

# DSP9

# DIGITAL ACTIVE LOUDSPEAKER



## DATASHEET

## OVERVIEW

DSP9 is a product of Meridian's Extreme Engineering programme, a result of years of investment and research at the extreme edge of audio design. The loudspeaker employs our Precision Sonic Transport design concept which ensures the entire journey taken by audio signals through the product maintain maximum sonic fidelity. The DSP9 combines a striking new cabinet design with many of Meridian's unique technologies to achieve a level of performance never previously achieved on a loudspeaker of this size.



## USER FEATURES

- Powerful and flexible audio settings. These include day-to-day controls such as *Treble*, *Bass*, and *Balance*, and other settings, including *Position*, which relate to installation. The settings can be accessed and adjusted from a connected Meridian controller product, or via the Meridian B-Link device supplied.
- Meridian B-Link, supplied with the DSP9, supports Bluetooth® wireless technology, allowing the loudspeakers to play audio wirelessly from a Bluetooth device such as a smartphone, tablet or computer. B-Link also provides the option of control from iOS and Android devices via the Meridian Control app.
- Controllable via IR, USB, RS232 or from other Meridian controller products.
- USB audio input provides a direct connection for playing sound from a computer. Supports signals with sampling rates up of to 384kHz @ 24-bit resolution.
- Fitting the IA21 Analogue Input Module (supplied) changes the functionality of the DSP9 so it can be fed from any non-Meridian product or system which features a balanced or unbalanced line-level analogue output.

## DRIVE UNITS



### ULTRASONIC TWEETER

- 25mm beryllium dome with silver voice-coil, steel custom waveguide.
- Combines pinpoint imaging with wide dispersion to provide a three-dimensional image over a wide listening area.
- Surrounding scalloped shaped cabinet, to provide smooth dispersion characteristics.
- Capable of reproducing frequencies in excess of 40kHz.



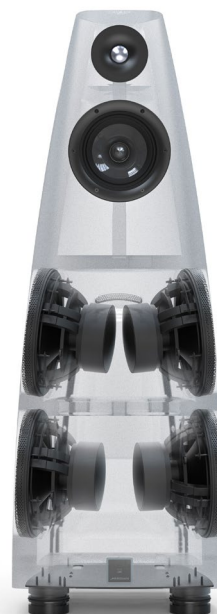
### EVO MID-RANGE DRIVER

- Meridian's Evo mid-range driver.
- Bespoke 160mm long-throw design with clear cone.
- Large motor system with newly developed non-conductive voice-coil former.
- Outputs high sound levels with ultra-low distortion.



### SUBSONIC BASS DRIVERS

- 4 x 200mm long-throw (24mm excursion) bass driver 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 cancel out each other. As a result, the Force Balanced configuration greatly reduces vibration of the cabinet which would manifest itself as undesirable resonance.
- The upper pair of bass drivers are fed with frequencies up to the crossover point of the mid-range driver, while the lower pair is dedicated to reinforcing only the lower bass frequencies. This provides the DSP7 with bass which extends to the lowest depths while remaining remarkably clear and controlled.



# CONSTRUCTION

Not only do the beautifully sculpted lines of the DSP9 make it aesthetically pleasing, they also provide a sonic benefit to the loudspeaker. 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 cabinet is scalloped around the midrange driver and the tweeter to allow the soundwaves they create to flow smoothly into the room. This carefully designed shaping avoids having a unwanted step in the path of the waves which would impede them, scattering the sound in an undesirable fashion.

When viewed from any angle, the silhouette of the cabinet narrows towards the top of the loudspeaker. This helps diminish any impression of bulkiness which afflicts the appearance of some loudspeakers with comparable overall dimensions. The DSP9s are beautifully proportioned. They appear sleek and yet purposeful, they can make a statement in a wide range of room sizes, while not visually overpowering the space.



Advance engineering was used to create the sophisticated three-dimensional spaces within the cabinet. The bass drivers are housed in a cavity which is isolated from the space around the mid-range driver and tweeter. 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. The loudspeaker remains able to successfully project the complex mix of frequencies which build the audible picture we humans use to understand the world around us.

# ELECTRONICS

At the heart of the electronics section, the Command board carries the loudspeaker's DSP (digital signal processing) as well as the circuitry which controls all aspects of the loudspeaker's functionality.

