DALI VEGA

TECHNOLOGY PAPER



MODERN LISTENING, REFINED

The way we experience music in the home has changed enormously in recent times. Audio in the home has become integrated with other home entertainment technologies, and with home life itself. Wireless audio, streaming and multiroom technologies mean we can have high-quality music playing wherever and whenever we want it, choosing how we listen; attentively, casually or somewhere in-between the two. Technology has enabled high-quality sound to be enjoyed in multiple home environments, not only restricted to dedicated listening setups or listening rooms, but expanded to fill the entire home and fill our everyday lives.

DALI is immensely proud to present the DALI VEGA stand-alone high-end sound system. The DALI VEGA is a wireless, all-in-one, active loudspeaker designed to be the performance benchmark for stylish and accessible single-box music in the home. VEGA combines fabulous sound quality with immense versatility, intuitive ease of use and a uniquely engaging Danish luxury design aesthetic. The following pages will describe and tell the story of the DALI VEGA.

HIGH PERFORMANCE SOUND AND FABULOUS LOOKS

At DALI, delivering high-performance sound is top priority - but it is always supported by aesthetic design, ease of use, versatility and advanced engineering. This is especially true for the DALI VEGA. More than just a music player that excites and inspires, it is designed to be the most versatile and user-friendly audio source in the home. And even when it is not playing, the VEGA impresses with its striking design and visual appeal.

Whether it serves as the compact Hi-Fi centerpiece in your living room, brings gentle melodies to your kitchen, used on a study shelf or a lounge table, or finds its place on a bedroom wall, VEGA delivers rich, immersive sound to a wide range of scenarios. Its timeless design makes it a choice that feels at home in any setting—filling your spaces with music that feels alive for decades to come, for you and your entire family.

GENUINE DALI SOUND FOR EVERY SITUATION

In use, VEGA is a powerhouse of audio dynamics, musical engagement and real-world installation versatility. It can perform like a compact Hi-Fi system in a listening room yet simultaneously play the perfect background sound role anywhere in the home, or even be used as a high-end TV soundbar. Genuine DALI sound for every situation and occasion.

DALI ADAPTIVE ACOUSTICS AND BESPOKE DRIVE UNITS

The first fundamental parameter that defines the design of the DALI VEGA is its physical size. It is large enough that it can generate volume levels able to fill a space with high performance, wide bandwidth music, but compact enough that it doesn't physically dominate a space or demand that a room arrangement is subordinate to its needs. The extraordinary adaptive acoustics and Adaptive Stereo Enhancement (ASE) technology of the DALI VEGA are partly responsible for its achievement in this respect, but similarly responsible are the renowned DALI low-loss and wide dispersion principles that are integral to everything we do, from the reference DALI KORE high-end Hi-Fi loudspeakers to the award winning DALI KATCH G2 Bluetooth loudspeaker.

DALI VEGA electro-acoustics comprise four 4½ inch DALI designed bass/midrange drivers, four DALI designed 25 mm soft dome tweeters and two low frequency passive radiators, all housed in an immensely rigid composite enclosure. The VEGA on-board amplification comprises eight 50-Watt channels for a total of 400 Watts. VEGA incorporates advanced digital signal processing (DSP) that provides automatic adaptive acoustic adjustment for alternative mounting orientations and also offers Adaptive Stereo Enhancement (ASE) technology to enrich the listening experience even further.

The industrial design and aesthetic style was developed in-house at DALI in Denmark and combines classically simple forms with surfaces finished in seductive, tactile materials. The DALI VEGA is striking yet subtle in appearance, with finely resolved 3D surfaces and material transitions. Custom woven fabrics are combined with fine paint, anodised aluminium and real wood veneers to express high-tech precision engineering and organic charm. The VEGA's auxiliary bass radiators, which contribute to the speaker's extraordinary low frequency performance, are suspended diaphragms at each end of the cabinet tuned to the appropriate frequency.

The VEGA on-body user interface comprises an OLED display that automatically rotates with mounting orientation. This is combined with a large, balanced and weighted volume wheel encoder, and an array of tactile buttons for input selection and presets, allows everyday use to be initiated right on the device.

DALI VEGA IN THE HOME

The DALI VEGA creates sound beyond belief and sets a new performance benchmark for one-box wireless audio. It brings genuine and extraordinary DALI sound to every space and occasion.



WALL MOUNTED
(LANDSCAPE)



WALL MOUNTED
(PORTRAIT)

VERSATILE PLACEMENT

Versatility in the home is the key quality of any all-in-one music player and it's one in which the DALI VEGA excels. VEGA is designed to make beautiful sound that will fill a room with exquisite music yet be able to fit on a small table or shelf, or to be wall mounted in either landscape or portrait orientation. Where traditional high-end Hi-Fi systems often demand that a home is arranged around their needs, VEGA is designed for real homes in the real world and moulds itself to suit the home and its inhabitants. And it makes more exquisite, satisfying and magnificent music as a result. VEGA's enormously sophisticated and capable adaptive acoustics means it will always sound at its best, wherever and however it is used.



