AURALiC introduces new generation of streaming products at HighEnd Munich

[For release on 15th May 2023]

AURALiC has been at the forefront of the audio streaming industry since 2014 with the debut of the world's first streaming bridge, the ARIES. Continuing this legacy, AURALiC is releasing four new products this year: ARIES G2.2, VEG AG2.2, ARIES G3 and VEGA G3. These products represent a generational shift in the technology platform while maintaining the understated elegance and classic design of the G series **UnityChassis II** that incorporating a pure copper sub-enclosure and multi-point tuned sprung base assembly.

All the latest products incorporate AURALiC's new **Tesla G3 streaming platform**, using a 64-bit architecture that enables it to achieve eight times the processing power of the previous version. The memory capacity has also been increased to 4 GB, and Direct Memory Access Technology (DMA) has been integrated into the system. These advancements are engineered in such a way in that all audio-related circuits to connect directly to the system memory, substantially reducing latency and jitter by 90% comparing to its predecessor.

In a significant step for the company, the G2.2 and G3 products have been designed in the USA, and the ARIES G3 and VEGA G3 will be hand-built in AURALiC's Oregon facility. AURALiC is thrilled to announce a future collaboration with Dirac to incorporate their cutting-edge technology into the product line. This partnership will enable AURALiC to integrate Dirac's advanced technology, which will contribute to ensuring that products remain at the forefront of innovation and deliver the highest quality audio experience.

AURALiC will be showcasing its new products and cutting-edge streaming technology at the highly anticipated HighEnd Munich audio show between 18th and 22nd May at room Atrium 4.2G E211. The ARIES G2.2 and VEGA G2.2 are scheduled to commence shipping in July, while the G3 products are expected to be available for shipping in August.

ARIES G2.2 Wireless Streaming Transporter

ARIES G3 Wireless Streaming Processor

AURALiC has completely redesigned the ARIES G2.2 and G3 products, incorporating over 90% new components to deliver unparalleled performance. The USB DAC output now boasts second-generation galvanic isolation technology, enhancing compatibility with a wide range of DACs and ensuring a more refined audio experience.

The new Purer-Power low noise power supply design features double the capacity of preceding G2.1 models and even lower noise levels, providing extremely stable and reliable power to the device. Moreover, the optional internal music storage is now based on NVMe SSD technology, delivering read and write speeds up to ten times faster than its predecessor.

The ARIES G2.2 and G3 also now support USB 3.0 for external music storage, further expanding its capabilities and making it easier than ever to access and stream high-quality audio files.

The ARIES G3 is much more than just a transport or bridge, as it offers a host of features that enhance your digital listening experience. It boasts multiple inputs and a powerful co-processor that enables the product to function as a preamplifier for digital connections, providing comprehensive control over your audio system.

With dual 60fs femto clocks powering its digital outputs, the ARIES G3 ensures that you experience the highest levels of precision and accuracy when listening to your music. In addition, it utilizes AURALiC's state-of-the-art FPGA-based Proteus X1 co-processing platform, which optimizes the digital audio signal, removing harshness and improving the experience of listening.

As a result of this optimization, your music gains greater substance, space, and dynamic range, providing a highly immersive and engaging listening experience. The ARIES G3 is the perfect addition to any high-end digital audio system, and its advanced features and exceptional performance make it a standout product in the market sector.

The ARIES G2.2 and ARIES G3 now feature compatibility with the LEO GX.1 reference master clock, enabling users to achieve even greater levels of precision and accuracy when it comes to their digital audio outputs. By connecting to the LEO GX.1, these devices are able to take advantage of its advanced clocking technology, resulting in a more refined and nuanced audio reproduction.

This compatibility represents a significant enhancement to the already-impressive performance of the ARIES G2.2 and ARIES G3, allowing users to experience their digital audio collection with even greater clarity and depth. It is a testament to AURALiC's commitment to innovation and dedication to delivering the best possible audio experience to its customers.

