

# DALI OBERON

WHITEPAPER



IN ADMIRATION OF MUSIC

# INTRODUCTION

Improving and evolving products is the ultimate goal for any innovative company. Our aim is to ensure that the customer is presented with the very best we have to offer by using the knowledge, skill and technology gained over the years, delivering the greatest musical experiences, emotion and enjoyment possible.

For more than 35 years, DALI has brought “Best in class” audio experiences to our customers. We have dedicated ourselves to constantly improving those experiences through craftsmanship, technological advances and a passion for reproducing music and movies just as the artist intended.

DALI’s innovations, such as the oversized soft dome tweeters, SMC magnet systems and DALI manufactured drivers have been available for many years in our high-end speaker series. We are now at a point where we are able to bring these high-end DALI technologies to a speaker series in this price range, and also brings a brand new look to the listening experience.

With the launch of the DALI OBERON speaker series, we have picked the best elements from our current speakers, and brought them together in a series that delivers on audio quality, looks and versatility. This series has a speaker for every room and situation, from the small and compact OBERON 1, the OBERON VOKAL and OBERON ON-WALL, through to the large floor-standing OBERON 7. Not forgetting the larger stand-mount OBERON 3 and the compact floor-standing OBERON 5.





Built within a solid MDF cabinet, the DALI OBERON series is available in four finishes: Black Ash, White, Dark Walnut and Light Oak. The matte black or white front baffle frames the oversized 29mm ultra-lightweight soft dome tweeter and the SMC based woofers, with a new and optimised wood fibre structured cone. The rear mounted bass port ensures optimum integration within the room, and the elegantly shaped aluminium base gives the two floor-standing models a lighter look. The OBERON ON-WALL brings a slim on-wall solution to this series and utilises DALI's unique on-wall bass port system.

OBERON also introduces a brand new front grille design. The new rounded front grilles add a lighter

and contemporary visual look to the speaker series. Mountain Grey is the standard grille supplied with the light finishes, with Shadow Black standard on the dark finishes. Marshmallow White and traditional Black options are also available.

The DALI OBERON series is a true showcase of DALI ideas, traditions and inventions, all wrapped into an elegant and modern design. It redefines what is possible, both in audio quality and visual design, in its price range.

We are extremely proud to present you with the DALI OBERON series. Read on for a detailed description of the design ideas, technology and innovations behind this series.

## CABINET

Constructed from CNC machined MDF board and dressed in carefully selected high-grade vinyls, the cabinet forms the solid base for the speaker. The floor-standing cabinets employ a very rigid construction, with solid bracings across the inside of the cabinet for reinforcement. This contributes to the stiffness and practically eliminates resonance within the cabinet.

To optimise timing, the speakers are fitted with acoustic damping material internally along the sides, top and bottom - but not on the rear side of the front baffle. This creates a more direct contact between woofer and bass port. The audible result is a more precise bass and increased 'attack' in the midrange.

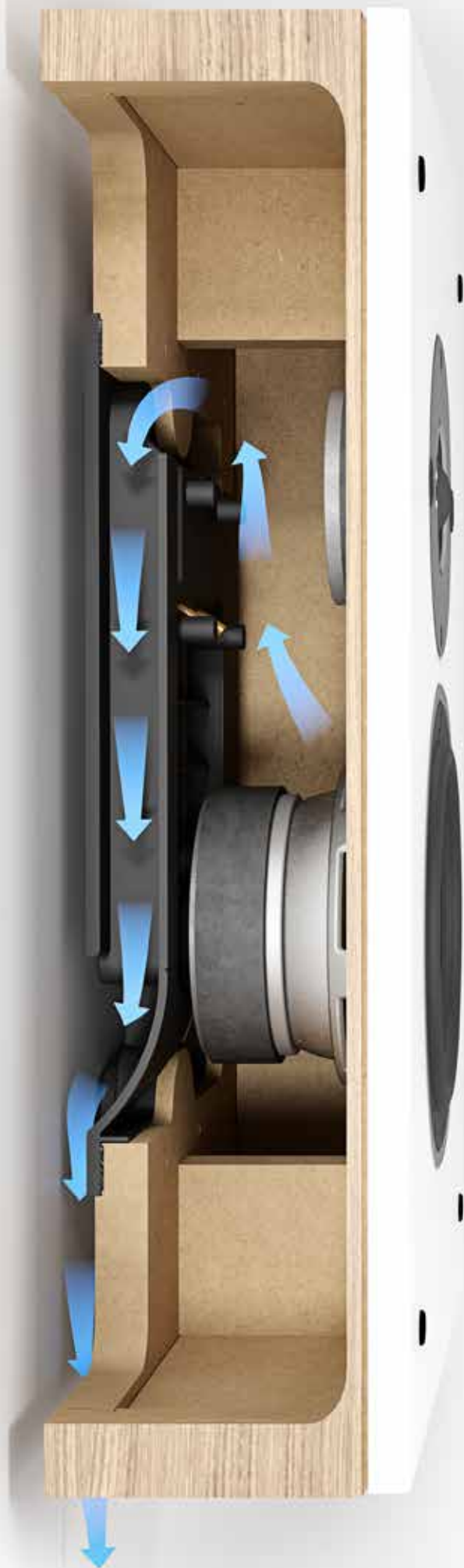
The bass ports are placed on the rear on most of the models, optimising room integration by utilising the wall for improved bass performance. On the OBERON VOKAL the base port is placed on the front to support placement in TV furniture.

