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BERKELEY AUDIO DESIGN ALPHA DAC REFERENCE SERIES

Reference, Indeed

by Robert Harley (/articles/?authors=1) | Dec 23rd, 2014

Categories: Digital-to-analog converters (/articles/?categories=16) |
Products: Berkeley Audio Alpha DAC Reference Series (/articles/?products=2492)

To understand Berkeley Audio Design's ambitious new Alpha DAC Reference, you need to know something about the company behind it. In its six years of existence Berkeley had produced just two products: the $4995 Alpha DAC and the $1895 Alpha USB, a USB-to-SPDIF converter. The hugely successful Alpha DAC established a new level of performance for digital products at anywhere near its price. I lived for several years with an Alpha DAC in front of some stellar electronics and loudspeakers, yet never felt it was the weak link in the chain despite its modest price relative to the rest of the system. Similarly, the Alpha USB was light years ahead of any other USB-to-SPDIF converter I'd heard. Given Berkeley's track record, I'd always wondered what this company could do if it aimed higher than the $5000 price point.

The answer has arrived in the new $16,000 Alpha DAC Reference Series, a vastly more ambitious effort than the venerable Alpha. Some potential purchasers will look at the Reference's lack of a USB input or its omission of DSD decoding, and consider the unit a non-starter. That would be shortsighted. Both a USB input and integral DSD compatibility were omitted by design, which speaks volumes about the ethos of Berkeley founders Michael Ritter and Michael "Pflash" Pflaumer. Their approach could be summed up as "no sonic compromises." If including a USB input in the same chassis as the DAC circuitry shaved off even a sliver of sound quality, it was ruled out. If performing DSD-to-PCM conversion brought performance down a notch, the decision was the same. Berkeley Audio, more than any other company I've encountered, is engineering and performance driven. A USB input and DSD decoding could easily have been included for marketing purposes, but that approach wouldn't have accorded with Ritter and Pflaumer's fundamental values.

The Alpha Reference is considerably more upscale in look and feel than the original Alpha. Although the Reference shares the Alpha's front-panel display and controls, the Reference's chassis is milled from a solid aluminum block, giving this 30-pound component a solid, brick-like feel. Front-panel switching includes input selection (two SPDIF, one AES/EBU, one TosLink), volume control, absolute-polarity inversion, filter choice, a button to change the display (volume, input sampling frequency, filter type, left/right gain), and a display dimmer. All these controls are duplicated on the handsome remote, along with a mute button and a balance control. LEDs indicate when the unit is locked to a source and if the input signal has been HDCD-encoded. The "Lock" LED glows amber when the Reference has established initial lock with the source, and then changes to green when the Reference locks to the source with a second, higher-precision clock. The Reference can drive a power amplifier directly with no need for a preamplifier in the signal path.

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Both S/P-DIF inputs are on BNC jacks, not the typical RCA. This is another example of Berkeley's "no-semi-compromise" approach. BNC connectors are not only the correct impedance (75 ohms); they also form a much more secure mechanical connection between jack and plug. Berkeley recommends AES/EBU; it has ten times the voltage compared with SPDIF (5V vs. 0.5V), which reportedly confers a slight advantage in timing precision. Balanced analog output is on XLR jacks, unbalanced on RCAs.

Berkeley Audio Design Alpha DAC Reference Series

Although you can't input DSD into the Alpha Reference, you can play DSD files by converting them to PCM in a Mac or Windows computer running the software playback engine JRiver Media Center. Buying an Alpha Reference gets you a license to JRiver. The rationale behind this approach is described in detail in the accompanying interview with Michael Ritter. If you want to drive the Reference with a USB output, you'll need Berkeley's Alpha USB.

Removing the heavy top panel and looking inside the chassis conjured up the image of a bank vault. The chassis' solid aluminum block has been milled out to create three separate isolated chambers—one for the power supply, one for the front-panel display and control electronics, and one for the DAC, DSP, and analog output stages. This design confers several advantages, including isolation from outside noise and vibration, isolation between subsystems, and temperature stability.

I enjoyed using the Reference on a daily basis. The front-panel layout, labeling, and display, and the remote control are sensible and well thought out. The circuit design is similar in many ways to the original Alpha DAC, but implemented with new parts and build techniques impossible in a $5000 DAC. After listening to the Alpha Reference and considering its design, I realized that this must be one of the most cleverly engineered products I've reviewed. By that I mean that every dollar of the parts budget was laser-focused on optimizing performance, with nothing wasted on superfluities. The Alpha Reference also upended several of my biases about what it takes to create a state-of-the-art DAC. As you'll see, the Alpha Reference sounds spectacular, and yet it realizes this unprecedented sound quality with what looks like a fairly conventional power supply (no outboard box filled with dozens of stages of cascaded discrete regulation), an off-the-shelf DAC chip (from Analog Devices), and an op-amp output stage. What you don't see are the extraordinary parts and the design techniques that have been applied to the subsystems that really matter, particularly the clocking and the hand-calibration of the analog filter. Berkeley has figured out exactly where to spend its parts budget—and where not to.

