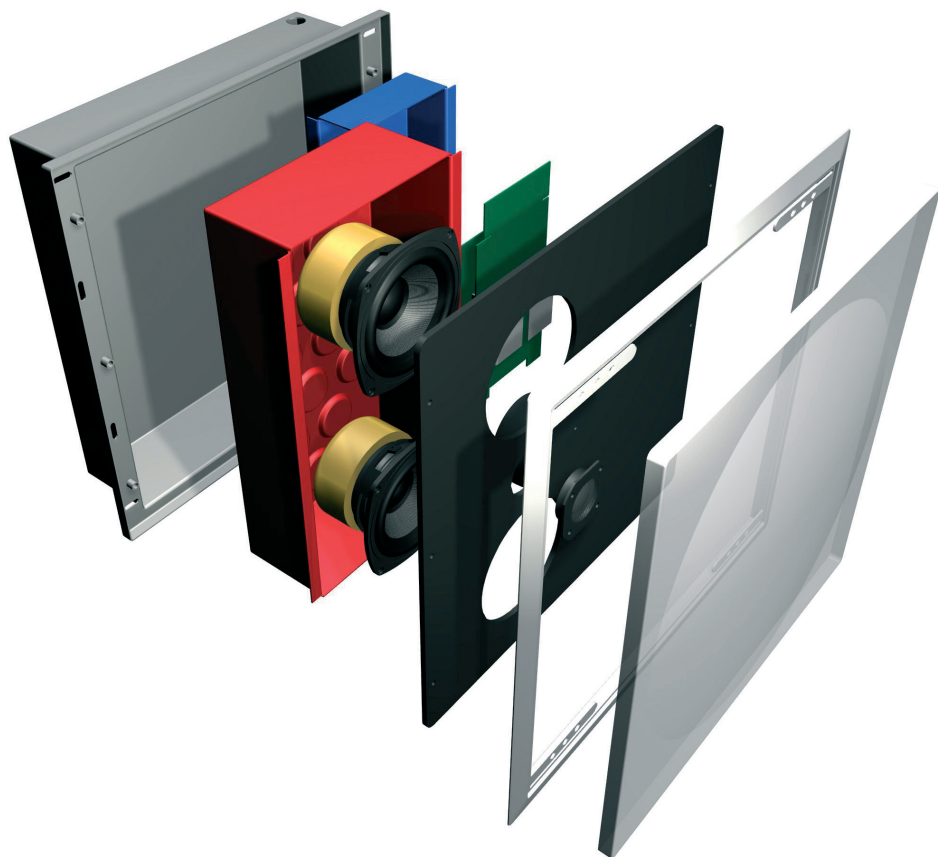




DSP420

Digital Signal Processing Active Installation Loudspeaker



Background

In-wall loudspeakers are not a new invention. Indeed they have been employed for many years by installers who wish to provide an unobtrusive audio solution to customers who have been unwilling or unable to install conventional free-standing loudspeakers.

However, the design restraints generally imposed on an in-wall design – limited space and thus limited enclosure volume, physical limitations on materials and other restrictions – have meant that in-walls have traditionally offered a level of quality and performance that has lagged some distance behind their free-standing counterparts.

Meridian's DSP420 breaks that mould with an in-wall loudspeaker that is a cut above the rest. Inside each unit, Meridian's unique high technology digital signal processing is used to free the sound from the walls: the result is clear and open with a wide response, very much in line with the performance of Meridian's smaller free-standing DSP-based

loudspeaker models, and with a similar character, enabling in-wall and free-standing speakers to be combined in a single system as required.

As a result, the DSP420 has become one of Meridian's most popular loudspeakers. Now it's been redesigned to include Meridian's innovative Cat 5-based SpeakerLink interfacing system, for rapid simple installation, carrying audio and control signals down a single cable. In addition, the back-box available for both units has been redesigned to permit easier and quicker installation.

Truly Active In-Walls

The DSP420 is a truly active in-wall speaker with separate internal amplification for high and low frequency bands. Rated at 65 and 85 Watts respectively and using carefully selected bipolar output devices, the idealised low feedback designs are based on those used in other Meridian loudspeakers to deliver exceptionally fast bass response and high resolution.

Product Highlights

The world's first DSP In-wall based on technology used in Meridian's famous DSP speakers

Includes Cat5-based SpeakerLink for simple, fast installation

Easy-install sealed pre-construction enclosure with redesigned, simplified back-box

Double sealed and damped acoustic enclosure

Separate, on-board, 85W bass and 65W treble power amplifiers

2 way active speaker with DSP crossover

Custom paintable grille/frame

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These amplifiers are coupled directly to the drive units for the most efficient delivery of power and the best possible control over driver excursion. The DSP420 exhibits extremely low levels of noise and distortion, aided by careful star earthing, while the power supply includes a substantial toroidal transformer and audiophile-grade capacitors.

