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COMPUTER AUDIO/DIGITAL EQUIPMENT REPORT



Antelope Audio Zodiac Platinum DSD DAC, Voltkus PSU, and Audiophile 10M Atomic Clock

NEW REFERENCE

Steven Stone

When I started in the audio business “professional” gear and “consumer” gear were very different. Pro gear was all about reliability and ruggedness. For manufacturers of pro-sound equipment, sound quality was secondary to ergonomic considerations, and virtually no serious audiophile would use pro gear in his home system. But about ten years ago things began to change. As audiophiles embraced computer audio and high-resolution digital they discovered that pro-audio companies such as Benchmark, Lynx, Grace, Meitner, Mytek, and Antelope Audio were already making devices for professional recording engineers that would work nicely in a high-performance home-audio system. Nowadays it could be said that the only difference between top-tier pro and consumer gear is where or whom it’s purchased from.

Igor Levin, whose work in high-performance digital-audio products began in 1990, created Antelope Audio. His first company was called Aardvark. It made one of the first SPDIF cards for PCs, as well as analog-to-digital (A/D) and digital-to-analog (A/D) converters, USB interfaces, and digital re-clocking units. Sonic Solutions, which makes Amarra playback software for the Mac as well as professional mastering software, was among the early adopters of Levin’s new hardware. After Sonic discovered that Aardvark’s re-clocking unit made a noticeable improvement in the overall sound quality of its mastering systems, it began recommending the Aardvark clock to its customers. In Levin’s words, “All of a sudden, I had a ‘hit’ product...The clock I built for my own converters turned out to be much more important than the converters that I built it for.” Antelope Audio has further refined and developed digital clocking technology to the point where its top-of-the line DAC uses a rubidium “atomic” clock at its heart.

The Antelope Audio Zodiac Platinum DSD DAC, Voltkus power supply unit (PSU), and 10M Atomic Clock are Antelope’s newest flagship “home-audio” DAC system. The system consists of three separate boxes—the control unit, a power supply, and an external clock. The Zodiac DAC has its own internal clock so it can be used without the 10M Atomic external clock, but for optimal performance Antelope recommends employing the 10M clock unit as part of the complete Platinum system. On the Zodiac site you can find videos in its “Blog” section that explains Antelope’s clocking technology. One features WuTang Clan producer, Yoram Vasan, talking about what a difference using the 10M clock made in the sound of his mastering system.

Technical Tour

If you are the sort of audiophile who demands solid technical reasons before you commit to a product, Antelope’s website will be a welcome respite from your average thin-on-info site. At the Antelope Audio site you’ll find a plethora of short videos and printed technical data on each of Antelope’s products, along with a multiplicity of reasons why Antelope Audio’s engineering expertise in digital re-clocking and clocking circuitry makes them special.

The Antelope DAC system’s basic capabilities are as follows: It supports sample rates up to 384/24 PCM and 128X DSD via any of its inputs except TosLink, which only supports up to 192/24. Instead of a single DAC the Platinum employs two independent TI DAC chips (quad architecture) for better dynamic range and linearity. The left and right channels each have a dedicated two-channel DAC chip; this offers better signal-to-noise and separation than earlier Antelope DACs.

Antelope uses field programmable gate arrays (FPGA) to create its own proprietary upsampling filters that replace the stock filters

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built into the TI chips. Igor Levin says in an Antelope video, “We have chosen what we think is the best, most natural-sounding audio algorithm in reconstructing the wave, and the precision we’re carrying out is much higher than what can be done on the chip.” The Antelope 8x filter upsamples 44.1 sources to 352.8.

All DSD, whether 64x or 128x, is upsampled by the Antelope Audio Zodiac Platinum DSD to 256x using an upsampling algorithm similar to the one Levin developed for PCM sources. These dedicated upsampling filters are part of the secret sauce that differentiates the Zodiac DAC from the competition.

Antelope Audio has employed stepped relays in its volume-control circuits for a while. According to Antelope Audio’s site, “Precision resistors are used to establish the level and the relays, which are electronically operated switches that step between each level in incremental steps.” Antelope first initiated this design on the Zodiac Gold model, but for the Zodiac Platinum DSD Antelope sourced new, quieter relays. Unlike previous generations of relays, which made audible clicks as the volume knob was turned, the Zodiac Platinum DSD only emits a faint mechanical click from the knob itself. With its calibrated and delineated 0.5dB adjustments, the volume control makes matching levels between different sources easy.

