AURALiC Vega Digital Audio Processor
High Performance, Reasonable Price

Chris Martens

AURALiC's Vega Digital Audio Processor ($3499) is a powerful and versatile digital-to-analog converter that can also serve as a digital-input-only, balanced-output-capable preamplifier. Specifically, the Vega supports all PCM files from 44.1kHz/16-bit resolution to 384kHz/32-bit resolution, while covering all sampling rate/word-depth combinations in between. Moreover, the Vega is DXD- and DSD-compatible and can decode both DSD64 and DSD128 bitstreams via the DoP V1.1 data-transmission protocol. In short, the Vega is an ambitious, premium-quality DAC/preamp that aspires to top-tier performance. Does it reach this goal? I think it does as I will explain in this review, but first let's first take a look at AURALiC's company background and at the Vega's underlying technologies.

As I mentioned in my review of the firm's Taurus MkII balanced headphone amplifier, AURALiC is a Hong Kong-based high-end audio electronics company co-founded in 2008 by President and CEO Xuanqian Wang and his business partner Yuan Wang. Xuanqian Wang has had formal training as an electrical and audio recording engineer and is an accomplished classical pianist, while Yuan Wang has a background in sociology and management science. Both men share a passion for music and sound quality, having met (where else?) at a musical event—the 2008 Festival of Waldbühne Berlin. Not long thereafter, the men decided to launch AURALiC Ltd.

More than many DACs in its price class, the Vega is chock-full of advanced technical features, yet it is also informed by Xuanqian Wang's thoroughgoing familiarity with classic analog-audio circuit designs. In practice, this means the Vega is a modern-as-tomorrow DAC with stellar performance specifications, yet goes the extra mile not only to measure well but also to deliver sound that, first and foremost, holds true to the sound of live music. As I survey the Vega's rich set of technical features it is important to bear in mind that this is more a "music first" design than it is a "technology *über alles*" product.

As noted above, the Vega is a DXD- and DSD-compatible 384kHz/32-bit-capable DAC/digital preamp. The Vega provides five digital audio inputs: one AES/EBU, one TosLink, one USB, and two coaxial SPDIF. The Vega provides single-ended and balanced analog outputs, with volume levels controlled by a 100-step digital controller said not to compress dynamic range.

Digital audio processing is handled by AURALiC's proprietary Sanctuary Audio Processor, which the company says is based on a "multi-core ARM9 architecture" and provides a prodigious 1000MIPS (millions of instructions per second) of data-crunching power. Unlike many competing DACs, the Vega upsamples all incoming PCM audio data to 1.5MHz/32-bit resolution prior to decoding. Further, the Vega provides six user-selectable digital-audio filter modes (four for PCM formats, two for DSD formats). The PCM filter modes each comprise four individual filters optimized for a specific group of sampling rates. One can choose Filter Mode 1, which offers the best performance measurements; Mode 2, which reduces group delay while imposing minimal amounts of treble attenuation; Mode 3, which minimizes pre-echo and ringing effects but with a somewhat higher degree of treble attenuation; or Mode 4, which applies minimum-phase type filters and is said to allow "no pre-echo effect at all" with "very small group delay to eliminate ringing."

Filter Modes 5 and 6 are designed specifically for use with DSD files, and address the problem of the very-high-frequency noise that DSD bitstreams can entail, providing strategically chosen levels of ultrasonic treble roll-off. The concept is to preserve the music intact while getting rid of ultrasonic noise that could potentially damage wide-bandwidth amplifiers or speakers.

Significantly, the Vega permits users to switch between its various filter modes on the fly to compare their subtly different voicing characteristics and overall impact on the music. Xuanqian Wang wisely observes that one's choice of filter mode might depend to a large extent on the recording quality of the material being played. Great recordings, he says, often sound best through Filter Mode 1, while customer comments suggest that

Filter Mode 4 is the best "general purpose" setting for a mix of audiophile-grade and more commonplace recordings. The important point is that the Vega allows users to fine-tune the DAC's sonic persona to fit the musical material at hand.

