MERIDIAN

DSP9 DIGITAL ACTIVE LOUDSPEAKER

ACOUSTIC AND VISUAL MASTERPIECE

CONTENTS

THE DSP9 - AN INTRODUCTION

DSP9 is our first digital loudspeaker to showcase a brand new and iconic cabinet aesthetic. It represents a major advance in the design, aesthetics and performance of Meridian Digital Active DSP loudspeakers, achieving an unrivalled level of sound quality for a loudspeaker of its size. Drawing on a wealth of knowledge in psychoacoustics, many of Meridian's unique technologies are implemented in the loudspeaker. The highest specification components are combined with a new audio architecture to provide new levels of sonic realism.

The DSP9 is is a step change in loudspeaker design. To find out more:

THE DSP9 - INNOVATION AT ITS HEART

■ STUNNING NEW CABINET DESIGN

With the DSP9 our designers and engineers have pushed the boundaries of cabinet design and construction - resulting in a sleeker silhouette featuring elliptical curves, which not only enhance acoustic performance, but also allow it to seamlessly blend into any room.

■ ULTRA-REALISTIC AUDIO IS NOW REALITY

A new design concept, Meridian's Precision Sonic Transport, uses innovative techniques and processes which ensure the entire journey taken by an audio signal through a product maintains maximum sonic fidelity, so that the listener is immersed in authentic and realistic sound.

■ NEW PLATFORM DELIVERS ENHANCED PERFORMANCE

The electronics section of DSP9 utilises the new "R1" electronics platform which combines digital and analogue circuitry deployed in an entirely new layout to to ensure maximum performance.

■ BESPOKE LOUDSPEAKER DRIVE UNIT DESIGNS

All-new drive units are implemented throughout, each of which pushes performance levels to new heights. A new cabinet design is resonance-free, ensuring seamless playback across the entire frequency range.

■ NEW AND UNIQUE DESIGN TO ACHIEVE OUTSTANDING BASS RESPONSE

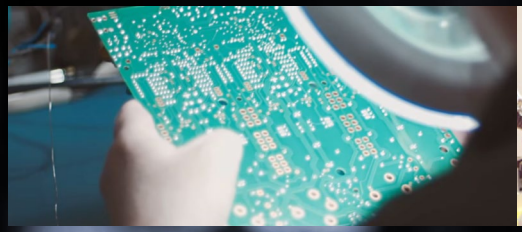
The active design and unique audio architecture enable the DSP9 to produce low-frequency output performance never previously achieved for a speaker of this size.

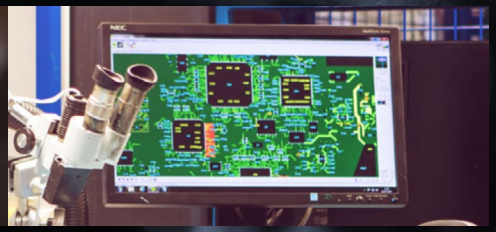
EXTREME ENGINEERING PROGRAMME

Meridian has been at the forefront of audio innovation since it was founded in 1977. To ensure that Meridian continues to lead the way, the company has launched the Extreme Engineering Programme which combines major investment with research into the cutting edge of audio design. Every element of the loudspeaker has been re-imagined including its hardware and software, and this holistic system approach is informed by psychoacoustics and engineered by experts.

The Extreme Engineering Programme draws on Meridian's heritage for creating products which deliver an authentic, natural and lifelike sound. It also has a mission to explore new technologies and new ways of thinking, to ensure that Meridian audio products continue to be world leaders in decades to come.

Our flagship DSP8000 XE was the first Meridian loudspeaker to emerge from our Extreme Engineering Programme and the DSP9 integrates many of the technological advances found in the DSP8000 XE.





TECHNOLOGIES

The DSP9 utilises Meridian's key technologies to deliver outstanding performance. The all-new Atlas Software Core, a future facing audio processing and control platform is host to Meridian's most powerful DSP engine to date. Atlas Software Core enables the implementation of new enhancement technologies and features. It also allows even more performance to be extracted and delivered from Meridian's existing proprietary audio technologies. Discover more :

SIGNAL CONDITIONING	SYSTEM OPTIMISATION	PERFORMANCE MANAGEMENT	PLAYBACK ENHANCEMENT
DIGITAL PRECISION	FFA	PRO-ACTIVE BASS	E3 BASS
Q-SYNC	FREE-Q	PRO-ACTIVE THERMAL	IMAGE FOCUS +
TRUE LINK	PERFECT BALANCE		
TRUE TIME	BESPOKE SIGNAL MAPPING		

PLEASE ROLL-OVER ICONS ABOVE TO LEARN MORE

TECHNOLOGIES

DSP9 IMPLEMENTATION

CHALLENGE

As an audio signal, from any source, travels from an input to the listening environment, there are many opportunities for distortion and interference to occur, over long signal paths or when digital noise interferes with the signal. The result is an unnatural listening experience.

