deliver the **ultrasonic detail** and **fast transients** captured by high-resolution recordings. At the other end of the audio spectrum, the low-frequency response *extends below 0.1 Hz*. The AHB2 has a high damping factor that augments its extended low-end to deliver solid, well-controlled bass. It's a stunning experience to finally hear full-bandwidth high-resolution playback. The AHB2 allows you to escape the distortion limitations of classic amplifier topologies and enter the world of high-resolution audio playback.

Class AB amplifiers generate crossover distortion every time the output stage crosses 0 volts. This crossover distortion can be especially problematic at low playback levels. Class A output stages eliminate this crossover distortion at the expense of high power-consumption, poor damping, and a limited dynamic range. THX recently patented two new technologies that address crossover distortion, and Benchmark teamed up with THX to incorporate these innovations into the AHB2 design. These new innovations virtually eliminate crossover distortion while offering opportunities to improve efficiency, damping, and dynamic range. The licensed technology solves the crossover problem by combining a plurality of output stages such that one stage drives the output while another stage enters a crossover region. Distortion performance exceeds that of class A amplifiers, while the efficiency exceeds that of traditional class AB amplifiers.

### PRELIMINARY SPECIFICATIONS

#### Power Output

- 100 W/channel into 8 Ohms, both channels driven
- 170 W/channel into 4 Ohms, both channels driven
- 340 W Bridged Mono into 8 Ohms

#### Dynamic Range

- 130 dB A-weighted
- 125 dB 20 Hz - 80 kHz

#### THD

- < -118 dB relative to full output at any output level below clip, stereo, 1 kHz
- < -118 dB relative to full output at any output level below clip, bridged mono, 1 kHz
- 0.00013%

#### THD+N

- < -113 dB relative to full output, 1 kHz
- 0.00022%

#### Frequency Response

- Better than 0.1 Hz to 200 kHz, +0/-3 dB



## The A.H.B. Story

The AHB2 power amplifier is named in honor of Benchmark's founder, Allen H. Burdick. Allen had a life-long passion for audio, and became one of the leading innovators in the pro-audio industry.

Allen's business ventures began in 1983 as "Benchmark Sound Company" where he operated from his garage in Dallas, Texas. He surrounded himself with a staff that shared his passion for achieving new audio performance "benchmarks". Benchmark's first product was a large mixing console for television and radio broadcast applications. In 1985, Allen changed the business name to Benchmark Media Systems, Inc., and relocated to a facility in his hometown of Syracuse, New York. By this time Benchmark was manufacturing the DA101 audio distribution amplifier for television studios. Allen's DA101 was a 35 W power amplifier card with astonishing specifications. It had a 150 kHz bandwidth, and a dynamic range of over 120 dB. The DA101 was designed to distribute line-level audio through extensive distribution networks. Television networks often require many cascaded distribution amplifiers, and this places extraordinary demands on the performance of each individual amplifier. Allen's DA101 revolutionized audio distribution in the era of analog TV.

Allen retired in 2006, but Benchmark continued to develop new products under the direction of John Siau. Allen's DA101 was never marketed as a power amplifier, but it became Benchmark's amplifier of choice for critical listening tests during the development of Benchmark's digital products. The recent development of the DAC2 converter family highlighted the need for a power amplifier that could match the performance of the converter, and Benchmark began the "PA2" amplifier project.

In many ways, Allen's DA101 helped define the performance goals of the PA2 project. Early prototypes were evaluated against the DA101. Benchmark's performance goals were achieved through the use of two new patented topologies from THX, the application of good engineering, and a high level of cooperation between the engineering groups at both companies. The result is an amplifier that Allen would have been proud to call a "Benchmark".

Sadly, Allen passed away September 27, 2013. Just minutes before his death, we changed the product name to AHB2 in his honor.

*In loving memory of Allen H. Burdick (June 29, 1942 - September 27, 2013).*

*Benchmark*  
...the measure of excellence!

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