

DALI PHANTOM E Series

WHITEPAPER



IN ADMIRATION OF MUSIC

INTRODUCTION



The DALI PHANTOM E series constitutes the beginning of a new era for DALI's custom install loudspeaker series. Having gained a reputation for high quality in-wall/in-ceiling speakers with the DALI PHANTOM line of products, DALI is now expanding the PHANTOM series with brand new models featuring additional sizes and updated designs.

The DALI PHANTOM E series is the

perfect starting point for high quality in-ceiling audio. Available in three sizes (5", 6½" and 8") the PHANTOM E-50, E-60 and E-80 offer a quick and easy to install audio solution.

Based on the highly acclaimed DALI PHANTOM KOMPAS 6M, the new PHANTOM E series draws on the technologies and materials used previously, but takes the products to the next level in terms of both

performance and design. Most importantly, the easy to use dogleg mounting system has been updated for a simpler and more precise mounting. Secondly, the front grilles have been updated to meet the style demands of the install customer. Lastly, two new sizes have been introduced to improve the ease of placement and the ability to fill even large rooms with high quality sound.!

BACKGROUND



In-ceiling speakers offer an enticing alternative to traditional box speakers by introducing the possibility of playing music in rooms where precious floor space will not allow, or where the look of the room may be negatively affected by a standard box loudspeaker system.. With a lot of in-ceiling speakers however, these possibilities can come at the cost of the overall sound quality. Sadly, many of the in-ceiling products available today seem to focus only on the convenience of the product category, and leave a lot to be desired when it comes to audio performance. DALI believes that in-ceiling speakers and true Hi-Fi can go hand in hand, so the PHANTOM E Series of speakers delivers on both stylish design and fantastic sound.

When designing an in-ceiling speaker, there are a couple of things to be very aware of:

All install speakers are mounted into a large surface, such as a wall or ceiling. This situation can, if used correctly, help extend the bass reproduction by working with the surface, and including it in the speakers baffle area. The downside of this is that the surface material is often not of the equivalent level of quality when compared to the materials used when designing cabinets for box speakers. To counter this, the mounting system and front baffle of a quality install speaker needs to be extremely rigid.

Another unknown is the cavity space

behind the install speaker. This area can be well dampened and thereby absorb many of the lower frequencies. On the other hand, there can be no damping at all, and standing waves can have a very negative effect on the speakers bass reproduction. An open back install speaker must be built to handle both situations and keep the driver under control.

DALI has more than 30 year experience in building and designing traditional loudspeaker cabinets and driver units. This knowledge has been invaluable in the design and manufacture of the PHANTOM E series, and has helped ensure that this brand new open back in-ceiling speaker delivers on all of DALI's sound principles.

