

Shunyata Research Denali Series

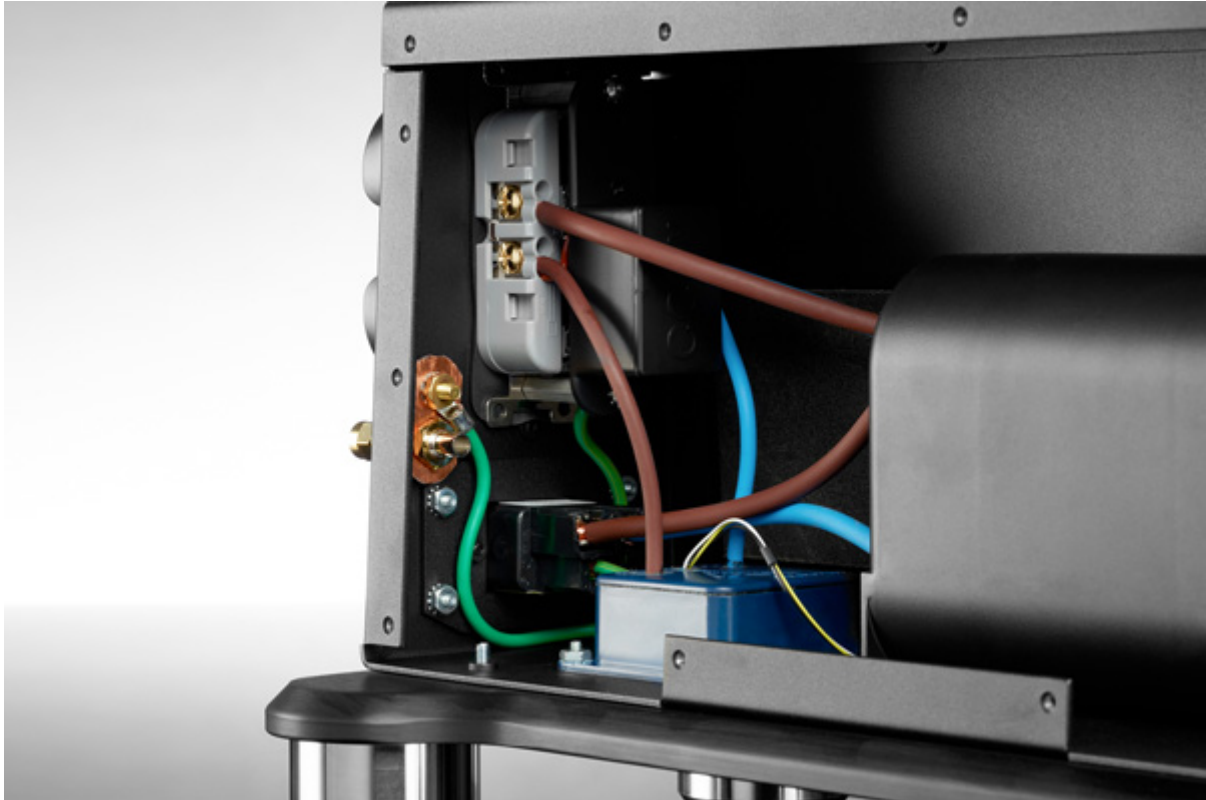


When Grant Samuelsen, Marketing and Sales Director at Shunyata Research, contacted me concerning the new Hydra Denali Series of Power Distributors, I assumed that that this would be a conversation discussing the repackaging of Shunyata's previous efforts in a more affordably priced product. After an extended phone conversation with Grant, I realized that the Shunyata Denali Series represented a total rethinking by Caelin Gabriel, Designer and CEO of Shunyata Research, in the design of his power conditioners. A portion of the technology in the Denali Series resulted from Shunyata's work in the new medical grade technology that has been successfully developed for electrophysiology labs and hospitals.

General Concepts

Before I discuss the Denali Series, I feel that it's very important to understand Shunyata Research's general philosophy concerning power distribution products. Many enthusiasts believe the primary function of a good power conditioner is to reduce the incoming grid noise on their home's AC. But more importantly, Shunyata feels that one's system components have even a larger negative interaction that can affect the sound of a component system. All power conditioners try to deal with the noise inherent on the AC supply line. But Caelin has identified two other issues that power conditioners should be dealing with to be successful in reducing noise: Component to Component Interference (CCI) and Dynamic Transient Current Delivery (DTCD). This discussion was previously published in my AudioStream review of the Shunyata Research Triton v 2, Typhon, and DPC-6 v2. I feel that these

concepts also apply to the Denali Series as well. The following are taken from Caelin's discussion of these important topics:



Component-to-Component Interference

Audio components can generate noise that can be reflected back from the power conditioner to contaminate other components. Shunyata controls CCI without the use of transformers, coils or large capacitors that are inductive and can impede instantaneous current delivery. The CCI filters are designed to provide localized "sinks" for system generated and radiated noise. Shunyata's new CCI (Component-to-Component Interference) filters are a capacitive array applied to each outlet that prevents the spread of high-frequency noise between terminals.

