

ANTELOPE AUDIO ZODIAC



Antelope Audio Zodiac DAC \$1,895 USD

by
Dr. John Richardson

I well remember reading about Antelope Audio's Zodiac series of DACs some time before the products were ever released. As seems to be the norm these days, someone leaked an announcement of the product onto several well-traveled audio sites and then sat back to see what would happen. Hey, I'm not complaining, as I think it's fun to watch all of the regulars at those sites speculate about what sort of DAC chip the device will have, how expensive it will be, what it will look like, and of course, how it will sound. I recall finally seeing a picture of one of the first Zodiacs to hit the market and thinking to myself how elegant it looked. I made a mental note to myself that this DAC would be a good one to put on my "to be reviewed" list.

Here we are, nearly two years after the first Zodiacs hit the street, finally getting around to doing the review. I'll disclose, however, that this is not my first experience with the Zodiac DAC. It was first introduced to me in the flesh by Jack Caldwell, of Holistic Audio Arts, who brought one along when he came to set up my H1 speakers; his was the Zodiac+ (\$2695 usd), which is the middle of Antelope's DAC line. Also available are the top of the line Zodiac Gold (\$3895 usd) and the entry level Zodiac (\$1895 usd), which is the subject of this review.

Even though the Zodiac is Antelope Audio's entry level DAC, it's still the most expensive DAC I have reviewed. My terrain so far has been in the \$600 to \$1300 price window. My goal here will be to try to tell you whether or not I think it is truly a step above the less expensive competition that I am most familiar with. Remember that here at Stereomojo, discerning good value is one of our primary goals.

Let's start with some background on Antelope Audio, a pro audio company founded in 2005, for which Igor Levin is the lead designer. Prior to this time, Mr. Levin founded and designed gear for a company called Aardvark and had focused on the task of synchronizing digital devices in the recording chain. As such, he developed an external clocking device to output a common clocking signal that could be used to synchronize data flow in any combination of digital components. As we now know, this approach leads to lower jitter which in turn leads to better sound. By the time Antelope Audio was founded, Mr. Levin was focusing on how to make better clocking devices, culminating in the idea of thermally stabilizing the oscillator to eliminate environmental fluctuations in the clocking signal. Now, Antelope Audio offers a full line of D/A converters,

A/DD/A converters, and external clocks, all of which are based on Mr. Levin's oven-controlled oscillators. While initially a pro audio only company, Antelope has more recently branched out to design crossover products that could be equally used and enjoyed in mastering studios and audiophile listening rooms. The Zodiac series of DACs are perfect examples of such products.

To get a better picture of what the Zodiac DACs are all about, I posed a few questions to Antelope's Igor Levin.

JR: Tell us something about the importance of the oven controlled clock with regard to improved sound.

IL: High-accuracy clocking is the key to avoiding the loss of details and poor stereo imaging. An accurate clock creates better timing reference by providing more stable pulses, which determine the exact placement of each sample. Without the accurate clocking reference, the sample might appear earlier or later, which results in audio-damaging fluctuations called jitter.



The timing is managed by the clock, which is basically a crystal oscillator and as such, is an analog component that vibrates and responds to the environment. Any fluctuations in the temperature result in fluctuations in the timing reference provided by the clock. This is how I came up with the idea of introducing the Oven Controlled Crystal Oscillator. So I put the crystal oscillator in an enclosure which keeps the temperature constant. Keeping the temperature constant is extremely important to improve stability and jitter performance. This is how I introduced Antelope's Isochrone line of audio master clocks (Iso - same; chronos - time from the Greek). Now, the technology originally developed for professional recording and mastering studios, runs the digital signal in the Zodiac DAC family.

JR: How is your implementation of the USB interface different from others?

IL: In our designs we can use both async and sync modes, but we found that the most marketed mode (async) does not provide the smoothest user experience and requires proprietary drivers on some operating systems. Since we are one of the few that have the hardware capability to use sync mode we utilize it instead of the async in our DACs. This is why we offer users a plug and play custom USB interface with native drivers, requiring no additional software installation both for Mac and PC. The benefits are 384 kHz streaming (currently Zodiac Gold only), excellent jitter performance and smooth user experience without additional drivers.

In addition we are developing a dedicated USB ASIO driver for Windows that will allow users to stream audio up to 384 kHz on Windows platform.

JR: What aspects do all three of the DACs in the Zodiac family share?