DESIGN

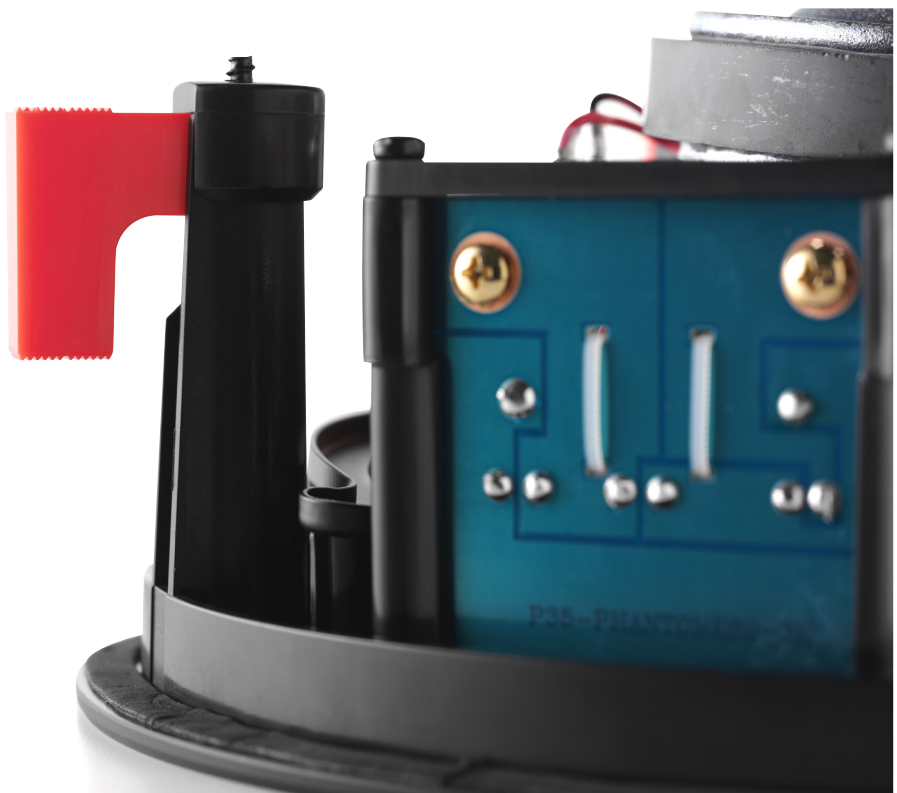


The PHANTOM E Series front grilles have been updated to meet the style demands of the install customer. The new sleek design helps the speaker integrate perfectly into the surroundings.

With an improved outer edge for stable and secure grip in the mounting surface and an optimized dogleg mounting system the PHANTOM E Series is very easy to install.

The PHANTOM E series introduces improvements to the basic design of the front baffle by adding extra thickness to the outer edges for a tighter and more secure fit against the mounting area. This also helps the overall strength and rigidity of the speaker.

The dogleg mounting system makes the install process an easy one step action. Simply insert the PHANTOM E series in the prepared mounting area, and from the front of the speaker tighten the dedicated screws to swing out the dogleg brackets and tighten them against the back of the mounting surface. If the mounting surface is extra thick reversing the dogleg makes it possible to expand the mounting grip to 70mm.



WIDE DISPERSION

All DALI speakers are designed around the principle of wide dispersion. This entails an off-axis optimisation of the audio reproduction. The off-axis optimisation helps deliver the music or movie audio to the largest possible

part of the room. This technology is perfect for use with install speakers, since they are always mounted flush against either a wall or a ceiling. Working with the off-axis optimisation

ensures that the listener will have a large sweet spot there the soundstage is perfect, but also that the sound received when away from the sweet spot is still of a very high quality.

Utilizing the principle of wide dispersion the PHANTOM E Series are able to create a very large sweet spot, and at the same time fill the room with high quality sound.



TWEETER



The placement of the soft dome tweeter on a wishbone shaped bracket help integrate the tweeter and the woofer and serves to reduce the overall footprint of the speaker. The compass rose on the outer edge help direct the speaker for optimum sound stage.

The 25mm soft dome tweeter module is fixed over the woofer in a composite housing mounted on an airplane-wing-profile wishbone bracket. By mounting the tweeter over the woofer the total foot print of the speaker is keep at a minimum. The aerodynamic design of the wing and the slightly of centre

placement of the tweeter help eliminate the “coaxial colouration” normally associated with coaxial drivers. The positioning also help the mid-range and low frequencies blend gracefully with high frequencies for a precise and natural overall performance even at high sound pressures.

WOOFER



By angling the woofer in the front baffle it is possible to better position the sweet spot for optimum sound staging.

Flexibility was important when designing the PHANTOM E series, and the ability to use the speaker in areas not fit for traditional DALI speakers was a large part of this. To ensure the best balance between durability and

great audio reproduction polypropylene was chosen for the cone material. The woofer is tilted and angled for improved directionality and sound staging. The cone, surround and magnet motor system is designed according to the

DALI low-loss principles. This makes the PHANTOM E series an easy speaker to drive, and even smaller amplifiers will be able to deliver a high quality audio experience with the PHANTOM E series.

