



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. Following its success, and in response to customer demand, an active analogue variant, the M420, is now available, with the same bass drivers and power amplifiers as the DSP version. In addition, the back-box available for both units has been redesigned to permit easier and quicker installation, including BNC connectors on the digital version and XLRs on the analogue.

Truly Active In-Walls

The DSP420 and M420 are truly active in-wall speakers 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. These amplifiers are coupled directly to the drive units for the most efficient delivery of power and the best possible control over driver excursion. Both analogue and digital variants exhibit 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.

DSP420

Digital Signal Processing
In-Wall Loudspeaker System

M420

Analogue Active In-Wall
Loudspeaker System

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

New analogue active version also available

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 (DSP420) or analogue line-level (M420) crossover

Custom paintable grille/frame

The DSP420 accepts up to 96kHz/24-bit inputs including Meridian MHR Smart Link. The M420 accepts line-level balanced analogue inputs. Unit is designed to comply fully with international building regulations

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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.

Analogue or Digital – Your Choice

Following the success of the original DSP420, the loudspeaker is now also available in an analogue active version, the M420. The M420 features a balanced line-level audio input (which may be unbalanced), with an XLR link from back-box to speaker unit (the digital unit is connected to the back-box via a 15-pin DSUB cable) and analogue crossover. The amplifiers, bass drivers and enclosure are identical in both variants. In addition, a redesigned back-box is available, common to both units, that features several design improvements based on installer feedback from the original design. Audio and power interfacing are built into fire-retardant boxes. The available redesigned back-box kit includes both analogue and digital input boards, allowing the correct board to be installed as appropriate. While the original screw terminals are retained, digital audio and Meridian Comms connections also employ BNC connectors, while analogue audio is on XLR. Power is hard-wired into the back-box and supplied to the speaker assembly via an IEC connector, thus helping to maximise the speed and efficiency of installation.

Acoustics

The DSP420/M420 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 tweeter (aluminium-domed in the DSP420, silk-domed in the M420) 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

Inputs:	DSP420 —1 x 75Ω coaxial digital input, IEC958 (S/PDIF), 44.1kHz – 96kHz. FIFO locks at 44.1, 48, 88.2, & 96kHz ±150 PPM, PCM & MHR.
Enclosure:	M420 —1 x 300Ω balanced line-level input on XLR connector Aluminium front baffle with sealed, mechanically damped and insulated acoustic enclosure. Baffle finished in textured black enamel. Grille finished in easy-to-paint white powder coat, backed by acoustically-transparent scrim. White moulded custom paintable frame.
Acoustics:	2-way Infinite Baffle enclosure. 2 x 127mm high-efficiency long-throw custom bass drivers, 1 x Meridian 25mm tweeter with aluminium (DSP420) or silk (M420) dome.
Response:	55Hz – 20kHz ±3dB.
Amplification:	Internal 85W woofer, 65W tweeter. 6VA (quiescent) – 200VA (full output).
DSP (DSP420):	100MHz Motorola 56364, Linear Phase Crossover, 96kHz, 24-bit DAC.
Controls & Indicators:	Front baffle controls for power and channel selection. LED indicators for power, lock (DSP version) and thermal warning.
Approx. Dimensions:	Frame 450mm (17.72in) square, depth 102mm (4.02in) Hole cutout 357 x 388mm (14.10 x 15.28in) <i>Note: dimensions are approximate. See installation drawings for detailed information. The DSP420 and M420 are designed to fit standard 16in stud centres.</i>
Approx. Weight:	8.5 kg (18.7 lb) main unit without frame, grille or connection boxes.
Mounting:	Easy-install frame with fire-retardant power and audio connection boxes. Templates provided for both new construction and installation into existing walls/ceilings.

DSP420

Digital Signal Processing
In-Wall Loudspeaker System

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Analogue Active In-Wall
Loudspeaker System



The DSP420 uses the same design principles as the famous Meridian DSP8000 and is perfect for use in a Meridian Digital Theatre® where a discreet appearance is required

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