



**THE WHOLE STORY ABOUT
DUKE**

TRENNER&FRIEDL

BE SOUND

“According to their US importer Profundo, Austrian loudspeaker manufacturer Trenner & Friedl will premier the most ambitious undertaking in their history at the 2011 Consumer Electronics Show in Las Vegas, January 6-9th. The culmination of designer Andreas Friedl's knowledge, skill and experience in loudspeaker design, “Duke,” named in honor of the great Duke Ellington, is a modular design incorporating numerous innovations, all of which contribute to a unified goal of absolute naturalness and musical insight in an ultra-resolution, ultra-bandwidth, high-sensitivity “last word” in loudspeaker design and construction.

Originally conceived as the first project of the company, six years passed and numerous other models appeared before the first Duke was ready in 2000. Planned as an acoustic “electron microscope” for the production of the company's recordings, Duke 2000 still maintained a high level of musicality and “fun,” the two main standards of all Trenner & Friedl's offerings.

“Duke 2010, while bearing a familial and philosophical similarity to the original version, represents a leap forward in both technical and musical areas, incorporating all that Friedl has learned in his pursuit of truly profound musical insight and emotional connection with the recorded performance. After dedicating his attention almost exclusively to this project for the past year, it is safe to say that Friedl has achieved his high goals.

“From the ground up, Duke 2010 sets itself apart from other “statement” speakers, by eschewing the usual “high-tech” design novelties and materials, in favor of natural materials and time-proven concepts, above all, symmetry and golden-ratio proportions. The cabinets are constructed from a unique sandwich of bamboo and birch-plywood, resulting in a very stiff, yet relatively low-mass cabinet. Cabinets are faced with leather from the supplier of several top automobile manufacturers. Such high-tech materials as aluminium, steel, plastics and woven fibers are avoided wherever possible out of tonal and musical considerations.

“The bass modules, of which there are two per channel, represent an in-house development of a hybrid form of horn-resonator and bass-reflex design. This is comprised of 14 individual channels that create a sandwich-structure, which then also reinforces and stiffens the sidewalls of the cabinet. The calculations and computations of simulations for this system alone were so complex that each required almost 30 minutes to complete (a process normally requiring only a minute or two), and Friedl went through hundreds of steps on his path toward the final result.

"These 14 channels are arranged such that they greatly amplify the effective radiating surface area of the 12" bass drivers and enable an optimal coupling to the listening room. The cabinet interiors are fully symmetrical and dimensioned in golden ratio, in order to minimize any non-linearities in back-pressure on the driver, which can cause wobbling-motions in the driver membrane.

"The 12" woofers are a cooperative development with SB Acoustics. The cones are comprised of fiberglass-reinforced paper-cells which, compared to the usual aluminum honeycomb (such as with Eton), reduce weight (moving mass) as well as significantly reducing internal resonances. The large voice-coils are wound at 12 Ohms each, in order to create a tube-friendly load when paired together. The massive generator alone weighs 22 lbs., contributing to precise control and tremendous power.

"The mid-/high-frequency module is coupled to the bass modules with an adjustable assembly that makes it possible to precisely set the time-alignment of drivers for the exact listening position in any given room. Mr. Friedl will personally install, measure, and align the system on-site for the purchaser of Duke.

"The Modules are coupled via three spheres of varying hardness, in order to dissipate/drain vibrations at differing points with varying speeds. The cabinets have hardwood inserts at the points of contact, to further enhance the dissipation of vibrational artifacts.

"The mid-/high-Module employs a special papyrus-cone midrange driver, manufactured specially for Trenner & Friedl by Seas, with proprietary, lower-mass voice-coils, installed in the symmetrically dimensioned cabinet (indeed, even the magnets of the tweeter have been designed for the purpose of symmetry). The magnet system for this driver is ALNiCo, the tonally best and most powerful (and expensive!) magnet material. The basket spider is acoustically completely transparent, which aids in the free movement of the cone. Even the phase-plug is turned from elm wood, to keep Duke a "NoMetalspeaker" as much as possible.

"The cabinet has a special "acoustic sink" made specially for T&F out of felt from locally raised sheep. This prevents reflections of backwaves from passing back through the thin cone-membrane and into the listening room.

"The tweeter is also developed in-house and is manufactured in Italy, exclusively for Trenner & Friedl. It has an ultra-rigid, rather large titanium-nitride diaphragm, coupled via a proprietary tractrix horn assembly. A large neodymium magnet assembly provides a powerful and dynamic magnetic field. This is all in order to have a high-frequency driver that does not fade dynamically, relative to the midrange. On axis, this driver delivers distortion-free to above 40,000 Hz.

"Above all this sits a super-tweeter with 360 degrees of radiation. Anything that radiates above 15,000 Hz. beams so strongly that we can really only perceive it at a single point.. therefore, it became quickly evident that an omnidirectional radiating driver was needed. And since it is the Duke, it should be able to reproduce frequencies to 100,000 Hz. Thus T&F had Thiel (Accuton) build a small 19 mm Diamond membrane tweeter which is oriented vertically into a leaded-crystal jewel from the Austrian firm Swarovski, which disperses the output in a circular pattern. The particular shape of the jewel (also in golden ratio, of course) has proven itself exceptionally well-suited to the task.

"After protracted experimentation with this topology, the passive crossover section of the mid-high module is also of symmetrical design, which costs twice as much, but truly works and allows for the circuit to remain surprisingly simple. All internal cabling is via Cardas Clear, setting industry reference points for transparency and musicality.

"The active crossover section, which feeds the bass modules, was designed by and with Trenner & Friedl. Symmetrical, naturally, it is extremely low-noise and low-distortion, while maintaining a very, very broad bandwidth. It will also be available separately in order to be able to "activate" other models in the line."

The details/data, at a glance:

Frequency response: 20-80,000 Hz. (-3dB)

Average Impedance: 8 Ohms

Sensitivity:

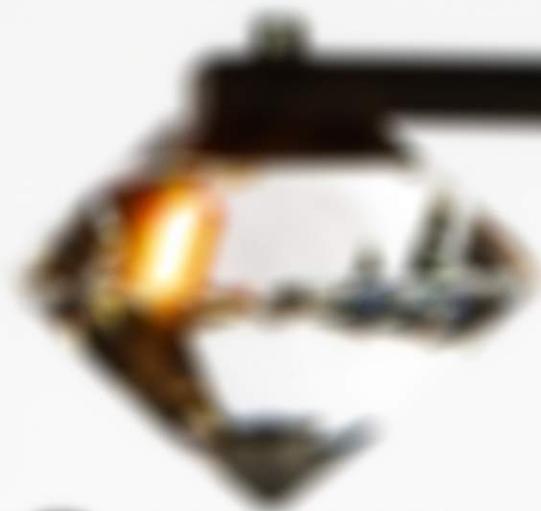
Mid-High module 92dB (above 200 Hz +- 1.25dB)

Bass module summed 93dB

Dimensions: 50cm wide, 80cm deep, 150cm high

Weight: 126 kg, excluding active crossover





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