

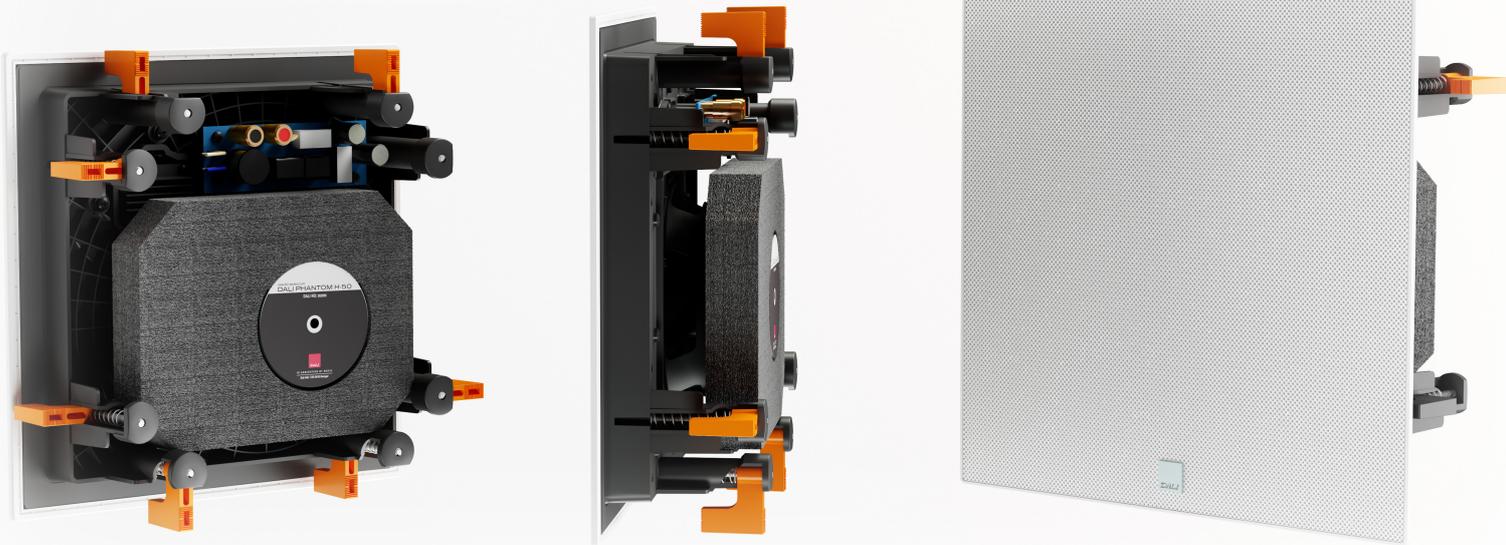
DALI PHANTOM H Series

WHITEPAPER



IN ADMIRATION OF MUSIC

INTRODUCTION



DALI PHANTOM H series consist of four models, a compact 5¼ inch, an all around 6½ inch, an impressive 8 inch model and a 3-way with a massive 12" bass driver.

The DALI PHANTOM H series is the natural choice when seeking a true Hi-Fi install audio experience. This In-wall optimised series is built around many of the traditional speaker design virtues and is based upon DALI's low-loss technologies. Elements like MDF front baffle, wood fibre woofer cones, ultra light soft dome tweeter and low-loss magnet motor system all contribute to making the PHANTOM H series a high performing, high quality audio product.

The DALI PHANTOM H series delivers ease of use and true Hi-Fi audio quality for an in-wall system. Available in four sizes, 5", 6½", 8" and a 3-way 12", the PHANTOM H-50, H-60, H-80 and H120 offer an easy all-in-one installation package that require no specialist tools to install.

Building on the highly acclaimed DALI PHANTOM LEKTOR the new PHANTOM H 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 simple 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 install 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 H Series of speakers delivers on both stylish design and fantastic sound.

