MERIDIAN 500/563

This new transport and Delta Sigma DAC is Meridian's best digital source combination to date

by PETER J COMEAU

There is little doubt that, if you want to make the most of the active DSP5000 speakers, the 500 transport is a must. It not only proved itself capable of driving the long digital interconnect which trails round the room, together with its COMMS lead, like a thin speaker cable, but the command structure makes system use so much simpler

Having championed the digital cause since before the introduction of CD, Meridian can now offer a fully-integrated digital system of highly flexible design.

Central to this Meridian system are the DSP5000 speakers, already covered by MC last month but here put into context with the 500 CD transport. These items form the Meridian Digital Music System, so that CD, LaserDisc and DCC or DAT provide the digital signal sources for the active DSP5000s to work on. This review assesses the Meridian 500 transport both as the source for the DSP5000 and as part of a conventional system, including its partnering DAC, the 563.

MERIDIAN 500 TRANSPORT

Meridian has been making its own drawer mechanism for some time, a hefty aluminium casting containing the complete disc transport that glides in and out under control of the Open key. For the 500 series a new, high-mass slimline drawer has been designed, carrying the single-beam, swing-arm optics. One advantage of this is that the laser lens is easily available for cleaning in case of dust build-up. But the main attribute is the acoustic isolation formed when the drawer is closed, helped by rubberised damping pads on the internal surfaces and a fibre seal around the door edges. Once inside, over half the CD surface is clamp-ed via a spring loaded precision disc to reduce vibration.

Meridian has eschewed the usual bought-in drive controller PCB in favour of its own circuitry. It is worth mentioning here that the 500 transport will talk to the earlier 600 and 200 series units through the COMMS sockets, as well as the D6000 speakers.

Decoding of the signal lifted from CD is via Philips SAA7310, which handles error correction as well as demodulation and subcode processing, and optical control is provided by the TDA8808/8909 servo electronics. From this a PCF2705 provides further digital processing from I2C to S/PDIF, before output to a high power 75 ohm amplifier feeding the co-axial output through a small toroidal transformer to improve the squareness of the signal into the interconnect. A high speed optical EIAJ 'Toslink' output is also provided.

Care has been taken with digital screening throughout, with a ferrite choke on the AC input, and a cunning design of wrap-over casework. The transport section itself is separately screened to allow the optical mechanism to work in an electrically as well as acoustically isolated environment. Note that there is no mechanical isolation of the transport itself, however, other than the domed feet on the case. Support on a specialised table or other method of vibration control is thus likely to have an effect upon the performance. Considerable mass is, however, added to the casework by the large sheet of glass that forms part of the eye-catching styling.

Visual design is by Meridian co-founder Alan Boothroyd: a clever touch is the colour coding on the power key to identify the unit. As the components otherwise look the same, this stops you trying to put a CD in the D/A converter!

SOUND QUALITY

There is little doubt that, if you want to make the most of the active DSP5000 speakers, the 500 transport is a must. It not only proved itself capable of driving the long digital interconnect which trails round the room, together with its COMMS lead, like a thin speaker cable, but the command structure makes system use so much simpler.

All commands are displayed on the speaker's window as well as the CD transport, with the advantage that the DSP5000 can be configured so the 'Main' speaker shows CD track numbers and the 'Slave' speaker indicates source and volume. Personally I found the displays distracting, so elected to use the optional blanked display mode where the figures only show when a command is issued.

You know how it is, when a system springs into life and there is such a degree of 'rightness' about the sound that you know you are going to get along with it. The 500/5000 combination is just such a system. Right from the start the tonal balance is impeccably neutral, and only those with difficult room acoustics will need to mess about with the 'tilt' and 'bass' tone correction controls for the speakers. As a system which you can plug and play direct from the carton, this Digital Music System is unparalleled in its user-friendliness, for ease of use and simplicity of set-up.

It is the very 'correctness' of the sound that makes you sit up and take notice. The even balance of character across the spectrum, the tight control of every nuance of detail from an extended bass to sparkling treble, thex effortless transient impact and swell of volume; all these give a tremendous authority to the sound and make the system stand out from the crowd.

It has long been noticeable that Meridian values enhanced detail resolution and a type of focused clarity in the sound of its digitally inspired designs. The 500/5000 combination advances this approach to musical transparency several degrees further. Those more used to the warmer and softer sounds of typical analogue systems may find the edge-enhanced, spotlit character of the Meridian system unsettling. But the degree of forced highlighting which I have detected in previous designs seems to have been tamed; it seems that the crisp treble nature of the 600 series components has been blended with a highly analytical midband, and thus no longer stands out as a featured characteristic. The 'hear through' nature of the system

is the most exciting aspect of the performance.

MERIDIAN 563

The joys of the 500 CD transport are not lost upon those who wish to incorporate one into their existing hi-fi system: Matching the 500 transport is the 563 digital-to-analogue converter, using Meridian's unique Delta Sigma converter. Four digital inputs, three electrical and one optical, can be switched between different sources with automatic lock to the input frequency. Each co-axial input is fed through a 'squarer' circuit, which boosts the signal from 500mV to 5V to give a more robust signal for the receiver to work on. One of the electrical inputs, D1, also offers a parallel XLR connection for AES/EBU type signals, backed by a small toroidal transformer. Co-axial and XLR connections cannot be used at the same time on this input, so forget any ideas of using D1 as a digital mixing input!