CROSSOVER

Every component in the crossover is carefully selected for their audiophile quality and the crossover is designed especially for every PHANTOM E model.

All PHANTOM E series models include PTC (Polymeric Positive Temperature Coefficient device) safety function. This safeguards the driver components from overheating if played at very loud

volumes over a long period. Install speakers are often played to fill more than just the room they are mounted in, so If the listener is in another room the volume can accidentally be turned up to extremely high levels, and therefore permanently damage the speakers. The PTC system will prevent this for happening, since it acts like a fuse if the current get to high.

All internal wiring is optimized for the speaker design and is placed and secured to eliminate the possibility of rattling. The terminals are placed directly on the crossover for the shortest possible signal path, and the spring loaded grip ensures the best possible long lasting connection to the speaker wire.

The spring loaded terminals delivers a tight and secure grip on the speaker cables for a lasting connection.



DISTRIBUTE SOUND AND HF TILT



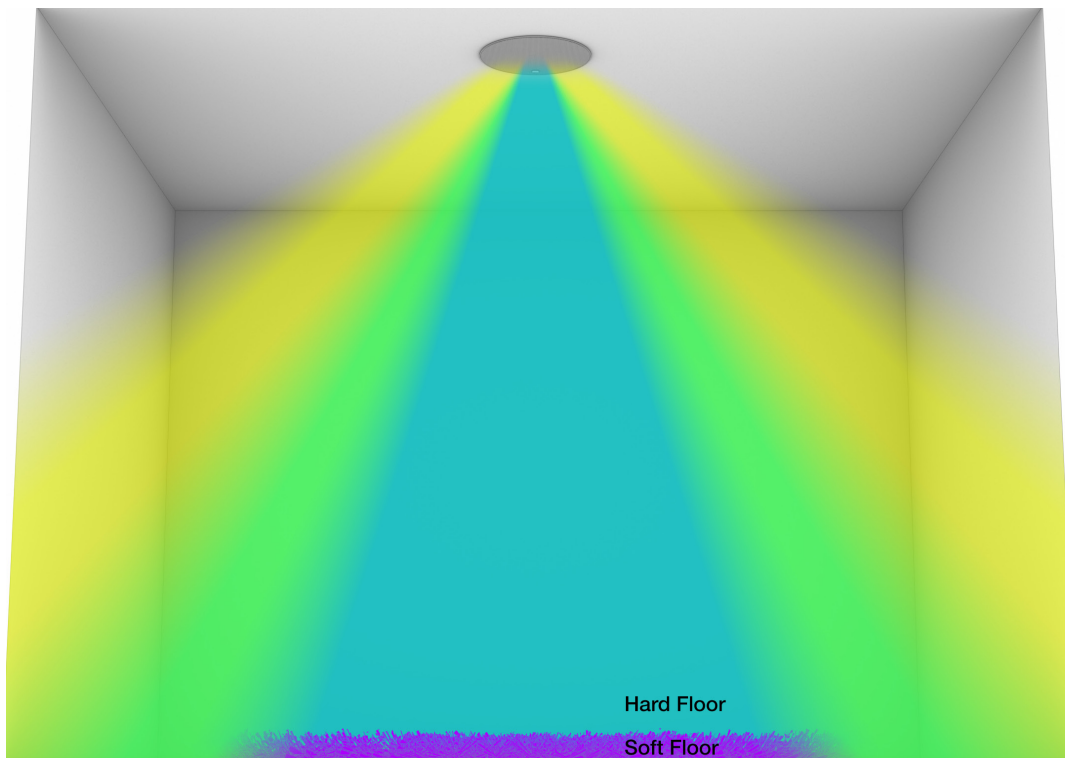
All PHANTOM E series models have two audio settings that can be used to adjust the performance of the speaker.

