



Dielectric-Bias System

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audioquest[®]

2621 White Road Irvine CA 92614 USA Tel 949 585 0111 Fax 949 585 0333 www.audioquest.com

AudioQuest Dielectric Bias System (DBS)

The patented Dielectric Bias System (US Pat 7,126,055) is a simple, elegant solution to one of cable's most vexing performance challenges.

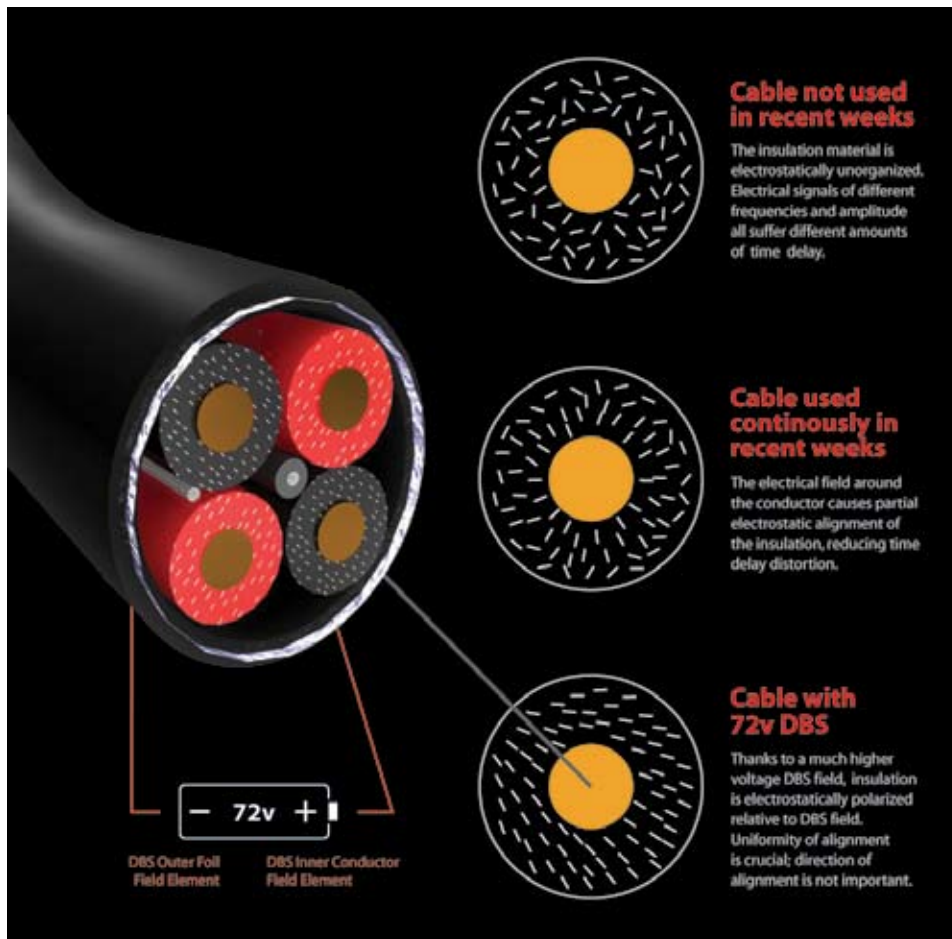
A highly misunderstood area of cable performance is the subject of cable run-in, sometimes (inaccurately) referred to as "break-in." "Break-in" properly applies to one-way mechanical phenomena, such as a motor or a loudspeaker surround. Cables and capacitors do not "break-in", rather their "dielectric forms," meaning that it takes time for the dielectric material to adapt to a charged state.

This process is quite audible and explains the significant improvement heard in electronics, loudspeakers and cables as signal is applied over a period of time. It has long been noted that cables (and all audio components) sound better after having been left turned-on for a number of days. It has also been noted that once turned off, the component or cable slowly returns to its original uncharged state. For many music lovers, this means that they are almost never hearing their cables in their optimum state.

AudioQuest's founder and chief designer, William Low, explains the Dielectric-Bias System: "DBS puts all of a cable's dielectric into a comparatively high voltage DC field ... continuously from the time the cable is terminated. The exceptionally simple design uses a wire down the middle of the cable, which is simply an extension of a battery's anode. This wire is attached to negative (-) of a DBS battery pack, and nothing else. It is not in the signal path and has no interaction with the signal. Depending on the model of interconnect (analog or digital) or speaker cable, an existing foil "shield" is used as the DBS anode by connecting it to positive (+) of the DBS battery pack. The negative side of a battery is nothing; it's just an empty reservoir. Again, there is no interaction with signal flow and no extra connections are introduced into the signal path."

The benefit of maintaining a bias on the dielectric at a substantially higher voltage than is ever achieved through normal use is dramatic. Even a cable, which has the loudest music or pink noise continually traveling through it, never has a fully formed dielectric.

DBS and Phase Distortion



The insulation on a conductor is in the path of a signal's magnetic field. A perfect cable would conduct at the speed of light. As this is not possible, specifications for high bandwidth cables commonly include a number for "propagation delay." The specification is a percentage of the speed of light.

Audio does not have a problem with propagation delay. In fact, almost no signals have a problem due to propagation delay ... the specification is an acknowledgment that the insulation is acting as a dielectric and is interfering with the signal transfer.

One might think of the absence of propagation delay as dropping a coin through air. If a coin is dropped through water, there is a delay, if dropped in a barrel of oil, much more delay. The problem with insulation on an audio conductor is that the signal's magnetic field is slowed down

by the insulation (dielectric). The amount of delay is different for each frequency and for each amplitude.

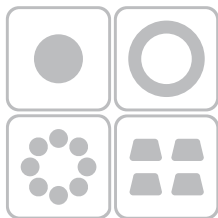
The AudioQuest Dielectric Bias System significantly reduces non-linear phase errors two ways. 1) By keeping a constant electrostatic field on the insulation material, the molecules of the material are polarized, greatly reducing the misbehavior. 2) By saturating the material, the insulation cannot absorb new energy and therefore cannot release that energy delayed in time.

One of the facts of audio life, whether turning on a turned-off piece of electronics, or when AudioQuest assembles a new DBS cable is that it takes about two weeks before getting most of the benefit. It takes time for the "dielectric to form." Evaluating the effectiveness of the DBS system requires a cable with its DBS system disconnected for two weeks to be compared with a cable that has had its DBS system attached for two weeks.

"I hope when you have the opportunity to experience AudioQuest DBS cables, that your response will be the same as mine when I put the first prototype in my system; "Ahhh, thank you!"

A handwritten signature in black ink, appearing to read 'WEL', with a long horizontal flourish extending to the right.

William E. Low



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or contact us at info@audioquest.com**