



## Sceptre™ Series Active CoActual™ Studio Monitors.



What does it take to realize the point-source potential of coaxial? A new transducer design and the world's most advanced speaker DSP.

# W

hat does PreSonus know about studio monitors? Just what we've learned from years and years of tracking and mixing in recording studios.

In other words, we learned what top-of-the-line monitors sound like.

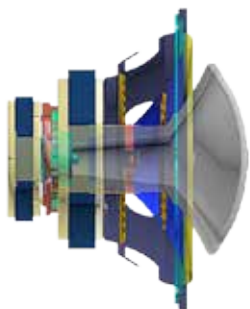
Only we wanted better.

So we went to a legendary speaker designer who had the design and DSP algorithms that would make beautiful music with our own software expertise.

The result is Sceptre.

You'll discover nuances of your music that can't be reproduced by conventional designs. The Sceptre's panoramic soundstage, fine detail, and stunning dynamics will astonish you.

This exceptional performance is the result of an advanced coaxial design that works integrally with a 32-bit, 48 kHz, custom processor running Fulcrum Acoustic's TQ™ Temporal Equalization Technology.



*A Bio: Dave Gunness, the designer of the Sceptre: Before cofounding Fulcrum Acoustic, Dave designed monitors and loudspeakers at Electro-Voice and later at Eastern Acoustic Works (EAW).*

Sceptre CoActual™



S6



S8

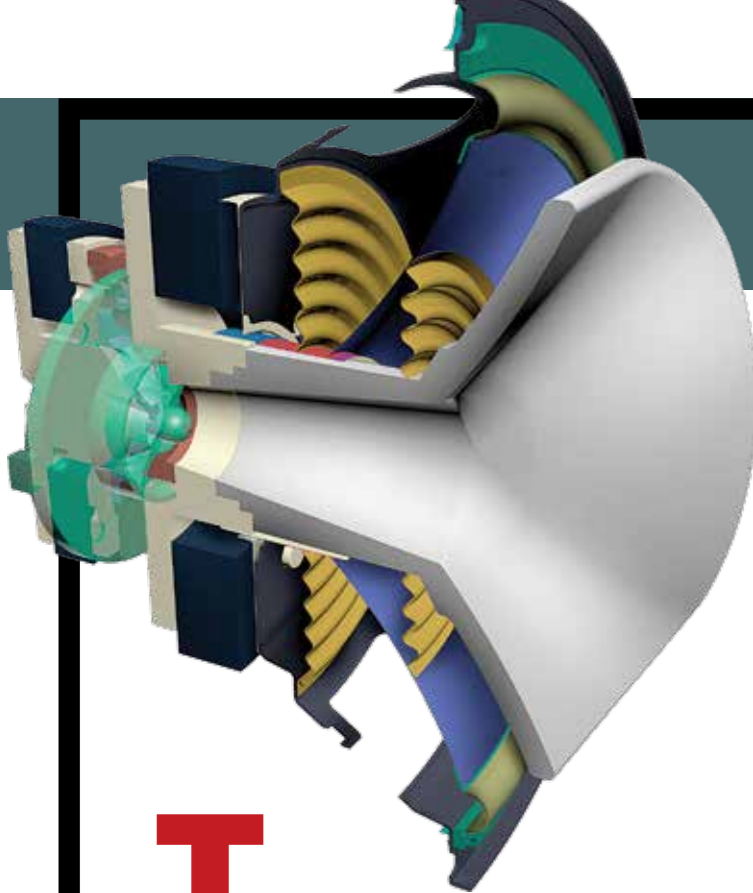
<b>LF Transducer</b>	6.25-inch composite	8-inch composite
<b>HF Transducer</b>	44 mm horn-loaded titanium	44 mm horn-loaded titanium
<b>Power</b>	180 watts, (90 W+90 W) Class D	180 watts, (90 W+90 W) Class D
<b>Maximum SPL</b>	103 dB continuous	105 dB continuous
<b>Frequency Response</b>	52 Hz – 20 kHz ±3dB	46 Hz – 20 kHz ±3dB
<b>Crossover Frequency</b>	2.2 kHz	2.4 kHz
<b>Protection</b>	RF interference, output-current limiting, over-temperature, transient, subsonic	
<b>Controls</b>	Acoustic Space Settings (Linear, -1.5 dB, -3 dB, -6 dB), High Frequency (Linear, +1 dB, -1.5 dB, -4 dB), Highpass Filter, (Off, 60 Hz, 80 Hz, 100 Hz, 2nd Order)	
<b>Display</b>	Front-panel power and Overload/Clipping, four rear-panel LEDs each for Acoustic Space, High Frequency, and Highpass Filter options	
<b>Inputs</b>	Balanced XLR and TRS ¼"	
<b>Power Requirements</b>	100-120V ~50/60 Hz / 220-240V ~50/60 Hz	
<b>Dimensions</b> W x H x D	9"/13.2"/10.24" 230 mm/335 mm/260 mm	11.4"/15.75"/11.8" 290 mm/400 mm/300 mm
<b>Weight</b>	18.8 lbs / 8.53 kg	24.25 lbs / 11 kg