IL: The main aspect that is common to all three DACs from the Zodiac family is my philosophy that the converters should be transparent. Any sound shaping should be done by dedicated devices (equalizers, compressors, tape simulators, tubes, transformers) that are designed for the purpose and have a great degree of adjustability and control. To have a 'colored' converter is like having a camera with a pink-colored lens - you do not always want all your pictures in pink.

The main technologies we are using in all three models provide the transparency that we are looking for. All Zodiac family DACs have the Oven Controlled Crystal Oscillator and the Fourth Generation of Acoustically Focused Clocking jitter management, as well as the custom designed USB interface and the dedicated dual stage head phone amp, designed to deliver high-quality sound both at high and low levels. Another common feature is the software control panel available for OS X, Windows and Linux giving the users the freedom to control the DAC, update the firmware and adjust additional options from the computer.

JR: Share with us any other thoughts you might have on design/implementation choices you made for the Zodiac series.

IL: While all three models are designed to provide high quality sound they offer certain features shaped according to their targeted customers. This is the reason why in Zodiac+, which is meant for the pro market you can find more connectivity options than in Zodiac, as well as a mono function which is not so common for home use. At the same time, the flagship Zodiac Gold, targeting the more demanding audiophile market, offers the 384 kHz streaming, the step relay volume attenuator and a remote control. The separate power supply, Voltikus, originally came as an addition only for Zodiac Gold. Now we see that users of all three models are also looking for it, as it enhances the sound considerably.



An interesting choice is the design of the DACs, aiming to fit well both in home and studio environments and being small enough to be easily portable.

The Zodiac is a precision DAC with an on-board volume control and high quality headphone amplifier. Also found on the device are the typical input/output options usually seen on pro audio converters: dual optical toslink, dual coaxial RCA S/PDIF digital inputs (but no AES/EBU option), and both RCA and balanced XLR analog outputs. There is also a mini usb option, so the Zodiac can be interfaced directly to a computer. The RCA and usb inputs will handle files up to 192 kHz resolution, whereas the optical input is limited to 96 kHz. On the front panel are the on/off switch, source selector, main volume knob, separate headphone volume knob, and two headphone jacks. The display above the main volume knob indicates the input sampling rate, while the small white LED to the left of the volume knob burns steadily when the input is locked to a digital source and blinks when the incoming digital signal is interrupted.

Some purists might be put off by the Zodiac's external switching power supply. While the supply is of the ubiquitous inexpensive Chinese variety, I found it to work just fine. I also find this not to be too alarming, as it gives the buyer the opportunity to upgrade the power supply down the road. I have read of good quality third-party linear supplies for the Zodiac offered by outfits such as Welbourne Labs and Teddy Pardo for reasonable prices; one could also opt for the more expensive matching Voltikus supply offered directly by Antelope (\$995 usd). Jack Caldwell was demoing his Zodiac powered by one of the nice battery supplies from Red Wine Audio. I like this degree of flexibility and upgradability in a product, though it will add some cost to the Zodiac's sticker price.

A few more off the wall observations: some folks might find the boxy (almost cubic) appearance of the Zodiac to be a bit unusual; I know I did. I'd like to think that it adds a bit of panache to my rack. Also, I found the champagne-like finish on the enclosure picks up fingerprints easily, especially when cables are being swapped in and out. One might want to invest in some cotton gloves when handling the DAC to avoid such oopsies. Overall, as I said before, the appearance is quite elegant and upscale, unlike much of the pro audio gear I have auditioned.

Since the Zodiac is the low end of the Antelope DAC line, I wondered if it would give up much ground sonically to its more expensive brothers, the Plus and the Gold. The good news here for value minded audiophiles is that the important innards (e.g., the DAC chip, receiver chip, analog output circuitry, and of course, the super precise oven-controlled clock) are identical in all three models. What more money buys you is primarily more features. For example, the Plus gets you balanced and unbalanced analog inputs as well as de-jittered digital outputs, among other things. Going all the way to the Gold gets the buyer additional goodies such as a precision stepped attenuator, fancy remote control and 384 kHz processing capability.

Overall, I found the Zodiac to be easy to set up and operate, and I gave it a good 500 hours of playing time before doing any critical listening. My digital setup was pretty typical: my Mac Mini using iTunes played back via Channel D's Pure Audio software sent the bits by way of usb to a new piece of gear in the arsenal, a Sound Devices USBPre 2 interface serving as a usb to S/PDIF converter (more about this little wonder in a future review). The digital signal then went from the USBPre2 to

the RCA coaxial digital input on the Zodiac. One other addition to the system also made a huge difference and was used for all critical listening: the wonderful Spiritual Audio VX-9 power conditioner. Look for a future review on this game changer as well!