The Zodiac Platinum DSD comes with Antelope’s second-generation Voltkus power supply. This triple-regulated design features internal power-line filtering, a toroidal transformer, a newly designed cable, and a new locking connection. Thanks to its small size and relatively cool operation, it can be placed in tight spaces without any worries about heat.

The third part of the Zodiac Platinum DSD DAC, Voltkus PSU, and 10M Atomic Clock triumvirate is the 10M external clock. Despite the fact that the Zodiac Platinum DSD has its own internal ultra-low-jitter, oven-controlled crystal oscillator, Antelope has developed an even better external clock, the Isochrone 10M Atomic Reference Generator. According to Igor Levin, “I would always recommend the use of a separate dedicated master clock. This is the only way one can be sure that the digital devices are perfectly synchronized and that jitter multiplication due to device-chaining is avoided.” The Audiophile 10M Atomic Clock is a scaled-down version of the Isochrone 10M Atomic Reference Generator, which supports eight separate devices. The Audiophile 10M has only two clock outputs.

The dual headphone outputs on the front panel of the Zodiac Platinum DSD also employ the Zodiac’s relay-based volume control. The headphone outputs have a dual-stage driver configuration that was implemented to improve the Zodiac Platinum DSD’s impedance control. The Zodiac Platinum DSD has two user-changeable options for headphone impedance—120 ohms or 0 ohms.

Ergonomics

Although the Antelope Audio Zodiac Platinum DSD DAC/Voltkus PSU/10M Atomic Clock is a three-chassis design, the only unit with any control interfaces is the Platinum DAC DSD itself. The Voltkus power supply and 10M clock attach via supplied, decently long cables to the back of the Zodiac DAC, so they can be placed some distance away from the main control unit.

On the front of the Zodiac Platinum you will find a small centrally located display window with a large volume knob

directly below the display and a small mute button at the bottom of the panel. On the right hand side of the front panel are a pair of ¼" stereo headphone outlets with a small output selector switch above. On the left side of the front panel are indicator lights for DSD or PCM, digital lock, atomic-clock lock, word-clock lock, mono/stereo indicator, and pushbuttons for power, source, and mono/stereo selection.

The rear panel of the Antelope Audio Zodiac Platinum DSD DAC is a model of organization. On the left side are the clock, power inputs, and digital and analog inputs; on the right side are all the analog and digital outputs. The Platinum DSD has two TosLink, two SPDIF, one USB, and one AES/EBU digital input, as well as a pair of balanced and unbalanced analog inputs. Outputs include one pair of balanced, one pair of unbalanced, and two pairs of analog headphone outputs. On the digital side the Zodiac has two SPDIF and one AES/EBU digital outputs.

The Antelope Audio Zodiac Platinum DSD also comes with its own remote control. Solid aluminum with seven machined pushbuttons, the remote supports volume, source selection, mute, power on/off, and headphone A/B switching. Nitpickers may find the slight rattle that comes from the metal buttons when you move the remote disconcerting, but no matter how hard you shake the Zodiac remote I guarantee you that nothing will fall out.

Antelope Audio has an Android app to control the Zodiac Platinum DSD DAC. An iOS version is also in the works, but at the time of this review the project was not far enough along for Antelope to release even a beta version, so I advise iPhone users not to hold their collective breaths while waiting for its appearance.

With its three separate analog outputs and three digital outputs the Antelope Audio Zodiac Platinum DSD DAC was designed for maximum flexibility. For pro studios, having the ability to send a “feed” to more than one pair of monitors is essential, and the Zodiac Platinum DSD DAC will easily fit into such a system. The Zodiac will remember each volume setting’s last level, so when you switch outputs via the front panel or remote, the volume levels will change to the last previously used level for that output.

Even for a consumer, having multiple analog outputs can be a very useful feature, especially if you can gang them together so the balanced output can go to your main speakers while the single-ended unbalanced output goes to your subwoofer. The fact that the Zodiac’s outputs are only configured for independent output levels, while not unusual with pro gear, can be somewhat inconvenient. This inability to have the two analog outputs change levels in tandem makes it slightly more difficult to use the Zodiac Platinum DSD DAC as a DAC/pre in a desktop system—you will need to use a splitter/adaptor to make one pair of the two analog outputs into two pairs, or be blessed with a subwoofer that possesses a pair of pass-through input/outputs.