*Gunness holds five patents and writes technology whitepapers, many published by AES. The KF900 system, the DSA digitally steered array, and a suite of innovative processing techniques*

*marketed as "Gunness Focusing™" are all results of his career-long emphasis on improving loudspeaker performance with innovative software tools and DSP.*

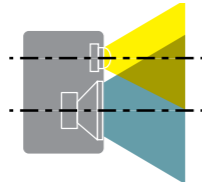
Sceptre CoActual™

# How Dave Gunness' unique transducer design and Temporal EQ™ software algorithms met PreSonus digital signal-processing power and perfected the coaxial studio monitor.



relationship between the listener and the speaker elements and cannot possibly have an optimal impulse response over a wide area.

The second advantage of coaxial design is that the crossover transition can theoretically be made inaudible. All designers of conventional two-way monitors battle this problem. One transducer is providing high and mid frequencies; another — often of a very different type — is providing low mid and bass. The frequency point where highs and lows “cross over” can result in an audible “dip” (or



peak) in the response of the monitor. Again, the simple fact that of different transducers are in different spots is to blame.

Because a coaxial multi-way speaker is a point source, it has the potential to completely hide the crossover point. Note that we said *potential*. It's no slam dunk. And this brings us to why *all* studio monitors aren't coaxial. Both transducers nestled together on the same axis also generate significant problems. A horn right in the middle of the low frequency speaker cone can cause diffraction and distortion. Rearward sound from the horn can bounce off the woofer cone and arrive at listener's ears too late, smearing the stereo image.

Finally, the proximity of horn and woofer can cause the two outputs to experience audible intermodulation distortion.

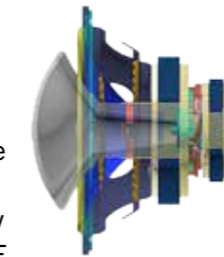
Advanced digital signal processing to the rescue: **Fulcrum Acoustic Temporal Equalization™** algorithms that rely on state-of-the-art computer processors unavailable a few years ago.

Fulcrum Acoustic cofounder

Dave Gunness believes that (along with using the best possible transducer) DSP should be a part of the initial loudspeaker design — instead of merely being used to fix shortcomings in a finished design. Or as Dave puts it, “*Rather than choosing a compromise between two competing attributes, we physically optimize the attribute that can't be addressed with DSP... and solve the other problem with DSP.*”

In other words, Sceptre starts out with a transducer that *a)* solves many basic coaxial problems through its physical configuration and *b)* is also

designed so that DSP can be used to correct other issues. In the 8- and 6.25-inch CoActual™ transducer, magnet structures are in close proximity for extremely smooth off-axis response. The purpose-built high-frequency horn contributes to frequency pattern control, and keeps HF energy off of the woofer cone. The woofer's larger radiating surface works with the HF horn to improve bottom operating-range directional control.



reflections. But it's possible when the resonances happen consistently. Knowing in advance how the loudspeaker will respond to a particular signal, it is possible to calculate a special new signal that not only avoids exciting natural resonances, but also actively kills these resonances before they become audible!

That's just one instance of how TQ makes Sceptre function so well as a point source. There are dozens more. But the real proof is hearing these monitors.

Demo them at a PreSonus dealer—side-by-side with the most expensive monitors in the store. Prepare to be pleasantly surprised.

No. Make that totally stunned.

