PRESS RELEASE

AURALiC introduces the AQUILA X3 Streaming Media Processor

Beaverton, Oregon, USA, January 20, 2025 – AURALiC is proud to introduce the **AQUILA X3** Streaming Media Processor, a groundbreaking addition to its product line. This release marks a significant step forward in both design and technology, showcasing a bold new design language and cutting-edge streaming innovations.

The AQUILA X3 features full-width enclosure with a sleek, modern appearance, a vibrant 14-inch touchscreen display, and a modular architecture that allows users to customize and upgrade their device over time. At the core of the AQUILA X3 is AURALiC's proprietary **Tesla G3** streaming platform supported by **Direct Data Recording (DDR), Galvanic Isolation** and many other unique technologies**.** AURALiC developed an intuitive new software interface for AQUILA X3 and **LightningCast**, AURALiC's next-generation multi-room streaming protocol. This advanced platform seamlessly integrates with leading streaming services, including Lightning DS, TIDAL Connect, QobuzConnect, AirPlay II and more.

Designed for flexibility and future readiness, the AQUILA X3 provides a wide array of connectivity options in its base configuration. These include Ethernet and WiFi, two Toslink inputs, one Coaxial input, USB Audio ports (USB-B at the rear and USB-C on the front), HDMI eARC, USB 3.0 for external storage, and a built-in CD transport. Users can tailor the device to their specific needs with optional modules, choosing between digital and analog output configurations or both. The analog output module incorporates AURALiC's latest proprietary **Fusion DAC Gen II**, **Integrated LEO Clock**, **ORFEO Class A output module** and **ORFEO passive analog volume control**, delivering unparalleled sound quality. Additionally, an optional analog and phono input module allows for flexible signal processing, offering either an analog-only signal path or onboard ADC functionality for recording and processing via the Tesla G3 platform. For those seeking expansive storage, an 8TB of NVMe optional internal storage is also available.

Powering this advanced system is AURALiC's latest **Variable-Frequency External PSU**. Utilizing Class AB regeneration technology with up to 400Hz user selectable regen frequency, the power supply generates clean AC power that feeds into linear power modules, eliminating EMI noise and contamination from the power grid completely. This unique design results in a pristine power source and an exceptionally dark audio background, enhancing every listening experience.

The AQUILA X3 is not only a technical tour de force but also a visual statement. For the first time in AURALiC's product line, users can fully customize the aesthetic of their device. Available trim colors include Jet Black, Space Grey, and Titanium Gold, while surface panel options span aluminum plastic, solid walnut wood, natural slate and marble. These surface panels are designed to be easily interchangeable, allowing the AQUILA X3 to seamlessly complement any home décor, from traditional to contemporary. This customization ensures that each AQUILA X3 reflects the personal taste and style of its owner.

Speaking about the new product, Xuanqian Wang, founder and chief designer of AURALiC, remarked, "AQUILA X3 represents the pinnacle of both manufacturing and digital audio technology. We've pushed every boundary to create this masterpiece. Back in 2017, we required multiple separate enclosures to achieve this level of technology. Now, we've integrated everything into a single, beautiful unit with even better performance and sound quality. The AQUILA X3 is also the reason we made the decision to cancel the G3 product line. With this newer style and exceptional value, we felt it was important to launch our new flagship under the 'X' series instead of adhering to the previous design philosophy. AQUILA X3 embodies everything we envision for the future of AURALiC."

The AQUILA X3 will be available through AURALiC's premium dealers starting in late April 2025. Each unit is custom-built to order, with customers able to design and visualize their configurations using a tool on AURALiC's website. Dealers will also provide samples of trim colors and surface materials to help customers make their selections.

Technology Story

To achieve superior sound quality, the AQUILA X3 integrates several of AURALiC's most celebrated technologies from the G2.2 series, including Direct Data Recording (DDR), Galvanic Isolation, ORFEO passive analog volume control, ORFEO Class A output modules, and the Purer-Power low-noise design. In addition to these established features, AQUILA X3 introduces groundbreaking innovations that merit a closer look.

Variable-Frequency External PSU

To meet the X series' modular and future-proof design requirements and to allow for future upgrades, the AQUILA X3 is equipped with a power supply boasting a capacity of over 200 watts—more than quadruple that of the previous generation. The power supply occupies its own dedicated chassis, with separate modules for the processing and audio circuits, each powered by independent regenerated AC circuits.

Modern energy grids increasingly rely on renewable sources like solar and wind power. While environmentally friendly, these energy sources pose unique challenges for high-fidelity audio systems. Solar inverters, which convert the DC output of solar panels into AC power compatible with the grid, often introduce high-frequency harmonics during the conversion process. These harmonics can cause electrical interference and disruptions to audio equipment sensitive to power quality. Additionally, fluctuating solar irradiance levels can result in voltage sags or swells, further complicating grid stability.