Meridian DSP

The DSP420 accepts digital input signals up to 96kHz/24bit, including Meridian High Resolution (MHR) streams from Meridian Surround Controllers, Processors and DVD Players.

Enclosed in a fully shielded housing, Meridian's unique DSP processing is performed on a specially-designed six-layer PCB using a powerful 100 MIPS Motorola DSP engine. Thanks to this sophisticated audio computer, the DSP420 embodies identical high-technology features to those found throughout the Meridian DSP Loudspeaker family. These include:

- Position control to compensate for speaker location
- FIFO memory buffer at the input for the lowest possible jitter
- Linear-phase crossover for precision drive unit integration
- Tweeter delay for perfect driver alignment
- 48-bit resolution volume control
- Minimal frequency equalisation, delivering a frequency response free from drive unit or electronic colouration
- Transparent tone controls
- Absolute phase control
- Phase-corrected balance control

Active Bass Extension

A further DSP-enabled enhancement to the audio performance of the DSP420 is Meridian's active bass extension. This deepens the response of the system without excessive woofer excursion and in turn produces a convincingly 'big box' sound from an in-wall unit. At moderate volumes, a psychoacoustically-correct filter significantly extends the bass response, while at high volumes dynamic DSP bass protection is used to prevent the woofers from bottoming.

New back-box

In addition, a redesigned back-box is available, featuring several design improvements based on installer feedback from the original design. Audio and power interfacing are built into fire-retardant boxes. Power is hard-wired into the back-box and supplied to the speaker assembly via an IEC connector, while audio and control signals are carried via Meridian's SpeakerLink system, which allows balanced digital audio and communications to be carried by a single Cat 5 STP cable, thus helping to maximise the speed and efficiency of installation.

Acoustics

The DSP420 front baffle and acoustic back box are made from aluminium. This offers very low resonance at low frequencies and is further damped by the incorporation of stiffening into the back-box.

Additional high frequency damping means that the whole system suffers exceptionally low cabinet colouration and delivers excellent mid-range transparency. All damping materials have been fully tested and in all cases comfortably meet or exceed building regulations for in-wall design.

The bass drive units are two parallel 5in woofers with cast alloy chassis, carbon fibre cones and very large shielded magnets that provide excellent drive and control.

The aluminium-domed tweeter has a Neodymium magnet and a protective grille, while an acoustically transparent grille protects the front baffle and drive units from harm when installed. Its powder finish means the grille can be easily painted, helping the unit to blend in with its surroundings.

Outline Specifications

Connections

Digital input: 1 x balanced digital (AES/EBU) input on RJ45. 32kHz – 96kHz sampling rates.

Digital output: 1 x RJ45 with balanced digital audio and control for a second loudspeaker. 9-pin D connector for RS232 PC setup and control, null modem, 9600 baud, 2N1, no handshake.

Digital formats

44.1–96kHz. FIFO locks at 44.1, 48, 88.2, or 96kHz $\pm$ 150ppm. PCM using SPDIF/IEC60958, or MHR connection support with auto-detection.

Signal processing

1 x Motorola 56364 running at 100MHz.
1 x 24-bit Multi-bit delta-sigma DAC with 128x oversampling.
Crossover linear-phase $\pm$ 30° at 2.3kHz.

Output stages

Power amplifiers: Low feedback complementary bipolar design, with output-stage error correction and twin loop design.
Bass: 85W RMS.
Treble: 65W RMS.

Acoustic

Bass drive units: 2 x 127mm (5in) carbon fibre custom drivers, cast alloy chassis.
Treble drive unit: 1 x 25mm (1in) aluminium dome, neodymium magnet, with protective grille.

Characteristics

Distortion: Typically <0.01%, or <0.05% up to full power at all frequencies.
Noise and hum: <-95dB at all volume settings.
Acoustic output: Typically >104dB spl @ 1m.
Acoustic noise: <15dB spl @ 1m.
Frequency response: 55Hz-20kHz $\pm$ 3dB

Cabinet

Aluminium front baffle with sealed, mechanically dampened and insulated acoustic enclosure.

Dimensions *These are approximate: confirm with install drawings before installation.*

Grille Frame 450mm (17.7in) square
Rough-in box 417mm square (bezel); main body 357mm x 388mm (w x h)
Hole cutout 420mm (16.54in) square approx.
Weight: 8.5 kg (18.7 lb) main unit without frame, grille or connection boxes.

Power

100-125; 200-250V AC 50-60Hz.
6VA idle; 200VA max.

Weight

35kg packed.

Available accessories

Meridian System Remote Plus (MSR+).
G12 Remote Eye for remote control reception.
Meridian SpeakerLink cables (available in various lengths).

Meridian Audio reserves the right to amend specifications without warning.