FREE STANDING



EASY ACCESS TO YOUR FAVOURITES

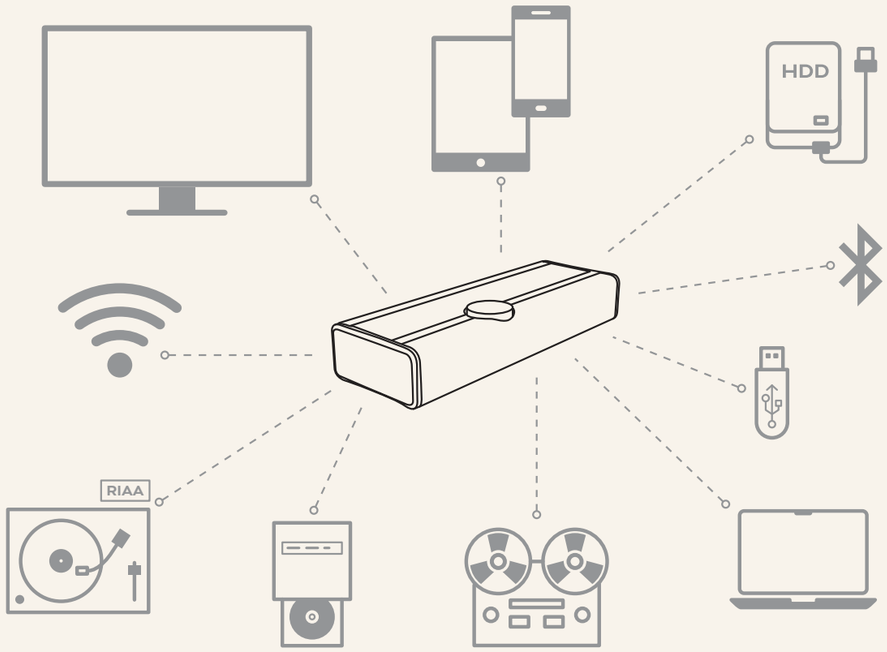
Easy access to great music is everything for DALI! Advanced technology is often difficult to use, however a hugely significant element of the VEGA design philosophy is accessibility and ease of use. There's no complex app needed to control VEGA, so there's no need to find a phone before the music can play. VEGA can be operated from either its remote control or its simple on-body user interface comprising an OLED display, that automatically rotates with mounting orientation, combined with a generous, weighted volume encoder and an array of tactile feel input and preset buttons. VEGA offers an intuitive, user-centric interface that remains transparent to the listening experience - precisely as high-performance audio equipment should.

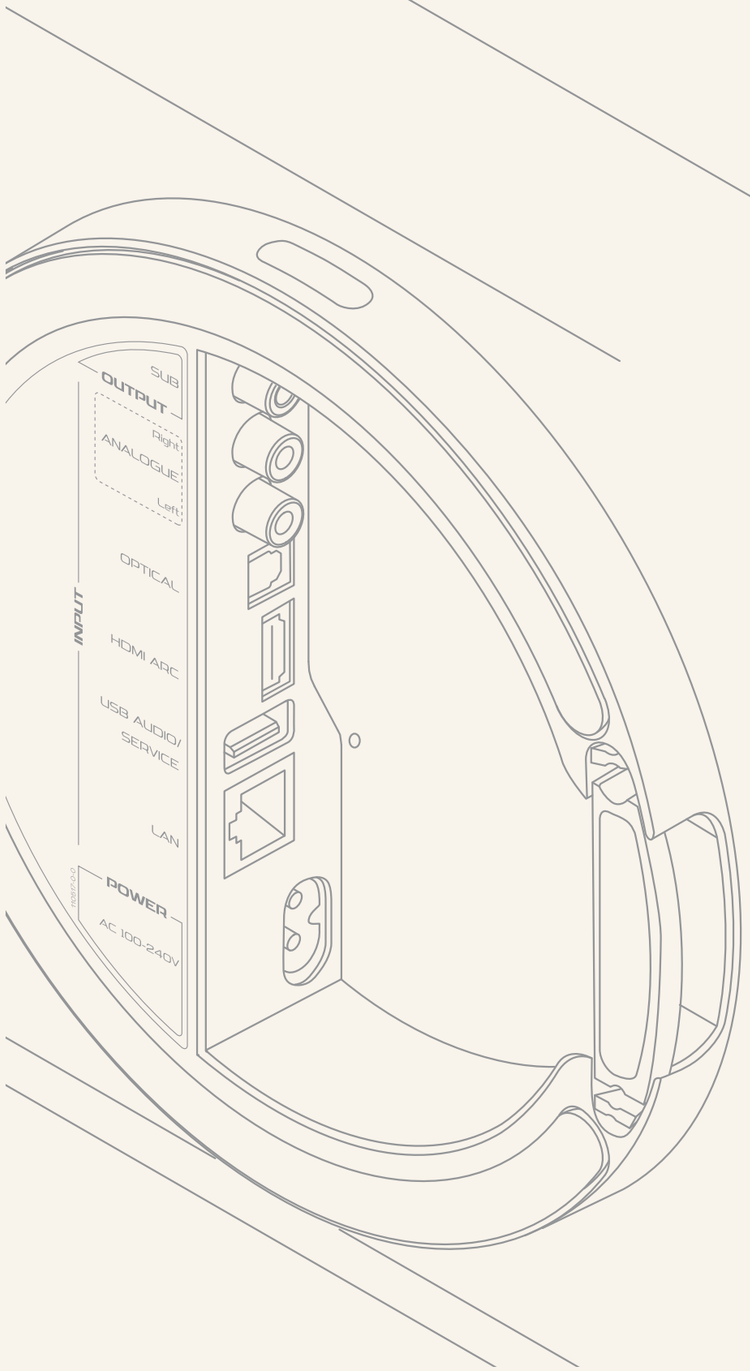
UNIVERSAL CONNECTIVITY - WIRED OR WIRELESS

