

DISTRIBUTED POWER CONDITIONING SYSTEMS

The Shunyata Research Approach: Distributed Power Conditioning

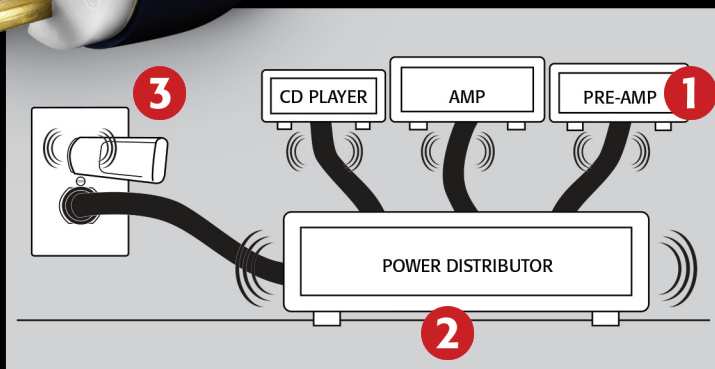
Shunyata Research pioneered the idea and implementation of Distributed Power Conditioning to solve the problems of internal and grid related power-line noise, while eliminating the complications and limitations posed by traditional “one-box” power conditioners.

What is Distributed Power Conditioning?

Distributed Power Conditioning describes Shunyata Research’s multi-point approach to noise isolation. Beginning at the first electrical connection of each component – the power cord – Shunyata’s distributed power conditioning measurably reduces noise. This is accomplished without getting in the way of instantaneous current (*DTCD™*) or interfering with the individual components unique power conditioning elements. Following, are the three stages of Shunyata’s Distributed Power Conditioning System.



DISTRIBUTED POWER CONDITIONING
Shown: α . ALPHA ANALOG power cord,
VENOM PS8 power conditioner,
VENOM DEFENDER module.



1 Stage 1: Power Cords with Measurable Noise-Reduction Technology

Shunyata Research manufactures several power cords that reduce power line noise. They employ a modified Ξ TRON™ circuit that measurably reduces power line noise. The power supplies in electronic components generate RFI and EMI emissions that may be radiated to the other components through the power cords. This is called CCI™ – *component-to-component interference*.

Shunyata Research power cords employ built-in Ξ TRON™ noise filters that intercept this noise before it is transmitted through the power cord to the power distribution buss and then ultimately onto the power line itself. This stops power line noise at its source – where noise suppression is most effective.

2 Stage 2: DTCD™ & CCI™ Optimized Power Conditioners

The primary function of a power distributor is to supply power to multiple components from a single wall outlet. Ideally this should be done without limiting DTCD™ – *dynamic transient current delivery*. Incoming power grid noise can be reduced and CCI™ reduced through the use of noise reduction techniques.

Shunyata Research’s power distributors are designed to provide high current capacity and to reduce noise with patented NIC™ (*noise isolation chambers*) and with proprietary MPDA™ (*multi-phase differential array*) filter-networks. Additionally they provide over current protection and surge protection.

NOTE: These noise reduction technologies are non-reactive and do not interfere with the normal operation of a component’s power supply.

3 Stage 3: Pocket-Sized Protection and Filtration at the Wall

For a simple system or a single component, an expensive power conditioner with its large size, and multiple outlets may be unnecessary. The pocket sized VENOM DEFENDER plugs directly into the wall outlet providing surge protection and noise reduction. It may also be used with the reasonably priced, eight outlet, VENOM PS8 power distributor.

Summing Up... Shunyata Research’s Distributed Power Conditioning Systems provide the most diverse and efficient means of protection and noise isolation for recording, mastering, film and sound systems. Shunyata’s multi-stage noise-filtering measurably reduces noise at the components, where it matters most. Every element in the Distributed Power Conditioning System has been designed to work seamlessly with all component power supplies, without adding interference and without the degradation of instantaneous current (*DTCD™*).