This is achieved without losing the all-important 'easy placement' that DALI has become known for throughout its speaker series'.

High-density MDF together with the front baffle forms the solid base for the tweeter and woofers.

The elegantly shaped aluminium base gives the two floor standing models a lighter look.





The OBERON ON-WALL takes the use of the rear wall to a whole new level. Using the unique port design originally introduced with our RUBICON LCR, the OBERON ON-WALL bass ports fire downwards, letting the ports and the wall work together to extend the bass reproduction far beyond what should be possible from such a compact cabinet.

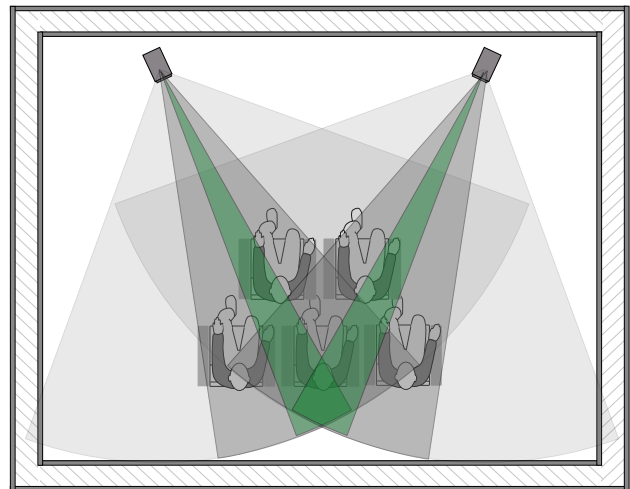
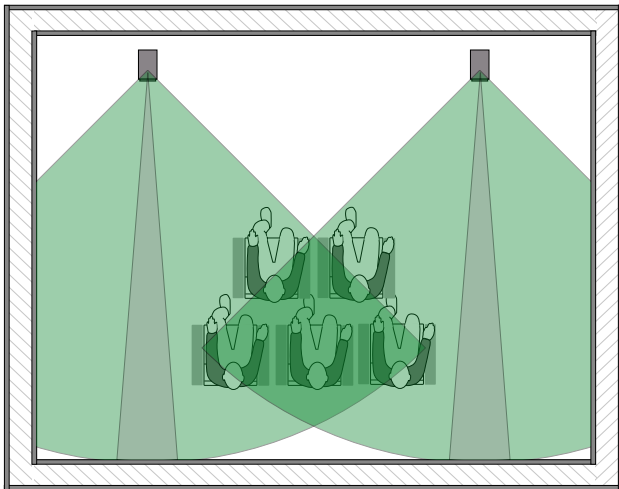
The front baffle is finished in an exclusive matte finish, complementing the dark aluminium details. The rounded front grille is constructed from an acoustically transparent fabric that completes the visual appearance of the OBERON speaker.

High quality DALI terminals secure maximum grip on speaker cables, whether raw or fitted with banana plugs.



The unique bass port design lets the ON-WALL use the wall to extend bass performance.

DALI speakers is build for wide dispersion, filling the room with the best quality audio and enlarging the listening sweet spot.