The manufacturer suggested retail prices are $6,099/ €5,999/ £5,299 for ARIES G2.2 and $10,899/ €10,899/ £9,899 for ARIES G3.

VEGA G2.2 & G3 Streaming DAC

The VEGA G2.2 and G3 build upon the already impressive foundation of their predecessor, the G2.1, retaining key features such as the AURALiC's proprietary **Fusion DAC** structure, **Direct Data Recording (DDR)**, **Galvanic Isolation**, **passive analog volume control**, and **analog pre-amplifier**. The unique architecture of VEGA G2.2 and G3 avoids using a PLL circuit as it cannot fully remove the distortion and jitter present in the original clock signal. Instead, it records the audio data directly into the Tesla G3 processing platform's system memory in binary format, bypassing the original clock signal entirely. As a result of these cutting-edge technologies, the VEGA G2.2 and G3 are immune to the input signal's distortion and jitter, delivering the highest level of sound quality possible.

Both VEGA G2.2 and G3 now incorporate the advanced Tesla G3 platform, providing a significant boost to their processing power and capabilities. Additionally, a new **dual 60fs Femto Clocks** powers the DAC operation and time the Tesla G3's data output to the DAC. The result is an unparalleled listening experience, with stunning detail, clarity, and precision that is free from any distortion or jitter.

Building upon the advanced features of the VEGA G2.2, the VEGA G3 takes the product line to a new level by integrating a range of state-of-the-art technologies that surpass even the highest expectations. With its cutting-edge Proteus X1 co-processing platform, the VEGA G3 sets a new standard for digital filtering and oversampling, delivering an unmatched listening experience. Specifically optimized to process music signals from streaming content, whether through the built-in streamer or digital inputs. The algorithm running inside Proteus X1 of the VEGA G3 enhances the audio quality, significantly improving the listening experience for music that may not be available in the highest resolution format. With VEGA G3, music takes on incredible depth, clarity, and detail, elevating the audio experience to a whole new level.

Compared to the G2.2, the VEGA G3 incorporates an enhanced DAC design, delivering a 30% reduction in distortion and noise, and a 50% improvement in dynamic range. Moreover, the VEGA G3 offers the option to run in **Pure DAC mode**, disabling its internal streaming functions for those who prefer a more traditional approach.

VEGA G2.2 and G3 represent a significant upgrade to an already impressive benchmarks, offering advanced features and exceptional performance that will satisfy even the most discerning listener.

The manufacturer suggested retail prices are $7,899/ €7,799/ £6,899 for VEGA G2.2 and $11,899/ €11,899/ £10,699 for VEGA G3.

Technology Story

AURALiC have recently unveiled their latest products, the G2.2 and G3, at the HighEnd Munich exhibition. These new models are built upon a new streaming platform that represents a major technological advancement since the introduction of the first-generation ARIES in 2014. This article aims to provide an overview of the new technologies featured in these products.

Tesla G3- A New Era for Wireless Streaming

Built on a 64-bit ARM architecture, this revolutionary streaming platform delivers eight times the processing capability of its predecessor. Equipped with 4GB of DDR4 system memory, the Tesla G3 can easily handle even the most demanding processing tasks, making it a future-proof solution which will accommodate the rapidly evolving digital audio landscape.

The Tesla G3 platform also employs Direct Memory Access (DMA) technology for its audio input and output channels, enabling all audio-related hardware and software to access the system memory directly. This significantly reduces latency and jitter by 90% compared to Tesla G2, giving us more flexibility to fine-tune the performance and sound quality of our products.

With these advancements, the Tesla G3 optimizes operations and enhances multitasking capabilities in all the new G2.2 and G3 series products, providing our customers with an unparalleled streaming experience.

ARIES G2.2- Wireless Streaming Transporter

The ARIES G2.2 and G3 have undergone a complete interior redesign, with 90% of the electronic components being brand new. These cutting-edge products boast several new technologies that have been introduced to take their performance to the next level, all enclosed in AURALiC's elegant UnityChassis II enclosure.

