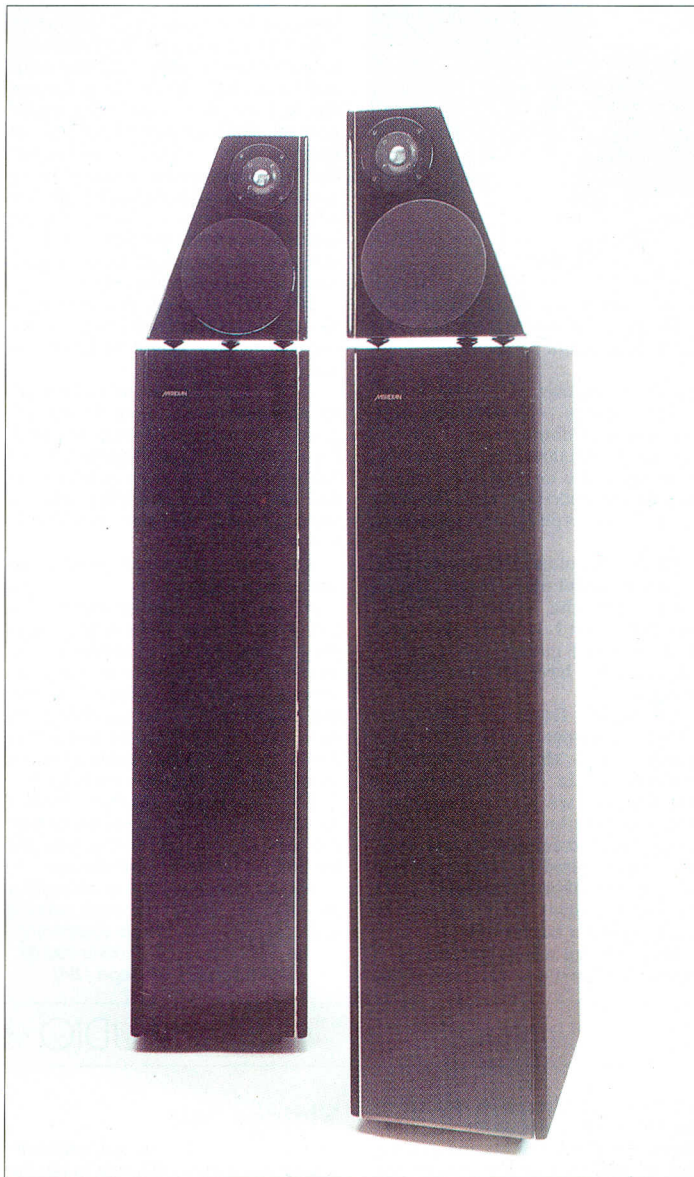


MERIDIAN D6000 DIGITAL ACTIVE LOUDSPEAKER



SPECIFICATION

Type: Active three-way design with digital inputs and digital signal processing
 Drive units: 4 × 210mm bass, 1 × 170mm midrange, 1 × 25mm tweeter
 Amplification: 4 × 65 watts amplifiers per loudspeaker
 Distortion: any settings below clipping, typically <0.02%
 Signal-to-noise ratio: absolute, any channel, >110dB CCIR
 Digital processing: automatic sync to input signal
 automatic identification of CD or DAT to enhance lock-in
 proprietary PLL for lowest jitter
 CRC validity checking of input signal
 four-times oversampling digital filter
 error correction and concealment
 >15.7 bits precision
 passive D/A converter filtering
 processing and display of subcode

Power consumption: 10VA standby, 200VA max

Dimensions (W × H × D): 210 × 900 × 295mm

Weight: 68kg each

Manufacturer: Meridian Audio Ltd., 13 Clifton Road, Huntingdon, Cambs PE18 7EJ

Tel: 0480 434334

UK retail price: £7,600 per pair

groups of self-contained solid-state power amplifiers in the accepted analogue fashion. The 'novel' part takes a further step in Meridian's trend-setting reversal of conventional practice in the form of a most versatile remote-controlled digital preamplifier which can select signals from a number of external digital sources, the commonest example being a CD 'transport'. It can then adjust volume, balance, tone or phase as commanded and pass the signals on for frequency division and compensation to a trio of Bitstream digital-to-analogue converters coupled to their respective normal power amplifiers. At the same time a small display near the top of the main loudspeaker cabinet provides a read-out of the source, volume setting and other relevant information, as requested by the remote control unit, which will also converse with other Meridian units if present. I will return to discuss these digital goings-on in more detail, but first a description of the whole loudspeaker is indicated.