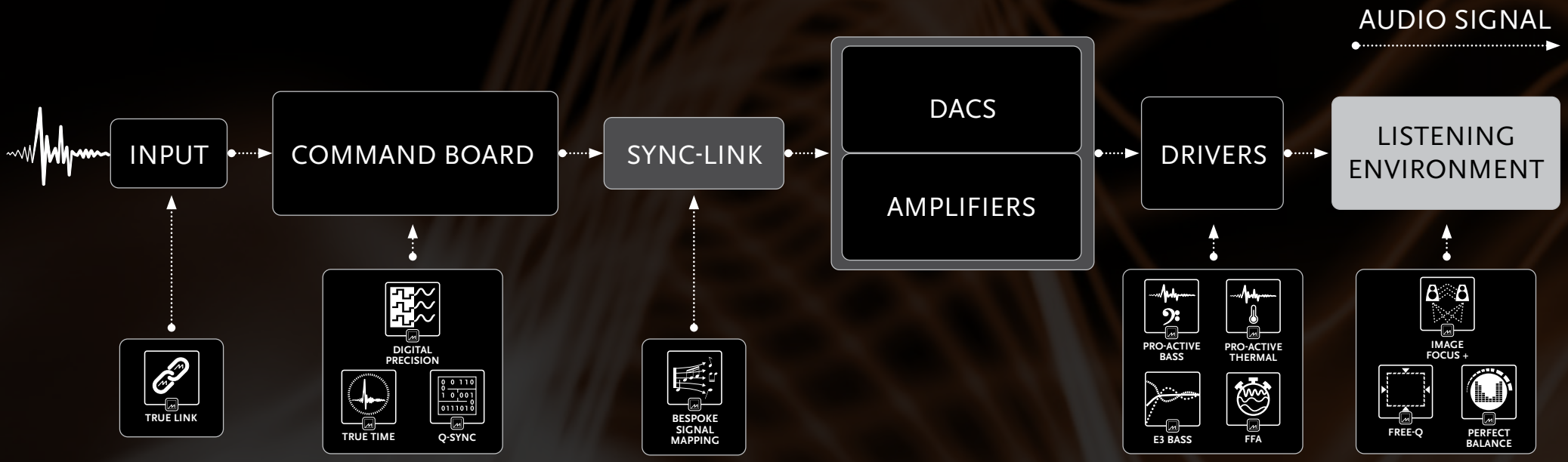
SOLUTION

A new design concept, Meridian's Precision Sonic Transport system, uses a series of innovative techniques and processes which ensure the entire journey taken by an audio signal through a product maintains maximum sonic fidelity. Vital acoustic processes and components are used to isolate the noisy digital signals from the analogue to maintain signal integrity.

RESULT

The purest and most authentic analogue signal is delivered to the drive units.

True authenticity and realism are delivered when the sound arrives at the ear of the listener.



DRIVE UNITS

ULTRASONIC TWEETER

Our Ultrasonic tweeter features a custom matte black steel waveguide which enables pinpoint imaging as well as wide dispersion for a massive sweet spot and total spatial immersion.The surrounding scalloped shaped cabinet is designed to provide smooth dispersion characteristics.

The 25mm beryllium dome delivers an unrivalled combination of lightness and rigidity, creating an accurate reproduction of the music you're listening to, revealing details you may never have heard before. Beryllium is an expensive, super lightweight, high-performance metal. It has an incredibly high strength-to-weight ratio, many times more rigid than Titanium or Aluminium, making it the perfect material to create the most natural, '3-D' sound.

Capable of effortlessly reproducing frequencies in excess of 40kHz.

- Each DSP9 features a 25mm beryllium dome with silver voice-coil featuring a steel custom waveguide to deliver crysytal clear highs
- Custom faceplate is mounted flush to the surrounding cabinet surface.
- Capable of reproducing frequencies in excess of 40kHz.
- Combines pinpoint imaging with wide dispersion to provide a three-dimensional image over a wider listening area.