Meridian's Bespoke Signal Mapping technology performs the task of a "digital crossover", separating the sound into separate audio channels for treble, mid-range and bass frequencies. These three signals leave the command board while still in digital form.

The DSP features Meridian's Sync-Link system to pass digital audio via shielded RJ45 cables from the Command board to two DAC boards, each of which carries two channels of D/A conversion. One DAC board converts the treble and mid-range channels separately from each other, the other board deals with the bass.

The DAC boards are mounted directly above the two amplifier boards. This reduces the length of the analogue audio paths which minimises interference on the analogue signals. Each DAC board receives its own power from ultra-low noise linear regulators which greatly improves the electrical isolation between the digital and analogue sections.



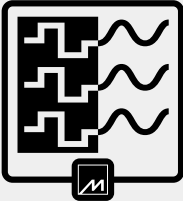
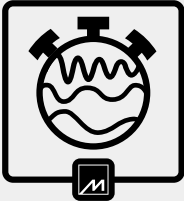
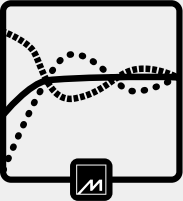
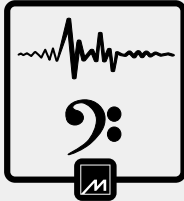
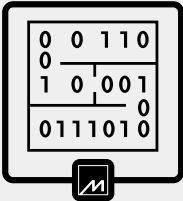
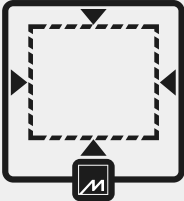
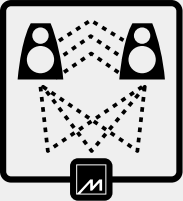
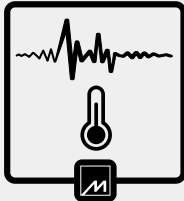
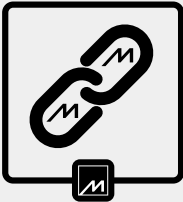

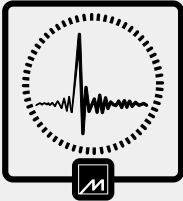
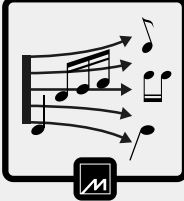
The amplifiers for the tweeter and mid-range driver are Class-AB designs capable of delivering 150W into 4Ω with extremely low noise and distortion under all conditions.

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

Power is provided by a bespoke toroidal transformer featuring independent windings for each amplifier as well as the digital circuitry. A separate low-power supply operates when the loudspeaker is in standby mode.



# TECHNOLOGIES

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

# CONNECTIVITY

## REAR PANEL



The DSP9 has multiple connectivity options which are identical to those on the DSP8000XE.

The SpeakerLink (RJ45) connections carry audio and control signals when the loudspeakers are used with other Meridian equipment.

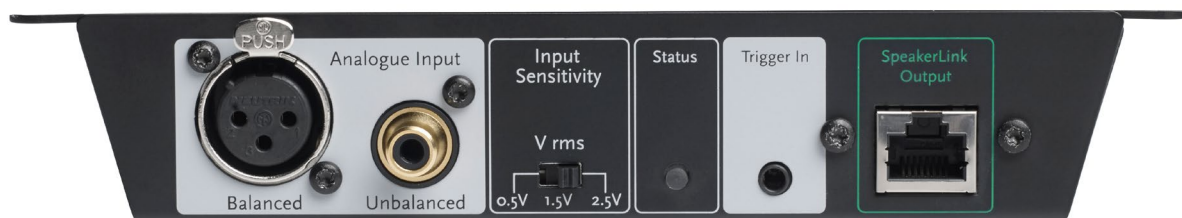
Other digital audio sources can be connected to the loudspeakers via the digital co-ax, optical, and USB audio connections.

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.

## IA21 ANALOGUE INPUT MODULE

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.



# CONNECTIVITY



## 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. A suitable cable is provided for this purpose. 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 accessing 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.