Dynamic Transient Current Delivery (DTCD)

Our audio components do not draw current in a constant or linear fashion. They draw current in instantaneous pulses as rectifiers switch on to fill the storage capacitors. This is not only found in high current devices, but in preamps and other low current components. These current pulses have high frequency harmonics up to 50 times the frequency of the AC power line. This places a great demand upon the AC power circuit and associated connections to deliver current without significant impedance to the flow. Impedance to these instantaneous current flow demands can cause a loss of phase and time coherence and degradation in voice and instrument weight with an overall compression of dynamics.

DTCD Analysis

DTCD analysis is another important concept if one wishes to understand what is contributing to Shunyata Research's design of their AC distribution products and AC cables.

"DTCD is a method of current analysis that measures instantaneous current delivery in the context of a pulsed current draw. In layman's terms, it is a way of measuring current performance into typical electronic component power supplies."

"The DTCD Analyzer allows the measurement of pulsed transient current through a variety of AC power products, including power cords." Shunyata Research optimizes their AC distribution centers and AC cables by using the DTCD Analyzer to improve and optimize performance.

The Three Denali Series Products



D6000/T

The D6000/T offers 6 outlets, two of which are high current especially designed for amplifier use. The tower design allows the Denali D6000/T to be placed on the floor eliminating space issues in one's component rack and improvement in cable management. The D6000/T has an integrated isolation base that is made of CNC machined aluminum with massive vibration damped 50cm stainless steel footers that eliminate the need to place the Denali on a base. The Vibration Isolation System utilized in the D6000/T isolates internal and external parts of the chassis and reduces the effects of floor borne vibrations. Shunyata has gone to great lengths to ensure that the chassis and internal components have minimal contribution to vibration. The chassis of all of the Denali Series are all made from aluminum that has constrained damping material applied to the panels to reduce ringing and vibration that can negatively affect the sound of the power conditioner. Each outlet has a vibration absorbing system to isolate it from the chassis and from vibration conducted through the AC cables. The CCI filters, NICs, and QR/BB are all potted with a vibration-dampening compound.



Another feature found on all 3 Denali Series distributors, is a cable cradle support system found on the back of each outlet that prevents AC cords from being pulled out from their weight, especially in the tower Denali designs.