- New Galvanic USB Isolation

The introduction of the galvanic isolation technology on the USB port in the ARIES G2 was a significant breakthrough for digital audio systems. It successfully addressed the issue of separating the noisy computing circuit from the sensitive audio circuit, resulting in a massive improvement in USB audio system sound quality.

Building on this success, AURALiC is proud to introduce the second-generation Galvanic USB in the ARIES G2.2 and G3. This new isolator has improved DAC compatibility, functioning in the same way as a regular USB port with hot plug/unplug support. The signal quality and jitter performance of the 2nd generation Galvanic USB has been further optimized, resulting in noticeable sound quality improvement.

In addition, users can now choose to enable or disable the USB port power supply to the DAC through software, which ensures an even cleaner signal path.

- New Purer-Power Design

The ARIES G2.2 and G3 feature the Purer-Power low noise power supply with a capacity that is twice that of the previous version, and an even lower noise design. This increased capacity ensures a clean and stable power supply for the high-performance processing platform and music storage options.

All digital audio-related circuits, including the Galvanic USB, have their individual power supplies, maintaining an extremely low noise level of just 0.8 microvolts - an 80% reduction from G2.1 model. Furthermore, the computing circuits, which are less sensitive to noise, benefit from a low noise power supply of just 27 microvolts, a 50-fold improvement from G2.1. This advanced power supply design ensures that the digital audio circuits receive a clean and stable power supply, free from noise and interference, resulting in a superior audio experience for the listener.

- NVMe Internal Storage

With the new Tesla G3 processing platform in place, ARIES G2.2 and G3 have upgraded their internal storage from traditional SATA based SSD or HDD to the most advanced NVMe (Non-Volatile Memory Express) SSD storage option. This upgrade offers numerous benefits, including outstanding data transfer speeds and dependability, ensuring a seamless experience for storing and playing digital music.

Thanks to the Direct Memory Access (DMA) technology, NVMe storage offers significantly faster transfer speeds and lower latency than traditional storage options, resulting in improved performance and faster access to stored music. Compared to the G2.1 model, the ARIES G2.2 and G3 now offer a copying speed that is ten times faster when transferring music from Ethernet to the internal storage.

Both ARIES G2.2 and G3 can be fitted with factory pre-installed 4TB NVMe storage as an option. However, customers can also request larger storage options as a special-order request.

- USB 3.0 External Storage

The addition of USB 3.0 external storage ports on the ARIES G2.2 and G3 significantly increases copying speeds and facilitates effortless transfer of high-resolution audio files. The USB 3.0 port provides 1.5 amps of power, triple the power capacity of G2.1. The added power capacity also allows for a wider range of external storage options, including larger capacity drives that may require more power.

- Support of LEO GX.1

For the most discerning listeners, ARIES G2.2 and ARIES G3 now offer the ability to connect to our LEO GX.1 Reference Master Clock through Lightning Link, allowing for even greater levels of accuracy and improved sound quality of digital outputs.

ARIES G3- Wireless Streaming Processor

The ARIES G3 goes beyond being just a simple transport or bridge, as it offers multiple inputs and a powerful co-processor that enables it to function as a preamplifier for digital connections. This makes the ARIES G3 an ideal centerpiece for your digital system. In addition to the improvements made to the ARIES G2.2, the ARIES G3 features several other significant advances:

- Proteus X1 Co-Processor

Proteus X1 co-processor is built around a Xilinx XC7A200T FPGA chip with over 200,000 logic cells and 740 DSP slices. This chip shares the Tesla G3 system memory, enabling powerful data processing capabilities. With advanced processing techniques, Proteus X1 elevates the listening experience. Sub optimal and early digital recordings can benefit from Proteus X1's impressive processing power. The optimization process removes harshness and potentially improves the experience of listening to an inferior recording. Music gains substance, space, and extra dynamic range as a result.

