

# ADS L420-L520-L620

ADS 2-Way Speaker Systems



# ADS L420-L520-L620

## ADS Makes Great Sound Affordable

ADS is in a unique position to answer the needs of the discriminating music lover who is also mindful of his budget.

Among the best known of ADS' two-way systems are ADS Miniature Speakers. Their introduction shocked the audio world and clearly established ADS as a leader in miniaturization technology. Miniature or not, ADS speakers have consistently delivered the greatest performance for a given enclosure volume. ADS also builds some of the most sophisticated and prestigious professional monitoring systems in the world. Chosen by the most critical recording and broadcast engineers in the industry, ADS speakers have gained an enviable reputation for advanced technology, superior design, uncompromising quality, and pacesetting performance.

It should come as no surprise, therefore, that ADS produces some of the best two-way bookshelf speaker systems that money can buy. The ADS L420, L520 and L620 are results of the very same technology which has put ADS Minispeakers at the head of their class. They incorporate many elements of the largest, most expensive ADS Professional Monitor. They are designed and built with the same "old-world" care, attention to detail and quality components.

## The Drivers

ADS manufactures all of the drivers used in its speakers. This fact alone distinguishes ADS from a large majority of speaker system manufacturers, who must purchase most or all of their drivers from bulk suppliers. ADS thus maintains total control over system matching, quality and engineering improvements. Proper design and manufacture of the drivers obviate the need for unnecessarily complex, efficiency-robbing crossover networks typical of many "sophisticated" speaker sys-

tems which represent nothing more than valiant attempts to match inherently incompatible drivers. Each ADS driver, furthermore, embodies the most advanced design, materials and manufacturing techniques in the industry.

## The Tweeter

The L420, L520 and L620 have in common ADS' 1-inch acoustic suspension soft-dome tweeter, which accounts for their ultra-clean, "airy" high-frequency response. This unit's unusually small diameter and precise shape results in high-frequency extension and wide, uniform dispersion unmatched by other designs. The dome is constructed of a super-light fabric-like material coated with a proprietary "sticky" damping compound. It has none of the "ringing" and other resonance-related distortions common to other materials. Soft to the touch, the tweeter nonetheless functions as a perfectly stiff piston through its operating range, thus ensuring low distortion and coloration.



The tweeter's voice coil features a sophisticated and unusual single-layer winding. (Most similar tweeters must use two layers of windings in their voice coils to achieve the required number of turns.) Although difficult to execute, this technique yields an incredibly high force-to-mass ratio through lowered moving mass and increased magnetic field intensity. Further aided by a powerful Barium Ferrite magnet, the ADS 1-inch tweeter delivers superb high-frequency exten-



sion, excellent transient response, extremely low distortion and high efficiency.

The tweeter also features an all-metal voice coil structure which is unsurpassed in dissipating heat. Its narrow-gap magnet design, moreover, promotes efficient thermal transfer for effective cooling of the voice coil during high-current drive. This "air-cooled" voice coil structure can only be achieved through high-precision assembly, and it is more efficient than "liquid-cooled," ferrofluid-filled systems. It should not be surprising, therefore, that very few tweeters, including those with voice coils of larger diameter, can handle as much power as the ADS 1-inch soft-dome tweeter.

All ADS soft-dome tweeters, furthermore, feature airtight cavities behind the diaphragm. In effect an independent miniature air suspension system, the tweeter enjoys total acoustic isolation; and, equally important, the trapped air acts as a highly linear diaphragm "spring" which does not deteriorate with age as in other designs.

## The Woofer

While a woofer obviously need not be as light as a tweeter, low mass (relative to a given driving force) is an absolute necessity for well-damped, hangover-free bass. A woofer cone must simultaneously be as "dead" as

possible—it must have a high degree of internal damping—in order to avoid imparting its own character to the sound. (Tapping a woofer cone with the eraser-end of a pencil should produce a dull “thump” rather than a sharp, “live” sound.) And yet, the cone must be as stiff as possible in order to avoid “break-up” and other non-piston-like behavior. These three seemingly contradictory requirements take on added importance in two-way designs because the woofer is called on to accurately reproduce midrange frequencies in addition to bass information. While many driver manufacturers have used various exotic materials in attempts to meet these requirements, ADS firmly believes it has the closest thing yet to the ideal woofer cone: *Stifflite*™.



The L420, L520 and L620 have 7-inch, 8-inch and 10-inch diameter woofers, respectively. All three woofers feature ADS' tapered *Stifflite* cones. *Stifflite* is a relatively thick material formed of air-filled, randomly-oriented pulp fiber in a unique “sandwich” construction. The internally trapped air damps resonances and keeps the structure very light, while the thickness of the construction lends high structural rigidity. And yet, the *Stifflite* cone is thick only where it needs to be—toward the outer edge—and tapers off where the extra mass is not required for rigidity.