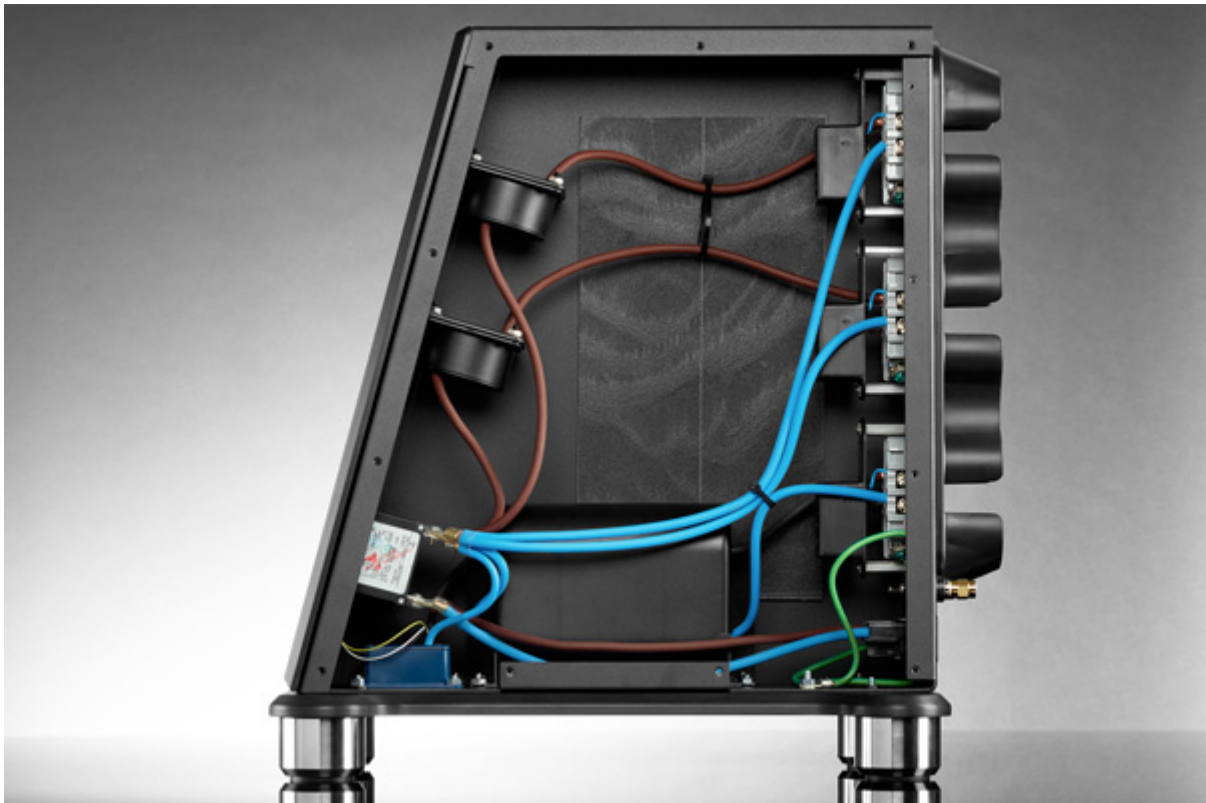
D2000/T

D2000/T is also a tower design with a similar isolation base and footers found on the D6000/T. 2 outlets are provided that are identical to the high current outlets found on the larger tower model.



D6000/S

This horizontal shelf model has 6 outlets that are similar in function to the D6000/T but without the base isolation platform and special stainless steel footers. The D6000S is intended for placement on a stable rack with its own isolation, although there are Shunyata's basic isolation footers employed in this model that have vibration-dampening characteristics.



Denali's Improved Features For Noise Reduction

NIC V2 (Noise Isolation Chambers)

The NIC V2 has been redesigned for the Denali Series. The NIC is a proprietary technology that reduces high frequency power line noise using ferroelectric substances. Not only has the size of the chambers been reduced, but also the efficiency improved. The NIC V2 is now used in series compared to the parallel use in the Triton v 2 and Typhon. The NIC reduces high frequency noise in the Megahertz and Gigahertz range by absorbing noise passively. There are no chokes, coils, or transformers used that can interfere with instantaneous current.

CCI Medical Grade Filters

These newly developed filters were originally developed for use in medical applications used in electrophysiology labs and hospitals. The Denali series is the first of the Shunyata Research power conditioners to offer these new filters. The CCI absorbs noise from a component and prevents contamination to other components connected to the Denali or the same power line. Shunyata claims that the CCI interference levels can be reduced more than -60dB from 500KHZ to 10 MHz with these new filters.

QR/BB

The QR/BB is a new (patents pending) technology from Shunyata Research that eliminates the sense of dynamic compression often experienced when power amplifiers are connected through a power conditioner. The QR/BB stores current without capacitors, chokes, or coils. Shunyata states that dynamics are actually improved with connection to the Denali compared to a direct connection to a high-capacity dedicated AC line.



Other Denali Features

CopperCONN Outlets - These outlets are used in the Triton v2 and DPC-6 v 2 that I previously reviewed. They have a base metal made of copper instead of brass, with a thin layer of nickel plating that protects the copper. I have found the CopperCONN to be excellent sounding outlets.

- The Gemini Surge Module provides 40,000 amps of surge protection, spike protection and noise reduction.
- The Hydraulic Electromagnetic Breaker used in the Denali D6000/T and D6000/S operate right up to their maximum current rating without current limiting.
- KPIP Processor- The Kinetic Phase Inversion Process is a process and a machine that significantly reduces burn-in time for optimum sonic performance from the Denali.
- ArNi Conductors - 8 gauge internal wiring that allows the Denali Series to have a 20 Amp continuous rating. These conductors are a "hollow tube" VTX design that are made from pure OFE (oxygen-free electrolytic) C10100 copper and treated with the KPIP process. The hollow core design of these conductors minimizes skin effects and random eddy currents. Cryogenic treatment of many of the electrical parts in the Denali improves the performance of the wires, conductors, connectors and terminals.
- Chassis Ground System (CGS) Terminal – An internal ground-buss noise reduction feature that is tied into the NIC v2 to extend the noise reduction system to components external to the Denali.