Listening

The playback system in which I evaluated the Alpha Reference is as good as it gets, in my experience. All the components are extraordinarily transparent, resolving, and dynamic, with these qualities in abundance over a very wide band. It turned out, however, that rather than the playback system telling me how the Alpha Reference sounded, this DAC revealed to me, for the first time, the playback system's full capabilities.

The highest praise that reviewers can heap on a DAC is to describe it as "analog-like." The Alpha Reference is certainly "analog-like," but not in the way that term has been used in the past. This accolade has described a DAC with a slightly softish treble, good space and bloom *for digital*, and an overall presentation that favors ease over resolution. The Alpha Reference transcends such comparison, overturning the idea that digital can merely aspire to mimic analog's best qualities. Rather, the Alpha Reference stakes out entirely new territory with a presentation all its own that sounds like neither analog nor digital, but rather like microphone feeds. The Alpha Reference is the first DAC in my experience to cross a threshold in which digital reproduction is no longer judged by how far it falls short of the analog benchmark. Make no mistake; the Alpha Reference is a watershed event in digital audio's long journey out of the Dark Ages. It's not just a little better than the best out there—it is significantly superior in every sonic criterion as well as in the musical involvement those sonic qualities engender. It's safe to say that no one has heard digital audio sound like this before.

The Reference's "un-digital" sound isn't achieved by masking digital shortcomings or by mitigating them with an overly smooth sound or by adding a bit of artificial bloom. Rather, the Reference presents a startling—and I mean startling—sense of tangible instruments existing in what is easily the most spacious and dimensional soundstage I've heard from digital media, from the best high-res files to older CDs. This vividness of timbre and image flows directly from the Reference's crystalline transparency. The Reference reveals that all previous DACs imposed a layer of opacity between source and listener, which diluted the sense of immediacy and realism. Hearing familiar recordings through the Reference is like taking several steps forward through the chain right to the microphone feed. As good as some digital has become, it has never quite engendered that same frisson of realism that comes so easily to analog—until the Reference.

This sense of hearing nothing between you and the instruments is heightened by the Reference's unprecedented timbral truth. The slightly grayish patina overlaying tone colors, the shaving off of fine micro-details that dilute vividness, and the homogenization of images we've become inured to in digital are completely absent. The Reference has an uncanny ability to reveal much more information about how a sound was created, and consequently to produce a more lifelike impression of the real thing. I was struck by this quality while listening to *Skip, Hop, and Wobble*, a wonderful acoustic trio album by Jerry Douglas, Russ Barenberg, and Edgar Myer. Although I've heard this standard-issue CD on countless systems over the years, hearing it through the Alpha Reference was revelatory. The picking of the guitar and dobro, the way each note bursts forth for an instant, the resonant instrument bodies, the fine texture in the dobro's unique timbre, and the sounds of fingers on the strings all came together to create a more convincing illusion of hearing the instruments themselves rather than recreations of them.

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As you'd expect from this description, the Reference's reproduction of the human voice is startling in its naturalness. Jane Monheit's gorgeous voice on the 96/24 version of *Come Dream With Me* has a palpability and immediacy that are downright eerie. The close miking and minimal reverb on her voice make the illusion of someone singing between the loudspeakers that much more credible. Although this file can sound wonderful through other great DACs, it never quite crossed that threshold into making me believe, if just for a few moments during the unaccompanied passages, that someone was actually standing in my listening room. The difference in the electrical waveforms output by the various DACs under consideration must be miniscule, but the musical effect is anything but. The Reference allows the music to create a sense of intimacy between listener and artist in a way that I've never before experienced from digital.

