



➊ Rear view of the DSP33, showing its complex inputs and switching; front view of speaker without fabric grille in place

PRICE	£2475/pr
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Meridian DSP33 loudspeaker

Compact active monitor from Meridian, with digital inputs and on-board signal processing

It's an odd thing that in our increasingly hi-tech age the great majority of loudspeakers remain entirely passive devices. The standard tripartite system split of source components, amplifier and loudspeakers is so deeply ingrained that the idea of combining the last two in one box seems almost radical, however logical. Even at the most basic level such a coupling has obvious benefits in its invitation to design an amplifier expressly for a specific drive unit and enclosure. A two-way design can have two dedicated amplifiers and of course it is demonstrably better to effect the crossover at line-level than wrestle with high-current chokes, capacitors and resistors, as Meridian demonstrated 24 years ago with its first active loudspeaker, the M1.

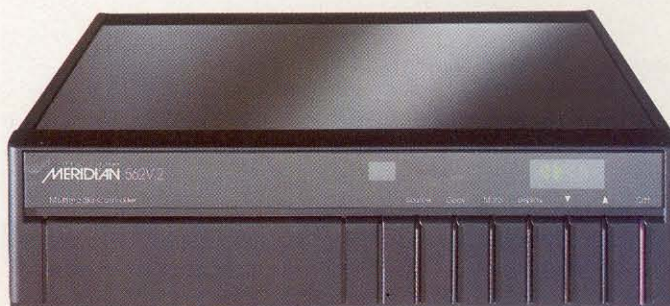
All this was common sense to the company's technical director, Bob Stuart; back in 1977, the challenges seeming almost trivial compared with the work he and his colleagues were soon to tackle with the advent of digital audio. A dedicated amplifier can exert precise control over the drive unit, aided by a minimum of cabling between output devices and coil. The bass roll-off defined by the drive unit characteristics, the cabinet, the loading format

and positioning can be compensated for without significant penalty. Noise and distortion are minimised. There are many plus points, yet most of us have persisted with convention, expecting any amplifier to drive any possible load at the level of our choosing via bell wire or jump leads, anticipating synergy in the face of rather poor odds. Escalating digital technology has only strengthened the case for active loudspeakers. Now we can have digital crossover filters which allow far more complex and precise signal manipulation. The phase distortion inherent with conventional analogue filters can be minimised; the signal to a tweeter can be delayed with respect to the LF driver so that so they integrate seamlessly in the crossover region. Refined tone

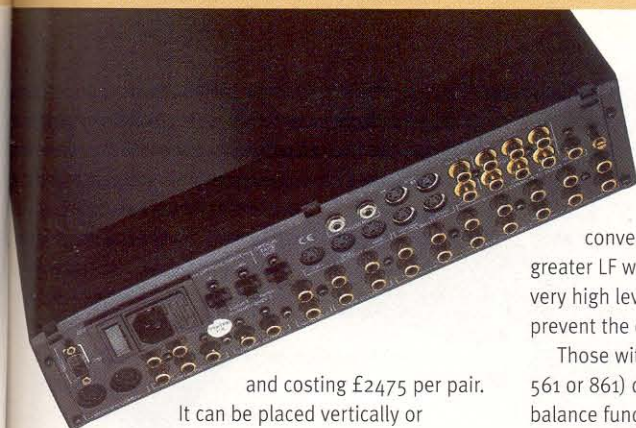
controls can be implemented with no degradation. With suitable front end components the signal can be kept in the digital domain from disc almost to driver.

Meridian has been prominent in this arena from the start and makes an impressive range of digital loudspeakers suitable both for conventional two-channel stereo and fully fledged home theatre systems. From the elegant three-way DSP5000 and DSP5500 models through to the DSP6000 and superb four-way DSP8000 Reference design, it offers systems to suit most rooms if not most pockets.

The DSP33 is the smallest in the range, a compact two-way, three-driver infinite baffle design suited equally to hi-fi and AV applications



➋ Meridian's 562V multimedia controller, which completed the review system (rear panel view is shown at top of facing page)



and costing £2475 per pair. It can be placed vertically or horizontally and can be bought in pairs or singly for centre channel use (the DSP33C, supplied with tilt plinth).

Compact is certainly the word for this elegant unit which is just 396mm (15.6in) tall and 150mm wide. The cabinet is made of cast and extruded aluminium and has fractionally curved, tapering, side, top and bottom panels so that the front is larger than the rear. A carefully profiled plastics baffle sits proud of the cabinet and supports the two slightly sub-flush mounted bass/midrange drivers, set symmetrically about the central tweeter. The LF units are 127mm in diameter with a cast aluminium chassis, 90mm carbon-fibre cone and a large shielded magnet; they are fitted with convex rubber roll surround and plastics central dustcap. The 25mm aluminium dome tweeter with neodymium magnet is protected by a perforated metal cover. The entire baffle is normally hidden by a black fabric covered grille (a Meridian badge can be rotated to suit the positioning). The cabinet is finished in crackle black paint with an optional extra 'piano lacquer' finish.