- Multiple Digital Inputs

The ARIES G3 offers a comprehensive range of digital inputs, including USB Audio, Coaxial (2), Toslink (2), AES/EBU, and HDMI eARC (to be added via a software update in the future). Incoming signals from these inputs are recorded as binary data into the Tesla G3's memory, which eliminates any potential for jitter. The data can then be processed and corrected using Proteus X1, based on the user's preferences, before being outputted either as processed or bit-perfectly, with a defined latency, to the desired output channel.

- Dual 60fs Femto Clock

ARIES G3 aims to be the best possible digital audio source, achieved by the implementation of a dual 60fs Femto clocks - one for 44.1x and another for 48x sampling rate frequencies. These audio-optimized clocks have extremely low close-in phase noise and can greatly enhance sound quality, setting a new standard for signal timing. For the ultimate performance, adding LEO GX.1 will deliver a true state-of-the-art digital source experience.

VEGA G2.2- Streaming DAC

The VEGA G2.2 streaming DAC represents the latest evolution in high-end DAC performance and cutting-edge analog circuit. AURALiC is at the forefront of digital audio technology, continuously pushing the boundaries with innovative new technologies.

- Fusion DAC

When it comes to audio digital-to-analog converters (DACs), there are two primary designs: discrete ladder DAC and Delta-Sigma DAC. The popular discrete ladder DAC design allows designers to use different components for various parts of the circuit, providing greater flexibility in tailoring the sound signature. However, the discrete ladder DACs can suffer from non-linearities caused by precision mismatches in the resistor values. Uneven temperature changes also play a significant role in introducing non-linearity to the system. This can lead to distortion and reduced overall performance.

Delta-Sigma DACs are known for their high accuracy and resolution, which is achieved through precise manufacturing processes. These DACs also offer a high dynamic range and low noise and distortion level, making them well-suited for high quality music playback applications. However, Delta-Sigma DACs are often integrated with complicated digital circuits like Phase Lock Loop (PLL), digital filter, and oversampling circuits, which can make them less customizable for designers. This can limit their suitability for high-end applications where customization and flexibility are important.

AURALiC's Fusion DAC design in the VEGA G2.2 and G3 products is a pioneering technology that combines the best features of discrete ladder and Delta-Sigma DAC designs. This innovative approach uses a high performance, manufacturer DAC chip as a basis for modification. Most of the DAC chips' functions, such as PLL, digital filter, and oversampling circuits are bypassed, and instead AURALiC's proprietary clock reconstruction, digital filter, and oversampling technologies are deployed. This unique approach ensures that only the precise switching network inside a DAC chip is used for the final digital-to-analog conversion stage, resulting in exceptional sound quality. This Fusion DAC design facilitates a unique level of customization and flexibility, providing users with the ability to fine-tune and optimize the DAC to their individual preferences. Overall, AURALiC's proprietary implementation of this unique, in-house developed technology represents a significant advancement in DAC design, offering exceptional performance and unparalleled sound quality.

- Direct Data Recording

Both the VEGA G2.2 and VEGA G3 are equipped with AURALiC's proprietary Direct Data Recording (DDR) technology. Unlike traditional DACs that rely on a Phase Lock Loop (PLL) circuit to reconstruct the incoming clock signal, our DDR technology avoids using a PLL circuit as it cannot fully remove the distortion and jitter present in the original clock signal. Instead, we record the audio data directly into the Tesla G3 processing platform's system memory in binary format, bypassing the original clock signal entirely.

Next, a series of advanced digital filters and oversampling algorithms process the audio data, optimizing it for the best possible performance. To power the DAC operation and time the Tesla G3's data output to the DAC chip, a dual 60fs Femto Clocks - one for 44.1x and another for 48x sampling frequencies - acts as a master clock, independent of the input audio signal.

As a result of these cutting-edge technologies, the VEGA G2.2 and G3 are immune to the input signal's distortion and jitter, delivering the highest level of sound quality possible. The result is an unparalleled listening experience, with stunning detail, clarity, and precision that is free from any distortion or jitter.