DRIVE UNITS

EVO MID-RANGE DRIVER

Meridian's next generation mid-range driver plays louder due to its large motor system.

The bespoke 160mm long-throw drive unit, with its distinctive clear cone has a newly developed non-conductive voice coil former for ultra-low distortion.

Designed to deliver detail and clarity of vocals, along with power and dynamics.

The surrounding scalloped shaped cabinet is designed to provide smooth dispersion characteristics.

- Each DSP9 features a newly developed Evo mid-range driver, which delivers unrivalled power whilst sounding natural and lifelike.
- Bespoke 160mm long-throw design with clear cone material.
- Large motor system with newly developed non-conductive voice-coil former.
- Developed from previous designs to play louder and produce less distortion.

DRIVE UNITS

SUBSONIC BASS DRIVERS

Four bespoke, low-frequency, bass drive units selected for their extreme power handling and performance.

With a huge motor system, they effortlessly play down to the lowest frequencies with ease and efficiency.

The bass drivers are housed in a cavity which is isolated from the space around the mid-range driver and tweeter to prevent the forces created inside the loudspeaker by the bass-drivers, from interfering with the performance of the midrange driver and tweeter, even when producing huge amounts of sound energy.

- 4 x all-new 200mm long-throw (24mm excursion) bass drivers with huge motor system and polypropylene cone.
- Two drivers are mounted on each side of the cabinet in Meridian's Force Balanced configuration. This horizontally-opposed arrangement ensures internally-generated pressure waves produced from the back of the bass drivers are cancelled out. As a result, the Force Balanced configuration greatly reduces vibration of the cabinet which would manifest itself as undesirable resonance.

CONSTRUCTION

The new cabinet features our unique sculpted design to make it aesthetically pleasing and provide enhanced sonic benefits. The curvature of the exterior minimises unwanted diffraction of the sound produced by the loudspeaker. As soundwaves pass over the edges of a cabinet which features flat surfaces, diffraction scatters the sound in multiple directions into the room.

The DSP9 ensures performance is controlled and integrated to provide seamless realism across the entire frequency range and delivers an unrivalled, low-frequency performance for its size.

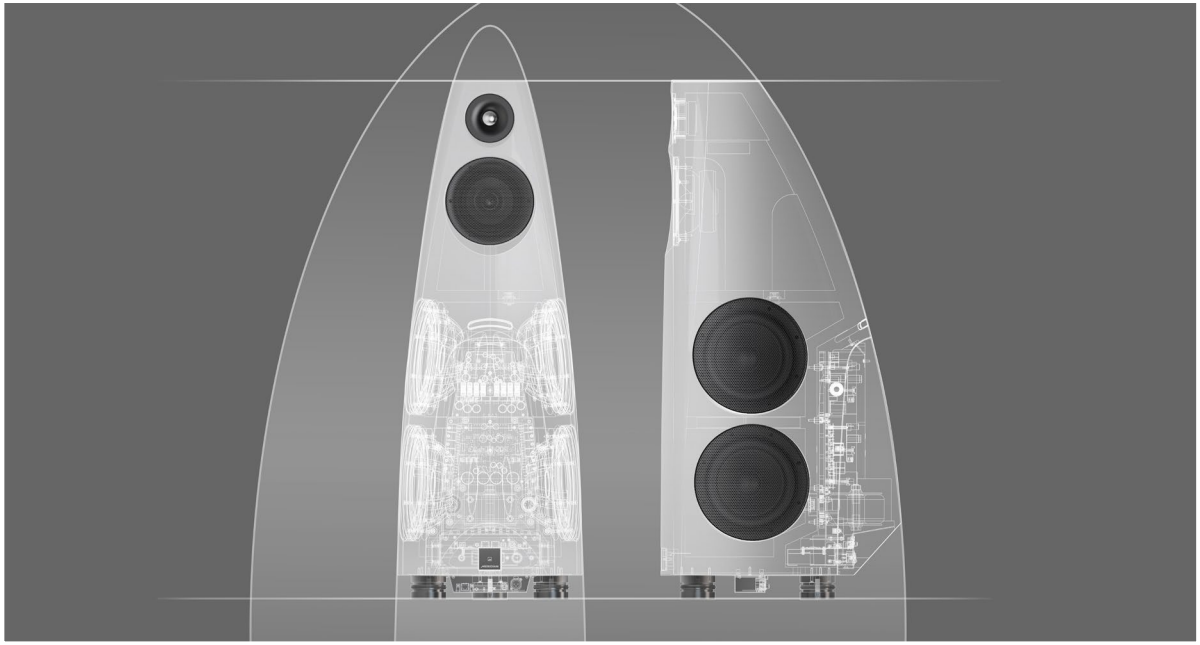
Advanced engineering was used to create the sophisticated three-dimensional space within the cabinet, which features two seperate enclosures. The upper enclosure carries the tweeter and mid-range driver, while the lower houses the four bass drivers and the electronics section. This has a major influence on perceived sound quality, as this area of the audio spectrum includes frequencies to which human hearing is most acutely honed. This separation prevents the forces created inside the loudspeaker by the bass drivers from interfering with the performance of the midrange driver and tweeter, even when producing huge amounts of sound energy. Two bass drivers are mounted on each side of the cabinet in Meridian's Force Balanced configuration, to ensure internally-generated pressure waves produced from the back of the bass drivers are cancelled out which greatly reduces vibration of the cabinet.