Focus/Distribute: This toggle enables the tweeter module to disperse the high frequencies better. If the normal listing position is close to the speaker, no more than 25 degrees off-axis, the Focus setting should be used for the best possible experience. If, on the

other hand, the normal listing position is beyond 25 degrees off-axis, the Distribute setting can be engaged to help the tweeter disperse the high frequency better. This will improve the audio experience at odd angles in the room.

Normal/HF Tilt: When placing two speakers at a great distance from each other, creating a good soundstage

can be difficult to achieve. To improve the audio experience under these conditions, DALI has included the possibility to add an extra 3dB to the high frequency output, to enable the sound to travel further. In many cases, this will help deliver a better soundstage even under extreme conditions.



	Norm	HF Tilt
Focus	Blue	Violet
Distribute	Green	Yellow

APPLICATION

With three models in the brand new PHANTOM E series, the installation and performance of DALI in-ceiling speakers been improved to unseen and unheard levels. The flexibility of these fantastic speakers means that they are now an easy choice for customers who require quality audio in compact living spaces, much larger living areas or even public places.

PHANTOM E-50

This compact in-ceiling speaker delivers an incredibly clear and well-defined audio experience, and impresses despite its size with the

level of bass it can produce. Its size makes it perfect for a stereo setup in a small room, or as a rear speaker in a larger room surround sound setup.

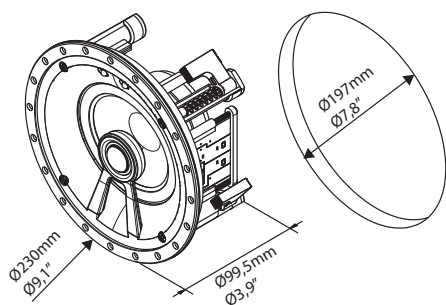
PHANTOM E-60

This model is the perfect all-round speaker. It is not too big, and therefore still easy to place, but big enough to deliver a full and complete audio experience. Use it for a stereo setup in a kitchen or family room, or to complete a large room surround setup as the side or rear speakers. The PHANTOM E-60 can also be mounted into the optional back box, which has been designed to provide

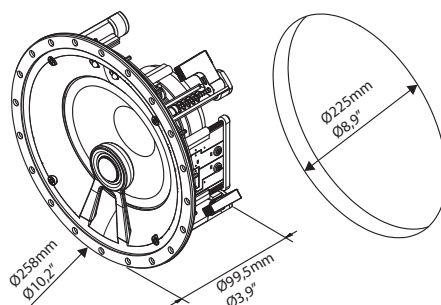
the E-60 with the perfect acoustic environment for the optimal audio performance. It also help insulate the sound projected backward thereby keeping music and movie sound from disturbing other rooms or neighbours.

PHANTOM E-80

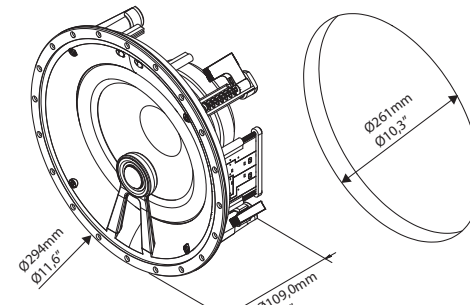
Big sound is what this model is all about. Drawing on every part of its 8" woofer, it will fill even very large rooms with sound high quality audio, whilst still keeping the bass under control. This makes it the perfect choice as the main speaker in a living room setup for either stereo sound or a surround system.



