

ARAGON IRIDIUM AND 8008 *design notes*

aragon performance, reliability, value

To experience your music in a given room environment with true dynamics and at true-to-life levels a powerful, accurate amplifier must drive a capable set of loudspeakers. Your amplifier needs to deliver the program current and voltage required by the system without stressing or straining.

Top end sound systems are expected to fill a large room with exceptional sound. Too often, the loudspeakers used force difficult loads on an amplifier (low-impedance and/or highly reactive). But only the best amplifiers are capable of delivering a truly neutral, yet superb, musical experience in such a demanding environment. To meet that demand, discriminating listeners choose a dual-monoblock amplifier such as the ARAGON 8008 or it's bigger brother, the ARAGON IRIDIUM MONOBLOCK.

The ARAGON 8008 is the modern example of the classic solid-state Aragon design that traces its history back to the early 1990s. To this day it remains a true dual monoblock with completely decoupled power supplies and amplifier channel circuitry. Like the original, the new ARAGON 8008 is capable of dynamics and precision that few other amplifiers can match, even at multiple times the price. The 8008 controls virtually any loudspeaker load in an elegant and engaging way.

The ARAGON IRIDIUM MONOBLOCK is a direct descendant of the highly acclaimed Mondial Palladium Monoblock. The IRIDIUM stands out for its ability to deliver a broad and deep soundstage, an accurate musical mid-range and tight, potent bass response. It's industrial design mirrors left and right for 2-channel applications and, like the 8008, it is unmistakably Aragon with its "V" shaped heatsink.

aragon power and audio circuitry

When we first embarked on the design of the new generation of Aragon amplifiers, we at Indy Audio Labs asked the rhetorical question – what would the engineers at Mondial have designed in 2012 had the company continued to evolve and grow along with the exciting new materials and technologies available today? Specifically, what engineering elements of older models such as the 4004mkII, 8008BB, Palladium II and Palladium 1K would benefit from updates and what elements should simply be left alone due to their proven performance and reliability? The answers to these questions provided the core system requirements for the new Aragon 8008 and Iridium designs.

Under the hood, the IRIDIUM and 8008 share similar amplifier circuits with the IRIDIUM running its two channels in a differential, or BTL (Bridge-Tied-Load), configuration. However, to achieve optimal performance in a bridged configuration, small but significant adjustments must be made to the amplifier's high-frequency compensation circuitry and power supply rails. Like the Palladium before it, the IRIDIUM is not simply a "bridged" 8008, but is optimized specifically for mono operation.

The new 8008 circuitry consists internally of two independent power supplies. Identical to its forerunner Mondial 4004 MK II and 8008 designs, two massive 0.5kVA toroidal transformers feed pairs of 35A bridge diode rectifiers. These supply signals are then filtered by more than 140,000uF of capacitance to deliver clean +/-70 volt power rails to each channel. The IRIDIUM power supply is

more than twice that of the 8008 on a per-channel basis because it's built around a single massive 1.2kVA toroidal transformer feeding all four 35A bridge rectifiers and 140,000uF of capacitance.

Both the 8008 and IRIDIUM use a discrete symmetrical amplifier circuit topology. No ICs are used in the signal path. Instead, some of the latest low-noise, high-voltage discrete semiconductors are used throughout. All Aragon models are DC-coupled input-to-output. Zero-offset is maintained by a newly designed servo circuit. The control and monitoring sub-system integrated with this latest generation Aragon amplifier features several advancements in thermal management and fault protection over prior designs.

Components are hand-selected for quality and reliability. The new Aragon models employ precision-sorted semiconductors matched across several parameters for each amplifier. For the output section, this helps ensure optimal current load sharing among devices, improves linearity-vs-power, enhances thermal performance and helps ensure long-term amplifier life. The input stages and current mirrors take advantage of precision audio transistors with low-noise, wide bandwidth and tight matching. The VAS stage uses low-capacitance, high-bandwidth transistors with input buffering. The 8008 output section utilizes 12 discrete bipolar junction transistors (BJTs) per channel while the IRIDIUM output section features 24 separate and discrete BJT devices; this allows the IRIDIUM to drive 2-ohm loads to nearly a kilowatt when necessary.