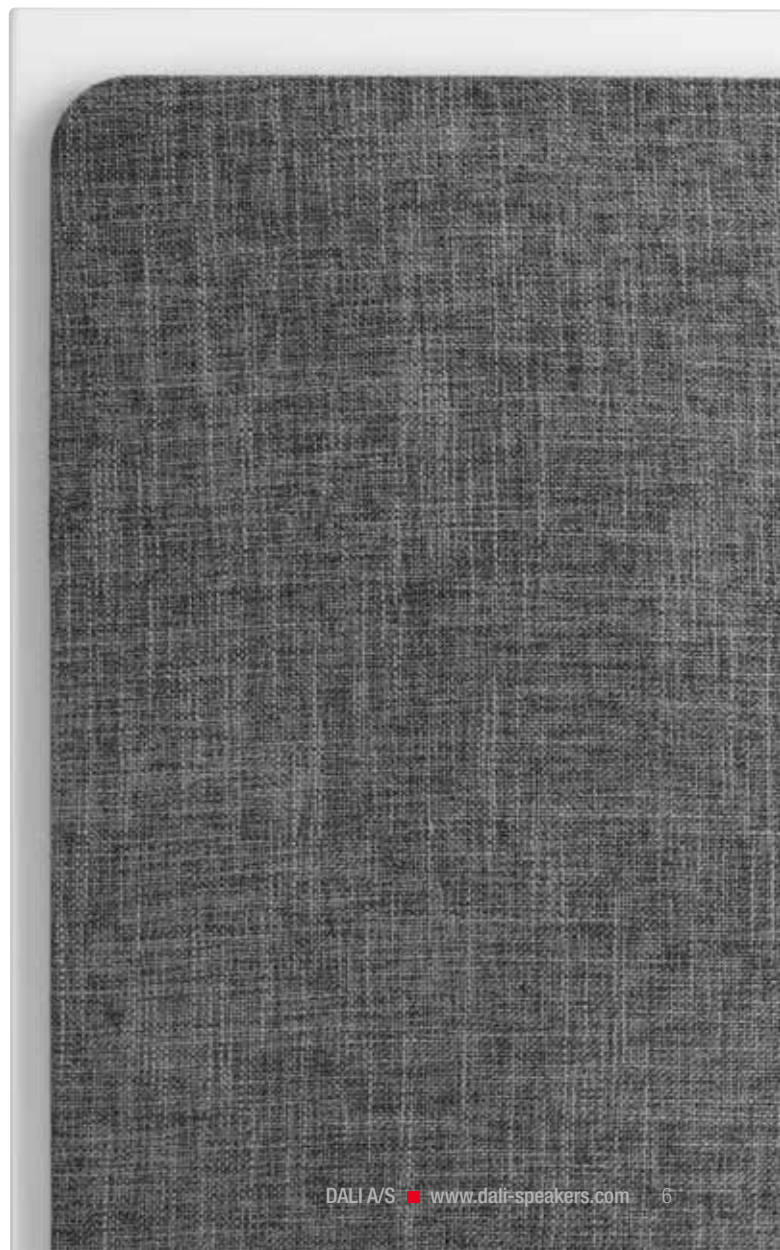


## WIDE DISPERSION

DALI makes it easy to integrate your loudspeakers into any room. Both the driver materials and geometry applied in the OBERON series has been selected to achieve a wide dispersion pattern in the listening area. The same principles have been applied in the design of the crossover.

Thus, you will experience a well-integrated sound, even when listening at a significant off axis angle. This is important as you are rarely seated directly in front of your loudspeaker when listening to music.

An added benefit is seriously reduced harmonic distortion and diffractions causing frequency distortion, as these will always be stronger in an on-axis response. This is also the reason why all DALI speakers are not designed to be toed-in.



# WOOFER

At DALI, we strongly believe in reproducing the recorded signal. No more, no less...

To achieve this, it's not only necessary to reproduce the frequency contents in the signal, but also the dynamics in all its aspects – ranging from subtle micro details to high level bursts.

The OBERON speakers have been engineered accordingly. Like all DALI drivers dedicated to reproducing the delicate midrange and bass frequency area, the OBERON woofer features a wood fibre cone. This blend of a fine grain paper pulp, reinforced with wood fibres, creates a stiff, light-weight and well-behaving structure. In combination with a low-loss surround and spider suspension, this cone reproduces the micro details in the signal - unfiltered and with high accuracy.