Each D6000, totalling some 1.3m (4ft 6in) in height, is constructed in two parts. The tweeter and midrange drive units which together are responsible for all sounds above 200Hz are installed in the face of a truncated pyramidal enclosure (avoiding parallel sides) 330mm tall and constructed of 25mm thick multi-ply. All corners are rounded and the whole of the exterior is finished in polished hard gloss black

lacquer. These cabinets are made in complementary (i.e. handed) pairs, have stout internal bracing and bitumenized damping pads plus a filling of BAF wadding. The tweeter is made specifically for Meridian and has a 26mm aluminium dome, silver voice-coil wire of 4.5 ohms DC resistance, ferro-fluid cooling and a short flat-profiled horn behind a protective perforated metal grille.

A 115mm polypropylene cone is fitted in the 170mm die cast frame of the midrange unit. It has a concave half-roll convex rubber surround and corrugated rear suspension. The voice coil of 4.6 ohms DC resistance is 39mm in diameter and is not hidden behind the usual dust cap. Instead a solid phasing 'bullet' is fitted to the centre pole of the 108 × 28mm ceramic magnet assembly. The natural resonance of this unit is 60Hz and this rises to 90Hz in the sealed box, an octave below its minimum operating frequency. It is protected by a cloth-covered grille which is a press fit into the rebated perimeter of the cut-out.

The second and major part of the D6000 takes the form of a tall, slim but deep, solid closed box which contains the four bass drivers, two on each side. The rear face of the box is set back some 75mm; all the electronics—digital preamplifier, analogue power amplifiers and supplies—are fitted to the two sections of a metal rear panel and slip into this recess

OVER the last 10–15 years our lives have been quietly invaded by electronic equipment of hitherto unbelievable complexity, but by skilful design it has been so successful in its presentation and so reliable in its operation that nowadays we just press a few buttons and unquestionably accept the result. I suppose that, pocket calculators apart, the real breakthrough was the video cassette recorder, now such a commonplace in millions of homes that it is known simply as 'the video'; as brilliant a mixture of clever thinking, precision mechanics and complicated circuitry as one could conceive. Now my six-year-old grandson races home from school to playback some 'un-missable' TV programme he has recorded during the day without a moment's thought as to the miracle that has taken place inside that innocent black

box; not too long ago, if indeed it was possible at all, this would have been a job for two men in white coats and £50,000 worth of Ampex VTR loaded with huge reels of two-inch tape!

What has that got to do with the subject of this report, you may ask? Well this Meridian product uses advanced digital technology to replace a tea-crate-full of analogue components and is, without doubt, the most sophisticated, intricate and technically advanced piece of audio equipment available today; but fortunately the same simplicity of operation rules. If the idea of 'operating' a loudspeaker seems strange, even intriguing, then read on and discover more about this radical new concept in sound.

The 'normal' part of Meridian's D6000s consists of complementary pairs of three-way, multiple-driver loudspeakers, each tri-amped by



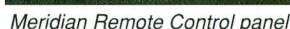
Bass and midrange drive units



It was over ten years ago that I first reviewed a Meridian Active Loudspeaker (Model M2 in August 1981) when domestic application of digital technology had yet to come. Nevertheless, much of the thinking which went into those early designs is carried through to the D6000; not least the basic ideas of housing all the electronics in a rear compartment, the dedication of separate power amplifiers to individual drive unit sections, frequency correction to straighten out and extend acoustic frequency response and the incorporation at the input of low-level active crossovers.

The ability to carry out all these things and others which are hidden from you (e.g. individual built-in calibration of each loudspeaker to compensate for driver tolerances etc.) is made possible by the incorporation of a pair of Motorola 56001 DSPs

After all these digital operations—both predetermined and user selectable—have been carried out the three resulting streams of bits, which now represent the bass, mid and treble signals for one channel, are translated to the analogue domain by the latest Boothroyd Stuart/Philips Bitstream technology (the co-operation which exists between the Dutch giant and the prestigious Huntingdon expertise is a constant source of wonder), duly filtered and de-emphasised if required by the programme material. All this part of the operation is contained on two printed circuit boards in a couple of quite small stacked screened containers behind the top section of the rear panel, where all the various DIN and phono sockets are situated. I hate to think how many thousands of resistors, capacitors, chips and so on, you would need to do all this in the analogue domain; indeed some of these operations would not be possible at all.



