

E S O T E C

High-End Mobile Loudspeaker Systems

Dynaudio Esotec

A primary objective in the development of the Dynaudio automotive loudspeaker models was to combine the qualitative performance attributes and off-axis response of the company's award-winning home audio models with the excellent near field response of the company's dedicated studio monitors into a range of mobile audio products that would be ideally suited to bring the advanced Dynaudio sound quality into the vehicle.

Thus the same core technologies that have made Dynaudio one of the most renowned high end home audio loudspeaker brands, or the official professional studio monitor of the demanding BBC (British Broadcasting Corporation) have been implemented into a full range of high performance loudspeakers designed and optimized for in-car installation: the Dynaudio Esotec series.

The Dynaudio Esotec Automotive loudspeaker series exudes all of the virtues in Dynaudio's long-standing tradition of high performance loudspeaker designs: Highly-evolved Dynaudio technology, meticulously selected components, painstakingly matched materials and carefully voiced sonics.

Every technical detail is developed and manufactured exclusively by Dynaudio in the company's state-of-the-art production facility in Skanderborg, Denmark. Dynaudio loudspeaker systems exhibit no sonic character other than that of the recording, and are renowned for their ability to portray an accurate, uncolored reproduction of music. Music the way it was intended to be heard.

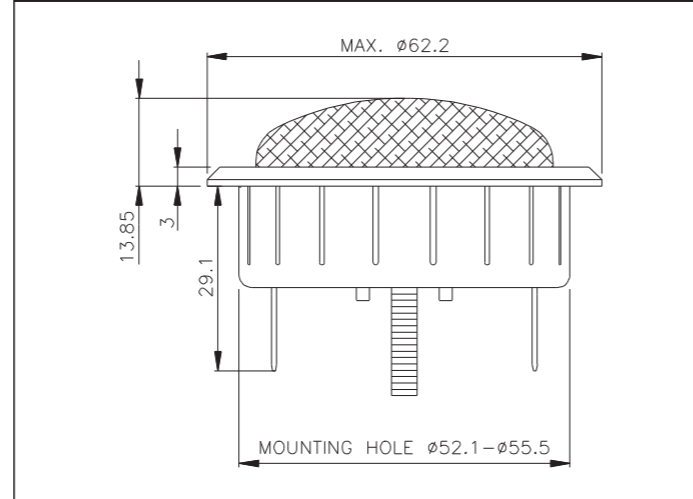
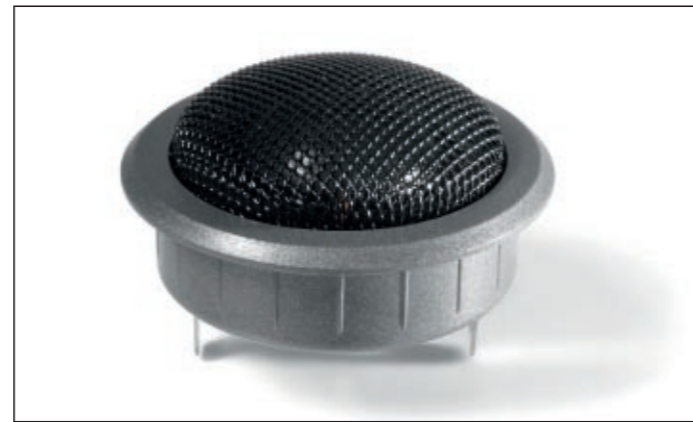
Dynaudio has become one of the world's leading high-end audio companies by staying true to the company vision of natural, uncompromised sound quality. The company's extreme focus and dedication as a specialist loudspeaker manufacturer is embodied in the diverse range of high-performance loudspeaker products.

The Dynaudio Esotec mobile loudspeakers follow in the longstanding tradition of the company's renowned home audio driver designs.