Coupled to each cone are a low-mass high-temperature metal voice coil at one end, and a highly flexible and uniform rubber surround at the other. The voice coils feature two layers of windings (where most other woofers use four), and they are precision-aligned into deep, narrow magnetic gaps. The results speak for themselves. The woofers have exceptionally light moving systems (lighter than voice coils *alone* in typical competitive designs). They excel at mid-range frequencies, a sore point with most larger two-way systems. They do not “color” the sound, and their ability to excise freely and linearly makes possible surprising amounts of deep, undistorted bass. Correctly dimensioned Barium Ferrite magnets coupled with low moving mass ensure high efficiency and damping. The woofers boast exceptional power handling capability thanks to their high-temperature voice coil assemblies. Their efficiency and power-handling combine to give the L420, L520 and L620 unusually wide dynamic range.

### The Crossover Network

Many speakers have crossover networks with numerous power-robbing, distortion-inducing components, which are needed to correct driver performance anomalies and match grossly different driver efficiencies. Others have ridiculously simple, inexpensive crossovers, too embarrassing to show or discuss in literature. ADS' networks are necessarily sophisticated because musical accuracy is highly dependent on proper transition from woofer to tweeter. But, thanks to ADS' advanced driver technology, ADS' crossover networks are free of excessive complexity and have the lowest power loss and distortion figures in the industry.

The crossover characteristics and frequencies for the L420, L520 and L620 systems have been selected through computer analysis, exhaustive acoustic measurements and extensive auditioning. The network components, furthermore, are of the finest quality. All

critical capacitors, for example, are computer-grade metalized polyester-film rather than the more common and less expensive electrolytic variety. Bass section inductors are “over-designed” with extra-heavy-gauge copper wire and special low saturation, low dynamic distortion ferrite cores. All high-frequency inductors are air-core designs. The coils, as a result, are extremely linear over the system's operating range and have the lowest measured DC resistance among modern production loudspeakers. The crossover networks of the L420, L520 and L620 thus provide seamless transition from low to high with maximum damping and minimum distortion throughout the speakers' entire frequency and dynamic range.



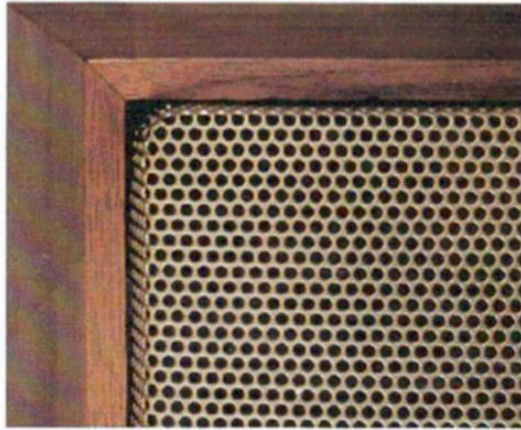
### Advanced Acoustic Suspension Design

All enclosed ADS speakers employ the acoustic (air) suspension principle for two basic reasons. First, it is ADS' belief that a properly designed acoustic suspension system offers the best, most consistent bass performance for a given size and cost, for the widest range of applications. Second, since acoustic suspension provides a highly linear diaphragm restoring force (trapped air) which is not dependent on the mechanical suspension of the driver, it delivers the most stable performance over years of use.

ADS' acoustic suspension designs, however, go far beyond these basic considerations. ADS' superior drivers and networks ensure the highest system efficiency. The L420, L520 and L620 are demonstrably more efficient than other acoustic suspension systems of comparable bass performance. Surprisingly, they are also more efficient than most bass reflex systems of comparable internal volume and bass response, even though theory dictates the reverse. (Most bass reflex systems lose their theoretical efficiency advantage to poor drivers and/or networks.) This enables the L420, L520 and L620 to be driven to startling sound levels with amplifiers as small as 15 Watts per channel, an important economic consideration since amplifier power is not a cheap commodity. ADS' acoustic suspension design, furthermore, ensures maximum bass accuracy and extension. All parameters are carefully chosen to maximize system damping and provide a smooth, gradual bass rolloff. Unlike "one-note" boom boxes which may initially impress the unseasoned listener, the L420, L520 and L620 produce bass of substance and subtlety, appreciation and enjoyment of which can only grow over years of ownership.

