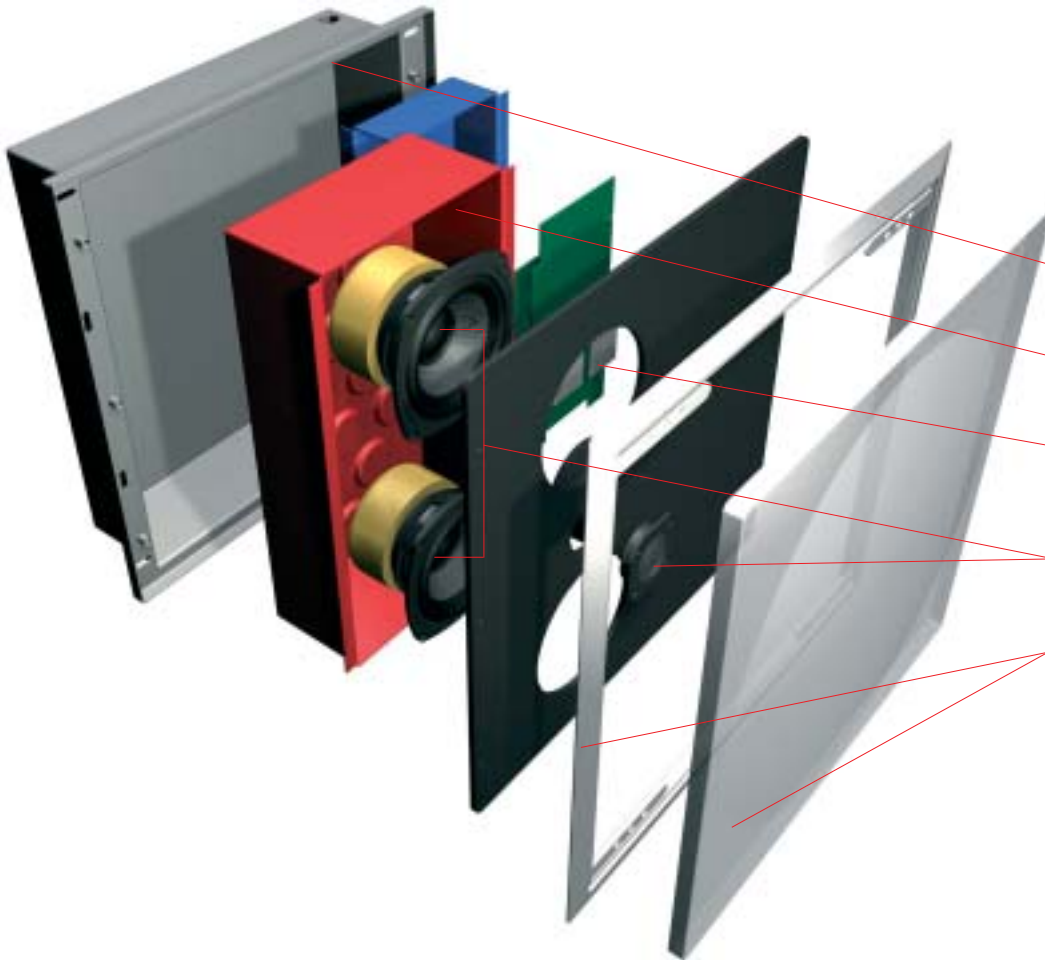


# DSP420

Digital Signal Processing  
In-Wall Loudspeaker System



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

**Easy install sealed pre-construction enclosure**

**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**

*The DSP420 accepts up to 96kHz/24-bit inputs including Meridian MHR Smart Link.*

*This product is designed to comply with international building regulations*

## Background

In-wall loudspeakers are by no means a new invention. Custom installers the world over have used them for years to enable the design and creation of discrete audio and audio-visual solutions.

Through the use of in-wall speakers, an installer can create an environment where the listener need only experience the sound they expect without resorting to more traditional freestanding loudspeakers.

While there are many in-wall loudspeakers currently available, surprisingly, there is very little design variation and all fall foul of the same constraints and limitations. Meridian DSP420 breaks that mould with an in-wall loudspeaker that is a rare breed. Inside each speaker, high technology digital signal processing is used to free the sound from the walls: the result is clear and open with a wide response.

## The Truly Active In-wall

The DSP420 is a truly active in-wall speaker with separate internal amplification for high and low frequency bands. The idealised low feedback designs are based on those used in other Meridian DSP speakers. Rated at 65 and 85 Watts respectively and using carefully selected bipolar output devices, they deliver exceptionally fast bass response and high resolution. The system has extremely low levels of noise and distortion, which is aided through careful star earthing.

The power supply includes a substantial toroidal transformer and audiophile-grade capacitors. These amplifiers are coupled directly to the drive units for the most efficient delivery of power and the best possible control over driver excursion.

## 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.

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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 extends the bass response much further than can be achieved with an analogue speaker of equal size, while at high volumes dynamic DSP bass protection is used to prevent the woofers from bottoming.

### Acoustics

The DSP420's 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 high frequency dome 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 DSP420 to blend in with its surroundings.

### Moving Walls

One of the major advantages of the Meridian Digital Theatre approach is the ability to make changes to audio signals in the time domain. This includes the ability to introduce time delays to each of the channels in a system, giving the listener the impression that the source of the delayed channel has moved further away in space.

With DSP420 loudspeakers installed in the walls of a Meridian Digital Theatre, time domain changes can be used to push back walls and completely change the acoustical characteristics of any sized room. In practice this means the listener experiences a greater impression of size and space within a surround sound system, making both music and movies more immersive and more convincing. Rear and side channel delays can now be used to increase the length and width of your theatre without the need to call in the builders!

### Outline Specification

<b>Inputs:</b>	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.
<b>Enclosure:</b>	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.
<b>Acoustics:</b>	2-way Infinite Baffle enclosure. 2 x 127mm high-efficiency long-throw custom bass drivers, 1 x Meridian 25mm tweeter with aluminium dome.
<b>Response:</b>	55Hz – 20kHz ±3dB.
<b>Amplification:</b>	Internal 85W woofer, 65W tweeter. 6VA (quiescent) – 200VA (full output).
<b>DSP:</b>	100MHz Motorola 56364, Linear Phase Crossover, 96kHz, 24-bit DAC.
<b>Controls &amp; Indicators:</b>	Front baffle controls for power and channel selection. LED indicators for power, lock and thermal warning.
<b>Approx. Dimensions:</b>	Frame 450mm (17.72in) square, depth 102mm (4.02in) Hole cutout 357 x 388mm (14.1 x 15.28in) <i>Note: dimensions are approximate. See installation drawings for detailed information. The DSP420 is designed to fit standard 16in stud centres.</i>
<b>Approx. Weight:</b>	8.5 kg (18.7 lb) main unit without frame, grille or connection box.
<b>Mounting:</b>	Easy-install frame with fireproof power connection box. Templates provided for both new construction and installation into existing walls. <i>The DSP420 is not designed for ceiling installation.</i>

# DSP420

Digital Signal Processing  
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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