# SPECIFICATION

INPUT CONNECTIVITY	<ul style="list-style-type: none"> <li>• 1 x Meridian SpeakerLink connector [RJ45]</li> <li>• 1 x co-axial digital audio [RCA phono] supporting up to 192kHz @ 24-bit</li> <li>• 1 x optical digital audio [Toslink] supporting up to 96kHz @ 24-bit</li> <li>• 1 x USB digital audio [type C] supporting up to 384kHz @ 24-bit</li> <li>• Bluetooth via the Meridian B-Link [supplied]</li> <li>• 1 x balanced analogue audio [XLR] on analogue input module</li> <li>• 1 x unbalanced analogue audio [RCA phono] on analogue input module</li> </ul>
OUTPUT CONNECTIVITY	<ul style="list-style-type: none"> <li>• 1 x Meridian SpeakerLink connector [RJ45]</li> </ul>
CONTROL OPTIONS WITHOUT ANALOGUE INPUT MODULE	<ul style="list-style-type: none"> <li>• Meridian comms via SpeakerLink</li> <li>• Bluetooth via Meridian B-Link module [supplied] and the Meridian Control app</li> <li>• Integrated IR receiver</li> <li>• External IR receiver connection</li> <li>• RS232 via SpeakerLink input</li> <li>• USB via Maintenance connection</li> </ul>
CONTROL OPTIONS WITH ANALOGUE INPUT MODULE	<ul style="list-style-type: none"> <li>• Automatic signal-sense detect. Switch on detect time less than three seconds; switch to standby time-out approximately 20 minutes.</li> <li>• Trigger input on analogue input module [3.5mm minijack]</li> </ul>
PERFORMANCE	<ul style="list-style-type: none"> <li>• Peak SPL: 119dB@1m for a single loudspeaker</li> <li>• Frequency response in room within 3dB: 20Hz – 40kHz</li> </ul>
TWEETER AMPLIFIER	<ul style="list-style-type: none"> <li>• Class AB, capable of greater than 150W into 4Ω, &lt; 1% THD</li> <li>• THD + noise @ 1kHz &lt; 0.005%</li> <li>• Bandwidth &gt;100KHz</li> </ul>
MID-RANGE AMPLIFIER	<ul style="list-style-type: none"> <li>• Class AB, capable of greater than 150W into 4Ω, &lt; 1% THD</li> <li>• THD + noise @ 1kHz &lt; 0.005%</li> <li>• Bandwidth &gt;100KHz</li> </ul>
BASS AMPLIFIERS	<ul style="list-style-type: none"> <li>• Four bridged pairs of Class-D amplifiers - each pair capable of greater than 240W into 4Ω, &lt; 1% THD</li> <li>• THD + noise @ 1kHz &lt; 0.008%</li> </ul>
TWEETER	<ul style="list-style-type: none"> <li>• 25mm beryllium dome with silver voice-coil, steel custom waveguide</li> </ul>
MID-RANGE DRIVERS	<ul style="list-style-type: none"> <li>• 1 x 160mm with non-conductive voice-coil former and anti-resonance clamp-ring mounting system</li> </ul>
BASS DRIVERS	<ul style="list-style-type: none"> <li>• 4 x 200mm polypropylene long-throw [up to 24mm excursion] with anti-resonance clamp-ring mounting system</li> </ul>
FRONT-PANEL INDICATOR	<ul style="list-style-type: none"> <li>• Blue in Standby, White in use [can also be unlit in use]</li> </ul>
REAR-PANEL CONTROLS	<ul style="list-style-type: none"> <li>• Power On/Off, channel selector switch, input sensitivity switch [on analogue input module]</li> </ul>
DIMENSIONS/WEIGHT	<ul style="list-style-type: none"> <li>• WIDTH: 392mm [15.43in ] tapering to 158mm [6.2in]</li> <li>• DEPTH: 511mm [20.1in] tapering to 187mm [7.4in]</li> <li>• HEIGHT*: 1101mm [43.5in]*</li> <li>• WEIGHT: 68kg [149.9lbs]</li> </ul>
LOUDSPEAKER PACKED	<ul style="list-style-type: none"> <li>• WIDTH: 660mm [26.0in]</li> <li>• DEPTH: 550mm [21.7in]</li> <li>• HEIGHT*: 1240mm [48.8in]*</li> <li>• WEIGHT: 80kg [176.4lbs]</li> </ul>

\*With feet/spikes fitted

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