DALI PHANTOM E-SERIES 5"

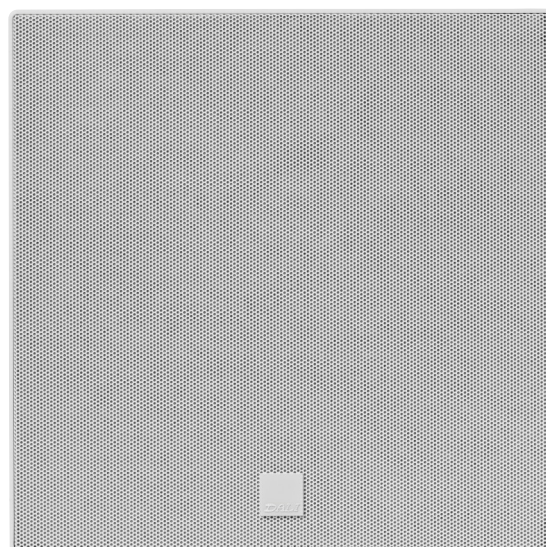
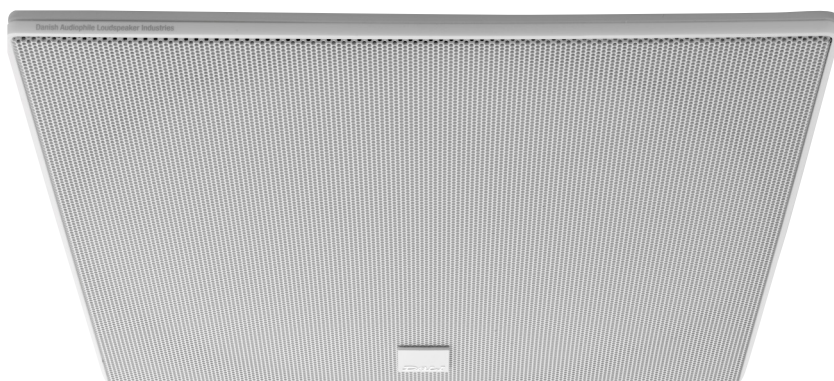


DALI PHANTOM E-SERIES 6,5"

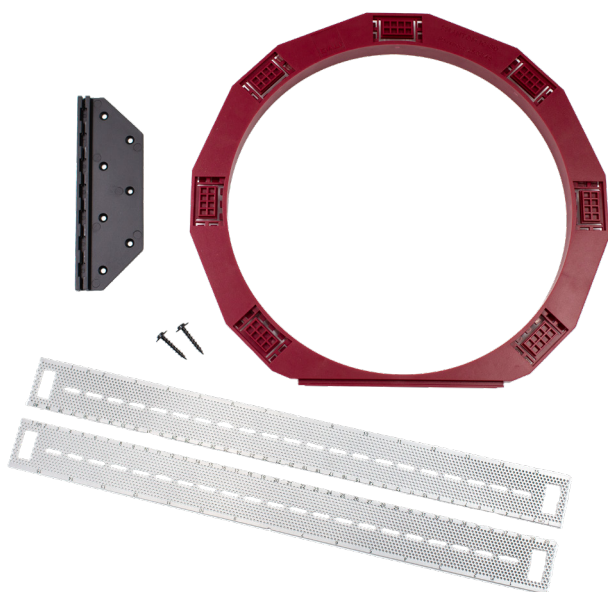


DALI PHANTOM E-SERIES 8"

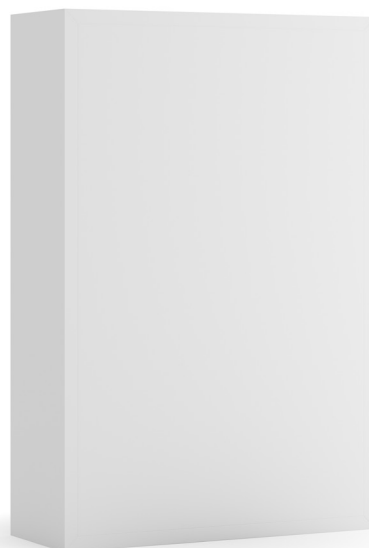
AVAILABLE ACCESSORIES



Square front grille for PHANTOM E-50, E-60 and E-80.



PHANTOM Pre-construction kit



PHANTOM Universal 25 backbox