The remote control panel which is supplied with the loudspeakers is the only means of accessing them, although limited operation is possible if certain other Meridian equipment is used as a source (so, keep a spare PP3 battery around the house just in case!). It comprises a 160mm-square and 22mm deep alloy die-casting, finished in-off white paint, with a removable steel bottom cover. There are 37 small but widely spaced push switches, helpfully colour-coded and plainly



labelled. The upper group are source selection, the centre group CD operation and tone, with a numeric bank of ten below. Two red ones on the right are normally used to raise and lower the volume (the so-called default mode) but if another command is pressed first—say Bass—then they will change to give control of that as required, reverting to volume after a few seconds' rest. All the occasionally used commands self-cancel in this way.

The infra-red source used to transmit instructions is a pair of just-visibly operating LEDs protruding from the front face; the receiver on the loudspeaker is quite sensitive so that it is not necessary to aim the controller—in fact reflection off the ceiling will do. Incidentally, when first setting up a D6000 system it is necessary to designate one loudspeaker as the master (the one to which it is most convenient to connect the input sources) and link this by means of a single cable to the other, known as the slave. The display on the latter will always indicate the source, e.g. CD or radio, and the volume level in dB (65–70dB is a good starting point, which can be put in a memory); the display on the master can be called upon to show many other things—tonal settings, timing on CD or programme or frequency on radio. Some of these are forwarded-on from other items of Meridian equipment I have been using as sources but which are not part of this report. For

the record these are the 204 tuner/timer reviewed by IH in our January issue fed via a 607 Analogue-to-Digital converter and the 602 CD Transport. Others are available of course, but suffice it to say that all conceivable inputs can be accommodated—both analogue and digital—right back to 78rpm records. At that point you will have laid out well in excess of £10,000 so now it is time to sit back and consider what it all sounds like.

How they performed

The D6000s normally rest in a standby condition, where their amplifiers are biased back to a low-current condition, and it takes a few minutes before they are really ready to perform (this may be a function of the source components, which also drop into standby). Once that short time had elapsed they effortlessly produced some of the better sounds that have been imported into the Horn household; and such a lot of sound too; you would have to have a very large room indeed before a pair of these began to run out of breath. The only sound-level meter I could readily lay my hands on hit the stops at 110dB spl but these loudspeakers went on way past the painful region. Their highly sanitized sound leads one to listen at a higher than usual volume, but even at more usual levels this immense reserve is a boost to exciting dynamics and, allied as it is to a very neutral,

relatively uncoloured and evenly balanced spectrum of very wide range, a most realistic reproduction of a great variety of material awaits you. The small and smoothly contoured separate head assembly covers all but the bottom two or three octaves so the stereo focus and depth are remarkable, better even than the similarly formatted B&W 801s or KEF's original R105, probably helped here by a more realistic height. The bass end, in particular, was extended and filled out by the active equalization well below its normal slope off, and organ pedals were enthusiastically portrayed; in fact I soon found it desirable to tame it down a couple of decibels and this held over all kinds of programme material.

In my room it seemed impossible at first to get rid of an excess of energy in the 100 to 150Hz region without losing out on the extreme low end, even though I tried moving these 75kg behemoths to a different position. The subjective effect was to cloud the bottom end, blunting definition and timing; this was accompanied by an apparent weakness in the fundamental tones of male voice, elevating "The Three Tenors" to new heights. However, it didn't measure that way and I eventually came to the conclusion that this was an artefact of the extremely steep crossover slopes which are obtained without phase problems by the DSP, allied to the physical spacing of the bass and

midrange units. I became used to it after a while and was able to listen through it. Another product of the steep crossovers is that the tweeter comes in at a rather low frequency of about 2.5kHz. This unit has a very wide dispersion and as a consequence I noticed early reflections from the room side walls which could not be countered by the usual toeing in; I had to provide temporary suspended damping.

You may gather that using loudspeakers of this calibre is not all plain sailing; their very perfection leads one on to follow-up the small revealed discrepancies which inevitably exist. What remains is a model of natural clarity and the easiest of listening, with really only the occasional reminder when a sibilant sings to tell you that the main cone is of polypropylene.

It would be nice to include a shortlist of some of the things I have particularly enjoyed listening to but the Audio Editor's electronic scissors are poised. However, I can guarantee that unless you are one of the very few people who already own superlative equipment—and in my experience there is not a lot in the marketplace which can really treat these D6000s on anything like equal terms—not only will you hear things on your discs that you didn't know were there, but you may also discover things which you didn't think could be recorded.

GEOFFREY HORN.