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

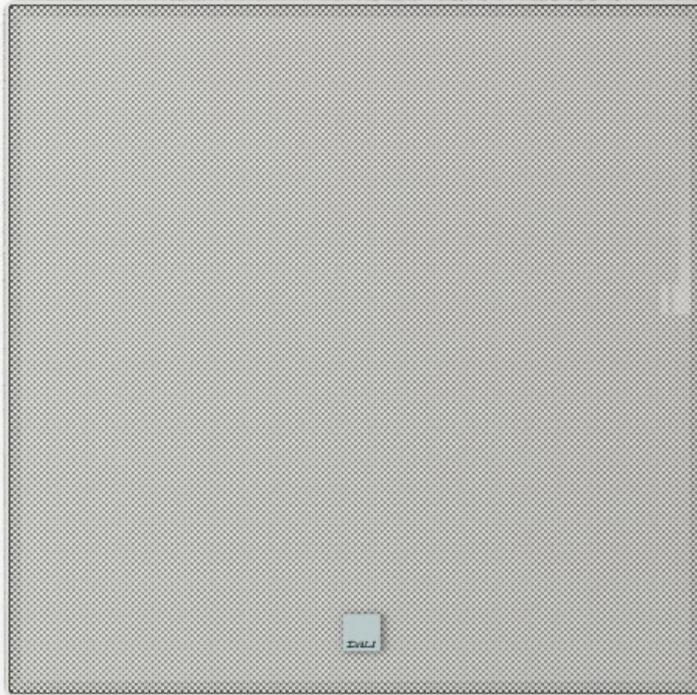
All install speakers are mounted into a large surface, such as a wall or ceiling. This situation can, if used correctly, help extend the bass reproduction by working with the surface, and including it in the speaker's baffle area. The downside of this is that the surface material is often not of the 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 damped 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 speaker's 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 years of experience in building and designing traditional loudspeaker cabinets and driver units. This knowledge has been invaluable in the design and manufacture of the PHANTOM H series, and has helped ensure that this brand new open back in-ceiling speaker delivers on all of DALI's sound principles.

DESIGN



The squared off grille sits snug up against the wall due to the integrated magnets in the front baffle of the speaker and blends almost seamlessly into the room.

Bringing the virtues of a traditional box speaker to the install segment, the DALI PHANTOM H series are able to combine compact design with quality performance. The drivers are securely mounted in the ridged front baffle with the tweeter placed close to the woofer for optimum integration. Based on a fibre reinforced polymer the front baffle in the PHANTOM H-50 offers the drivers a solid base to work within and in the PHANTOM H-60, H-80 and H-120 the front baffle is constructed from solid MDF. These ridged baffle

materials keep the drivers in place, removing unwanted vibrations and ensuring optimum integration with the wall or ceiling.

The PHANTOM H 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 H 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.



The easy to use dogleg system secures the speaker to the wall or ceiling and the front edge ensures integration with the wall or ceiling extending the front baffle.

WIDE DISPERSION

All DALI speakers are designed around the principle of wide dispersion. This entails an off-axis optimisation of the audio reproduction, helping 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 where the soundstage is perfect, but also that the sound received when away from the sweet spot is still of a very high quality.



DALI's wide dispersion technology fill every corner of the room with high quality audio and let the listener experience the music even if he is not placed in the sweet spot.

TWEETER



The 28mm ultra light soft dome tweeter sits in the front baffle close to the woofer for optimum integration.

A large part of the DALI sonic definition comes from the use of a soft dome tweeter. The ferrite driven magnet motor system is able to handle more power and disperses heat generated in the voice coil rapidly, thereby reducing power compression.

The ultra light-weight weave fabric combined with the very capable magnet motor system allows the tweeter to reproduce high frequencies with higher accuracy, giving the PHANTOM H series an impressively detailed sound.

The positioning of the tweeter front plate near the dome has been optimised to create the optimal working conditions for the soft dome. The aim is to combine an extended frequency response with wide dispersion and low colouration, and improve the integration of both the tweeter and the mid/bass driver.

WOOFER



Detail, timing, no coloration and control is what the wood fibre based low-loss woofer brings to the PHANTOM H series.

A true Hi-Fi speaker is able to deliver a believable soundstage, render even the smallest micro detail in the audio signal without coloration while letting the amplifier do all the work. DALI has designed the woofers in the PHANTOM H series to meet these and many more demands. By basing the woofer around the trademark DALI material, the lightweight and very well behaved wood

fibre cone, we lay the ground work for reproducing every small detail in the music, delivering a high resolution mid range and the precise and coherent bass DALI is well known for.

To support this even further the cone terminates in a low-loss rubber surround and both the surround and the spider holding the cone-assembly are

optimized for long excursions. All this is controlled by a powerful magnet motor system that ensures that the cone-assembly can start and stop promptly. Double magnets work on the 25 or 30 mm voice coils and together they deliver a high magnetic flux. The large voice coil diameter furthermore helps increase power handling.

