



The Advantages of the Atlantic-NetStreams System

Speaker Basics—How they work

The sound quality of an audio playback system is determined in large part by the quality of the speakers. Speakers, as we have come to know them, are made up of two basic things: The “drivers” (the woofer, which handles the low and mid frequencies and the tweeter, which handles the higher frequencies; some speakers also have a specialized ‘mid-range’ driver to cover just the middle tones), and a special electronic circuit that blends everything together, called the crossover network.

You can think of the crossover as a sort of electronic ‘traffic cop’, because it splits the incoming signal into lows, mids, and highs, and directs that portion of the signal to the appropriate driver, using electronic components called inductors, capacitors and resistors. The crossover is known in engineering terms as a “passive circuit,” because it doesn’t produce any power of its own; it simply reacts to the incoming signal.

The Weak Link—the Crossover

Crossover networks are a definite weak link. Perhaps the biggest problem is this: Passive circuits cause what’s called an “insertion loss.” In other words, the presence of a passive circuit in the signal path will soak up some of the signal, resulting in lower system output. No getting around it. (Why do you think they call them “resistors”? See fig. 1)

Another thing that crossovers try to do is to provide some “equalization” to the speakers. Let’s say, for example, that the woofer has too much output in its upper range. If that is not corrected (“equalized”), it will overlap too much with the lower end of the tweeter and the speaker will have too much midrange output. The result is a very “honky, nasal” sounding speaker. If the engineer selects an inductor of the proper value, he can bring that woofer’s upper-end

response down to where it should be, and the speaker will sound fine.

Lastly, the actual components that make up a crossover (the inductors and capacitors and resistors) can be subject to pretty wide variability from one to the other. These components can have a +/- tolerance of 5% or 10% per unit. (Atlantic uses +/- 2% components in the critical signal path to minimize variability, but not everyone does—not by a longshot! See fig. 2) An 8-ohm resistor in a conventional speaker might actually be anywhere from, say, 7 to 9 ohms. Once you stack up all the tolerances throughout the network, the crossover in two supposedly identical speakers can actually vary from each other more than you think. The stated woofer-to-tweeter crossover frequency of 2000Hz could vary anywhere from 1800 to 2200 Hz.

This is kind of an over-simplified explanation of how passive speakers work, but it’s pretty accurate. The crossover is the big stumbling block, because you have to get around the issue of insertion loss, and in most speakers, crossover component variability.

A Great ‘Solution’ to the Crossover

But how about if we could get rid of that passive crossover, and its variability, and its insertion loss? Wouldn’t that be great? Then we’d have a speaker system that crossed over from woofer to tweeter exactly where the engineer wanted it to, the crossover would be exactly the same from one speaker to the next, and the overall system output would be greater because none of the system’s amplification power would be wasted trying to plow its way through a passive circuit.

And what if we could equalize the speaker system with absolute precision, and not worry if the inductor we had chosen was affecting the woofer exactly as we wanted it to?

Figure 1 Conventional high-loss Crossover

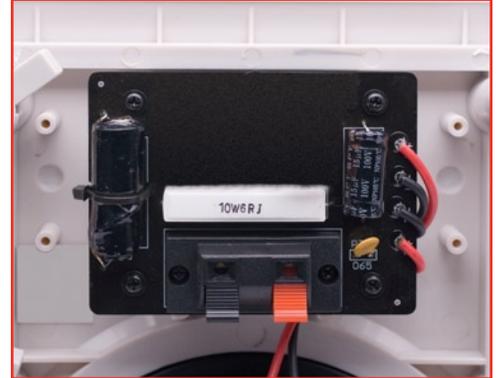


Figure 2 Atlantic's Sophisticated Crossover



Figure 3 Crossover Bypass Switch



This is what the NetStreams system will do—it relieves the speaker of having to perform crossover and equalization functions with a passive crossover, and instead moves those functions to the digital domain, ‘upstream’ in the system, in the NetStreams amplifiers themselves (See fig 4). Here, those functions are carried out with absolute accuracy and perfect repeatability.

An Even Better Solution—the Atlantic/NetStreams System

What would be really great is if you could combine the NetStreams digital precision with some truly outstanding loudspeakers—then you’d have a system second to none!

That’s exactly what you get with the Atlantic Technology-NetStreams system. Atlantic speakers are world-renowned for their incredible sound, and have several unique design advantages that make them especially well-suited to being partnered with the NetStreams system. Atlantic speakers have sophisticated adjustment controls to optimize their high-frequency output for varying room absorptive characteristics; the -7 and -14 LCR also have Boundary Compensation switches to tailor their frequency response depending on how close to an adjacent wall they’re mounted, and they have Atlantic’s exclusive Directional Vector Control (DVC™) that electronically directs the sound up or down from the speaker, without having to employ the conventional, unsophisticated mechanical “pivoting tweeter.” Only Atlantic speakers provide the end-user with such a comprehensive array of acoustic optimization controls to ensure that the speakers always sound great, in any installation.

We can do all these things. Atlantic and NetStreams engineers worked hand-in-hand for months to replicate every single one of the Atlantic equalization and adjustment curves—but this time, it’s done digitally in the NetStreams electronics (See fig. 5).

The Best of Everything

This is the beauty and the advantage of the Atlantic/NetStreams system. By using the NetStreams amplifier and the pre-loaded Atlantic crossover/equalization files, you can dial in the exact crossover and equalization for Atlantic models IWTS-4 LCR-IP, -7 LCR-IP, and -14 LCR-IP. Using the NetStreams system, the crossover and equalization functions are performed digitally upstream of the speaker, in the NetStreams amplifier. The amplifier is then connected to the Atlantic speaker with an easy Phoenix connector and a simple two-position toggle switch on the speaker bypasses the speaker’s on-board passive crossover.

This is the best of all worlds: a super-clean digital signal with the exact crossover and equalization data encoded for these Atlantic speakers. Everything stays in the digital domain, all the way from the recording studio until it reaches the speakers. Since the NetStreams DigiLinX system always distributes the audio completely uncompressed, it is finally possible to have a bit for bit copy of the original CD master recording in every room of the home!

The system sounds great—you get every bit of performance out of the speakers that they’re capable of. Atlantic speaker innovation, coupled with digital precision. It’s an unbeatable combination. And as a bonus, since we’re completely avoiding the passive crossover, we don’t suffer any insertion loss. As a matter of fact, the system will play as much as 5dB louder, which means that NetStreams’ 50-watt amplifiers behave like conventional 160-watt amplifiers! Wow. The whole system plays louder, cleaner, with less distortion, and perfect uniformity from one to the next.

Figure 4 NetStreams SL220 amp



Figure 5 NetStreams SL254 amp



Figure 6 NetStreams in-room interface

