
MIRAGE M-SERIES.
Experience the magic.
mirage

# A New Vocabulary.

The language of loudspeakers is rather unique.

Spatial.

Dynamic.

Transparent.

And there are more technical references involving such things as frequency response, diffraction and transient response.

The introduction of the Mirage M-1 triggers a word not commonly associated with a loudspeaker:

Emotional.

Never have the world's most prominent reviewers been unanimous in their extravagant praise when describing Mirage's ability to profoundly affect the listener.

## The Beginning.

Mirage was conceived in 1979 by music lovers, not by engineers. Realizing that the loudspeaker is the final moment of truth in any audio system, they dedicated themselves to creating a more perfect transducer.

But perfection can be elusive.

Enter Ian Paisley, Mirage's chief scientist and acknowledged master of the art. His unique talents synthesized solid ground rules to maintain integrity and focus in all phases of design and execution.

## The Vision.

Any company is comprised of people. "Things" are incidental.

The attitude, philosophy and approach of a company's people represent whether the product they produce is worthy.

Without a doubt, Mirage has attracted superior electronic and engineering talent with a critical added plus...vision.

The result is the M-Series.

## Everyone's Talking.

The opinions of respected reviewers around the world have dubbed the Mirage M-1 everything from "Editor's Choice" to "...another miracle from Canada" and "Product of the Year" by *High Fidelity Magazine*.

The 1990 Consumer Electronics Shows selected the Mirage M-3 to receive the prestigious Design and Engineering Award.

This level of critical attention has moved audiophiles to re-evaluate their thinking about loudspeaker performance.

## Musical Reality.

What reviewers and testing engineers experience with the Mirage M-Series is described as "an illusion of musical reality."

Instead of pinpointing actual *speaker* location, one locates musicians and their instruments. In a dark room, Mirage speakers seem to disappear.

Choose the mood, Mirage provides the reality. The Mirage M-Series represents a reality that transcends the traditional loudspeaker listening experience.

*The Mirage M-1 (left), Mirage M-3 (center) and the Mirage M-5 (right).*


## Musical Accuracy.

The precision of a loudspeaker requires the recreation of original musical relationships—side-to-side, front-to-back and vertically.

To recreate the soundstage and musical imagery with precise detail and pinpoint accuracy, a speaker must radiate sound the same way as the live experience. Frequency response must be flat and wide across the entire dispersion range. The largest possible bandwidth must be maintained while producing the flattest amplitude response.

In order to accurately reproduce all types of music, a loudspeaker must exhibit superior transient response. Quick reaction to fast musical impulses with equally fast decay is essential.

Tonal balance must be accurate over the full range of musical frequencies.

And there must be a wide dynamic range to reproduce the quietest and loudest passages with deadly precision.

Distortion must be absolutely minimal. Output should be absolutely free of resonances.

## New Thinking.

Commonly, developers use conventional anechoic techniques in the design of a loudspeaker. They take sound measurements one or two meters directly in front of the drivers. They optimize on-axis frequency response in the hope that the sonic result is satisfactory in a normal listening environment.

But the human ear cannot isolate the direct signals from reflections off ceilings, floors and walls.

It hears them all.

The brain processes, stores and compares *all* that audible information in terms of relative amplitude, direction and arrival time (phase).

A psycho-acoustic impression of the environment is formed.

Because Mirage objectives are based in sonic reality, we employ additional testing techniques far beyond that of the conventional.

Sound is measured at select points in a spherical configuration—front, rear, sides and many points in between.

The result more closely mimics the real-world listening environment to create a superior psycho-acoustic effect.

The second, and we believe the most important testing stage is a natural one. The human ear is ultimately used in a natural setting to fine-tune our measurements.

They are our most delicate testing instruments.

Countless hours of "double blind" listening sessions involving groups of trained listeners directed the final engineering refinements of the M-Series.

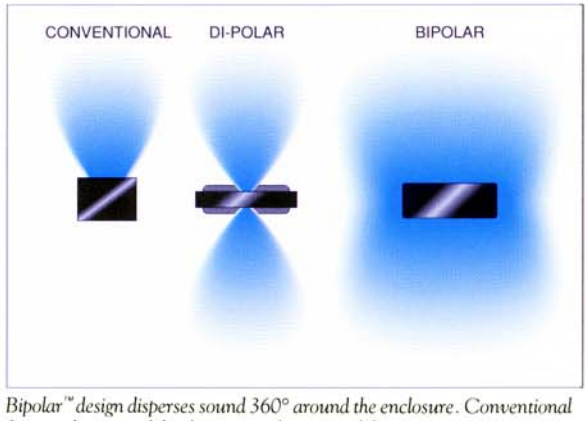
The result is a thrilling experience.

## Bipolar™ Technology.

Most speakers radiate forward in a teardrop pattern. To overcome this highly directional approach, the "dipolar" design was introduced. This configuration achieves a certain measure of spatiality by distributing sound both forwards and backwards creating a figure-8 pattern.

The Mirage design employs a technology known as "Bipolar" that establishes ultra-realistic soundstaging and imaging.