CROSSOVER

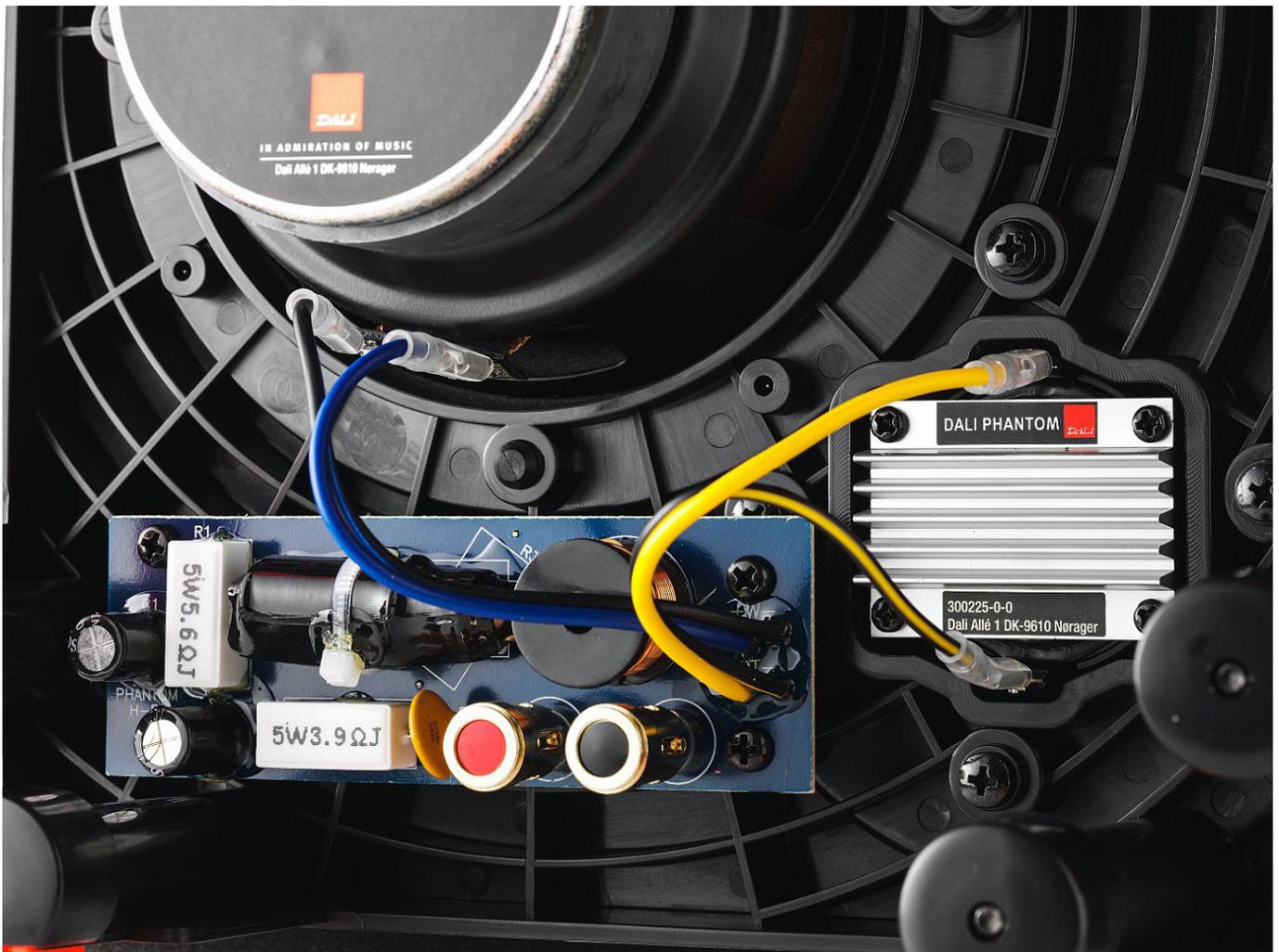
Every component in the crossover is carefully selected for their audiophile quality and the crossover is designed especially for every PHANTOM H model.

All PHANTOM H 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 from happening, since it acts like a fuse if the current gets too 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.

Offering a short signal path, build in safety function and audiophile quality components.



APPLICATION

With the four new models in the DALI PHANTOM H series, it is now possible to unite elegant design and great hi-fi sound in one speaker range. The different sizes of the DALI PHANTOM H series makes it easy to complete your hi-fi experience in a wide variety of different rooms.