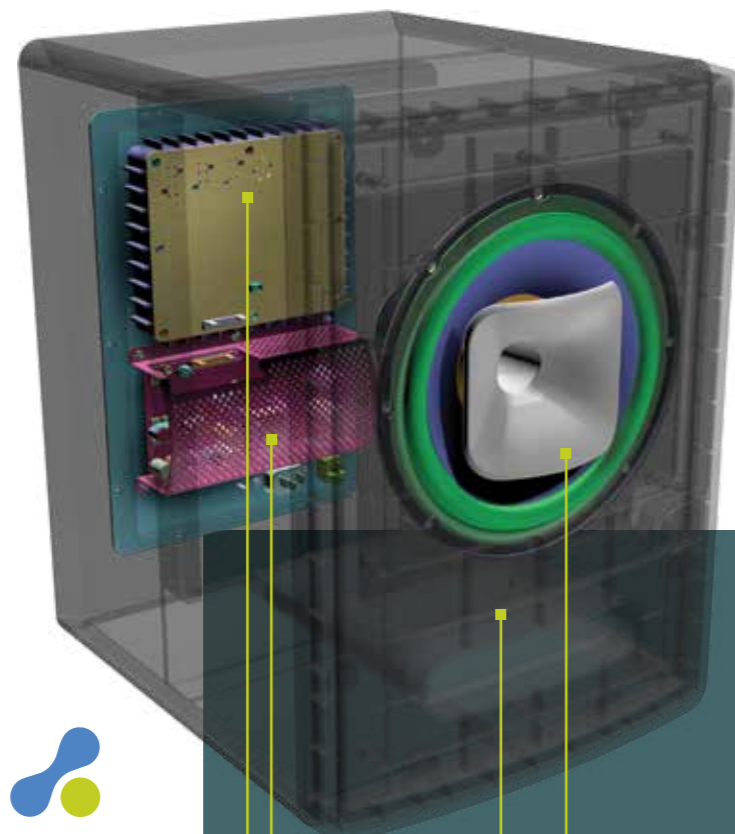


**T**he human ear hears most sounds as point sources. Even when we trick our brains into perceiving a stereo soundstage, each ear most easily “assembles” the stereo effect from its own point source (think headphones).

Since the 1930s, speaker designers have appreciated this and devised ways to put more than one transducer on a common axis. Hence the term coaxial. The Altec Lansing Duplex 604 (1945), Tannoy Dual Concentric (1947) and Urei 813 Time Aligned studio monitor (late 70s) all took advantage of coaxial design — and set new standards of fidelity for their time.

The particular benefits of coaxial technology are related to the radiation characteristics of a point source. The first advantage is a consistent acoustic center. A coaxial loudspeaker's response behavior is symmetric in both the horizontal and vertical axes. Frequency response at a given angle in relation to the axis is “mirrored” at the same angle in the opposite direction.

Conventional two- and three-way speaker systems simply can't achieve this. High and low frequencies originate from different physical points. Bass and treble arrive at the ear at different times — and from slightly different axis. This subtle “smearing” cannot be corrected with digital signal processing. Thus multi-way monitors suffer from the changing



Class D amplifiers with internal heat sinks  
CPU processor and electronics

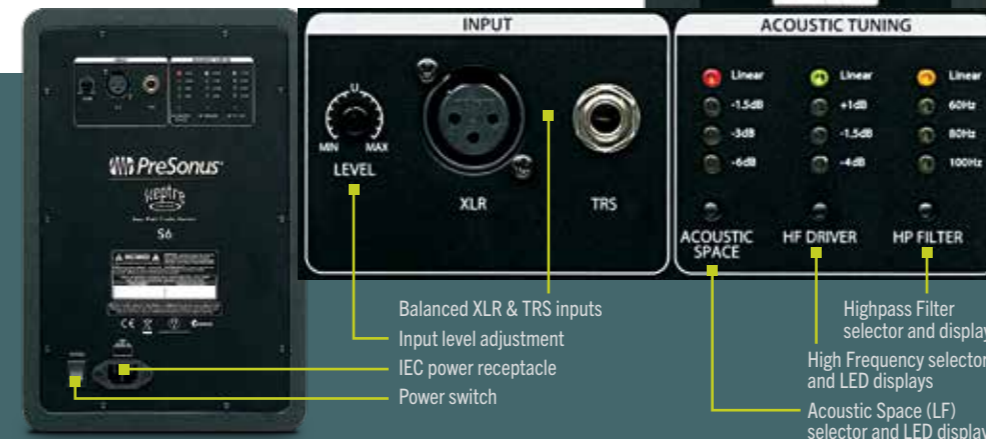
CoActual™ 2-way coaxial transducer  
Comolded front panel with integral reinforcement



**tq**™  
...takes cajones in the form of serious computer processing power. Fulcrum Acoustic's products rely on heavy-duty outboard speaker processors. PreSonus Sceptre uses a robust, custom DSP engine with orders of magnitude more processing power than any other studio monitor can take advantage of.

Then Fulcrum's **Temporal EQ™** (TQ) DSP algorithms are applied. It starts with the standard complement of Infinite Impulse Response (IIR) highpass, lowpass, and parametric filters, plus delay. To this is added fully addressable, fairly large Finite Impulse Response (FIR) filters that implement more detailed frequency response adjustments; and the precise temporal (time domain) filters that are responsible for the most remarkable TQ benefits.