Associated Components Used in the Denali Evaluation

I used my Asus G501 JW laptop running Windows 10 Pro 64 bit to act as the server or Roon Core for the Sonore microRendu powered by the Sonore Signature Power Supply. The Asus G501 JW possesses an Intel Core i7 4720HQ 2.6 GHz processor with 16 GB RAM and a fast PCIe Express X4 SSD. This laptop has 3 USB 3.0 ports as well as a Thunderbolt port that is connected to 2 GRAID Thunderbolt 8TB drives with AudioQuest Coffee Thunderbolt cables.

Software used was Roon server for the Asus, as well as the Signalyst HQPlayer integrated with Roon.

A number of DACs were employed in this review including the MSB Technology Analog DAC / Analog Power Base with the new Premium Quad USB2 Module, the Wavelength Crimson Silver with Quotient Q1 board, and the Musica Pristina Virtuoso Network Roon Ready DAC. The DACs were plugged into the Denali with Shunyata Sigma Digital AC and Alpha Digital AC cords. The Sonore Signature Power

Supply was connected to the Denali with a Shunyata Alpha Analog AC cord. My Ayre Acoustics KX-R Twenty preamp was connected with a Sigma Analog AC cord, as were the 2 Ayre Acoustics MX-R Twenty mono power amps.



The Power Amplifier Challenge

I have used numerous brands of power conditioners with my power amps and have never been satisfied with the sonic results. Some elements of the sound improved, but the over-all sound always seemed less dynamic and alive sounding leading me to connect the amps directly to the wall outlets. It just always sounded best connecting my high power amps directly to the wall.

I connected my 2 Ayre Acoustics MX-R Twenty amps to the Denali D6000/T. The result was astonishing in terms of the sonic improvements I was hearing. The soundstage appeared wider and deeper as well as a more defined deep bass and mid bass compared to the direct wall AC connection. But it was the dynamic quality of the music that really grabbed my attention. The 300-watt Ayre Acoustics monoblocks driving my Wilson Audio Sasha speakers were more open sounding and attention grabbing. All genres of music benefited from the amps connected to the 2 High-Current outlets of the Denali. The improvement was not subtle! I also noticed a deeper background silence that allowed me to hear previously obscured soundstage details found in well-recorded classical recordings.

Connecting my Wilson Watch Dog II powered subwoofer to a Denali D2000/T did wonders for the Wilson sub; better definition and control of the deep bass as well as a more dynamic impactful sound. The Denali D2000/T added a sense of weight and authority to the deep bass that was previously lacking in my system when the Watch Dog was connected directly to the AC wall outlet.

The Rest of the System

It was now time for me to connect my preamp, DACs, and the Sonore Signature Power Supply powering the Sonore microRendu to the Denali. The reduction in noise was very easy to appreciate.

Resolution of transient detail was enhanced with the Denali as well as an improvement in tonal naturalness. Micro dynamic nuances were more overt and noticeable as well as spatial and sound staging clues when listening with the Denali.

But what struck me the most was the enhancement of the midrange and high end. There was an engaging grain-free naturalness to the sound that was quite apparent when the DACs were connected to the Denali.



What AC Cord To Use With The Denali?

The Denali Series does not include a 20 amp AC cord for connection to the wall outlet. For this review, I used the Shunyata Research Ξ TRON Σ SIGMA HC AC cord and the Ξ TRON α ALPHA HC Power cord. I didn't hear a tremendous difference between the ALPHA and SIGMA for the lower powered components. But with my power amps connected to the Denali, the Sigma was my preferred choice. Both the Alpha and Sigma HC AC cords have been designed to reduce noise as well as delivering maximum DTCD (Dynamic Transient Current Delivery). For most listeners, the Alpha AC cords will be more than sufficient. But for those of you with high current power amps, the extra performance offered by the Sigma HC cords will be appreciated.



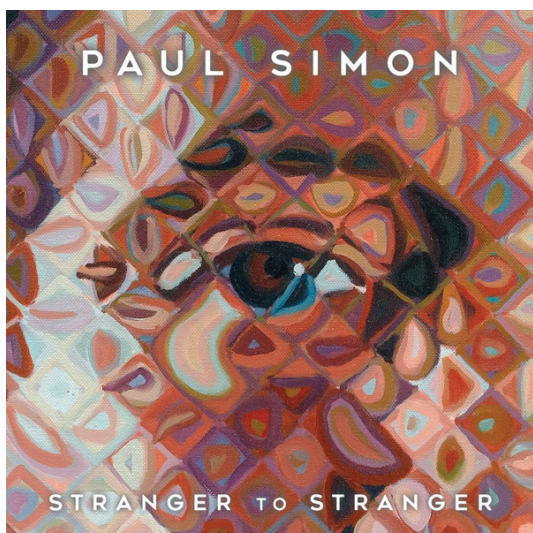
The Denali D6000/S

This rack mount version of the tower D6000/T is similar, but lacks the integrated isolation base and large stainless steel footers found on the D6000/T and D2000/T. Placing it on an isolated stand or base resulted in sound that was comparable to the D6000/T. But for me, the added flexibility to place the power conditioner directly on the floor without a need for a special isolation base was a feature well worth the extra cost.