The membrane area of the larger drivers in the OBERON series has bigger dimensions than the most common market standard. The 7" woofer in the OBERON 3 and 7 is approximately 15% larger when comparing the cone area to the more common 6½" size. A larger cone area

allows the same sound pressure level to be generated, utilising a lower voice coil excursion. It also allows a higher maximum sound pressure level and – most importantly – it leads to an effortless reproduction of the dynamics in the music.

The membrane terminates in a rubber surround that is chosen for its soft and very flexible properties. This gives the membrane free movement with a very low dampening effect, and leaves the magnet motor to control the membrane movement.

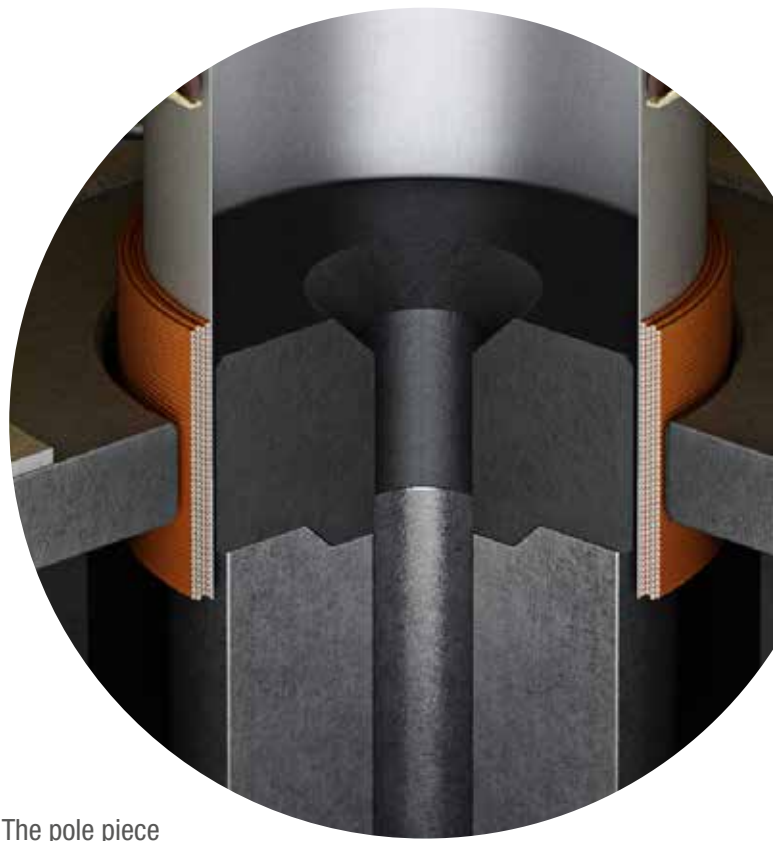
The OBERON voice coil is a 4-layer coil, and while a 4-layer voice coil is effective for a high force factor, the higher moving mass will often present a problem for the midrange response, impairing voice reproduction. Our solution for minimizing the weight was to apply a light copper clad aluminium wire. This rather costly solution applies an aluminium core and a thin-walled outer copper tube. Combining the high conductivity/weight ratio of aluminium (205% the value of copper), with the superior contact resistance properties and better mechanical strength of copper, we get a lightweight voice coil with high conductivity, capable of handling

The low-loss OBERON woofer is designed and manufactured by DALI.