The curved lines, based on an ellipse, contribute to rigidity and avoid parallel internal surfaces, to help scatter pressure waves generated within the cabinet, thus more rapidly diminishing unwanted standing waves. New materials have been used in the manufacturing process which allowed our designers to create sophisticated three-dimensional spaces within the cabinet. Precision machined MDF with internal resin coating and substantial internal bracing are used creating an incredibly inert cabinet which underpins the overall performance of the loudspeaker.

CONSTRUCTION

Designed to be ‘acoustically invisible’, the DSP9 cabinet has been engineered for maximum internal volume, rigidity and inertness.

By removing any unwanted resonances and vibrations that could colour or distort the original piece, the cabinet metaphorically ‘disappears’, allowing the original performance to take centre stage. The unique cabinet design reduces sound colouration, allowing maximum bass punch, without compromising the higher frequencies.



A SHAPE THAT REFLECTS OUR HERITAGE

The elliptical form is a design signature repeated throughout the Meridian product range and has an important aesthetic benefit. The arching curve of the ellipse creates a sleeker, more refined silhouette and when viewed from any angle the silhouette of the cabinet narrows towards the top of the loudspeaker. The DSP9s are beautifully proportioned, appearing sleek, yet purposeful. They are designed to make a statement in a wide range of room sizes, while not visually overpowering the space.

CONSTRUCTION

ANTI-RESONANCE CLAMP RINGS

Each of the mid-range and bass drivers is mounted to the cabinet using a combination of a rigid aluminium clamp ring on the outside of the cabinet and four sturdy steel clamping sections inside the cabinet to prevent any undesirable vibration or resonance from the drive-unit to cabinet junctions.

GRILLES

New custom-tooled, flush fit, matte black steel grilles are fitted to the mid-range and bass drivers. These offer protection for the drivers while maintaining an uninterrupted silhouette to the sculptured form of the cabinet. The grilles have a large open surface area, providing maximum acoustic transparency and are securely mounted for zero resonance.

OPTIMISING ADJUSTABLE FEET

The DSP9 stands on triangulated adjustable machined foot-assemblies with provision for floor-spikes or skids. The feet are secured into the cabinet through a thick aluminium mounting plate which holds the feet securely in place, creating a direct connection with the floor surface.

Designed to acoustically isolate the cabinet from any unwanted resonances from the floor, the feet are a vital element in the overall cabinet design and provide an audible contribution to performance.

ELECTRONICS

At the heart of the all-new “R1” electronics section, there is an all-new sophisticated command board which carries the loudspeaker’s powerful and flexible DSP (digital signal processing) as well as the circuitry which controls all aspects of the loudspeaker’s functionality.

Digital audio is handled with great precision using oscillators with the lowest jitter, and an improved output clock ensures digital signals retain their integrity throughout the audio path. Meridian’s Bespoke Signal Mapping technology separates the sound into three separate channels covering the audio spectrum, which are then passed on to be converted into analogue audio signals. All three signals leave the command board while still in digital form.

Three of these channels cover the whole frequency range in the form of treble, middle and bass. The treble channel feeds the tweeter, middle feeds the mid-range and the bass channel is used to feed the pair of bass drivers, as a result the 20Hz bass response is delivered with immense speed and accuracy.

The DSP9 features Meridian’s Sync-Link system to pass digital audio via shielded RJ45 links from the command board to two DAC boards. This provides the four separate DACs that are used for treble, mid-range, bass and sub-bass channels. The DAC boards are mounted directly above the two amplifier boards with each board hard-wired to the inputs of their associated amplifiers via extremely short balanced audio connections. This reduction in the length of the analogue audio paths minimises the potential for interference on the analogue signals. In addition, each DAC board receives its own exceptionally clean, double-regulated power from dedicated low-noise analogue circuitry. This greatly improves the electrical isolation between the digital and analogue circuitry which reduces crosstalk.