Another signature feature of the Vega is its Femto Master Clock, which yields a spectacularly low 0.082 picoseconds (or 82 femtoseconds) of jitter—a figure few DACs at any price can match. The Vega provides three master-clock control settings: the default "AUTO" setting, which maintains "a balance between lock-in ability and jitter performance," plus "FINE" and "EXACT" settings (available only after the Vega has warmed up for an hour), which "force the (clock controller's) PLL bandwidth into a very narrow range to maximize jitter performance." Not all digital sources are precise enough to use the FINE or EXACT settings, but Xuanqian Wang notes that with the EXACT settings in play he sometimes hears "a significant improvement, compared to the AUTO setting, for certain sound tracks, such as well-recorded classical piano solo."

As expected, the Vega is compatible with both Macs and PCs and with most popular music-playback software. The Vega auto-installs in Mac environments, but requires installation of an included Windows driver when used in PC-based systems. AURALiC does feel that music-software packages have a big impact on the DAC's sound and for this reason supplies a free copy of its recommended JPLAY software with the Vega. Accordingly, I used JPLAY software in conjunction with jRiver Media Center 19 music-management software in a PC-based system for my review listening.

The Vega's analog outputs are driven by a pair of AURALiC's signature ORFEO Class A output modules, whose design was inspired by the circuitry of the classic Neve 8078 analog recording console and whose sound is said to "share the same warm and natural sound of (the) Neve 8078." Perhaps as a result, the Vega claims vanishingly low THD and noise (just 0.00015%). Part of the performance equation, naturally, involves not only having high-performance analog output modules, but also addressing noise issues wherever possible. To this end, AURALiC constructs the Vega's chassis of a highly EMI-resistant metal-alloy called AFN402 and coats the chassis' interior surfaces with a multi-layer electro-mechanical damping material called Alire, which is used in most other AURALiC components.

The Vega sports an easy-to-read OLED front-panel display that shows the input selected, the format and data rates of whatever digital audio input has been selected, and the volume level (on a scale of 0–100) to which the processor is set. By design, the Vega can be operated from its faceplate or from an included remote control. The control menu offers options for adjusting absolute polarity and left/right channel balance, or selecting preferred filter models. Users can also control the OLED display itself, turning illumination up, down, or off (for zero visual distractions at all). Overall, the Vega is an ergonomic delight, though it is sufficiently complex that it pays to read the manual to understand the scope of the control options at hand.

If the foregoing technical description seems promising, then please know that the sound of the Vega is fully as good as, if not better than, the description might lead you to expect. Frankly, I've been around the world of computer audio for years, but I never felt a keen desire to make a dedicated high-performance

DAC a permanent part of my reference system until I heard the Vega in action. Up to this point, most of the computer-audio/DAC-based systems I have auditioned seemed to me to fall short of the sound quality I was used to hearing from top-tier disc players. I also found that those DAC-based systems that were sonically satisfying tended more often than not to be astronomically priced.

In contrast, what makes the Vega so captivating to my way of thinking is that it is reasonably priced yet consistently supplies a rich panoply of audiophile virtues, while also demonstrating an uncanny ability to keep its focus on the musical whole. In short, the Vega represents the intersection of good value, great (and forward-looking) technology, plus terrific musicality—a compelling combination indeed.

If you asked me to cite several specific qualities that characterize the sound of the Vega, two that come instantly to mind would be transparency and resolution—effortless, elegant, and unforced openness and detail that sound more like the real thing than like hi-fi artifacts. On the track "Embraceable You" from The Larry Coryell Organ Trio's *Impressions* [Chesky] the Vega lets you listen deeply into the voices of each of the instruments at play and so to savor the round, ripe tone of Coryell's guitar, the reedy and breathy voice of the organ, and the delicacy of the drum kit's contributions, the cymbal work in particular. Moreover, the Vega shows you the worth of high-res files, helping you to appreciate how much fuller and more complete they make the music sound. The beauty of the Vega's presentation is that the additional layers of detail it provides are delivered in a relaxed and lifelike manner; additional music information is simply there—whole and complete without unwarranted spotlighting or pyrotechnics,