VEGA input versatility is also hugely valuable in enabling its indispensable role in the home. Its analogue input for example is perfect for the connection of a turntable, and its HDMI and optical digital compatibility mean it can play the role of very high performance soundbar for any TV. Everything, from legacy analogue sources, via digital for TV audio, to Bluetooth and network streaming is catered for. Furthermore, the BluOS capability of VEGA means other BluOS compatible sources, or those connected to a Bluesound Player or Hub, will be able to connect wirelessly to the VEGA. For example, a turntable in another room, could be connected with the VEGA wirelessly using the Bluesound Hub. VEGA can play the output role for almost any audio source. If it has an audio output, VEGA has a suitable input.

VEGA inputs include both analogue and digital, and wired or wireless, to cover absolutely any potential installation and need; from standard analogue inputs to HDMI, and from USB storage to wireless or wired streaming.

VEGA is Bluetooth aptX HD, Spotify Connect, Apple Airplay 2, Tidal Connect and Qobuz Connect ready. Internally the VEGA digital audio management and DSP run at 24 bit / 48 kHz.





WIRED INPUTS

- HDMI ARC
- Analogue input (RCA unbalanced, stereo)
- Optical input (Toslink, stereo)
- USB Audio/Service (HDD or USB drive)

WIRED OUTPUTS

- Subwoofer output
- USB power out (5V/1A)

WIRELESS INPUTS

- Bluetooth AptX HD (Always ready – No app needed to connect)
- BluOS
- Spotify Connect
- Tidal Connect
- Qobuz Connect
- Apple Airplay 2



BluOS™ STREAMING & MULTIROOM AUDIO

VEGA is also able to be integrated into any BluOS enabled multiroom audio system. This means multiple DALI VEGA units can be accessed and controlled via the BluOS app or work with other BluOS devices – from either DALI, Bluesound or other BluOS compatible manufacturers. It also means VEGA is Hi-Res and fully MQA compatible, giving the absolute best in playback quality from multiple audio sources, either streamed from the cloud or stored locally.

Spotify · Spotify · TIDAL · TIDAL connect · amazon music HD · qobuz REDISCOVER MUSIC · Radio Paradise · TUNE IN · Audacy · Qsic · iHeart · nugs.net · LIVEXONE · CALM RADIO

SiriusXM · SiriusXM FOR BUSINESS · SOUNDMACHINE · prestomusic · CustomChannels The Art of the Perfect Music Mix · tunify · IDAGIO · DEEZER · pandora · KKbox · Bugs! · NYA · HIGHRESAUDIO

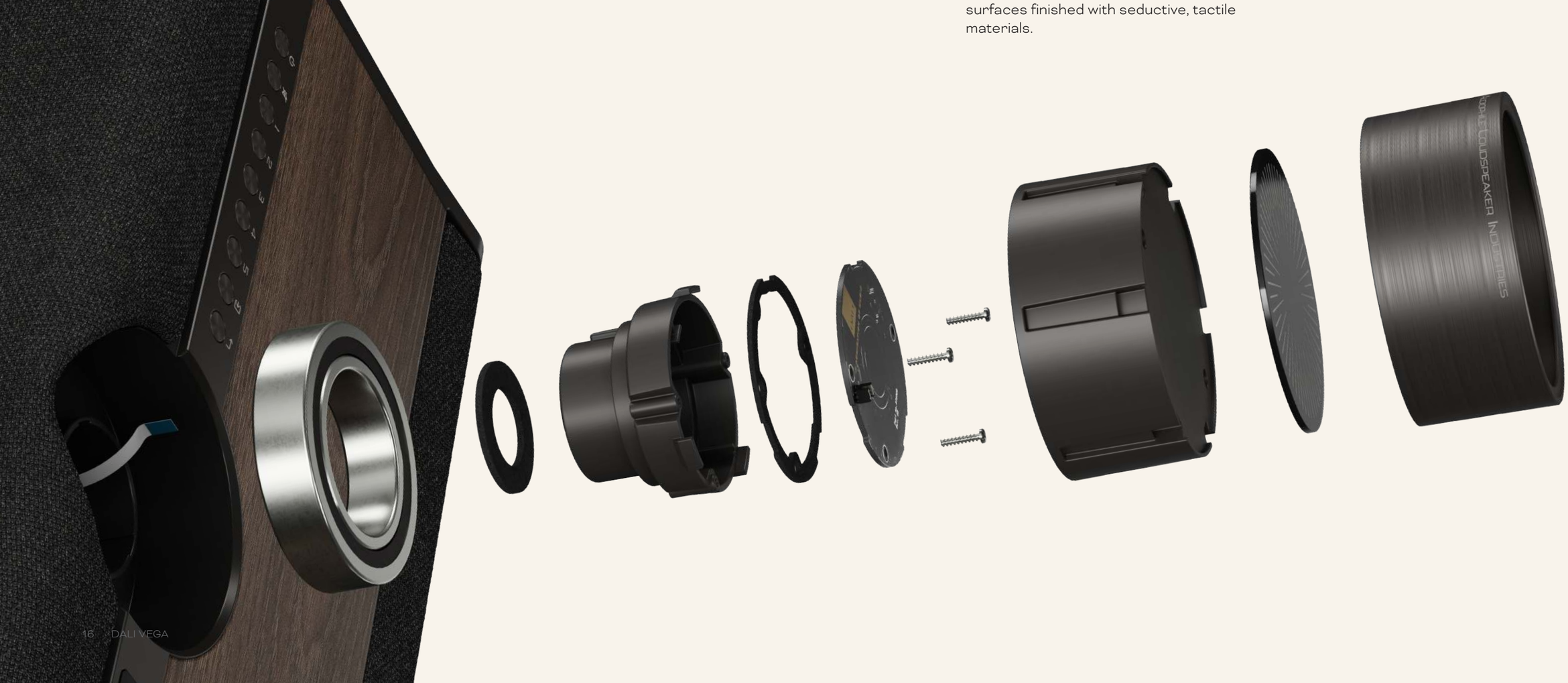
LUXURIOUS INDUSTRIAL DESIGN AND ENGINEERING