Given that the Zodiac was originally designed to function as a studio mastering DAC, it should be no surprise that transparency to the source is a hallmark of its performance. I really couldn't assign much in the way of a sonic fingerprint or characteristic to it. If you are looking for something to "fatten up" the sound of your system, then look elsewhere. Not that this is a bad thing at all, as the Zodiac never went so far as seeming threadbare or strident. Not at all. What you get is what's on the recording, no more, no less.

Along with this sense of transparency came an uncanny sense of pace and rhythm. The DAC just felt fast, in the sense that it was easily letting go of the notes. In comparison, some of the other DACs in my stable added a bit more texture to the music, but when placed against the Zodiac somehow seemed sort of slow and languid; congested, if you will. If I were to distill the Zodiac's sonic merits into just a couple of words, it'd be "crisp and clean" (and no caffeine, whose presence would suggest that there is some extra zing present that shouldn't be).

During my evaluation of the Zodiac, much of my attention seemed to be drawn toward the highs. While not overemphasized in any way, I feel that the improvement and resolution in this part of the frequency band is what makes the increase in price over my normal DAC candidates worthwhile (if that's important to you). What I heard was crystal clear extension with plenty of space or air around the notes. Since many spatial clues in music reproduction occur in the treble, I also heard more precise soundstaging in all directions than I'm normally accustomed to. I loved hearing the shimmering sweetness of cymbals and triangle, whose reproduction took on a lifelike presence I normally don't get to hear in my home system... There was a sense of harmonic extension that in a dark room could sound hauntingly like the real thing. Of course, my system is not overly bright sounding, so I do have to wonder whether this sense of treble extension might be too much of a good thing in some systems and lead to fatigue.

To make my listening comparisons easier, I set up a playlist with cuts from four recent favorite LPs that I have digitized and have been enjoying:

"Joy Spring," from Freddie Hubbard "The Best of... Live and in the Studio," Pablo 2405-415, LP

"Andante con Moto," from Serenata Concertante by Elizabeth Maconchy, Lyrita SRCS 116, LP

"One Never Knows," from Modern Jazz Quartet "Last Concert," Atlantic SD-2-909, LP

"Orient Blue Suite," from John McLaughlin, Al DiMeola, and Paco DeLucia "Passion, Grace and Fire," Columbia FC 38645, LP

Other DACs I had on hand for comparison included my Eastern Electric Minimax (\$750 usd when still available), a Lavry DA10 (\$1148 usd), and the internal DAC on the Sound Devices USB Pre2 interface (\$650 usd). Of these, the Lavry and Sound Devices boxes are closest feature-wise to the Zodiac.



Listening to Freddie Hubbard's "Joy Spring" was a joy with all of the DACs. Of the bunch, the Sound Devices USB Pre2 had the weakest showing, sounding quite musical, but congested and not as resolving as the others. That's acceptable, given its price and functionality. The Lavry and Eastern Electric boxes definitely upped the ante, sounding fleshed out and exceedingly musical, yet highly resolving. I really liked the full, fleshed out tones of the sax and trumpet through both boxes. However, my favorite among the bunch was the Zodiac, especially in its rendering of high frequency information. For example, the cut opens with some high pitched chimes which the Zodiac reproduced (to my ears, anyway) almost to perfection, with just the right pitch and extension. Later on, there is a ride cymbal that has a metallic, sustained overtone between strikes that the Zodiac really gets right. I almost thought I was hearing a real cymbal until I opened my eyes. I could hear the sustain with the other DACs, but it was dulled and nowhere near as realistic.

Differences were a bit harder to discern when listening to the Maconchy Serenata Concertante. This piece is quite beautiful, but like much modern music, takes a few listens to grow on you. Here, we have a full orchestra with emphasis on strings, punctuated with some interesting percussive effects. Early in this movement can be heard a moving bass line above which emerges a solo violin, which when reproduced well, seems to float freely in space. All four DACs on trial were able to reproduce this effect with reasonable realism, but again, it was the Zodiac that took the honors. Through the Antelope DAC there was more delicacy to the violin, with more space and air around the instrument. Also, due to the Zodiac's transparency, I could hear improved delineation within the orchestra, with each section taking its place in three-dimensional space. Perhaps the Lavry and Eastern Electric DACs provided a bit more depth of tone, especially in the midrange and bass, but again, this tended to make them also sound a bit slower and muddled in comparison to the Zodiac.