The new Esotec MD 102 tweeter is a soft-dome design as characteristic of Dynaudio. The fine soft dome features a special coating to facilitate an extended high frequency response free of distortion. The compact, shallow depth MD 102 tweeter features a 28 mm (1.1 inch) diameter surface area that is approximately 60% greater than that of conventional car audio tweeters. The optimized dome geometry provides greatly improved dispersion characteristics, enabling the MD 102 tweeter to offer exceptional performance even when mounted off of the listening axis. The dome coating serves to eliminate any high frequency break-ups, while providing improved damping. To eliminate high frequency distortions caused by reflections from inside the structure, the MD 102 tweeter rear chamber is also sealed and acoustically damped to eliminate high frequency distortion, which could be caused by back-wave reflections, while ferrofluid cooling adds damping and additional power handling.

The extremely smooth and incredibly detailed high frequency reproduction characteristic of the Dynaudio sound is ensured by the all-new Esotec soft-dome tweeter, which features the latest Dynaudio technological innovations. For the most authentic high-frequency reproduction – powerful Neodymium – one of the most efficient but also most expensive magnetic materials for loudspeaker construction is used in the tweeter magnet systems.

The soft-dome tweeter design topology allows unrestricted dynamics and a linear frequency response with extremely low distortion. The MD 102 features an aluminum voice coil, another Dynaudio hallmark, which has been updated and improved via an increased coil height with additional windings to allow an increased range of linear excursion within the magnetic field. Furthermore, as a result of the low moving mass of the new voice coil, a higher maximum output level and increased dynamics are achieved, while the frequency range has been expanded, thus allowing a better integration with the upper midrange frequencies to deliver a more natural sound with an open and detailed, and incredibly transparent reproduction of the high frequencies.

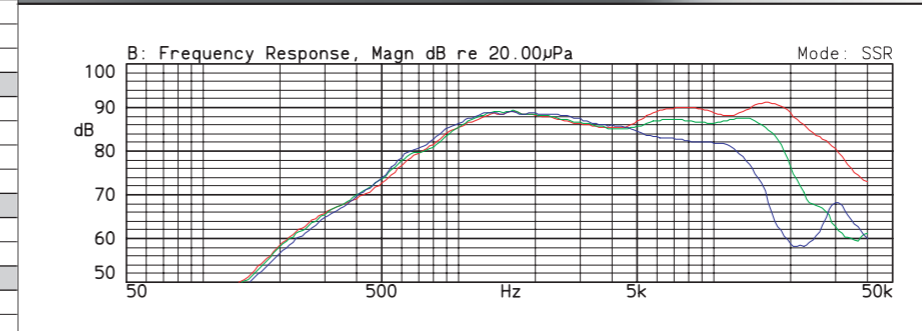
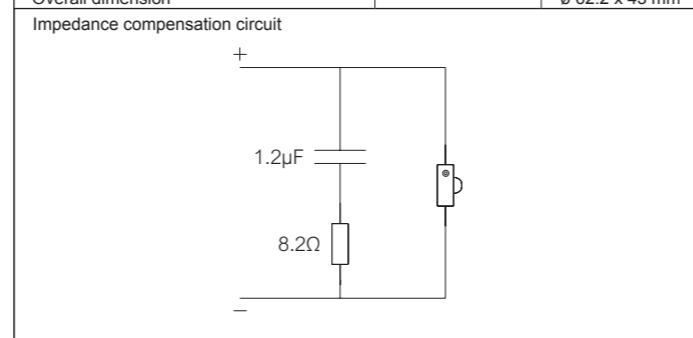


Thiele Small Parameters		
Nominal impedance	Znom	8 Ω
DC resistance	Re	5.6 Ω
Voice coil inductance	Le	- mH
Resonance frequency	fs	1300 Hz
Mechanical Q factor	Qms	-
Electrical Q factor	Qes	-
Total Q factor	Qts	-
Mechanical resistance	Rms	- kg/s
Moving mass (incl. air load)	Mms	- g
Suspension compliance	Cms	- mm/N
Effective dome diameter	d	- mm
Effective piston area	Sd	7.7 cm ²
Equivalent volume	Vas	- l
Force factor	BL	- Tm
Recommended frequency range		2200–30000 Hz

Magnet and Voice Coil Properties		
Voice coil diameter	dc	28 mm
Voice coil height	hc	1.7 mm
Linear excursion, peak to peak		- mm
Max. excursion, peak to peak		- mm