Fashion is temporary, but style is timeless,
and the DALI VEGA majors on style.
Fine Danish design and luxurious materials
meet high-tech audio engineering.

The industrial design of audio products that are intended to become part of the home is something close to our hearts at DALI. The DALI VEGA aesthetic is classic and subtle yet innovative and engaging. Its surface finishes and feel to the touch inspire a sensation of sophistication and quality. And it looks as good when it is silent as it does when it's in full flow of brilliant music.

The DALI VEGA was conceived, created and brought to life exclusively by DALI in Denmark. Its luxurious industrial design and engineering is a product entirely of DALI's in-house designers and engineers, and it inherits all the emphasis on quality and longevity that informs all DALI products. VEGA is inspired by the values of classic Danish design – an economy of style combined with classically simple forms, and surfaces finished with seductive, tactile materials.

Experience the ultimate in luxury with our carefully crafted volume controller. Although it appears simple, the engineering behind the volume control - responsible for its beautifully smooth, weighted feel - is remarkably sophisticated. Its anodized aluminum cover provides a sleek, refined look, highlighting the premium quality of the design. At the heart of this masterpiece is a 80 mm military-grade ball-bearing that operates silently and smoothly, ensuring precise and stable control. Every mechanical and electronic component in the volume controller is in-house developed and manufactured, guaranteeing exceptional performance and strict adherence to quality standards. This volume controller is not just a device, but a statement of craftsmanship and sophistication.



LUXURY MATERIALS

The DALI VEGA is simultaneously striking and subtle in appearance, with finely resolved 3D surfaces and material transitions. Custom woven fabrics are combined with fine paint, anodised aluminium, and real wood veneers to express both high-tech precision engineering and organic charm. An example of the latter are the VEGA auxiliary bass radiators; they are created by making each cabinet end-panel a suspended diaphragm, tuned to the appropriate frequency.

The VEGA enclosure is primarily a HIPS (High Impact Polystyrene) moulding covered with veneered panels and fabric finished grille components, all providing the very best acoustic environment for the drivers, while simultaneously offering beautiful aesthetics. The DALI VEGA is a statement in both design and sound. It's the opposite of a buy-and-discard product - it is engineered to last.

ELECTRO-ACOUSTICS, ELECTRONICS AND DSP



Delivering authoritative, high-end Hi-Fi sound from a single, compact enclosure requires extraordinary electro-acoustics, advanced electronics, and sophisticated digital signal processing (DSP). And when all three domains are designed, integrated and work together, the result exceeds the sum of its parts to perform audio miracles.

DALI VEGA ELECTRO-ACOUSTICS

The low profile form factor of the DALI VEGA together with its audio bandwidth and volume level goals require that it is equipped with multiple bass/midrange drivers, with a matching array of multiple tweeters. In addition to helping the VEGA meet its bandwidth and volume level goals, the multiple back-to-back driver positions also make it highly versatile for home use. They allow its equalisation and stereo routing to be easily adjusted for a wide range of installation locations and orientations. VEGA stands apart from every other stand-alone high-performance music player. Nothing else matches its unique combination of exceptional sound quality and unmatched versatility.

DALI VEGA TWEETERS

The VEGA tweeters are in-house designed 25 mm soft dome drivers that integrate numerous DALI developed engineering features and refinements. For example, the tweeters incorporate low viscosity ferro-fluid in their magnet gaps that increases power handling and minimises thermal compression while not restricting dome dynamics, as traditionally more viscous ferro-fluid is prone to do.

The VEGA tweeters also feature large, damped rear chambers with a specifically engineered air path beneath the domes. The result of the rear chamber and air path is a significantly lowered fundamental dome resonance, which in turn enables the system crossover frequency to be set lower than would otherwise be the case. This helps to widen and linearise system dispersion through the upper midrange, and reduce the distortion.





DALI VEGA BASS/ MIDRANGE DRIVERS

The VEGA bass/midrange drivers are DALI designed 4½ inch diameter units featuring our signature DALI paper and wood fibre cones, as found in many DALI high-end Hi-Fi loudspeakers, and low-loss natural rubber surrounds driven by high power motor systems incorporating an aluminium former voice-coils wound with copper wire. The VEGA bass/midrange drivers are inherently dynamic and accurate with remarkably insightful midrange clarity.