Bipolar driver technology disperses sound 360° around the speaker. The result is a hybrid panel-like design without the inherent limitations of a conventional panel speaker.




*Bipolar™ design disperses sound 360° around the enclosure. Conventional front-radiating and dipolar systems limit sound dispersion.*

## THE M-1. UNIQUELY AT THE TOP.

The 6-driver design of the M-1 utilizes an identical transducer complement—front and rear. The in-phase configuration produces matching acoustical output in both directions—omnidirectional dispersion that's far superior to the restricted figure-8 of a dipole design.

A dual set of proprietary drivers includes two ¾" hyperbolic tweeters, two 4½" midrange speakers and two 8" carbon-filled polypropylene woofers. This three-way design delivers full-range, crystal clear reproduction with amazing imaging and depth.

## THE M-3 AND M-5. DELIVERING A PROMISE.

While the M-1 occupies its unique position among discriminating listeners, we wanted to package Mirage performance in a more affordable design.

Mirage engineers enthusiastically accepted the challenge.

And they delivered.

In fact, they delivered two models...the M-3 and the M-5. Both proudly continue the Mirage heritage.

Slightly smaller and significantly less expensive than its big brother, the M-3 is also a 3-way design. It takes advantage of the non-directionality of low frequencies by sharing a single 10" woofer between front and rear.

The M-3 easily adapts to a wide range of rooms and can elegantly handle the output of high-performance electronics.

The M-5 is a fully symmetrical Bipolar system, incorporating two 6½" mid-bass carbon-filled polypropylene woofers and two ¾" wide-dispersion cloth dome tweeters—front and rear firing. The woofers share a unique half-hemisphere chamber that provides equal bass loading to the cabinet and effectively breaks up detrimental standing waves.

As with the M-1, the M-3 and M-5 are capable of tremendous power handling. They deliver the same detail, speed and transparency with dead-on imaging. All told, the Mirage M-Series represents three of the most musical loudspeakers on the market...regardless of price.

## THE TWEETER.

The Mirage hyperbolic dome high-frequency transducer maintains excellent transient response and delivers one of the widest dispersion patterns of any tweeter available. It plays a key role in providing precise on- and off-axis response that leads to an enhanced listening window.

The hyperbolic shape exhibits a very flat amplitude response over the entire dispersion range and maintains shape integrity at high frequencies even under extreme power conditions.

An ultra-light Kapton bobbin provides superb transient response. The magnetic structure utilizes specially-shaped poles for the highest flux density. Symmetrical distribution of the magnetic fields maintains lower harmonic distortion.

## THE MIDRANGE.

The midrange cone is made of mineral-filled polypropylene for smooth amplitude response and excellent dispersion. Body and edge treatments eliminate resonances and break-up modes. The cone body is lightweight for ideal transient response.

## THE WOOFER.

With a design charter to faithfully reproduce the lower octaves with precise accuracy, Mirage engineers pulled out all the stops on the woofer design.

Mineral-filled polypropylene woofer cones provide an extremely-high stiffness-to-weight ratio for uncolored reproduction, fine detail and superb transient response.

To terminate the M-3 and M-5 woofer cones, we applied a uniquely-shaped butyl surround. The M-1 uses a special surround material made of Nitrile/PVC. Critically damped termination results in significantly reduced harmonic distortion.

Substantial power handling and efficiency are achieved by using a multi-layer voice coil that's wound on an aluminum bobbin. The long winding length allows extended excursion and reduced distortion.

All drivers are built in-house with personnel trained and supervised by the Mirage engineering staff. Great care and attention are paid at every critical assembly and testing stage.

Components are put through rigorous computer testing and are matched within very tight tolerances.

## THE CABINET.

High-density fiberboard comprises the walls of the cabinets to reduce cabinet vibrations. Edges are smoothly radiused to reduce diffraction.

Cabinet bracing structures virtually eliminate internal resonances and break up standing waves. The bracing units and cabinet edges utilize solid tongue-in-groove construction for superior rigidity.

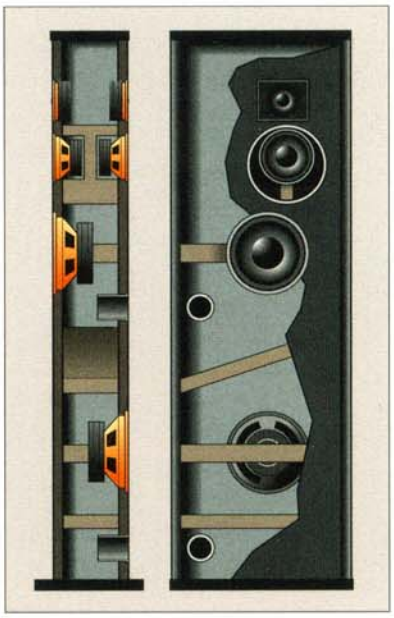
In the case of the M-1, solid-angled cross bracing divides the cabinet into two separate and equal volumes—one for each woofer. Specially-shaped midrange enclosures isolate the drivers from other speakers and reduce standing waves.