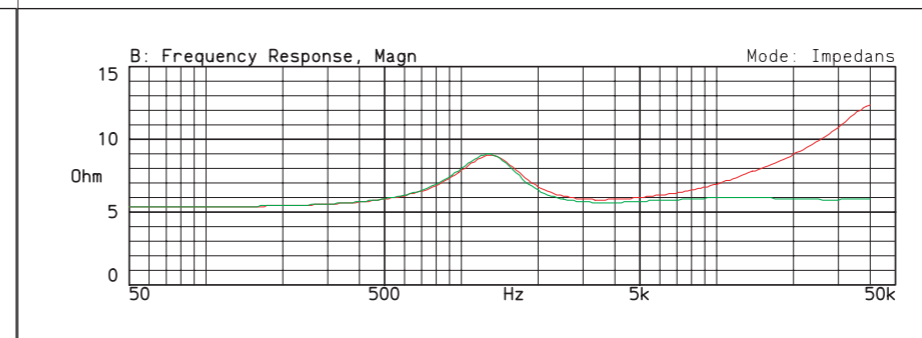
Power Handling		
Nominal long term IEC		100 W
Transient (10 ms)		500 W

Mechanical Properties		
Net weight		0.126 kg
Overall dimension		Ø 62.2 x 43 mm



SPL
 Red line: on-axis response
 Green line: 30° horizontal
 Blue line: 60° horizontal
 Measurement conditions:
 Level: 2.83 V
 Distance: 1 m
 Measured in a large baffle

Facts
 Coated textile dome eliminates any high frequency break-ups
 Powerful neodymium magnet system
 Protective grille
 Open and detailed high frequency reproduction
 Damped cavity beneath the dome



Impedance
 (with and without impedance correction circuit)
 Red line: impedance, free air
 Green line: impedance, free air with compensation.
 Measurement conditions:
 Level: 3.16 V, 50 ohm
 Driver in free air

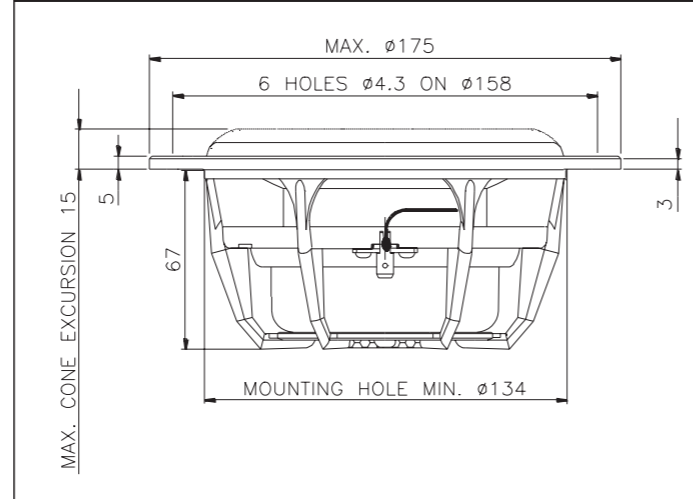
Ferrofluid adds damping and increases power handling
 Aluminium voice coil wire results in a low moving mass
 Shallow mounting depth
 Strong 6.4 mm terminals

The Esotec MW 162 mid/woofer is a medium sized 17 cm (6.5 inch) diameter driver that combines a clear and detailed midrange with a strong and powerful bass response.

Another characteristic typical of Dynaudio drivers and carried through in the new Esotec mobile series woofers is the diffraction-optimized shape of the MSP cone's characteristic curvature, which further improves imaging so that even at short listening distances as typical of most in-car installations a realistic, true three-dimensional sound-stage can be enjoyed. Molding the diaphragm and dust cap into a one-piece flat-membrane results in a controlled roll off and high dynamic range. In relation to the total cone surface area, the 75 mm (3 inch) voice coil is exceptionally large in diameter, allowing a most precise conversion of the amplifier's signal to music. The result is un-compromised, direct music enjoyment.