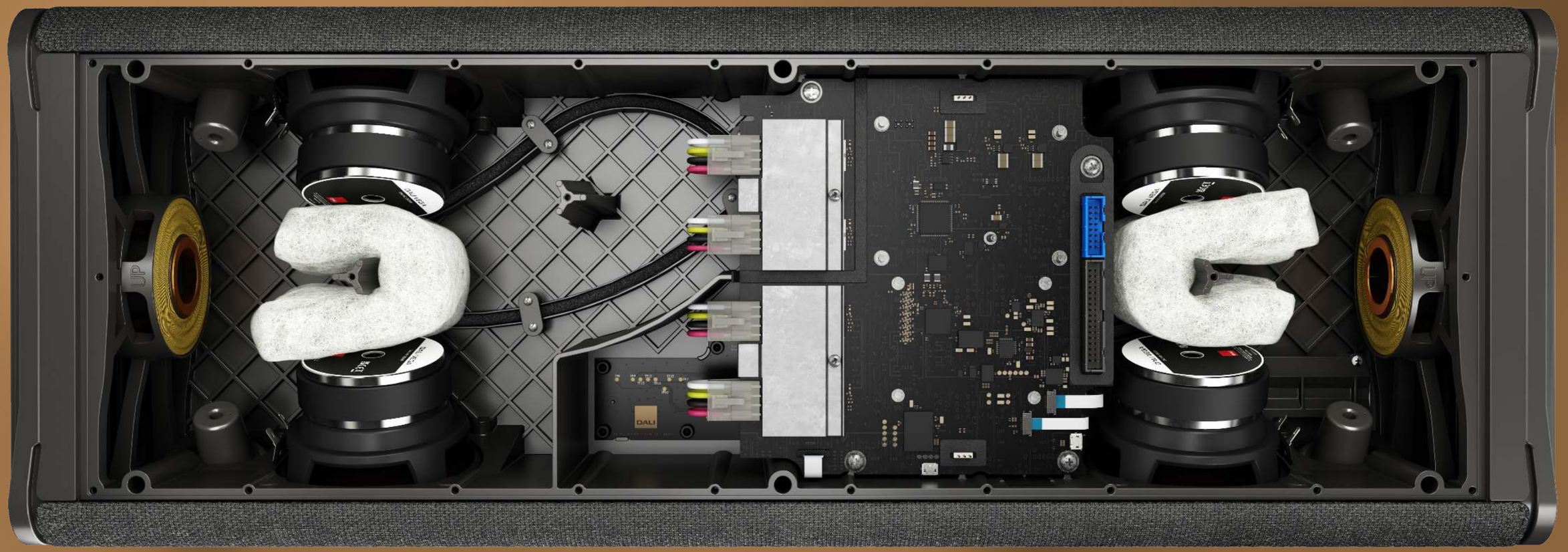
DUAL PASSIVE RADIATOR BASS DRIVERS

The low frequency system of the DALI VEGA incorporates two auxiliary bass radiator (ABR) diaphragms engineered into its enclosure end-caps. This ingenious solution to the problem of low frequency reproduction from a compact enclosure is unique to the DALI VEGA. Employing ABRs in preference to reflex ports has a particular advantage in a compact enclosure in that the tuning frequency isn't constrained by the internal enclosure space available. It's often the case with compact enclosures that the length and diameter of the reflex port required to achieve the appropriate tuning frequency and laminar airflow volume level is difficult to fit in the enclosure. Using ABRs avoids this issue completely.

The VEGA ABR diaphragms themselves comprise rectangular composite panels suspended by an external low-loss rubber roll surround and dual internal corrugated fabric spider suspensions. The ABR diaphragms are mass loaded in order to achieve the appropriate tuning frequency. The mass loading is further optimised for maximum stability of the axial (forwards and backwards) motion, using two spider suspensions to mimimise rocking modes of the diaphragms and lower the distortion.The system low frequency bandwidth of the VEGA bass/mid drivers and ABRs extends to 32Hz at -6dB with minimal distortion or time domain smearing. The results is deep, muscular and musical bass with real Hi-Fi loudspeaker impact and clarity.

The DALI electro-acoustic skill and expertise invested in VEGA derives from the same source as that instilled in every other remarkable DALI Hi-Fi loudspeaker. The VEGA's electro-acoustic engineering delivers more than just high-performance sound - it transforms your home into a space filled with music of exceptional quality. Music that can inspire and captivate, move you to tears, or get you dancing. With its extraordinary design, VEGA elevates the home listening experience to its fullest potential.





DALI VEGA ELECTRONICS AND DSP

One of the standout technical highlights of the DALI VEGA is its remarkable 400 Watts total amplifier power. Each of the eight VEGA 50-Watt amplifiers are Class D bridge-tied load (BTL) designs in which each bass/midrange driver and tweeter is effectively connected between two amplifier modules that operate in unison. The BTL technique simultaneously reduces distortion and increases amplifier efficiency, to the benefit of both sound quality and heat dissipation.

In front of the DALI VEGA's power amplification is an advanced digital signal processing system. This highly sophisticated system not only handles the active crossover, seamlessly blending the bass/midrange drivers with the tweeters, but also implements the following DSP technologies:

- DALI Adaptive Stereo Enhancement™
- Tone controls
- Adaptive Orientation Adjustment
- Individual EQ voicings for placement on table or shelf with three different distance-to-wall settings (Free, Medium, Short) and for wall mounting (portrait or landscape)
- HDMI delay
- Automatic multi-band limiting
- Automatic subwoofer bass management
- Dynamic bass adjustment

DALI ADAPTIVE STEREO ENHANCEMENT™

DALI Adaptive Stereo Enhancement™ (ASE) technology, is a DALI developed, patent pending technology, that delivers the expansive, spacious, room-filling stereo experience typically associated with traditional Hi-Fi speakers.