## The Enclosure

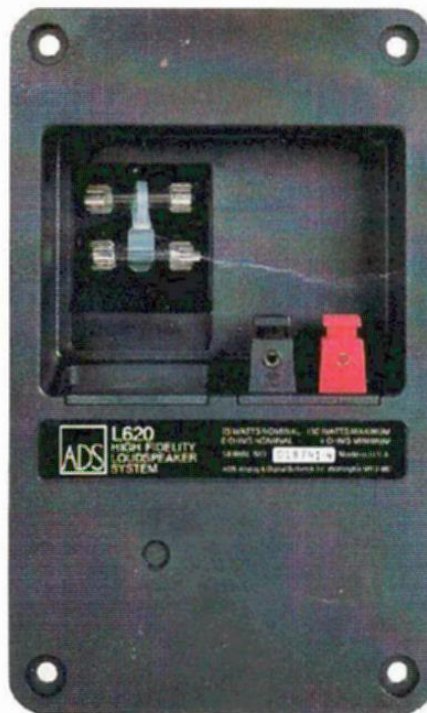
The L420/L520/L620 cabinetry is a supreme example of ADS' attention to detail. The enclosures are precision-constructed from ¾-inch extra-high-density particle board, which provides the mass, rigidity and acoustical properties necessary to keep sonic coloration to an absolute minimum. They are beautifully finished in select natural walnut. The drivers are carefully flush-mounted onto the piano-finish front baffle to minimize surface diffraction effects. The curved metal grille is acoustically transparent, and it eliminates the need for frames and supports, which cause further diffractive interference in conventional grille designs. ADS thus achieves remarkably diffraction-free performance in the L420, L520 and L620 without resorting



to unusual, and frequently unsightly, cabinet shapes. The lack of diffractive interference gives these speakers an open, "unboxed" sound quality and pinpoint-accurate stereo imaging, characteristics unusual in bookshelf speaker systems.

## Tweeter Protection

Since the tweeter is the most likely driver to be damaged by amplifier misbehavior (including clipping and oscillating) or abuse, the L420, L520 and L620 have tweeter protection fuses located in special compartments on their rear panels. Spare fuses are included in these compartments for convenience.



## Accuracy Above All

Sonic accuracy is often defined as a lack of recognizable character. Since ADS believes that speakers should be *transducers* rather than *sound generators*, it should not be surprising that the L420, L520 and L620 sound remarkably similar to one another. They sound, in fact, exceedingly like *all* other ADS speakers. (Naturally, as you go higher in size and price, the speakers play louder and go deeper in bass.) And you will find this sound exciting and spectacular only if you find *live* music exciting and spectacular. If upper-bass boom, larger-than-life "presence", and sizzling highs are your cup of tea, you will find the L420, L520 and L620 unimpressive and perhaps even disappointing. If these speakers have a sonic "signature" at all, it is their transparent, effortless and neutral sound character, a feature common to all ADS speakers.

## Value is Getting More for Your Money

The L420, L520 and L620 offer a degree of quality and performance rarely found at any price. But don't take our word for it. Compare their specifications, quality of construction and sonic performance to the competition. Compare the L420, L520 and L620 not only to other speakers of comparable size and driver complement, but also to larger, costlier speakers. Buying a similarly priced speaker simply because it is bigger or has more drivers may well prove to be false economy.

The ADS L420, L520 and L620 deliver tonal accuracy, wide frequency range, low distortion, high efficiency, excellent stereo imaging, fast transient response and wide dynamic range which set new standards for two-way speaker performance. Their advanced design, lavish construction, uncompromising manufacture and extraordinary performance ensure untiring musical entertainment and uncommon long-term value.

Superb quality and performance rarely found among much costlier systems make ADS 2-Way Speakers extraordinary values.



# SPECIFICATIONS

## ADS L420-L520-L620

### 2-Way Speaker System

#### Frequency Response

L420	48-20,000 Hz $\pm$ 3 dB
	38-22,000 Hz $\pm$ 5 dB
L520	35-20,000 Hz $\pm$ 3 dB
	25-22,000 Hz $\pm$ 5 dB
L620	30-20,000 Hz $\pm$ 3 dB
	20-22,000 Hz $\pm$ 5 dB

#### Impedance

6 Ohms nominal; 4 Ohms minimum

#### Efficiency

92 dB SPL with 2.8V RMS ("1 Watt") pink noise input measured at 1 meter in typical listening room (2000 ft<sup>3</sup>)

#### Driver Complement

L420	1" soft-dome tweeter
	7" Stiffite woofer
L520	1" soft-dome tweeter
	8" Stiffite woofer
L620	1" soft-dome tweeter
	10" Stiffite woofer