A large measure of the Alpha Reference's sense of realism comes also from the extraordinary spatial presentation. The Alpha Reference's soundstaging, dimensionality, and depth aren't merely spectacular "for digital"; they are spectacular, period. Instrumental images are tightly focused, but in a way different from other digital that has rendered a "sculptured" presentation. Rather, the image outlines are clearly delineated from the air around them in exactly the same way that real instruments sound in an acoustic space. There is no artificial edge to the outlines despite the tight focus. The way the sound expands around the image with each note—what Jonathan Valin calls "action"—is totally natural and lifelike. The spatial rendering is also extraordinary in the layering and bloom, with instruments positioned along the depth axis in a continuum rather than in discrete steps. I've described other DACs as exhibiting this depth-along-a-continuum phenomenon, but the Alpha Reference is clearly in a different league. The see-through transparency I mentioned previously combines with this spatial resolution to present even the lowest-level sounds at the rear of the hall with sensational vividness and clarity. I also enjoyed the manner in which the Alpha Reference "de-homogenizes" familiar music, presenting a collection of individual instruments, each distinct in tone color and space. The Reference is revelatory in the way it allows me to easily shift my attention between instruments or sections, and thereby to hear more of the composer's intent. I found myself experiencing familiar music from a different perspective as more and more musical information was unwoven by the Alpha Reference.

To hear all of these qualities at their zenith in a single musical example, look no further than Dick Hyman and the Swing All Stars at 176.4kHz/24-bit on the Reference Recordings HRx sampler disc. The distinct tone colors of the brass and woodwinds are richly portrayed, even during the unison phrases. The hi-hat "lights up" the acoustic in a completely natural way. The sense of transparent space is palpable. The piece includes an extended passage in which Frank Weiss plays a beautiful sax line that weaves in, around, and counter to the melody played by the brass and winds. The Alpha Reference, more than any digital I've heard, presents this playful counterpoint in all its glory—totally natural and unforced. I defy even the most diehard analog enthusiast to listen to this track through the Reference and detect the slightest trace of the flaws that have traditionally been assumed to be part-and-parcel of digital audio.

For all the Reference's vividness and resolution, it has a completely non-aggressive, almost laid-back character. This may seem like a contradiction, but the Reference's lack of edge and glare allowed it to sound immediate yet relaxed—just like live music. The rapid-fire

flamenco guitars on Paco de Lucia's *Live in America* are beautifully delineated with tremendous transient speed yet without the etch that makes you want to turn the music down. Orchestral crescendos at high playback levels don't create that sense of physical tension or "cringe factor" as your ears prepare for the glare. In fact, the Reference allows you to listen at louder levels, for longer sessions, without fatigue because of this smoothness and liquidity.

It almost goes without saying that the Alpha Reference's resolution is simply stunning. This DAC reaches down into the finest micro-details of timbre, transients, spatial cues, inflection, and dynamic shading. Everything is right there, laid out in a completely natural way that doesn't

of timbre, transients, spatial cues, inflection, and dynamic shading. Everything is right there, laid out in a completely natural way that doesn't call attention to itself as detail. The treble is ultra-smooth, silky, and richly resolved. Even compared with other digital that could be considered as having a smooth treble, the Reference is lacking the metallic bite that has plagued digital audio since its inception. This combination of rich detailing, massive resolution, and timbral liquidity in the top end is simply unprecedented.

The way in which the Reference portrayed dynamics is also unlike any other digital playback. Instrumental attacks jump to life with stunning speed and immediacy, much like one hears from a horn loudspeaker. Listen, for example, to the brass entrance in *The Firebird*, again from the HRx sampler, which will nearly lift you out of your seat. This quality just increases the Reference's vivid realism, but again, without the slightest trace of etch or artificial edge.

As if this embarrassment of riches weren't enough, the Alpha Reference's bass reproduction is in a league of its own. Believe me, no one has ever heard bass like this from digital. For starters, the overall bass balance is weighty, warm, and rich, but without the caveats that typically accompany those descriptors. "Warm" and "rich" often describe a softish bottom end that is pleasant, but that lacks dynamic agility and pitch definition. The Alpha Reference's full-bodied bottom end not only provides a solid tonal foundation, it is also exquisitely textured and nuanced. The sound of plucked acoustic bass, for example, is infused with rich micro-texture and micro-dynamic details that, frankly, other digital simply smears. The attack of the string, the resonant body of the instrument, and the decay are all beautifully delineated in a way that sounds more like the instrument and less like a facsimile. I was surprised by how much more fine detail in the bottom end the Reference revealed. Despite the filigreed rendering, the bottom end has tremendous power and speed.

This synergy of muscular authority, resolution of textural detail, and dynamic agility is sensational on a wide range of music. Orchestral music is big and full-bodied in a way that you rarely hear from reproduced music. The "oomph" in the midbass, richness and density of tone color, and that thrilling visceral involvement you hear from live music are abundant through the Reference. The sense of rhythmic propulsion on rock, blues, and some jazz is nothing short of addicting. The track "Trans-Island Skyway" from the 96/24 version of Donald Fagan's *Kamakiriad* has an unusual meter that gives it a powerful propulsive groove. The Reference better resolved this track's amazing bottom-end dynamics, and not just in pure impact but also in the lack of smearing of the closely spaced kick-drum attacks. The Reference takes this track up several notches in that powerful ability of music to involve your entire body.