ASE works to compensate adaptively for the difference in presentation between the sound field that conventional spaced stereo speakers can generate and that of traditionally configured single box speakers. Conventional spaced stereo speakers deliver sound in two key ways: first, by creating a stereo image for listeners positioned at or near the optimal listening spot; and secondly, by providing a natural sense of expansive scale through the use of multiple, physically separated sound sources. DALI Adaptive Stereo Enhancement™ incorporated in the DALI VEGA uses a programmed adaptive algorithm in combination with the system's multiple drivers to emulate the subjective perception of both listening position stereo imagery and multiple source acoustic scale. As a result, a single DALI VEGA can fill a space with stereo audio to a degree that is completely unexpected, and it can do so without unnatural artefacts or coloration. For more intimate settings, such as close-up listening in a smaller room, ASE can easily be switched off when preferred.

DALI ADAPTIVE STEREO ENHANCEMENT™ TECHNOLOGY

DALI Adaptive Stereo Enhancement™ is a patent pending, in-house developed technology designed for DALI VEGA.

Using this technology, DALI VEGA is able to deliver a natural, expansive panoramic effect for music and movies by applying real-time, adaptive stereo widening based on the characteristics of the input signal. This is especially beneficial for speaker systems like DALI VEGA, where the left and right drivers are placed relatively close together.

Rather than being a limitation, the narrower driver spacing becomes an advantage - providing a more immersive sound experience across a broader area of the room, not just in the traditional “sweet spot” common to many Hi-Fi systems.

Working principle:

The DALI Adaptive Stereo Enhancement™ (ASE) technology dynamically adjusts stereo widening based on the balance between the true mono and the spatial information in the incoming audio signal.

First, the stereo input is converted and up-mixed in the VEGA DSP to a 5-channel signal including a center channel and surround channels. The DSP analyses this 5-channel up-mixed signal in real-time, using the levels of center- and surround content to adaptively adjust the stereo widening based on the actual incoming material.

Whenever the audio signal is characterized to be focused, monophonic and dry, the amount of widening is increased. Conversely, the amount of added widening is reduced if the incoming signal is already ambient and perceived with a large and wide sound stage.

This ensures that the immersive widening effect is naturally tailored to the incoming audio signal, creating a room-filling sound without introducing any unnatural artefacts; Unlike typical “spacious” sound modes from common audio applications, the ASE technology never adds or removes information from the original source - there’s no echo, delay or tonal coloration etc.

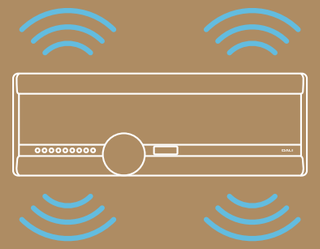
DALI Adaptive Stereo Enhancement™ will create a sound space making it feel like your whole room is playing, allowing the compact DALI VEGA to deliver a larger-than-life audio experience.

It’s a uniquely impressive effect - one you truly have to hear to believe!

DALI Adaptive Stereo Enhancement™ is happening in real-time and performs seamlessly without noticeable adjustment of the widening factor.

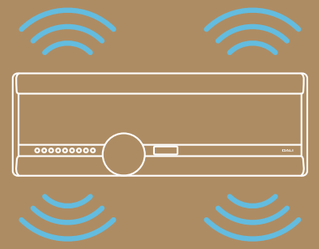


If the ambience level or channel separation is **high** compared to the level of center channel audio, widening is reduced to minimize potential side effects.



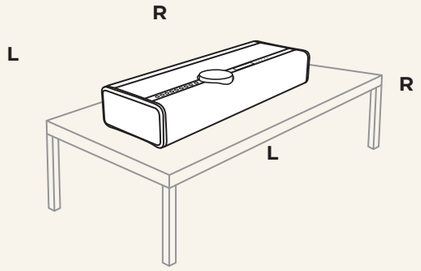


If the ambience level is **low** and the audio materiale is “dry” with a more “in-box” listeninge experience - widening is increased.



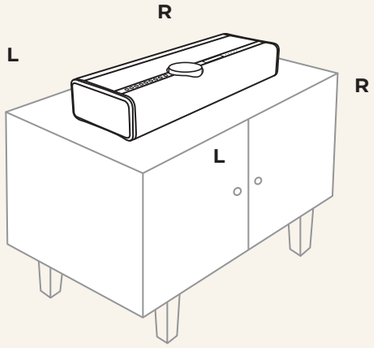
VERSATILE PLACEMENT – ANYWHERE IN THE HOME

The DALI VEGA array of multiple drivers; a pair of bass/midrange drivers and tweeters facing forwards and a pair of each facing nominally backwards, brings enormous opportunity for versatility in terms of installation locations. VEGA can be used on a table or shelf either close to a wall or some distance away or, with its dedicated bracket, wall-mounted in either landscape or portrait orientation. Each installation scenario requires specific equalisation settings, and in some cases, alternative stereo routing configurations. All of these parameters are seamlessly managed within the VEGA's DSP. In general, VEGA equalisation and stereo routing is arranged as follows:



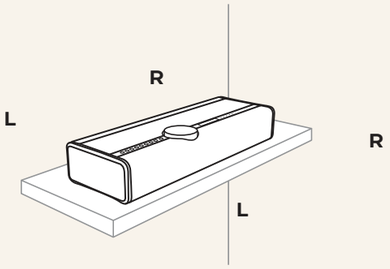
STANDING: FREE SPACE

DALI VEGA plays in both directions: front and back.
Recommended Rear Wall Distance setting: Free.