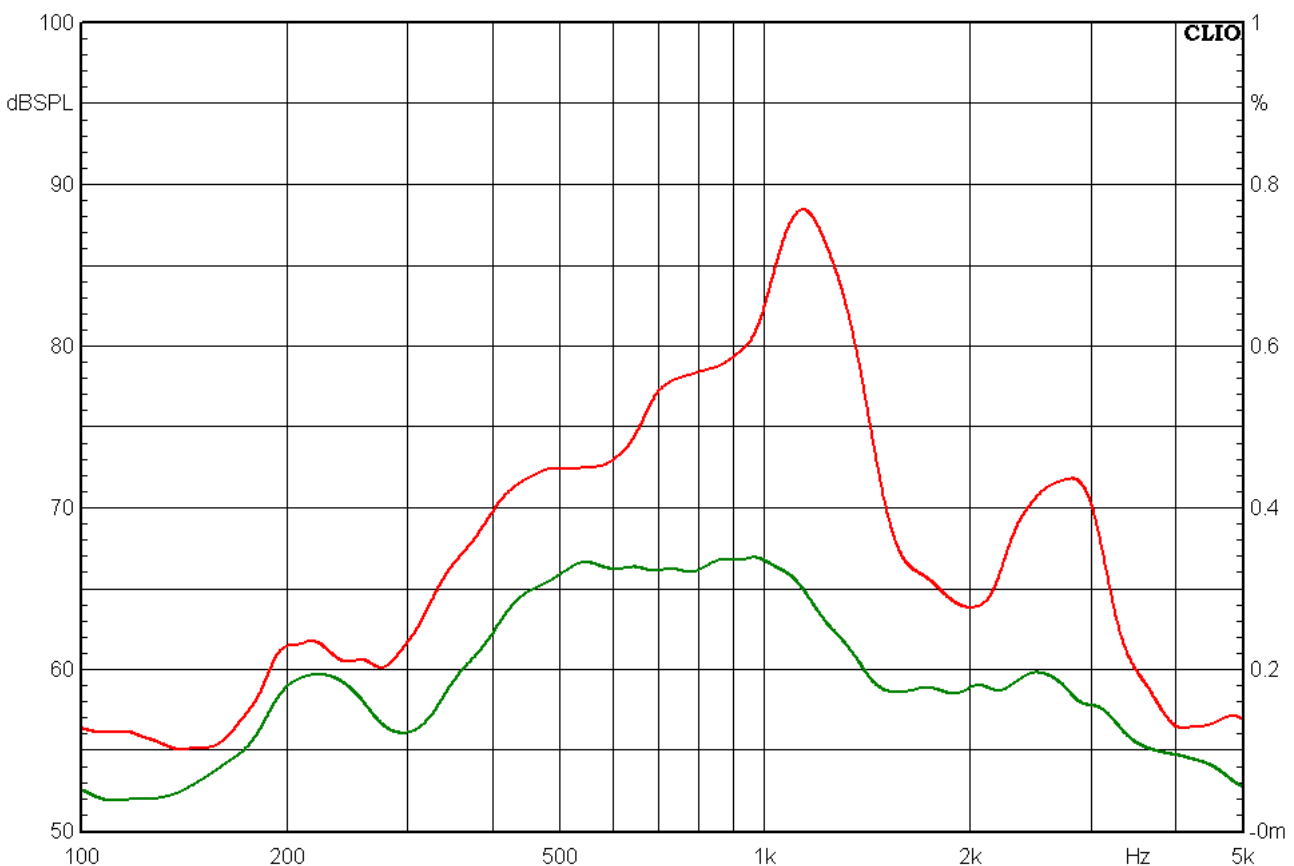
high peak signal levels. The result is seriously improved bass control, well controlled reproduction of micro details and great transient capabilities. The OBERON ON-WALL is fitted with a 2-layer voice coil. The wall mounted position helps deliver sufficient bass performance, and the lighter 2-layer voice coil adds the mid-range needed to match the bass performance.

The magnet motor itself consists of a large ferrite magnet that surrounds a pole piece made with a unique combination of iron and SMC. Letting the iron ferrite form the base of the pole piece means the negative effects of the iron is minimized, leaving the 10 mm SMC disk to crown the pole piece, placing it right in the middle of the 4-layer voice coils main working area. This placement ensures the maximum effect from the SMC on the voice coils environment, resulting in a greatly improved constant flux field. The use of the SMC disk also greatly reduces mechanical distortion caused by hysteresis and eddy currents. These combined improvements in the magnet motor system results in a lowering of third order distortion. This allows the OBERON series to present longer listening pleasure, a relaxed midrange and a surprising amount of detailing for the class.



The pole piece is a unique combination of iron and SMC, greatly minimizing mechanical distortion.

The SMC disk on top of the iron pole piece helps to dramatically lower 3. order harmonic distortion compared to a similar DALI woofer model based on a pure iron pole piece.