Perhaps not coincidentally, all the components in my current playback system share the specific quality of muscularity in the power range. The Magico Q7s, with their dual 12" woofers and 10" mid/woofer in a totally inert sealed enclosure, the mighty Soulution 701 monoblocks with their unprecedented bottom-end impact and resolution, and the MIT Oracle MA-X, known for its richly textured bass and midbass, teamed up to produce what is in my experience the most expressive presentation of what the British call pace and timing of any audio system I've heard. The Alpha Reference at the front end of these cost-no-object components revealed qualities in those components that had previously not been fully exploited.

I found myself astonished that these characteristics are apparent not just in super-high-resolution audiophile spectaculars, but across a wide range of music in my digital library. Standard CDs of my favorite recordings that I'd thought sounded hard, flat, and relatively low in resolution were "unwoven" by the Reference to reveal a rich panorama of musicality. That's a significant observation because it reveals that our CD libraries contain buried musical expression that can be released by improvements in digital-to-analog conversion technology.

Conclusion
The Berkeley Alpha DAC Reference Series is not only the absolute state of the art in digital-to-analog conversion, it also goes far beyond even this superlative to redefine what's possible in digital playback. This is a landmark product in that it crosses a threshold of sound quality and musical expressiveness that renders moot the idea that digital can only aspire to mimic analog rather than offer its own set of virtues.

I won't reiterate the Alpha Reference's merits, but can guarantee that you've never heard digital audio sound like this. This is a product that you have to hear for yourself to believe just how far digital has traveled. I'm also heartened by the Reference's price. Although not inexpensive, $16,000 for the unquestioned state of the art in digital playback makes it seem like a bargain.

On a personal level, I can't tell you how thrilled I am to experience an entirely new and unexpected level of musical involvement from my library of standard-resolution CDs and files. After one particularly rewarding session, I reflected on how Berkeley Audio Design epitomizes the highest ideals of high-end audio.

Ritter and Pflaumer toiled for years, researching the finest minutia of design details that affect sound quality to create a product that has allowed me to experience a deeper level of musical involvement and appreciation. Their single-minded pursuit of performance above all else exemplifies the ethos behind the landmark breakthroughs in the history of high-end audio.

And breakthrough the Alpha Reference is. I'm confident in saying that the Alpha Reference will be remembered decades from now as a turning point in digital audio sound quality.

SPECS & PRICING

Input sampling rate: 32kHz-192kHz
Input word length: 24-bit
Inputs: AES /EBU, SPDIF on BNC (x2), TosLink
Outputs: Balanced on XLR jacks, unbalanced on RCA jacks
Output level: 6.15Vrms at 0dBFS (balanced); 3.25Vrms at 0dBFS (unbalanced)
Digital volume control and balance: 0.1dB steps, 0.05dB L/R balance, 60dB range
Remote control: Volume, balance, input selection, absolute polarity reversal
Digital filter: Custom, user selectable

Digital filter: Custom, user selectable
THD+N: <–110dBFS at maximum output
Firmware: Upgradable through signal inputs
Warranty: Three years parts and labor
Dimensions: 17.5" x 3.5" x 12.5"
Weight: 30 lbs.
$16,000

Berkeley Audio Design
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berkeleyaudiodesign.com (http://berkeleyaudiodesign.com)

Associated Components
Loudspeakers: Magico Q7
Preamplifier: Constellation Audio Virgo II
Power amplifiers: Soulution 701 monoblocks
Analog: Basis Inspiration turntable, Air Tight PC-1 Supreme cartridge
Phonostage: Simaudio 810LP
Interconnects: MIT Oracle MAX, Transparent Reference XL, AudioQuest WEL Signature
Loudspeaker cables: MIT Oracle MA-X SHD
Digital cables: Wireworld Platinum Starlight, AudioQuest Eagle Eye (BNC), AudioQuest Wild (AES /EBU)
AC power: Four dedicated AC lines, Shunyata DPC-6, Triton, Talos, Cyclops, and Typhon conditioners, Audience aR-6TSS , aR2-TSS
AC cables: Shunyata Alpha Digital, Alpha HC, Anaconda; Audience Au24SE
Racks: Stillpoints Ultra
Amplifier stands: Critical Mass Systems MAXXUM
Isolation: Stillpoints Ultra 5, Ultra SS , and Ultra Mini; Critical Mass Systems Rize; Shunyata cable elevators
Acoustics: ASC 16" Full-Round Tube Traps, ASC Tower Trap, Stillpoints Aperture panels