STANDING: NEAR WALL

DALI VEGA plays more forwards than backwards.
Recommended Rear Wall Distance setting: Medium.

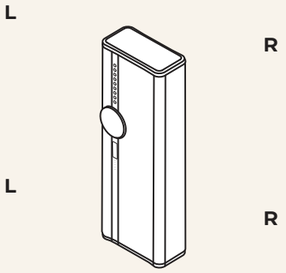


STANDING: CLOSE TO CORNER/WALL

DALI VEGA plays even less backwards in this mode.
Recommended Rear Wall Distance setting: Short.

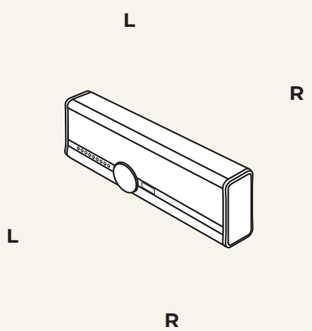
ON WALL: PORTRAIT

DALI VEGA plays in both directions.
The front drivers play the left channel, and
the rear drivers play the right channel.
Rear Wall Distance is automatically set.



ON WALL: LANDSCAPE

DALI VEGA plays in both directions.
Rear Wall Distance is automatically set.



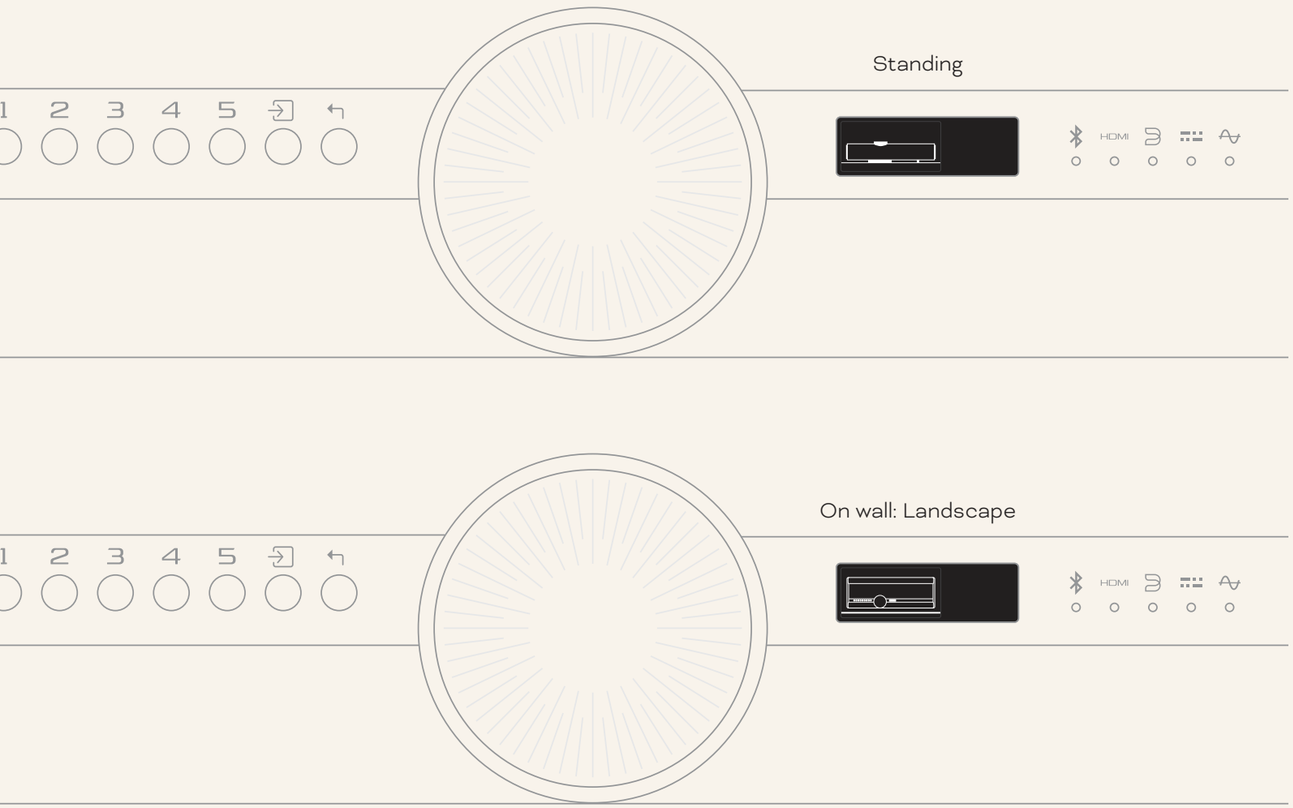
ADAPTIVE ORIENTATION ADJUSTMENT

The DALI VEGA is engineered with advanced Adaptive Orientation Adjustment technology developed in-house by DALI's engineers. Adaptive Orientation Adjustment enables the VEGA to integrate seamlessly into any living space, no matter how it is placed or mounted.