All drivers are flush-mounted to their respective baffles to reduce diffraction. The grille cloth is flush with the baffles to promote excellent dispersion.

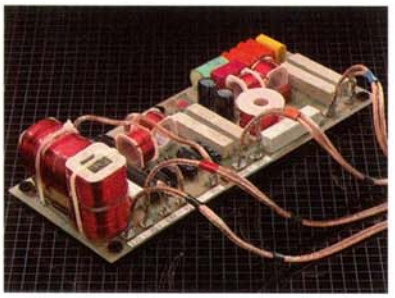
Unlike conventional speaker designs, Mirage M-Series loudspeakers are designed and tested for optimum performance with the grille cloth in position.

By design, it's non-removable.

Using sophisticated CAD/CAM technology, cabinet tolerances are maintained within ±0.1mm. Box components are glued and clamped under high pressure. Walls are fastened under critical torque specifications.



*Cabinets use solid tongue-in-groove construction with rigid cross-bracing (M-1 shown).*



## THE CROSSOVER.

Accurate tonal balance and flat frequency response are the ultimate goal of a quality crossover network.

Extensive listening tests combine with proprietary computer modeling for an elegant component topology. This achieves the flattest amplitude response a full 360° around the speaker and across the entire measured audio spectrum.

To further enhance performance and flexibility in amplifier and cable matching, M-Series loudspeakers incorporate bi-wire/bi-amp crossovers and gold-plated terminals.

## THE EXPERIENCE.

Mirage world-class loudspeakers continue to draw praise from discriminating critics and audiophiles alike.

But words only suffice as a two-dimensional representation of what Mirage is all about.

Experience the magic at your Mirage dealer.

## SPECIFICATIONS

| | M-1 | M-3 | M-5 |
|---|---|---|---|
| *System type* | *Bipolar radiator utilizing proprietary Mirage transducers.* | *Bipolar radiator utilizing proprietary Mirage transducers.* | *Bipolar radiator utilizing proprietary Mirage transducers.* |
| *Transducers* | | | |
| *Tweeters* | *(2) ¾" (19mm) hyperbolic dome* | *(2) ¾" (19mm) cloth dome* | *(2) ¾" (19mm) cloth dome* |
| *Midrange* | *(2) 4½" (11.4cm) tri-laminated, carbon-filled polypropylene cones* | *(2) 4½" (11.4cm) tri-laminated, carbon-filled polypropylene cones* | — |
| *Woofers* | *(2) 8" (20.3cm) polyflex treated, carbon-filled polypropylene with 1½" (38mm) voice coils. Termination via Nitril/PVC surrounds.* | *(1) 10" (25.4cm) carbon-filled, polypropylene with 1½" (38mm) voice coils. Termination via butyl surrounds.* | *(2) 6½" (16.5cm) carbon-filled, polypropylene with 1" (25.5mm) voice coils. Half-hemispherical cabinet design.* |
| *Frequency response* | | | |
| *On-axis (±2dB)*<br>*Off-axis (±2dB)* | *25Hz–23kHz*<br>*25Hz–20kHz* | *30Hz–20kHz*<br>*30Hz–18kHz* | *35Hz–20kHz*<br>*35Hz–18kHz* |
| *Directional characteristics* | *Mean front hemisphere within ±2dB of the on-axis response* | *Mean front hemisphere within ±2dB of the on-axis response* | *Mean front hemisphere within ±2dB of the on-axis response* |
| *Usable bass response* | *18.7Hz at -10dB anechoic chamber* | *24Hz at -10dB anechoic chamber* | *29Hz at -10dB anechoic chamber* |
| *Crossover points* | *100Hz, 300Hz, 2.3kHz* | *400Hz, 2.2kHz* | *2.2kHz* |
| *Sensitivity* | *83dB at 2.83V 1m anechoic chamber* | *85.5dB at 2.83V 1m anechoic chamber* | *85dB at 2.83V 1m anechoic chamber* |
| *Impedance* | *6 ohms nominal 4 ohms minimum* | *6 ohms nominal 4 ohms minimum* | *6 ohms nominal 4 ohms minimum* |
| *Rec. amplifier power (clipping less than 10%)* | *200–500 watts RMS per channel* | *100–300 watts RMS per channel* | *75–200 watts RMS per channel* |
| *Dimensions (HxWxD)* | | | |
| *Inches*<br>*Centimeters* | *59.8 x 19.3 x 9.5*<br>*152.3 x 49.1 x 24.2* | *52.5 x 18.1 x 8.3*<br>*133.7 x 46.1 x 21.1* | *43.7 x 15.8 x 8*<br>*126 x 40 x 20* |
| *Weight* | *185 lbs. (84kg)* | *130 lbs. (59kg)* | *75 lbs. (34kg)* |
| *Finish* | *Black high-gloss cabinet with matching grille cloth* | *Black high-gloss cabinet with matching grille cloth* | *Black high-gloss cabinet with matching grille cloth* |

*Descriptions and specifications subject to change without notice.*

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*Printed in Canada*
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