Example: It seems pretty incredible that a computer — a custom digital signal processor — can eliminate physical horn



Balanced XLR & TRS inputs  
Input level adjustment  
IEC power receptacle  
Power switch

Highpass Filter selector and displays  
High Frequency selector and LED displays  
Acoustic Space (LF) selector and LED displays

Front-panel indicator shows power on and clipping





# Sceptre Records: The Story of an American Classic

**S**ceptre Records was begun by young Richie Vito in 1966. Sceptre's mission was to release records by bands that were a part of the burgeoning rock scene in and around San Pedro (and Long Beach), California. Vito was proud of his Italian heritage, and wanted to share what he felt was a "wealth of talent" in the San Pedro area.



Sceptre's first release was by **The Daily Breeze**, "*Just Coastin'*," a pre-garage-rock tune that featured a pounding piano and (for the time) prominent bass line. The song was a minor sensation and was played regularly at local record and sock hops. Sceptre released a follow-up album, and the label was off and running.

What set Vito's label apart at the time was the production quality of the recordings, which eventually attracted several other artists.

## Beginnings

Sceptre founder Richie Vito was born to Italian immigrants who moved to the port town of San Pedro, California, in the 1930s. Growing up with his very pious Catholic parents, Vito found that listening to



First site of Sceptre Studios in Ritchie's parents' home. Note the all-wood surfboards.

the pop music being played at church dances was a way to break away from his parents' strict rules.

After graduating from Mary Star of the Sea High School (a private Catholic school) in 1966, Richie took his savings and converted his parent's garage into a recording studio. There, he produced local band **The Daily Breeze's** instrumental, "*Just Coastin'*." The tune had quite a sizeable hook, thanks to its piano part, bass line, and scrappy saxophone solo, and for its time, it had exceptionally good sound quality.

Even though the sax was on its way out in rock music, the song, released on Vito's Sceptre



The Daily Breeze ca 1966.

Records, was soon featured by local DJs at sock hops (still the "thing" with high schoolers) and eventually by a few radio jocks, too. Demand for the single led Vito to take the band back into his studio to record an album's worth of similar tunes and garage-rock cover versions. Though not as "hard" sounding as Tacoma's Sonics or Los Angeles' The Standells, **The Daily Breeze**



(named after the local San Pedro newspaper) found a spot on regional package tour bills (though usually toward the bottom). The album, *In a Minute, Man*, did fairly well and raised eyebrows for its high fidelity at a time when most local recordings were muddy-sounding at best.

Vito decided to push another single from the album ("*Marimba Blues*"), which kept sales respectable. New bands were signed to the label, including **The Radio Boys** (their name an unabashed attempt at radio airplay) and **Sig, Spud & Nick**.

## Further On

As the '60s wore on, Sceptre found itself with more regional hits. **The Daily Breeze** went on to record another album, the psychedelic-tinged *Don't Hassle Me*. Though wildly different from their

first LP, it did brisk sales initially but soon found its way into the cutout bin. Vito

had pressed way more copies than he could sell, and once sales flatlined, returns were (regrettably) added back into inventory.

By this time, though, Vito had released the debut single from **The Glowstix**, "*Gimme A Light*," which received airplay locally and in many college towns on the West and East Coasts. It did pretty well on the charts, too, reaching #31 in late '68.

Cash flow problems caused Vito to take on an investor/partner, James Byant, whose investment kept the doors open into 1969 and '70. A few more singles were released, including **Pandemonium's** "*You Can't Chase a Dream (If You Don't Have a Dream)*" and **Kingsize's** "*Every*

*Bit of You*," but Vito couldn't maintain any momentum with his release schedule, and by 1972 Sceptre Records was shuttered for good.

## Today

Nowadays, many of Sceptre's releases are prized by collectors for their extraordinary sound quality, unique label artwork, and colorful 45 picture sleeves. In the mid '80s, the punk band Minutemen (also from San Pedro) named themselves after The Daily Breeze's first album. Though the label is gone, the Daily Breeze has toured the reunion circuit (casinos, county fairs, etc.) and sells CDs at their shows. (The band bought the rights to their releases when Vito closed the label in 1972.)

Vito got out of the record business permanently and has been spotted in San Pedro with his wife, walking their dogs along the Vincent Thomas Bridge near the L.A. Maritime Museum.



The Glowstix, San Pedro Ballroom, 1969.



Kingsize ca 1971



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