Both the IRIDIUM and 8008 designs employ many of the same North American suppliers of power supply components (such as computer-grade capacitors and toroidal power transformers) that built components for the original Mondial products. As a result, these amplifiers have current and voltage capabilities to drive even the most difficult speaker loads with ease. High-current UL-rated heavy-gauge wiring and internal connection points ensure that peak supply currents are delivered to the load with negligible internal losses. The large bifilar wound toroids are built with virgin core material in North America and are wound for high-current and low stray fields. In fact, stray fields are so low that no transformer shields are required thus improving transformer heat dissipation.

Beyond audio and power circuitry advancements over prior Aragon designs, both the IRIDIUM and 8008 now feature one of the most complete control integration feature sets of any amplifier in or near it's class. Integrated Ethernet, RS-232 and 12V trigger control capabilities afford today's audiophile or systems integrator state-of-the-art design and relevance. In-home and remote diagnostics on these audio separates are not just possible – these new-to-Aragon features are a revolution in simplicity for both the end user and installer. All this control and monitoring is applied with no impact on signal path integrity since maximum audio performance was always and still remains the main design goal for Aragon.

aragon housing and material

Many amplifier designers seem to place function above form and utilize a traditional rectangular metal housing with a more-or-less stylized front panel to add interest. Other designs are built around a radical new form that more closely resembles a spacecraft from an H.G. Wells novel than a piece of audio gear. We chose to build our new design around the instantly recognizable V-notch that was introduced in the original Aragon 4004, Mondial's first amplifier design. This design feature quickly became the signature look for the Aragon brand. Aragon's new custom-tooled heat sink fins are manufactured in the USA from precision-machined Aluminum alloy and provide even better dissipation characteristics than the originals. Beyond its distinctive look, the V-notch has some practical advantages that remain relevant today. In addition to enhancing vertical convective airflow due to its broad fin spacing, the V-notch allows for front-to-back airflow in an equipment shelf, thus improving cooling efficiency.

The front panel is precision machined from a solid 3/4-inch extruded Aluminum billet. Precision machining and finishing is performed at the same Indianapolis firm that provides critical chassis parts for a number of motor racing teams based nearby. The Aragon brand name is CNC-milled directly into the front panel metal and then the whole panel is bead blasted and the center is grained to produce a rich mix of textures. Once machining and finishing is complete the whole panel is anodized either clear or black. The power button is custom turned on a lathe then bead blasted and then anodized. Even the model name and front artwork features high-resolution laser-engraving rather than low-resolution silkscreening as employed on most other electronics products. The result is a highly durable, highly attractive appearance that won't wear, scratch or fade with time. The high-quality, high-reliability circuit boards inside—gold-plated for superior presentation and corrosion resistance—are assembled in Indiana at Aragon's state-of-the-art assembly plant where some of the most exacting medical and defense products are built as well.

Aragon amplifiers can power virtually any speaker on today's market. The large power supply, oversized circuit board lands and 24 output transistors per-unit process and deliver substantial amounts of current. High-current, 60-Amp gold-plated binding posts, insulated gold-plated RCA inputs and professional-grade XLR connectors ensure reliable, uncolored, trouble-free connections.

aragon software control

For monitoring temperature and overall amplifier health, Indy Audio Labs proprietary web server technology presents amplifier status information in a clean, easy to use GUI that can be viewed by Apple, Android and any other web-browser-equipped mobile devices without the need to download an app or perform a lengthy setup procedure. Unlike the competition, the temperature and diagnostic information that indicates the health of each amplifier channel can be monitored locally by remote monitoring services directly over your wireless network. This allows an integrator to diagnose and determine with a repair plan to resolve an issue before the customer even knows there's a problem. The careful method used by Aragon engineers means no control and monitoring circuitry is required anywhere in-line with the fully-discrete signal path.

aragon sound satisfaction

In summary, Indy Audio Labs designed the new 8008 and IRIDIUM as next-generation, made-in-America amplifiers to better meet the needs of today's uncompromising listener while remaining true to the technical attributes the original founders of Mondial held in high esteem—performance, reliability, value.