

The Genesis ServoSub™ series of products are servo-controlled subwoofers that define state-of-the-art bass reproduction. They deliver fast, tight, distortion-free and low extended bass from extraordinarily small and beautiful cabinets.

Since ancient times, bass has been used to convey excitement and intensify emotions: warring tribes use drums to energize their warriors, and church organists have been using infrasound (notes below 20Hz) to create a sense of euphoria in their audience. In the animal kingdom, the spine tingling chill you get just before an elephant charges at you is a result of the elephant's war cry at 18Hz.

Frequencies from 80Hz down are important to creating the genuine sense of scale and weight in music. Without sufficient bass response, orchestras seem smaller and rock bands lose excitement. The visceral impact felt at rock concerts and action movies come mainly from the bass.

Low bass also helps recreate venues with long reverberant tails, such as large concert halls and cathedrals. The walls of your listening room seem to disappear and you are transported into the venue. The ability of the system to play low bass makes your listening rooms seem much larger than it actually is.

The Genesis ServoSub series use a combination of superior technologies to achieve accurate low bass, enabling all models to integrate exceptionally well to a wide variety of



loudspeaker systems, including electrostatic and planar models from other manufacturers.

### **Servo-Controlled Bass System**

The concept of our servo bass system is an easy one to understand: it employs an accelerometer as a sensor to continuously monitor the movement of the woofer cone, and compares it to the input signal. This comparison circuit identifies any deviation from the ideal and instantaneously applies a corrective signal to compensate for any deviation. This reduces woofer distortion to below 1% at rated output and improves transient response by making the woofer seem massless, being able to stop and start instantaneously.

As an example, when you have a high-impact, low-bass signal that starts and stops suddenly (for example, a kick drum), the inertia of the woofer cone causes the cone to be slow to begin moving. Once the cone is in motion, the momentum of the cone causes it to keep moving - even after the output signal of the amplifier has stopped. The sonic result is a lack of *speed*, overhang, bloat, lack of tautness and definition, and a blurring of dynamic impact.

With the servo system, the circuit senses that the woofer is not moving as fast as it should in the

"Transient impact was extraordinary; the dynamic envelope of low-frequency sounds was tight, clean, and articulate.... In addition, bass extension was outstanding; this woofer extended to subterranean depths and maintained its composure.... It combines first-rate musicality and exceptional delicacy with a bottom-end solidity and power that was fully up to the job of reproducing today's dynamic soundtracks."

Robert Harley, The Perfect Vision  
Review of Genesis 928

start, and applies more current to make it move faster. When the signal stops, it detects that and applies a counter-signal to cause the woofer to stop faster and more effectively than normal circuitry or plain damping would.

The servo system places extraordinary demands on the amplifier, because it uses enormous amounts of current to make the woofer follow the signal. Hence, a Class D design is used for its power efficiency and ability to deliver enormous power with less heat and better thermal stability.

“No matter what I threw at it, the S4/8 was absolutely unflappable. No histrionics, no distortion, just excellent clean bass. There was no getting this subwoofer to lose its composure.”

John Potis, 6moons.com

### **Ribbed Aluminum Woofers**

The transducer used in a ServoSub must be strong enough to withstand the high current approach of the servo-control system, and yet delicate and light enough to react extremely quickly. This is achieved with our woofers that are designed with ribbed aluminum cones that are lightweight and yet inherently stiff.

The aluminum cones used by Genesis exhibit no resonance or cone flexure within the frequencies at which the subwoofer operates. Metal cones have only one single distortion mode, which is far above the 18Hz to 180Hz operating frequency of the subwoofer. Therefore, the driver is a perfect piston within the frequencies used, and this results in extraordinarily clean, tight bass.

### **LFE Blend™**

The Genesis Low Frequency Effects Blend technology conveys extraordinary flexibility to the ServoSub. It allows the ServoSub to take both a full-range speaker-level signal, and a line-level LFE signal in *at the same time*. The LFE Blend technology then seamlessly integrates the two signals in the analog domain.

One ServoSub can be used in place of up to three ordinary subwoofers: as an LFE channel, and at the same time, augment the bass response of two separate loudspeakers. This is most useful

in multi-channel applications when used to distribute bass sources around the room to control room modes.

As most home theater and multi-channel processors can only control one subwoofer (or LFE channel), we provide a separate LFE gain control on each ServoSub. This allows you to tune the subwoofer at each room position, conveying extraordinary flexibility when it comes to positioning. Distributing bass around the room requires use of long interconnects and the ServoSubs make this easy with powered, fully buffered LFE daisy-chain outputs.

### **Unique Cabinets**

At Genesis, we know that the cabinet design makes a significant contribution to the sound of the speaker. We heavily brace all our cabinets, and make intelligent design choices to eliminate panel resonances and box coloration, making no compromises on the sound quality while retaining a beautiful, elegant style.

In our ServoSubs, a balanced design eliminates cabinet shake and controls vibration. It is a simple fact of physics that an accelerating 25-gram cone moving 25mm in one direction will move a 25kilogram box 0.25mm in the opposite direction. This results in distortion, and “hopping” cabinets.

In all of Genesis’ ServoSubs, opposing drivers are used to eliminate this movement, resulting in subwoofers that are truly absolute fidelity™ – producing bass as the performance intended.

### **Application specific models**

The Genesis ServoSubs come in a range of application-specific models for flexibility in mix and matching. Because we believe that bass should be distributed around the room, we provide models that are ideally suited for corner placement and side-wall placement as well as the usual boxes that can be placed in the middle of the room.

All ServoSubs are available in premium wood and painted finishes.

**absolute fidelity™**