Equipped with an internal orientation sensor, VEGA intelligently detects its mounting orientation. Whether placed on a shelf or table or wall mounted in landscape or portrait mode - it automatically reconfigures stereo channel mapping and uses custom developed EQ settings for each orientation, to ensure optimal audio fidelity. This automatic adjustment enhances spatial accuracy and stereo imaging, delivering a consistently immersive listening experience regardless of placement, and with no user input required.

Adaptive Orientation Adjustment is a key component of VEGA's environment-aware design philosophy, allowing it to adapt acoustically to its user preferences and elevate musical performance with precision and clarity.

Once you position your VEGA in the desired orientation, the display will indicate Adaptive Orientation Adjustment mode by showing one of three logos.



Standing

On wall: Landscape



On wall: Portrait

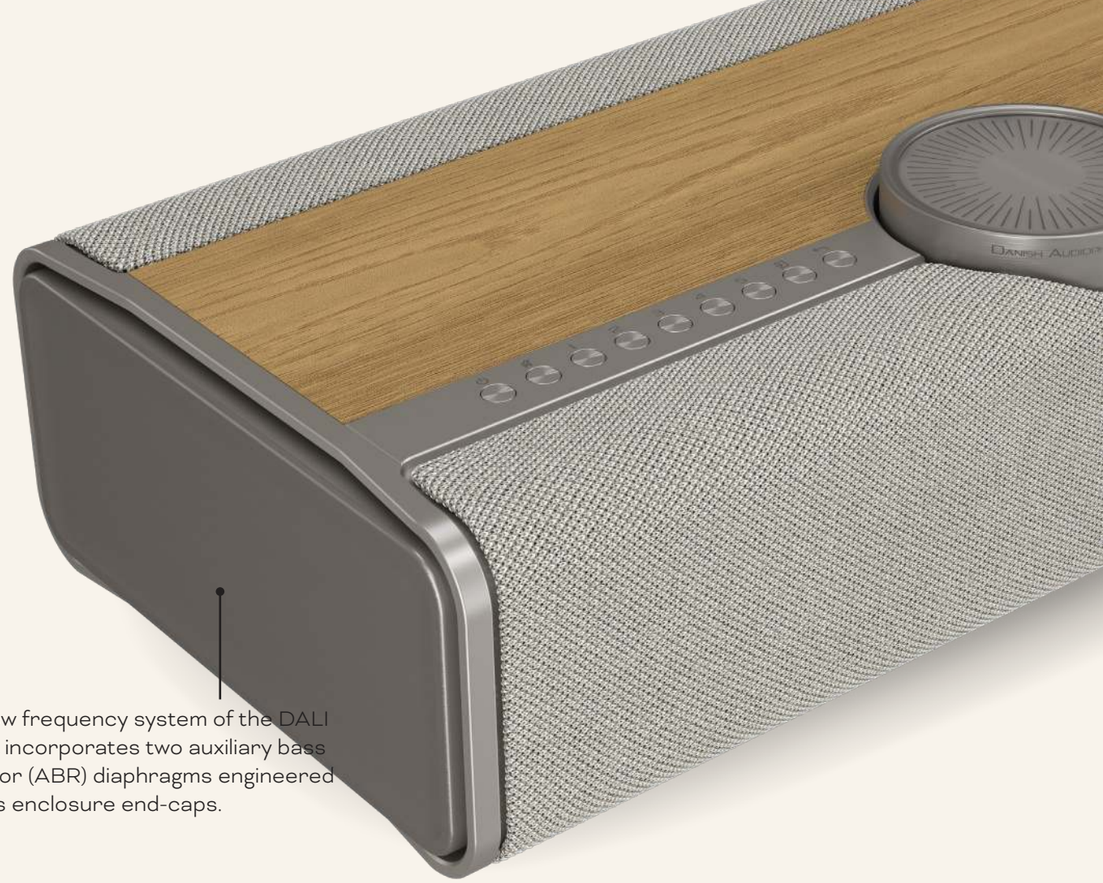


DALI VEGA DESIGN HIGHLIGHTS

The DALI VEGA is much more than just the sum of its parts - though many of those parts, and the way they've been designed and engineered, are truly extraordinary. To celebrate this, and because a picture often speaks louder than words, we've curated a gallery showcasing some of the key design and engineering highlights of VEGA.



Experience the ultimate in luxury with our carefully crafted volume control dial ensuring precise and stable control and a beautifully smooth, weighted feel.



The low frequency system of the DALI VEGA incorporates two auxiliary bass radiator (ABR) diaphragms engineered into its enclosure end-caps.

LIFE SOUNDS BETTER WITH DALI VEGA

With the launch of the VEGA, you can finally enjoy the full DALI experience - everything the brand stands for, delivered in one extraordinary compact music system: the design philosophies, the engineering values, the manufacturing quality, and best of all the unswerving commitment to music and sound quality, in a stand-alone high performance music player.

The VEGA is an immensely versatile, easy to use and delightfully designed expression of everything that DALI stands for – easy access to beautifully reproduced music. VEGA is designed to be everything for everyone. It can be the centerpiece of a compact high-end Hi-Fi setup, provide a gentle musical backdrop in the kitchen, bring focus to a study, add warmth to a lounge, or become a stylish feature in the bedroom.

Every moment, in any place, it fills your life with beautiful music

DALI VEGA

.dali-speakers.com