#### Crossover

12 dB/octave at 1,500 Hz

#### Power Rating

L420	50 Watts nominal
	100 Watts max. peak program
L520	50 Watts nominal
	100 Watts max. peak program
L620	75 Watts nominal
	150 Watts max. peak program

#### Recommended Amplifier Power

L420	15 Watts minimum
	100 Watts maximum
L520	15 Watts minimum
	100 Watts maximum
L620	15 Watts minimum
	150 Watts maximum

#### Dimensions

L420	17½" (H) x 11¼" (W) x 7" (D)
L520	21½" (H) x 12¼" (W) x 10½" (D)
L620	25½" (H) x 14¼" (W) x 11¾" (D)

#### Approximate Weight

L420	16 lb./7 kg
L520	30 lb./14 kg
L620	40 lb./18 kg

#### Cabinet

Select natural walnut over extra-high-density particle board

#### Baffle

Piano black finish with diffraction corrected flush driver mounting

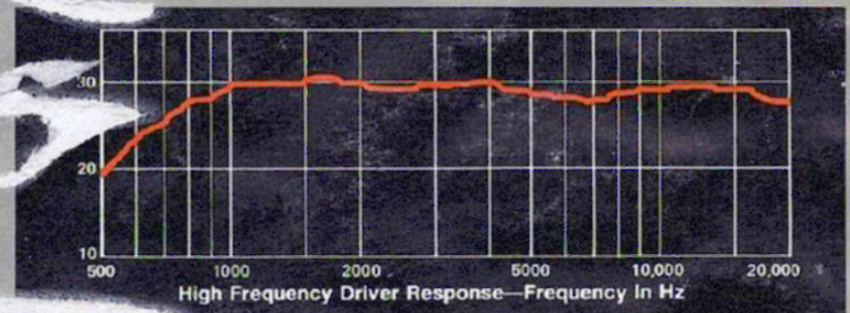
#### Grille

Acoustically transparent removable frameless grill in bronze finish

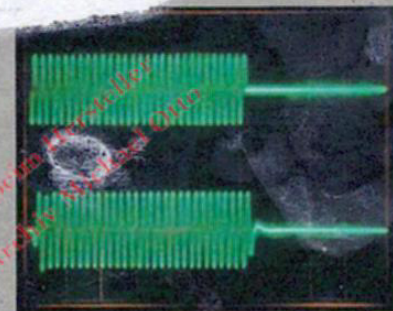
#### Optional Accessory

L520	ADS F700 black metal base
L620	ADS F800 black metal base

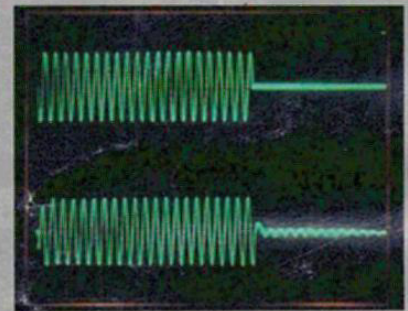
Specifications, features and prices of all models are subject to change without notice.



1. On-axis response of a typical high-frequency driver as used in all ADS two-way loud speaker systems, measured with warble-tone sine-wave input at one meter distance in a typical listening room. This excellence of high frequency performance is available in every ADS speaker system regardless of size or price.



2. Tone burst response of a high frequency driver (L520) at 7.5 KHz.



3. Tone burst response of a 10" low-frequency driver (L620) at 200 Hz.

All tone bursts are actual oscilloscope photographs. In each frame the top trace is the input signal and the bottom trace is the measured output. The tone burst measurements are of drivers mounted in their cabinets and receiving signal through the crossover network. Excellent tone burst response over the entire range ensured faithful reproduction of musical detail.

## Who is ADS?

Analog & Digital Systems is an expanding young high-technology American company with roots in European craftsmanship and esthetic sensitivity. We are dedicated to innovation and leadership, but not technological novelty for its own sake. At ADS, advanced technology is always at the service of musical enjoyment, and it is always firmly grounded in the sciences of physics, chemistry and acoustics. Over the years, ADS products have consistently received high critical acclaim and won coveted design and engineering awards. Having made headlines in 1975 with the now-famous ADS 2001 System, the world's first high-fidelity bi-amplified miniature speaker system, ADS technology today extends to a complete line of home and professional speaker systems, bi-amplification and modular systems, ambience synthesis (digital delay) systems and automotive audio products. ADS 2-way bookshelf speakers further exemplify ADS' engineering excellence in pursuit of better music reproduction.



Where technology serves music

Analog & Digital Systems, Inc., One Progress Way, Wilmington, MA 01887 (617) 658-5100