- Passive Analog Volume Control

Analog volume control is widely regarded as the superior approach for achieving high-performance audio playback. Whilst digital volume control can accurately reduce the signal level, it cannot reduce the noise floor level of the output signal. As a result, when using digital volume control to attenuate the signal by a large amount, the system's dynamic range is inevitably heavily compromised. Analog volume control, however, can reduce both the signal level and noise floor, whilst retaining the system's dynamic range.

The VEGA G2.2 and G3 feature a true analog ladder resistor volume control that delivers exceptional and noise-free control without introducing any distortion. This volume control system includes eight coil-latch relays that remain inactive when not in operation, consuming no power and emitting no EMI noise. Once

the system is adjusted, it remains electronically invisible, thereby further enhancing the already outstanding audio performance of the VEGA G2.2 and G3.

- Analog Preamplifier

The VEGA G2.2 and G3 maintain the successful analog preamplifier function from the original VEGA G2.1. This feature has been enhanced in the new design, with the output level increased from 4.4Vrms to 6Vrms to meet the demands of even the most power-hungry amplifiers. Additionally, the ORFEO Class-A output modules ensure that the balanced output can drive loads well below 600ohm with minimal degradation in performance.

If desired, users can disable the preamplifier function through software, with the option to reduce the output level to 2Vrms, allowing for the use of external preamplifiers. In addition, a convenient home theater bypass mode is available for analog input channels.

- Galvanic Isolation

Modern high-end DACs are capable of providing exceptional dynamic range that can reveal minute details in the original recording. However, achieving such a dynamic range requires extremely clean clocks, power supplies, and signal feeding into the DAC. To ensure that no noise can be coupled into the DAC circuit, the VEGA G2.2 and G3 are equipped with high-speed galvanic isolators that are strategically positioned between the Tesla G3 processing platform and the ultra-sensitive audio circuit. These isolators provide physical separation and protection against interference for the DAC whilst enabling data transfer.

VEGA G3- Streaming DAC

Introducing the VEGA G3 streaming DAC, our latest innovation in delivering an unparalleled musical experience. Building upon the advanced features of the VEGA G2.2, the VEGA G3 integrates a range of state-of-the-art technologies that surpass expectations. The VEGA G3 streaming DAC is not just a product, but a testament to our unwavering dedication to providing the most captivating and immersive musical experience ever imagined.

- Proteus X1 Co-Processor

The Proteus X1 in the VEGA G3 is an advanced technology built around a Xilinx XC7A200T FPGA chip, featuring over 200,000 logic cells and 740 DSP slices. This chip shares the Tesla G3's 4GB DDR4 system memory, allowing for powerful data processing capabilities. Unlike in the ARIES G3, the Proteus in the VEGA G3 exclusively processes the signal with advanced digital filter and oversampling, ensuring that all input signals work at the DAC's optimal sampling frequency.

The algorithm running inside Proteus X1 of VEGA G3 is specially optimized processing music signal from online sources, whether it is through the built-in streamer or the digital inputs. This optimization significantly improves the listening experience for music that may not be available in highest resolution format.

- Better DAC, Higher Performance

The VEGA G3 incorporates the same Fusion DAC design as the VEGA 2.2, but with an important upgrade: a final output switch network for analog conversion at an even higher level of precision. This advancement results in a significant 30% reduction in distortion and noise and a 50% improvement in dynamic range, making the VEGA G3 an exceptional choice for even the most discerning listeners seeking unparalleled audio performance.

- Pure DAC Mode

Pure DAC mode in the VEGA G3 allows for an optimized signal path by disabling the streaming capabilities of the device. This feature is especially beneficial for users who prefer to rely on other methods for streaming their audio content. With Pure DAC mode, the VEGA G3 provides the cleanest possible signal path, resulting in a high-quality audio playback experience.