

DSP5500 Digital Loudspeaker

Meridian has led the market with their highly acclaimed DSP loudspeaker designs. The current models DSP5000, DSP5000C, DSP6000 and DSP6000C have won a steady stream of awards. In fact the DSP6000 – which was introduced in 1990 – is the only loudspeaker to hold the coveted *Stereophile* Class A rating for four successive years.

The Meridian DSP loudspeakers combine excellent acoustic and drive-unit technology, with multiple built-in power amps and unique performance-enhancing DSP and digital conversion systems. The DSP loudspeaker is the ultimate expression of the speaker builder's art.



The DSP5500 is a single-box DSP loudspeaker, designed to provide performance similar to the highly popular DSP6000. This new model is a front-facing format that can be effectively built into system cabinets – DSP functions are provided to correct the frequency response in a number of locations. A unique removable wood and steel side panel arrangement allows for easy colour changes or custom finishes. The side panels are bolted in place; in addition to providing unequalled magnetic shielding, the resulting solid, stiff cabinet provides massive acoustic damping giving the speaker amazing mid-range transparency.

Acoustic system and format

The DSP5500 is a powerful 3-way active acoustic reflex system. The bass system uses two 200mm long-throw composite bass drivers. The cabinet vents through a floor-level wide-area coupling slot; this configuration –

along with the active and DSP correction – maintains smooth powerful bass in the room down to 30Hz with very low mid-range colouration.

The mid-range is mounted in a separate enclosure and uses a custom 160mm polypropylene driver. The tweeter is the Meridian 25mm aluminium-dome, silver-wire tweeter used in all the DSP loudspeakers.

Each of the four drive units has its own 70W power amplifier.

The main cabinet is constructed from high-density MDF. A unique Meridian 'sandwich' construction method clamps sheet steel all over the cabinet sides between the main cabinet and the real wood veneer side panels. This technique results in a very inert cabinet and provides exceptional magnetic screening – allowing the DSP5500 to be placed immediately next to small or large TVs. The top of the cabinet has an attractive 4mm plate-glass top.

Electronic system

Each speaker incorporates an electronic panel in the rear part of the cabinet. The speaker accepts digital signals and there are two inputs. The input receiver uses a unique proprietary Meridian twin phase-lock-loop system for ultra-low jitter.

The crossovers, equalisation, tuning for a number of locations including cabinet installation, protection and tone controls are all implemented in two Motorola 56001 Digital Signal Processors (DSP) inside each speaker. The DSP feeds carefully tailored individual signals to the bass, mid and tweeter DACs generating 22 bits of resolution. This is then amplified using four Meridian Class-A discrete 70W low-distortion power amplifiers – one for each of the drivers. The electronics are powered from a high-current toroidal transformer through a custom high-speed power supply.

Performance

Frequency response in-room within 3dB from 30Hz to over 20kHz (for inputs at 44.1kHz or 48kHz).

Linear-phase mid–top crossover, 6th-order Linkwitz-Riley bass–mid crossover

Output >112dB spl @ 1m on music material

Noise less than 15dB spl

Overall distortion typically <0.02% at any frequency or level

Inputs

Two digital inputs to SPDIF standard; 32kHz–48kHz sampling rates

Construction

3-way acoustic reflex system.

2 x 200mm long-throw bass drivers.

1 x 160mm polypropylene mid driver in separate enclosure.

1 x 25mm aluminium-dome tweeter, silver wire, short horn-loaded with protective grille

Cabinet constructed from high-density MDF. Integral magnetic shielding and user-changeable real wood veneer acoustic damping side panels.

Digital input receiver uses unique proprietary Meridian twin phase-lock-loop system.

Four precision 64x oversampling converters for bass, mid and tweeter signals.

Analogue gain and filtering using proprietary Meridian Class-A discrete amplification.

Digital and conversion electronics constructed using advanced surface-mount techniques and partitioned 4-layer printed-circuit boards.

Four 70W power amplifiers, one for each of the drivers.

Power amplifiers use a unique feedback topology and precision local error-correction systems to achieve a performance equivalent to the conversion system.

Dimensions 1100mm (43.31in) H, 284 (11.2) W, 450 (17.72) D – Weight 81kg (179lbs) each

Digital Signal Processing

Twin Motorola 56001 DSPs running at 32MHz

6th order Linkwitz-Riley crossover at 200Hz

Linear-phase time-aligned crossover at 2.6kHz

Response correction for the whole system

User tone controls

Volume and phase control

System operation

By included Meridian System Remote (MSR) that operates:

Volume, Mute, Source selection

Source control (e.g. of CD or Tuner)

Balance and listening-axis control

Tone control with bass and tilt functions

Room-position correction to optimise for a number of locations including free-standing, wall, corner and cabinet

Absolute phase selection

Display control including blank and options for; source, volume, CD track and time, tuner preset and frequency

Favourite tone-settings memory

Reset function

Rear-panel controls for: Power On/Off

Front-panel four character display with system lights