PHANTOM H-50

This compact in-wall speaker delivers an astonishingly clear, detailed and well-defined audio experience, and despite its size manages to generate a level of bass that is surprising. Its size makes it perfect for a stereo setup in a small room, or as a rear speaker in a larger room surround setup.

PHANTOM H-60

This model is the perfect all-round speaker. It is not too big and therefore still easy to place, but it is 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.

PHANTOM H-80

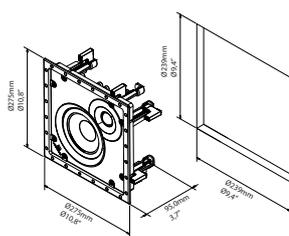
Big sound is what this model is all about. Drawing on every part of its 8" woofer it will fill even very large rooms with sound, whilst keeping the bass under control. This makes it perfect as the main speaker in a

living room setup for either stereo sound or a surround system.

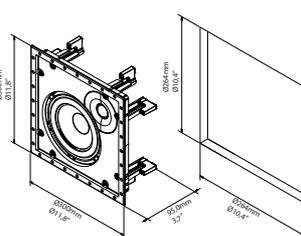
PHANTOM H-120

This totally unique in-wall speaker brings the best, and then some, from a traditional big floor standing speaker, but is mounted in your wall. With an unprecedented 12" woofer to deliver deep and powerful bass, and a separate 5" woofer to handle the important mid-range area, this 3-way speaker delivers like no other in-wall speaker in the world. Perfect for installations where normal floor-standing speakers or an external subwoofer cannot be used, or when deep, room filling bass is essential.

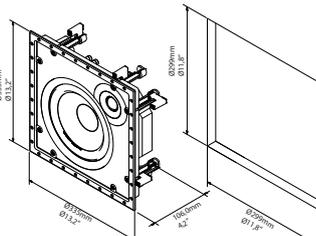
Available accessories



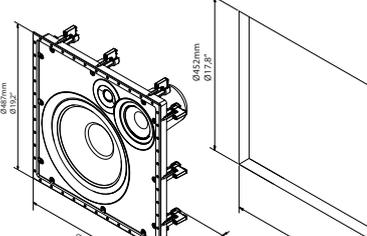
PHANTOM H-SERIES 5"



PHANTOM H-SERIES 6,5"



PHANTOM H-SERIES 8"



PHANTOM H-SERIES 120"

TABLE 2 - PHANTOM H SERIES TECHNICAL SPECIFICATIONS

	PHANTOM H-50	PHANTOM H-60	PHANTOM H-80	PHANTOM H-120
Frequency Range +/-3dB [Hz]	52 – 25,000	51 – 25,000	46 – 25,000	32 – 25,000
Sensitivity (2.83V/1m)[dB]	88	89	90	90
Nominal Impedance [ohm]	6	6	6	4
Maximum SPL [dB]	105	107	109	112
Crossover Frequency [Hz]	2,450	1,900	2,350	850 / 4,000
Recommended Placement	In-Wall / In-Ceiling	In-Wall / In-Ceiling	In-Wall / In-Ceiling	In-Wall / In-Ceiling
Recommended Amplifier Power [Watt]	30 - 120	30 - 150	30 - 200	50 - 400
High Frequency Driver	1 x 28 mm soft dome			
Low Frequency Driver	1 x 5¼"	1 x 6½"	1 x 8"	1 x 5¼" / 1 x 12"
Connection Input	Single wire	Single wire	Single wire	Single wire
Dimensions (H x B x D) [cm]	27.5 x 27.5 x 9.5	30 x 30 x 9.5	33.5 x 33.5 x 10.6	47.1 x 47.1 x 17.0
Dimensions (H x B x D) [cm]	10.8 x 10.8 x 3.7	10.8 x 10.8 x 3.7	13.2 x 13.2 x 4.2	18.5 x 18.5 x 6.7
Cut-out Dimensions (H x B) [inches]	23.9 x 23.9	26.4 x 26.4	29.9 x 29.9	44.5 x 44.5
Cut-out Dimensions (H x B) [inches]	9.4 x 9.4	10.4 x 10.4	11,8 x 11,8	17.5 x 17.5
Weight [kg/lbs]	2.15/4.75	2.60/5.75	3.30/7.29	9.0/ 19.8
Finish	White	White	White	White
Accessories	Cut-out template, 3mm Allen key, Logo badge Front grille			

All technical specifications are subject to change without notice.