Again, the Zodiac more than held its own on the Modern Jazz Quartet's "One Never Knows," from the "Last Concert" album. Here, my attention was drawn to two things: Milt Jackson's vibes and Connie Kaye's percussive timekeeping. In both cases the Zodiac's exquisite handling of timing paid dividends, as the vibes had a natural sense of attack and decay without any sense of heightened overtone or ring (regular readers will know that I often use the vibraphone as an indicator of timing and tonal accuracy). Likewise, there is an emphasis on the use of bells and chimes in the percussion, both of which grabbed my attention via the Zodiac. As before, this DAC excelled in its ability to portray the treble registers of these instruments with uncanny timing, attack, and extension, thus rendering them in a most natural and lifelike sense. Relative to the other DACs, I did note that the piano didn't seem quite as harmonically fleshed out through the Zodiac. My feeling here is that the Zodiac has a tendency not to embellish in any way to make the music seem more fleshed out or euphonic; in other words, it doesn't emphasize any particular part of the frequency spectrum. Some listeners may not like this approach as much and may favor a richer harmonic presentation, especially through the all-important midrange. As I've said before, that's one reason why system matching and personal preference play such an important role in this hobby.

I haven't yet mentioned bass performance. In this regard, the Zodiac showed excellent extension, but also tremendous control. There was no sense of overripeness or flabbiness whatsoever. Again, to some listeners, the bass might feel a bit underwhelming at first due to the lack of control that characterizes many less refined DACs. Careful listening, however, will quickly show the error of that assumption.

The final test cut, "Oriental Blue Suite," is a three-guitar extravaganza. I often use this piece to listen for tonal realism and also precision of soundstaging. The guitarists are arrayed across the soundstage left, center, and right, but the wash of sound can become so overwhelming that it becomes difficult to determine the placement of each performer. All four DACs did a good job of making the guitars sound like real instruments in real space. However, I appreciated the resolution of the Zodiac in that it conveyed a greater sense of attack such that I could better visualize the movement of hands on the fretboards of the instruments and the actual interaction of fingers against strings.

After all of these evaluations, I decided it was time to give the usb interface a try. With some other DACs I have spent time with, the usb option proved slightly disappointing, as it offered a less than stellar version of the S/PDIF performance. Much of this lies in the implementation of the usb interface itself (e.g., what type of receiver chip is used, whether the interface is adaptive or asynchronous, whether the data are re-clocked or not, and even the quality of the usb cable itself). Usb itself can be a noisy interface, and control of timing of the arrival of the bits that carry the music is critical. With the Zodiac, I really wasn't expecting much; certainly not an improvement over the coaxial S/PDIF interface. And here I was surprised: I found the performance of the Zodiac simply delightful via usb! I'll even go out on a limb here and declare that I slightly preferred it to the coaxial S/PDIF option. What I got was some fleshing out of the midrange timbre that seemed to be ever so slightly missing before, but without any sense of loss of detail or resolution. In other words, the best of both worlds. Maybe the S/PDIF interface is more accurate, but the usb was sure a joy to listen to. My advice would be to try it before investing in a usb to S/PDIF converter, as you might well be more than satisfied. I also found in this performance proof again that a well-implemented non-asynchronous interface can work quite well, thank you very much.

Lastly, there's the headphone amplifier section of the Zodiac DAC. I'll admit that I didn't spend much time here, as I'm really not a headphone junkie. I did employ it in conjunction with my Audio Technica ATH-AD900 'phones when doing some noise reduction of archived vinyl records. The Zodiac had no problems driving the Audio Technicas, but that comes as no surprise since these are low impedance 'phones which don't take much power to get going. I found the headphone section to be more than up to the task I was using it for, providing me with plenty of definition and resolution without ever becoming harsh or screechy. A good showing, but I'd suggest the true headphone nut give the Zodiac a careful audition with his/her headphones to be sure of compatibility.

STEREOMOJO

SPECIFIC RECOMMENDATION

This is the time when I have to address my original question about the value of the Antelope Zodiac DAC. Is it really worth the asking price, especially for a cheap bastard on a stretch? For the listener looking to get a bit closer to the real thing, then yes, it's worth the asking price, especially given its multiple capabilities. Most impressive sound-wise were the rhythm and timing of the music as well as the incredible sense of presence and extension of the treble. My only niggle was the slight sense of dryness in the midrange, but this was ameliorated by using the USB interface.

Yes, folks, the Zodiac DAC is the real deal and well worth an audition, and proof positive that a little bit more money sometimes really does get the consumer a commensurate (or better) improvement in performance. Well done, Antelope Audio!