All of the Esotec MW (mid/woofer) model variants employ Dynaudio's customary oversized aluminium voice coil, which feature an uncharacteristically large diameter coil wound on a strong and temperature stable former to drive the geometrically optimized rigid MSP cone diaphragm. The Esotec mid/woofers have all been further upgraded with a brand-new suspension. The new spider allows greater mechanical movement of the cone, increasing excursion while allowing a higher maximum SPL and improved low bass performance.

The use of Dynaudio's large diameter aluminium voice coils increases thermal handling capabilities tremendously, allowing the drivers to operate within an ideal temperature range, even at high continuous power levels and during powerful music transients. Dynamic impulses are reproduced precisely and without distortion, even at high volume levels, while impressive sound quality and high power handling capability are achieved.

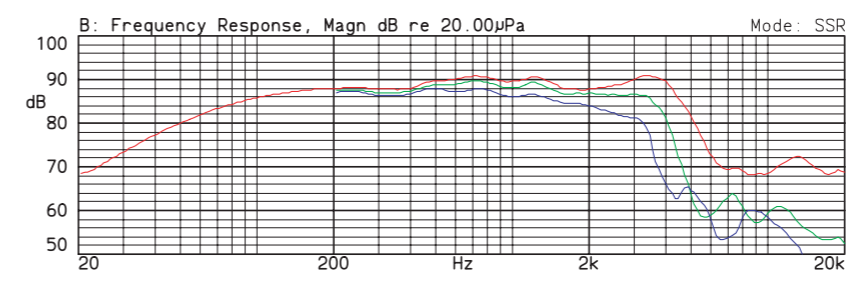
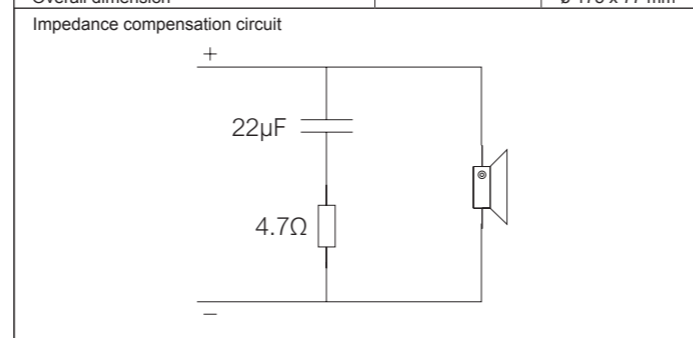


Thiele Small Parameters		
Nominal impedance	Znom	4 Ω
DC resistance	Re	3.1 Ω
Voice coil inductance	Le	0.22 mH
Resonance frequency	fs	55 Hz
Mechanical Q factor	Qms	2.2
Electrical Q factor	Qes	0.57
Total Q factor	Qts	0.45
Mechanical resistance	Rms	2.7 kg/s
Moving mass (incl. air load)	Mms	17.4 g
Suspension compliance	Cms	0.48 mm/N
Effective dome diameter	d	124 mm
Effective piston area	Sd	120 cm²
Equivalent volume	Vas	9.8 l
Force factor	BL	5.7 Tm
Recommended frequency range		40–4000 Hz

Magnet and Voice Coil Properties		
Voice coil diameter	dc	75 mm
Voice coil height	hc	10.9 mm
Linear excursion, peak to peak		6 mm
Max. excursion, peak to peak		17 mm

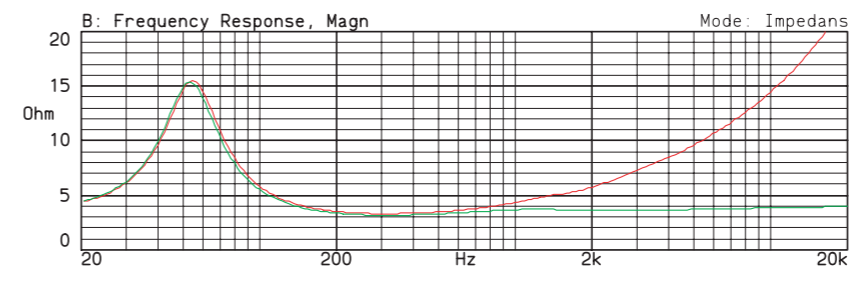
Power Handling		
Nominal long term IEC		120 W
Transient (10 ms)		1000 W