Ultra-light soft dome tweeter developed for the OBERON series delivers effortless and unbiased reproduction of the finest details.

## TWEETER

The brand new 29 mm ultra-light soft dome tweeter has been developed specifically for the OBERON series. Leveraging solutions used in DALI's other tweeters, this unit is at the same time something brand new and filled with well proven DALI technologies.

The oversized 29 mm membrane is constructed based on an ultra-light weight weave fabric. Compared to most soft dome tweeters in the market, the DALI dome material is less than half the weight; 0.060 mg per mm<sup>2</sup>.

The large size of the membrane lets the tweeter generate higher sound pressure with less excursion, keeping the voice coil motion to a precise minimum. To further improve power handling, to reduce power compression, and to support a straight-line excursion of the voice coil, the tweeter magnet system incorporates ferro-fluid cooling. For long term stability in a saturated field, a high quality (220 gauss type) is used.

Covering the entire top of the pole piece is soft felt damping. This damping material eliminates unwanted reflections that may occur from a traditional flat-surface pole piece, applied in simpler tweeter constructions.

The DALI manufactured ultra-light weight soft dome tweeter is additionally optimised for a larger bandwidth in its lower frequency area. This ensures the optimal handover from the midrange woofer to the tweeter, creating a well balanced, unforced and very coherent upper midrange.

The tweeter front plate near the dome has been designed with similar geometry as the OPTICON and RUBICON tweeters to create the optimal working conditions for the soft dome. The aim is to combine an extended frequency response with wide dispersion and low coloration.

## PRODUCTS

The DALI OBERON series consists of six models. Two stand-mount speakers: the very compact OBERON 1 and the larger OBERON 3. Two floor-standing speakers: the elegant compact OBERON 5 and the largest of the series the OBERON 7. OBERON ON-WALL is the very slim and

compact dedicated on-wall speaker of the series, and the OBERON VOKAL is the centre piece of an OBERON surround setup. All six models are available in four finishes, Black Ash, White, Light Oak and Dark Walnut.

**OBERON 1** is the ultra-compact speaker of the line-up. Sporting the same oversized 29mm ultra-lightweight soft dome tweeter as the rest of the series, and a 5¼" wood fibre SMC based woofer to handle lower midrange

and bass. The cabinet size enables an optimal balance between inner volume for bass performance, and a compact appearance for small rooms, discreet audio setups or wall mounting.



**OBERON 3** brings the best of both worlds. The 29mm ultra-lightweight soft dome tweeter seamlessly integrates with the 7" wood fibre SMC based woofer for impressive highs, detailed and crisp mids and a

surprising coherent and well-timed bass. Combining the large sound of a floor-standing speaker with the compact design of a stand-mount, the OBERON 3 is the perfect fit for any stand-mount or shelf solution.



**OBERON 5** is the ultimate performer. A compact and elegant floor-standing speaker, housing 2 x 5¼" wood fibre SMC based woofers and the series' wide bandwidth 29mm ultra-lightweight soft dome tweeter. This slim floor-stander will surprise with its ability to deliver a deep firm bass. Together with the clear and well defined mid-range and the airy high frequencies, this speaker is at home with any music or movie sound track.



**OBERON 7** brings everything together. This large floor-standing speaker has 2 x 7" wood fibre SMC based woofers and the oversized 29mm ultra-lightweight soft dome tweeter. This, combined with the large but elegant cabinet, delivers the very best in deep bass and large room performance. Despite its size, this speaker is surprisingly delicate and will impress with its ability to render any music style naturally and lifelike even at lower volumes. This makes the OBERON 7 perfect for almost any audio setup and any music or movie style.





**OBERON ON-WALL** is the slim, discreet and surprisingly powerful on-wall speaker of the series. Housing the oversized 29mm ultra-lightweight soft dome tweeter, a 5¼" wood fibre SMC based woofer and the unique DALI down-firing bass port system. The combination of technologies used made it possible to create a speaker that despite its compact size, will render audio like a much larger model. For this reason it's the perfect discreet choice for both stereo and surround setups.



**OBERON VOKAL** is the finishing touch for your OBERON surround system. It is designed to be the perfect match with any of the other speakers in the series. With a 29mm ultra-lightweight soft dome tweeter and 2 x 5¼" wood fibre SMC based woofers, the OBERON VOKAL delivers a precise, clear and detailed movie or concert sound track.