SPECS & PRICING

Type: Digital-to-analog-converter/digital preamplifier
Digital inputs: One AES/EBU, two coaxial, one TosLink, and one USB 2.0 buffered by ActiveUSB
Analog outputs: One stereo single-ended (via RCA jacks), one balanced (via XLR connectors)
Frequency response: 20Hz–20kHz, +/-0.1dB
THD+N: <0.00015%, 20Hz–20kHz at 0dBFS
Dynamic range: 130dB, 20Hz–20kHz, A-weighted
Supported digital formats: All PCM from 44.1kHz to 384kHz with word lengths up to 32-bit, DSD64 (2.8224MHz), and DSD128 (5.6448MHz)

Important format information: 352.8kHz and 384kHz are supported through USB only; 32-bit word lengths supported through USB only; DoP V1.1 transmission protocol supported through USB only
Output voltage: 4V RMS at maximum, with dynamic-loss-free digital volume
Dimensions): 11" x 2.6" x 9"
Weight: 7.5 lbs.
Price: $3495

AURALIC AMERICAS INC.
12208 NE 104th St.
Vancouver, WA 98682
(360) 326-8879
auralic.com

so that the music is free to breathe and flow.

Other qualities that typify the sound of the Vega are its dramatic and at times explosive dynamics, which likewise unfold in a naturally expansive way. As with musical details, the dynamic qualities you hear seem to flow more from the music than from the equipment. Consequently, the music seems energized and illuminated from within, much as it does when heard live. To hear what I mean, try listening to Silvestre Revueltas' *Sensamayà* as captured on the *Chicago Symphony Orchestra Brass Live* recording [CSO Resound]. This exotic-sounding piece is full of lithe twists and turns as it progresses from one dynamic highlight to the next, with tension building as the composition unfolds. I've heard this piece through many digital source components, but none made *Sensemayà* sound as powerful or expressive as the Vega did; nor could any convey the tsunami-like force of the composition's final crescendo as effectively as the Vega.

Finally, I was struck on multiple occasions by the Vega's unfailing musicality, which I sometimes—tongue-in-cheek—called the "Neve factor." Neve recording consoles are known for pulling off a difficult but highly rewarding tightrope act of sorts; on the one hand, they deliver exceedingly high levels of transparency, clarity, and timbral purity, while on the other hand they preserve a naturally warm, organic, and lifelike sound. I think it is significant that Xuanqian Wang has chosen the classic Neve sound as his sonic model for the Vega and that the Vega strives (successfully) to strike a similar sonic balance. As a result,

the Vega's sound is every bit as revealing, crisply defined, and informative as any "analytical" DAC would be, but without the drawbacks (sterility, a vaguely "mechanical" quality) that analytical products usually entail. Rather than dissecting or deconstructing the music, then, the Vega simply reveals musical textures, timbres, tonal colors, and dynamics, and then gets out of the way.

I compared the Vega to my primary digital reference, Rega's superb Isis CD player/DAC, and found the Vega's sound competitive, though somewhat different. I had a slight preference for the Rega's sound on 44.1/16 material owing to the Rega's somewhat more coherent upper midrange and treble presentation, though in truth the contest was very, very close. But a key point is that the Vega is less than half the price of the Rega and is capable of exploring high-res PCM and DSD files, which the Rega is not. In particular, listening to DSD files through the Vega proved revelatory, because DSD files as rendered by the Vega seemed to do a much better job than standard-resolution PCM files in enabling the presentation to sound more three-dimensional and realistic.

Although I'm not ready to part with my top-shelf Rega Isis CD player just yet, the Vega is the first sensibly-price DAC I've heard that I could readily embrace as one of my primary digital source components. For less than $3500, the Vega takes discerning audiophiles and music lovers very far up the high-end audio performance ladder, providing them with a versatile and technically advanced digital playback solution they will not soon outgrow. **tas**