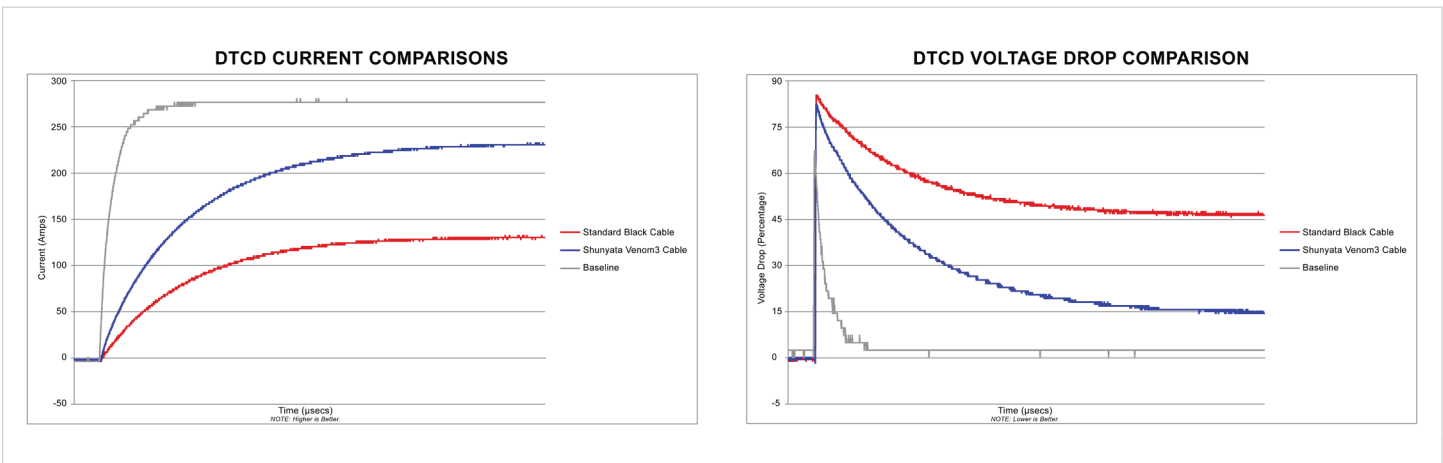
MEASUREMENTS: THE MAKEUP OF A SUPERIOR PERFORMANCE POWER SYSTEM

Following, are the three building blocks of Shunyata's Distributed Power Systems and why they part with tradition in their product category.

1 DTCD™ (Dynamic Transient Current Delivery)

The DTCD™ Analyzer is a device that allows the measurement of transient current flow through a variety of AC power products like power conditioners and power cords. The precision-made DTCD Analyzer also provides the ability to measure differences between outlets, breakers, switches, wire and contacts.

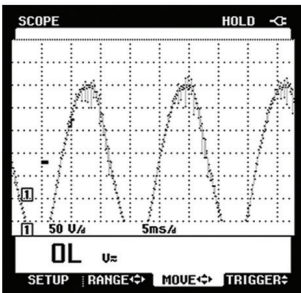
Most power conditioners limit DTCD™ (*dynamic transient current delivery*) which impedes current delivery to a component's power supply. This tends to degrade sonic performance in a high-end music system. Caelin Gabriel considers DTCD™ Analysis to be so vital that it is used to performance test each and every part and subassembly used in Shunyata Research's power products.



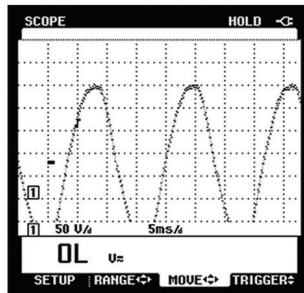
2 CCI™ (Component-to-Component Interference)

Traditional power conditioners are designed to block noise coming in from outside the home but do not address the noise that is generated by the electronic component's themselves. In fact, most conditioners reflect noise back into other components attached to the power conditioner. Shunyata Research calls this form of contamination CCI™ – *component-to-component interference*.

Our research indicates that CCI™ may be one of the most significant but often overlooked aspects to power system performance. Shunyata Research uses a *Distributed Power Conditioning System* approach with a variety of patented and proprietary technologies to reduce both CCI™ and outside power grid noise.



NOISE WITH A STANDARD POWER CABLE



NOISE ELIMINATED WITH THE ITRON CX ANALOG POWER CABLE

3 Avoiding Conflict

Many traditional "power conditioners" contain elements that are often in conflict with component's own power supplies. This can create a power conditioning mis-match with unpredictable results. Consequently, traditional "power conditioners" are not recommended by the majority of electronics manufacturers. Shunyata products are non-reactive by design, meaning they have no elements that would conflict with whatever is designed into electronic power supplies. Shunyata products offer consistent performance no matter what combination of components they are connected to. This explains why many electronics manufacturers use Shunyata's Distributed Power Systems in their trade show and design systems.