The digital inputs can accept data up to 96kHz/24-bit, which includes the high resolution data streams from Meridian's range of home theatre processors and DVD players. Processing centres around a new 100 MIPS (million instructions per second) Motorola device, the DSP56364, and the complex circuit is built on four and six-layer boards with extensive use of surface mount components. A FIFO memory buffer (first-in, first-out, a common technique for eliminating the data 'jams' prevalent in high density circuits) is employed to help achieve the lowest possible jitter from almost any source. Amplifier components include audiophile grade polypropylene capacitors and van den Hul wiring. Low feedback circuits employ high slew rate bipolar devices, while the layouts themselves make extensive use of star earthing.

The processor implements a linear-phase crossover (+/-30° at 2.3kHz) and time delay to the tweeter to compensate for the forward placement of its dome relative to the LF drivers' cones, as noted earlier. It also offers tilt and bass controls, absolute phase switching (polarity) and a phase-corrected balance control. Bass performance is enhanced in the digital

domain too, the acoustic profile linked to the volume setting according to established psycho-acoustic findings. This is the posh relation to the bottom end of a conventional loudness control, in that greater LF weight is applied at lower volumes. At very high levels the extreme bass is curtailed to prevent the drivers bottoming.

Those with a Meridian digital processor (568, 561 or 861) can activate tilt, bass, polarity and balance functions from the MSR handset. In a simpler system using just the 562V multimedia controller as the digital front-end link, only volume is accessible (shown on the 562 display) while in a minimalist CD-only system with the digital output of a player connected directly to the DSP33, one needs to purchase a 512 Remote Eye and associated lead and have a suitably appointed handset (ideally the MSR) in order to control volume and balance, neither of which can be shown since the DSP33 has no display. In both these cases the 'deeper' functions can be accessed only by running the set-up routine from a Windows PC (the software and cable are provided). The dealer can establish these settings for those who shy away from technology.

Meridian's Product Configuration software is simple to use, though, and gives full control over all possible settings. One thing to beware of is the default setting for speaker use: 'Boundary'. This optimises the response for when the loudspeakers are set closer than 0.5m to a wall, which is likely to be correct for home theatre set-ups but not for the two-channel audiophile who wants to set them on stands well out into the room. So in my case, with the 508.24 CD player, a loan 562V.2 and a pair of DSP33s I had to dig out an old PC to effect the changes: something of a challenge for an inveterate Apple Macintosh devotee!

PERFORMANCE

Home theatre is of little interest to me but I can imagine that five of these smart boxes plus a subwoofer would make a impressive, supremely coherent sound in all but the largest rooms. In a two-channel audiophile set-up it certainly has much to commend it, although it needs care in setting up and room placement. I used the pair on heavily damped 24in Target stands, well out into the room and programmed for a free space response, but found the bass, although well beyond expectations in terms of weight and reach, rather too 'contained' until I discovered by experiment the sweet spot in the room. Tonal balance thus established, the sound began to sing, improving further after an hour or so's use.

The DSP33's strong suit is its superb imaging, midrange integrity and liquid top end. I've rarely heard anything to match it. With its almost inert

cabinet and seamless crossover the balance here is pretty well flawless. Voices are amazingly truthful and the transparency is such that you can hear right to the back of an orchestral canvas to spot the tiniest detail.

This intriguing loudspeaker has very serious audiophile potential. Ideally, in my view, it would be used in free space with its bass set flat and the shortfall made up by one of Meridian's matching subwoofers; that would surely be a full range system to reckon with. Its requirement for a digital input and Meridian's Comms for control limits its currency somewhat, although the versatile 562V.2 multimedia controller accepts analogue or digital inputs from practically any quarter. But the convenience, integration and styling of an all-Meridian system is extremely persuasive. That doesn't come cheap but you'd have to look long and hard to find anything significantly better.

WORDS: IVOR HUMPHREYS

TECHNOLOGY

The two built-in power amplifiers are rated at 85W for the LF drivers and 65W for the tweeter. Crossover point is 2.3kHz. In addition to an IEC three-pin mains input socket, panel fuse and rocker switch, the rear panel carries two 75 ohms coaxial digital inputs and a coaxial digital output on gold-plated RCA phono sockets, two Meridian Comms sockets on 5-pin DIN connectors and a nine-pin RS232 D-socket for setup via a PC. A slider switch determines whether the loudspeaker decodes the left/centre or right channels from the data stream. Four hex-headed bolts allow the cabinet to be mounted on an optional Omnimount Series 75 Wall support.

Digital processing allows complex manipulation of the signal to suit specific drive unit characteristics, cabinet configurations and room positionings, all without compromise. True linear phase crossovers can be effected and the signal to the tweeter delayed so as to effect near-perfect transition from the LF driver(s). Tilt and bass controls can be readily implemented. Such precision is impossible with conventional analogue circuits and would involve much additional circuitry and concomitant risk of signal degradation.

KEY FEATURES

- May be near room boundaries or on stands in free space
- Digital input keeps the signal in a robust domain for as long as possible
- Elaborate processing facilities for home theatre or two-channel stereo