ELECTRONICS

AMPLIFIERS

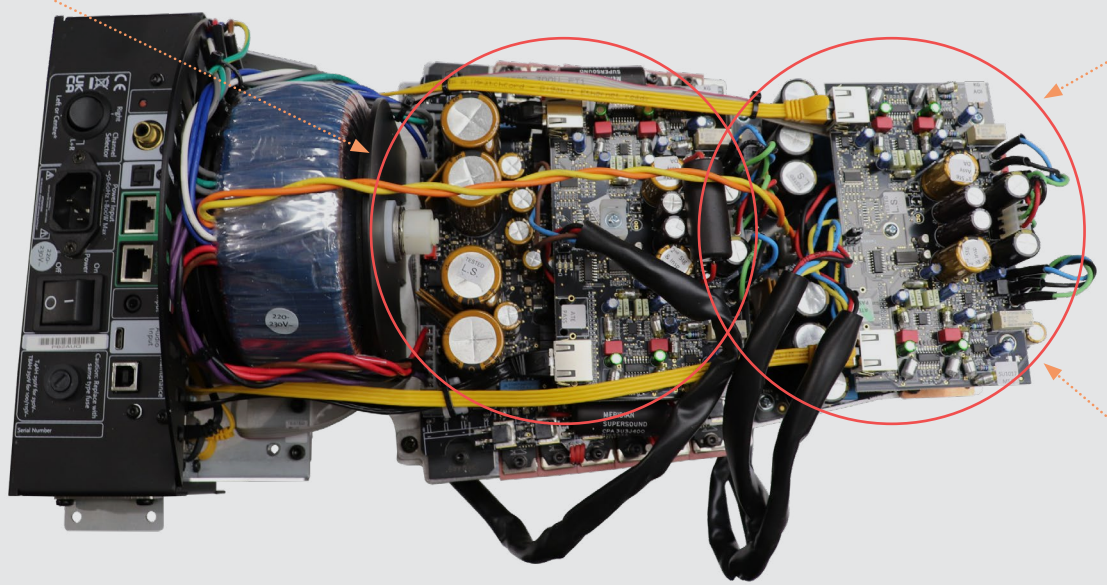
The amplifiers for the tweeter and mid-range driver are Class AB designs based on the topology developed by Meridian for the Reference 857 Amplifier. Each amplifier is capable of delivering 150W into 4Ω and provides incredibly low noise and distortion under all conditions. The units features a large heatsink for efficient thermal management.

Each of the four bass drivers is fed from a bridged pair of high capacity Class-D amplifiers with post filter feedback; each pair is capable of delivering 240W into 4Ω.

The DSP9 features a highly efficient "Low Power Standby" power supply, whilst the main power supply is based on an over-specified bespoke toroidal transformer which has been designed to eliminate mechanical noise. It includes windings dedicated to the digital circuitry as well as independent windings for each of the amplifiers. To achieve a seismic bass performance, DSP9's amplifiers have been designed and specified for maximum power and efficiency with minimum heat and noise.

BASS

- 4 bridged pairs of Class-D amplifiers - each pair capable of greater than 240W into 4Ω, < 1% THD.
- THD + noise @ 1kHz < 0.008%



HIGH

- 1 x Class AB, capable of greater than 150W into 4Ω, < 1% THD
- THD + noise @ 1kHz < 0.005%
- Bandwidth >100kHz

MID

- 1 x Class AB, capable of greater than 150W into 4Ω, < 1% THD
- THD + noise @ 1kHz < 0.005%
- Bandwidth >100kHz

CONNECTIVITY

The DSP9 features comprehensive connectivity options.

INPUT

- 1 x Meridian SpeakerLink input connectors (RJ45)
- 1 x co-axial digital audio [RCA phono] supporting up to 192kHz @ 24-bit
- 1 x optical digital audio [Toslink] supporting up to 96kHz @ 24-bit
- 1 x USB digital audio [type C] supporting up to 384kHz @ 24-bit
- Bluetooth via the Meridian B-Link [supplied]
- 1 x balanced analogue audio [XLR] on IA21 Analogue Input Module
- 1 x unbalanced analogue audio [RCA phono] on IA21 Analogue Input Module

OUTPUT

- 1 x Meridian SpeakerLink input connectors (RJ45)

REAR PANEL

The SpeakerLink (RJ45) connections carry audio and control signals when the loudspeakers are used with other Meridian equipment. Other digital audio sources can be connected to the loudspeakers via the digital co-ax, optical, and USB audio connections.