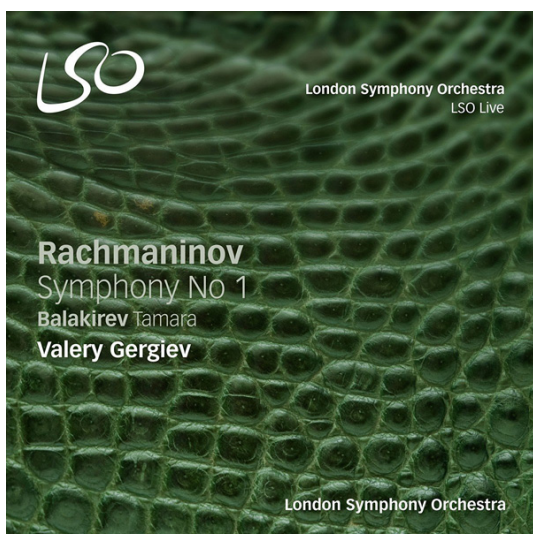


Enjoying Music With The Denali

Listening to the jazz vocalist, Rene Marie, on her new release Sound Of Red (24/96) I was impressed with the beautiful and focused reproduction of her voice. The instruments accompanying her were dynamic sounding with no image smearing. The resolution of transient detail sounded clearer using the Denali.



Paul Simon's new release Stranger To Stranger (96/24) with its heavy studio mixing, sounded very nice when played with the Denali. The enticing rhythms of these compositions came across well with deep bass that was well defined and impactful. The Denali allowed this recording to sound non-fatiguing with extended treble that had no "digital" edge.



The recent release of the Rachmaninov Symphony 1 performed by Valery Gergiev conducting the London Symphony Orchestra (DSD64) was thrilling to listen to with my front end and power amps plugged into the Denali D6000T. The recording's dynamically expressive sound was reproduced convincingly in a manner that was extraordinarily expressive and involving. The Denali allowed me to be pulled into the music with sound that was delicate and nuanced.



One Of Shunyata Research's Finest Efforts

Over the years, I have had first hand experience with a number of Shunyata Research's power distribution centers including the Hydra V-Ray, V-Ray v 2, DPC-6, DPC-6 v 2, Triton, and most recently, the Triton v 2. I don't remember any of these power conditioners creating the initial overall listening excitement I heard when first experiencing the Denali Series. And for those of you wondering if the Denali Series outperforms the "reference" stack composed of the Triton v 2, Typhon, and DPC-6 v 2, the answer is most definitely no. But for many users, the Denali will be more than sufficient for their overall system needs given Shunyata's attention to detail in Denali's components and design. I consider the Denali Series to be one of Caelin Gabriel's finest creations and harbinger of things to come in future Hydra models.

Denali D6000/T

Device Type: Power Distributor

Design: Tower Floor Model

Inlet: IEC-C20

Outlets: 6 outlets

Dimensions (H x W x D): 17.75 inches X 7.75 inches X 17.25 inches

Weight: 24.1 pounds

Denali D6000/S

Device Type: Power Distributor

Design: Shelf Model

Inlet: IEC-C20

Outlets: 6 outlets

Dimensions (H x W x D): 4.50 inches X 17.25 inches X 12.15 inches

Weight: 12.3 pounds

Denali D2000/T

Device Type: Power Distributor

Design: Tower Floor Model

Inlet: IEC-C20

Outlets: 2 outlets

Dimensions (H x W x D): 9.0 inches X 7.75 inches X 17.25 inches

Weight: 17.7 pounds

Shunyata Research AC Cords Used In The Evaluation Of The Denali Series

ΞTRON Σ SIGMA HC AC Cord

Device Type: AC Cord

Version Evaluated: Σ SIGMA HIGH-CURRENT IEC C-19, 1.75 Meter Length

ΞTRON α ALPHA HC Power Cord

Device Type: AC Cord

Version Evaluated: α ALPHA HIGH-CURRENT IEC C-19, 1.75 Meter