Mechanical Properties		
Net weight		1.2 kg
Overall dimension		ø 175 x 77 mm



SPL
(Frequency response: on-axis, 30° and 60° off-axis)
Red line: on-axis response
Green line: 30° horizontal
Blue line: 60° horizontal
Measurement conditions:
Level: 2.83 V
Distance: 1 m
Box volume: 15.6 l

Facts
Diaphragm and dust cap moulded as one piece
Large 75 mm voice coil ensures high power handling
Internal double magnet system with vented pole piece
Aluminium voice coil wire provides for a low moving mass



Impedance
(with and without impedance correction circuit)
Red line: impedance, free air
Green line: impedance, free air with compensation.
Measurement conditions:
Level: 2 V, 10 ohm
Driver in free air

Rigid die-cast chassis with aerodynamically shaped ribs
Materials and parameters are optimized for the harsh environmental conditions in a car
Smooth high-frequency roll-off
Natural midrange reproduction

Crossover Esotec X 252

The new Esotec X 252 crossover is a competition grade, audiophile quality passive two-way crossover designed to accommodate four of the new Esotec woofers, the MW 152, MW 162, MW 162 GT and MW 172 models in combination with the Esotec MD 102 tweeter.

The X 252 Crossover is also included in three packaged Esotec two-way component systems, and features a three-position tweeter level control to better adjust the high frequency performance to listener position or preference. With the vast experience gained in developing the advanced Dynaudio premium factory sound systems offered to the automotive industry, fine-tuning the new Esotec crossovers brought forth a substantial improvement in sound quality. The Esotec X 252 is a first order crossover with impedance correction for the woofer to create an even easier load for any amplifier and a second order filter with an integrated self-resetting protection circuit for the tweeter. The Esotec crossovers all feature gold plated screw terminals, polypropylene capacitors, thick printed circuit boards with pure copper traces, and are housed in impact resistant plastic enclosures. Each is optimized for a particular configuration and is designed to enable the individual Esotec loudspeaker models to perform at their optimum capabilities while addressing a wide range of systems and applications, and are optimized for perfect phase response and time coherency in any vehicle.



X 252	MW 152	MW 162/GT	MW 172
Crossover frequency	2200 Hz	2200 Hz	2200 Hz
Nominal impedance	4 Ohms	4 Ohms	4 Ohms
Power handling	100 W	120 W	150 W
Dimensions	38 x 84 x 145 mm		
Net weight	0.33 kg		



Crossover Esotec X 362

The new Esotec X 362 crossover is a three-way competition grade, audiophile quality passive crossover designed to accommodate four of the new Esotec woofers, the MW 162, MW 162 GT, MW 172 and MW 182 models in combination with the Esotec MD 102 tweeter and Esotec MD 142 soft dome midrange.

The X 362 Crossover is also included in two packaged Esotec three-way component systems. There is a three-position level control for both the tweeter and midrange, which allow one to adjust the sound according to driver position and or personal preference. Regardless of the driver complement chosen, the result is an incredibly linear frequency response with an extremely detailed midrange reproduction and excellent dispersion.

Essentially a three way variant of the X 252 model, the Esotec X 362 utilizes a first order crossover slope for the woofer and midrange, and a second order slope for the tweeter. The phase correct, shallow slope Esotec crossover networks utilize the highest quality components selected and matched to extremely tight tolerances and offer impedance correction for the woofer and integrated protection circuits for the tweeter while enabling a linear frequency response and improved dispersion from the drivers, allowing such to be perfectly integrated into any vehicle.



X 362	MW 162/GT	MW 172	MW 182
Crossover frequency	900 Hz/3.5 kHz	900 Hz/3.5 kHz	900 Hz/3.5 kHz
Nominal impedance	4 Ohms	4 Ohms	4 Ohms
Power handling	200 W	200 W	200 W
Dimensions	43 x 104 x 175 mm		
Net weight	0.60 kg		