The mains power switch, channel selector switch and reset button are easy to access, helping simplify installation. The infra-red input and USB maintenance socket provide additional options for control and automation of the loudspeakers.

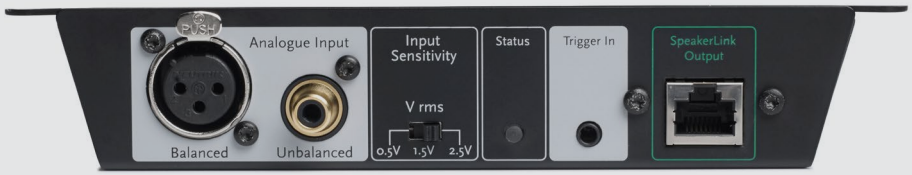
CONNECTIVITY

IA21

Supplied with each DSP9 loudspeaker, the analogue input module allows the loudspeakers to be used in non-Meridian systems. The module mounts to the underside of the loudspeaker and is connected using a single SpeakerLink cable (also supplied).

Once installed, the module causes the loudspeaker to automatically configure itself ready for use in this way. The module accepts a variable line-level analogue input in either balanced (XLR) or single-ended (RCA phono) form. The three-way input sensitivity switch allows a wide-range of third-party pre-amplifiers as well as other sources with a variable output to be used.

A signal-sense detect system automatically activates the loudspeaker when it receives audio and switches it to standby if no audio is played for approximately 20 minutes. Alternatively, the trigger connection (3.5mm minijack) can be used to remotely switch between On and Standby mode from a suitable device, or the loudspeaker can be set to remain on whenever it is powered.



MERIDIAN B-LINK

The Meridian B-Link is a multipurpose device supplied with each pair of DSP9 loudspeakers. It connects to the SpeakerLink input on the Master loudspeaker. The B-Link enables audio to be streamed to the loudspeakers from a Bluetooth device such as a smartphone, tablet or computer.

The B-Link also allows control of the loudspeakers from a phone or tablet via the Meridian Control app. The app provides an intuitive interface for adjusting volume level, switching the loudspeakers on and off and gives access to other settings such as Treble and Bass. It also allows selection of any other sources which may be connected directly to the loudspeakers.

In addition, the B-Link can be used to access and select set-up menus which are used during the installation of the loudspeakers. This includes the “Position” setting which uses Meridian’s Free-Q technology to optimise the low-frequency performance of the loudspeakers to suit their location in the room. Such installation settings are stored in the loudspeakers’ non-volatile memory, so they are retained even if the B-Link is disconnected and put aside.

PERFORMANCE

DSP9 is the second loudspeaker to emerge from Meridian's groundbreaking Extreme Engineering Programme; a result of years of investment and research at the extreme edge of audio design and built upon the fundamental and unique elements of Meridian's approach to delivering authentic, natural and lifelike sound.

The electronics section of DSP9 utilises the new "R1" electronics platform which combines digital and analogue circuitry deployed in an entirely new layout to deliver outstanding fidelity, dynamics and sheer power. The DSP9 is designed to deliver an incredible experience in cinemas and listening rooms alike.

HIGHLIGHTS

- Peak SPL: 119dB@1m for a single loudspeaker
- Frequency response in room within 3dB: 20Hz – 40kHz
- Electronic platform resolution 176kHz/192kHz at up to 24-bit precision
- Multiple amplifiers:
  Tweeter and Mid-range - each >150W into 4Ω, Class AB
  Bass – four bridged pairs, each pair >240W into 4Ω, Class D
- 6 drive units:
  Tweeter - 1 x Ultrasonic tweeter, 25mm beryllium dome with custom waveguide
  Mid-range - 1 x EVO mid-range, bespoke 160mm with clear cone
  Bass Drivers - 4 x bass drivers, 200mm with long-throw, polypropylene cone
- Hi-Res compatible

MARKETING RESOURCES

Our marketing team have created a suite of materials and resources for our flagship DSP9.

DATASHEET

AT A GLANCE

MARKETING TOOLKIT

VIDEOS

BEAUTY FROM EVERY ANGLE

Explore the DSP9

BRITISH AUDIO TECHNOLOGY PIONEERS

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