As you would expect, the Zodiac Platinum DSD DAC requires proprietary drivers with Windows-based PCs, but Antelope has also developed special drivers for Mac computers. On the Zodiac Platinum DSD DAC download page you will find “control panels” for Windows, Mac, and four varieties of Linux. The control panel mimics the Zodiac Platinum DSD DAC front panel in every way—any adjustment you can make to the actual Zodiac Platinum DSD DAC, you can make to this virtual Zodiac Platinum DSD DAC. If I were feeling lethargic, being

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able to adjust the Zodiac Platinum DSD DAC without rooting around for the remote or leaning over to where the actual Zodiac Platinum DSD DAC was located would be a very nice thing. For A/B comparisons the desktop control panel came in very handy. I could change source and adjust levels without moving my head more than a millimeter or two. And if you need to configure a system where the DAC will be situated well out of reach or even in a separate “machine room” this virtual control surface could prove to be essential.

Installing the Zodiac Platinum DSD DAC in my desktop system was a simple affair, and during the course of the review I tried several different configurations. Part of the time I used the Zodiac Platinum DSD DAC connected to either the Wyred 4 Sound mPre or NuForce MVP-18 via balanced analog outputs. I also used the Zodiac Platinum DSD DAC without a separate preamp by attaching the Zodiac Platinum DSD DAC’s single-ended outputs to a Velodyne DD+10 subwoofer and then connecting the “pass through” outputs on the Velodyne to a pair of Wyred 4 Sound mAMPs driving a pair of Audience Clair Audient 1+1 speakers. This left the Zodiac Platinum DSD DAC’s balanced outputs available for my Stax SRM-007t headphone amplifier.

Day-to-day operation was simple and straightforward: select an input, set the volume levels, and listen. One unique feature on the Zodiac Platinum DSD DAC was its “mono” switch, which is something you don’t often see on DACs. And unlike most “mono” switches I’ve used which instantly switch you from stereo to mono and back, the Zodiac Platinum DSD DAC’s mono switch does a more gradual changeover. If you push the switch while wearing headphones you will hear the soundfield collapse incrementally into mono from stereo or gradually expand from mono into a stereo soundstage. It’s guaranteed to deliver hours of listening fun.

The USB connection was very stable without any dropouts or momentary signal losses. All formats, from 64kbps streaming up to and including 128X DSD played through the Zodiac Platinum DSD DAC with no glitches or unexpected surprises.

You can, if you wish, turn off the Antelope Audio Zodiac Platinum DSD’s upsampling feature. I tried it without the upsampling turned on, and after a couple of minutes of listening I went back to the default with upsampling on. The Antelope Audio Zodiac Platinum DSD lost some of its mojo with the upsampling turned off.

Sound

After only a few hours listening to the Zodiac Platinum DSD DAC I knew I was faced with a pleasant but nonetheless daunting reviewer’s dilemma. The Zodiac Platinum DSD DAC is simply the best DAC/pre I’ve heard in my system to date. Is it head-and-shoulders better than other DACs I’ve experienced? No. But while its superiority may not amount to a large margin, the improvement in transparency, pace, reduction in low-level noise, and overall musicality made my time with the Zodiac Platinum DSD DAC memorable.

Although this may not be of primary interest to audiophiles who only listen to high- and super-high-res material, the Zodiac Platinum DSD DAC’s ability to improve the sound coming from less-than-optimal Internet radio streams, 320kbps MP3s, and even 44.1/16 sources was impressive. During the review period the local

community radio station in Boulder had a special dedicated live feed coming directly from the RockyGrass Bluegrass Festival. This 128kbps stream sounded much better through the Zodiac Platinum DSD DAC than it had any right to sound. Instead of the flat, one-dimensional, opaque presentation that I usually hear from Internet streams, the Zodiac Platinum DSD DAC allowed me to listen as deeply into the RockyGrass feed as I do with higher-resolution material. During the weekend KGNU alternated between playing live sets directly from the stage and playing recorded sets from the previous evening. It was easy to hear the difference between live and recorded sets (even with a 128kbps feed) through the Zodiac. I can readily understand how a pro engineer who *has* to work primarily with MP3s would find the Zodiac Platinum DSD DAC to be an essential ear-saver.