Similarly, wind energy systems contribute to grid instability due to the inherent variability of wind speeds. These fluctuations can cause voltage and frequency deviations, introducing further challenges for maintaining clean power. Compounding the issue, subpar inverters used by some homeowners to feed energy back into the grid can inject noise and contamination, negatively affecting power quality across the network.

AURALiC has extensively researched solutions to these challenges, exploring methods such as advanced AC EMI filtering and battery-based designs. Ultimately, the company developed a unique AC regeneration technology that ensures a pristine power supply for high-performance audio equipment. This technology begins by using a low-noise transformer to convert mains AC into DC voltage. A Class AB amplifier, driven by a low-distortion sine wave clock source, reconstructs a pure AC power signal. The amplifier, designed with a high Power Supply Rejection Ratio (PSRR) and limited bandwidth, filters out contamination while amplifying only the required signal frequency. A coupling transformer further eliminates noise and unwanted harmonics, creating a power source that is immune to grid instability and contamination.

The regeneration frequency, which can affect the sound character, is adjustable via the AQUILA X3's software, with options up to 400Hz. This feature allows users to fine-tune the audio experience to their preferences.

By addressing the real-world challenges posed by modern renewable energy grids, AURALiC's Variable-Frequency External PSU exemplifies the company's commitment to delivering exceptional performance in any environment. Whether dealing with noise from a solar inverter or fluctuations caused by wind power, the AQUILA X3's power regeneration technology ensures unmatched stability and purity for superior sound quality.

Lightning Cast – The Next Gen Streaming Technology

Developed by AURALiC, LightningCast is an open-source, next-generation multi-room high-resolution streaming technology. Free for non-commercial public use, it focuses on delivering the best sound quality to audio systems while ensuring ease of use.

LightningCast is a new and unique proprietary technology and as such we have created a separate document explaining this exciting new development. Please refer to the LightningCast document included with this Press Release to learn more.

Fusion DAC Gen II

The Fusion DAC, first introduced in the G2.2 series, revolutionized digital-to-analog conversion by combining the strengths of discrete ladder and Delta-Sigma DAC architectures. This unique approach bypasses many standard DAC chip functions, including the PLL, digital filters, and oversampling circuits, replacing them with AURALiC's proprietary technologies for clock reconstruction, digital filtering, and oversampling. This innovation ensures that only the precise switching network of the DAC chip is used for digital-to-analog conversion, delivering superior accuracy and sound quality.

The Fusion DAC Gen II takes this concept to a new level, featuring significant advancements in performance. AURALiC has engineered the Gen II hardware to achieve lower distortion and noise levels while extending the dynamic range, ensuring a cleaner and more immersive audio experience.

One of the standout features of the original Fusion DAC design was its **Tone Mode Control**, which offered users a choice between two predefined sound profiles: **Clear**, emphasizing detail and clarity, and **Mellow**, providing a warmer and smoother sound. With Fusion DAC Gen II, these two settings are retained, but the tone control system has been vastly expanded. Users now have the ability to customize their own tone modes using two new parameters: **'Richness'** and **'Texture'**.

The **'Richness'** parameter influences the tonal warmth and body, ranging from neutral to lush and full-bodied. Meanwhile the **'Texture'** control allows users to adjust the level of detail and clarity in the sound, from ultra-smooth to highly detailed. Together, these controls enable users to create custom sound profiles that suit their personal preferences and listening environments. Whether a listener prefers the analytical precision of Clear, the soothing warmth of Mellow, or a bespoke combination tailored to their unique taste, Fusion DAC Gen II offers unprecedented flexibility.

Integrated LEO Clock

Clocking precision is critical to achieving high-performance digital-to-analog conversion, and AURALiC has consistently led the way in master clock technology. The original LEO Master Clock, introduced in 2017, set a new benchmark by directly driving the DAC rather than relying on a 10MHz external clock for PLL-based frequency reconstruction. This direct approach significantly reduced jitter and enhanced timing accuracy, delivering industry-leading performance.

The LEO clock is so precise that existing benchmarks aren't detailed enough to accurately represent what it can do. Instead, we use Allan deviation to describe the resolution, which is like looking at phase noise closely enough to detect shifts of +/-1Hz or even +/-0.1Hz. The LEO Clock achieves the same exceptional performance as the original, boasting an Allan deviation of **2E-12 (at 1 second)**, which is equal to a 10MHz rubidium atomic clock with phase noise of +/-1Hz at -110dBc/Hz, or an amazing 500 times less jitter than an 82fs Femto clock oscillator.

For the AQUILA X3, AURALiC took on the ambitious challenge of integrating the LEO clock—previously housed in a standalone unit—directly into the DAC module. This required overcoming significant engineering hurdles to maintain the clock's renowned precision and performance within the compact confines of the module, while also enhancing reliability and durability. Remarkably, the integrated LEO Clock retains the same exceptional performance as its standalone predecessor. Furthermore, by eliminating external clock cables and connectors—common sources of jitter and signal degradation—the new design delivers a cleaner, more stable transmission path, making it both more robust and reliable for long-term use.