## APPLICATION

The OBERON series presents a 'speaker for every use' line-up of models. With two compact stand-mounts, two floor-standing, an on-wall and a centre channel, the OBERON has something for every need. Every speaker model is perfect for stereo use, and is able to fill everything from small apartments to large living rooms with high-quality sound.

The OBERON series also includes several solutions for the ultimate surround setup for any room, from the very competitive combination of OBERON 1 with an OBERON

VOKAL together with the DALI SUB C-8 D or DALI SUB E-9 F, through to the powerful room dominating combination of OBERON 7, OBERON ON-WALL and OBERON VOKAL, together with the DALI SUB E-12 F or a DALI SUB K-14 F.

DALI OBERON is a series of speakers that gets the balance of audio quality, visual design and price just right. With new exciting visuals, the use of SMC and the new oversized dome tweeter, DALI OBERON speakers offer Hi-Fi quality sound in a new fresh design.

# TECHNICAL SPECIFICATIONS

	OBERON 1	OBERON 3	OBERON 5	OBERON 7
Frequency Range [+/- 3] dB [Hz]	51 - 26,000	47 - 26,000	39 - 26,000	36 - 26,000
Sensitivity (2.83V/1m) [dB]	86	87	88	88.5
Nominal Impedance [ohm]	6	6	6	6
Maximum SPL [dB]	106	108	108	110
Recommended Amplifier Power [Watt]	25 - 100	25 - 150	30 - 150	30 - 180
Crossover Frequency [Hz]	2,800	2,400	2,400	2,300
Crossover Principle	2-way	2-way	2-way	2-way
High Frequency Driver	1 x 29 mm soft dome	1 x 29 mm soft dome	1 x 29 mm soft dome	1 x 29 mm soft dome
Low Frequency / mid-range Driver(s)	1 x 5¼"	1 x 7"	2 x 5¼"	2 x 7"
Enclosure type	Bass reflex	Bass reflex	Bass reflex	Bass reflex
Bass Reflex Tuning Frequency [Hz]	50	49	43	39.5
Connection Input(s)	Single	Single	Single	Single
Recommended placement	Stand/Shelf	Stand/Shelf	Floor	Floor
Recommended Distance from rear wall to speaker's rear panel [cm]	1 -50	5 -50	15 -80	20 -80
Dimensions (H x W x D) [mm]	274 x 162 x 234	350 x 200 x 315	830 x 162 x 283	1015 x 200 x 340
Dimensions (H x W x D) [inches]	10.8 x 6.4 x 9.2	13.7 x 7.8 x 12.3	32.7 x 6.4 x 11.2	13.7 x 7.8 x 12.3
Weight [kg/lb]	4.2 / 9.2	6.3 / 13.9	10.8 / 23.8	14.8 / 32.5
Accessories	Rubber feet, Manual	Rubber feet, Manual	Spikes, Rubber feet, Manual	Spikes, Rubber feet, Manual

	OBERON VOKAL	OBERON ON-WALL
Frequency Range [+/- 3] dB [Hz]	47 - 26,000	55 -26,000
Sensitivity (2.83V/1m) [dB]	89.5	86.5
Nominal Impedance [ohm]	4	6
Maximum SPL [dB]	109	107
Recommended Amplifier Power [Watt]	25 - 150	25 -100
Crossover Frequency [Hz]	2,600	2,100
Crossover Principle	2-way	2-way
High Frequency Driver	1 x 29 mm soft dome	1 x 29 mm soft dome
Low Frequency / mid-range Driver(s)	2 x 5¼"	5¼"
Enclosure type	Bass reflex	Bass reflex
Bass Reflex Tuning Frequency [Hz]	46	50
Connection Input(s)	Single	Single
Recommended placement	Shelf	Wall
Recommended Distance from rear wall to speaker's rear panel [cm]	0 - 50	0 - 10
Dimensions (H x W x D) [mm]	441 x 295 x 161	385 x 245 x 120
Dimensions (H x W x D) [inches]	17.4 x 11.6 x 6.3	15.2 x 9.7 x 4.7
Weight [kg/lb]	7.45 / 16.4	
Accessories	Rubber feet, Manual	Rubber feet, Manual

All technical specifications are subject to change without notice.