Switching over to my own 128x DSD live recordings, the Antelope Audio Zodiac Platinum DSD DAC, Voltkus PSU, and 10M Atomic Clock did a faultless job of decoding and laying out the musical information in a manner that was consistent with what I heard when the recordings were originally made. As part of my work for *Vintage Guitar Magazine* I visited the RockyGrass Academy, which occurs four days before the festival begins, where I recorded a guitar duo workshop by Bryan Sutton and Chris Eldridge. Through the Zodiac Platinum DSD DAC I could hear all the subtle tonal colors that differentiated Sutton’s 1942 rosewood-bodied Martin D-28 from Eldridge’s 1937 mahogany-bodied Martin D-18. Also the distant background sounds from the multiple belt-sanders’ whine from the mandolin-building class, and the voices of happy children splashing in the St.Vrain river, came through, distinct and separate from Sutton’s and Eldridge’s heavenly-sounding guitars.

SPECS & PRICING

Zodiac Platinum DSD DAC/ preamp

Dynamic range: 129dB
Sample Rates: 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz, (352.8kHz and 384kHz through USB only), 64X DSD, 128X DSD
Inputs: One BNC; one AES/EBU XLR; two SPDIF RCA; two RCA analog; two 1/4" TRS analog; two optical TosLink
Outputs: Two analog XLR; one AES/EBU; two SPDIF; two analog RCA; two headphone
THD: 0.0004%
USB: 2.0 Hi-Speed, Type B
Dimensions: 6.5" x 4.4" x 7.5"
Weight: 4.4 lbs.

Voltkus Power Supply for Zodiac DAC

Input power: 120V-240V; 50Hz-60Hz
Output Power: 18V DC
Dimensions: 4.4" x 4.2" x 6.6"
Weight: 5.5 Pounds

10M Atomic Clock

Clock frequency: 10MHz
Timing Accuracy: 0.03ppb
Connections: Umbilical to Connect with DAC, Grounded AC
Dimensions: 4" x 4.4" x 6.6"
Price: \$5500 (for Zodiac and Voltkus); \$12,995 (for Zodiac, Voltkus, and 10M)

ANTELOPE AUDIO
(415) 869-9661
antelopeaudio.com

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Several times during the review I A/B'd the Zodiac Platinum DSD DAC with and without the 10M atomic clock connected. Although the difference was subtle, it was consistent, with better pace and a less mechanical overall sound via the clock. Once more the salubrious effects of the 10M clock were more apparent with standard 44.1 and lower-resolution sources than with 192/24 and 128x DSD material. I also found that the fatigue factor was reduced with the clock connected. With the 10M clock as part of the system, even after ten-hour spans of almost continuous listening, my ears felt fine, which is not always the case with other gear.

The Zodiac Platinum DSD DAC headphone outputs proved to be flexible and powerful enough to drive the vast majority of headphones successfully. With the least efficient cans in my collection, the Beyerdynamic DT-990 600-ohm model, the Zodiac Platinum DSD DAC had more than enough gain for commercial releases and just about enough for my own recordings when the level was turned up to -0dB. Switching over to the most sensitive monitors I have, the Westone ES-5 in-ears, I noticed no hiss or extra noise when no signal was present, which is a feat few other built-in headphone amplifiers have matched. The Zodiac Platinum

DSD DAC headphone amplifier section ranks among the most compatible-to-a-wide-range-of-cans amplifiers I've used including stand-alone analog-only headphone amps.

Conclusion

Some audiophiles treasure high-end components as art objects as much for their impressively thick faceplates or overall physical "presence" as for their performance, no matter how stellar that performance may be. Those who need to see platinum on the outside of their components may not initially see the beauty of the Zodiac Platinum DSD DAC after a cursory once-over. The Zodiac Platinum DSD DAC's "gold" is all inside its case.

As I wrote at the beginning of the "Sound" section, the Antelope Audio Zodiac Platinum DSD DAC, Voltkus PSU, and 10M Atomic Clock make up the best digital front-end I've had in my system. And while you can, if you wish, certainly spend more on a DAC/pre, if you are planning on dropping a bushel of dollars you should, for sonic reference, hear the Antelope Audio Zodiac Platinum DSD DAC, Voltkus PSU, and Audiophile 10M Atomic Clock. I have yet to review a sonically superior or more ergonomically elegant DAC/pre. **tas**