A Crystal receiver IC operates a phase lock loop, searching over the 38 to 48kHz range. If the incoming data is clocked at the 44.1kHz of CD then a double locking takes place via a quartz crystal/controlled lock, shown by a red illuminated indicator on the front panel. This circuit can overcome a variation of 250ppm in incoming clock frequency without losing lock, and basically ensures freedom from jitter due to connection problems or interference on the digital interconnect. The data is finally re-clocked to ensure the lowest possible jitter. Incidentally a similar system is used in the D5000 to accommodate long digital interconnections without the loss of data integrity.

Output from the receiver is shuffled to produce phase and antiphase signals to feed the Crystal DAC pairs operating in differential mode. The Crystal Delta Sigma 1-bit DAC is designed as a one chip solution for stereo decoding, including its own high performance digital filter, oversampling and noise shaping. By using a pair of decoders in differential mode for left and right channels, Meridian claims a unique implementation giving a precision up to 19-bit resolution. A front-panel switch toggles a software phase inversion at this stage if the user desires, with the handbook pointing out that 'in some circumstances this can give a noticeable improvement in realism'.

NE5534 ICs, bandwidth-limited via a 38kHz single pole filter, feed Class A discrete output stages which provide two balanced outputs via XLR connectors as well as the two standard phono outputs. Each output circuit utilises A06/A56 high current driver transistors, easily capable of driving long cables with a source impedance of 12 ohms.

SOUND QUALITY

The 500/563 combination was slotted into a system of AVI 2000 pre-amplifier and power amp with ATC SCM20T speakers wired with Audioquest cabling. Immediately apparent (when the substituted for an AVI 2000 CD player), was the increase in detail retrieval which really was an eye opener, but accompanying this was a tilt in tonal balance towards a brighter sound, mainly having the effect of emasculating the bass power. It turned out that the interface between Merdian 563 and AVI pre-amp was very cable sensitive, and only the intervention of VDH 'The Second' managed to neutralise the performance. Now the system began to sing rather more sweetly.

I have to say I preferred this approach, rather than the Meridian Digital Music system. The combination of AVI amplification and the superior drive unit technology of ATC speakers is very winning, and the Meridian CD source really brings it to life.

Throughout all the experimentation, however, there was always an awareness that the source duo were not lacking in musical ability, which no amount of playing about with cables managed to dent. Together with admirable crispness and poise of transient attack, the rhythmic flow seems to bring out the beauty of the changes in tempo within a performance, and again the sense of authority and control is all-pervasive. This is in such contrast to earlier Meridian manifestations that I had to go back and check a 602/606 to make sure I wasn't imagining things. Sure enough, the 600 series transport and converter sounded rather sterile and starkly explicit in comparison; and the substitution of an Arcam Black Box 5 brought added warmth to the 500, but nothing like the wrapt attention that the 563 generated.

CONCLUSION

The level of musical detail displayed by the 500/563 is nothing short of entrancing, and how wonderful to find rhythmic expression to match. Meridian struck gold with their last dual converter working in differential mode, a configuration that led eventually to the DAC7. With the 563 Bob Stuart has worked digital magic again, and the transport and D/A converter are a combination which anyone seeking domestic musical harmony should covet.

MERIDIAN 500/563

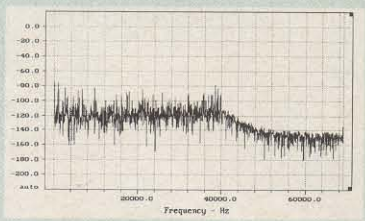

Fig 1. Meridian 500/563: spuriae associated with 1kHz tone at -70dB (to 40kHz)

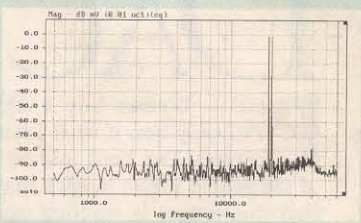

Fig 2. Meridian 500/563: intermodulation, 19kHz/20kHz tones at 0dB

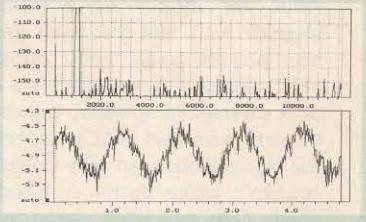

Fig 3. Meridian 500/563: dithered 1kHz sinewave at -90dB, distortion spectrum above

LAB REPORT

As might be expected from a transport and converter of this pedigree, frequency responses and channel balance showed no errors worth describing. Inter-channel phase difference was zero. Channel separation was excellent at better than 100dB mid-band. THD figures have improved considerably over the 263 Delta Sigma converter, and overall noise level is lower. Low-level linearity figures are excellent.

Intermodulation spuriae were noticeably absent, and the freedom from spuriae up to 100kHz relative to pure tones was also exemplary. This combination is unlikely to give any amplifier problems at its input. Radiated RF is markedly down over earlier Meridian products, and FM tuners are unlikely to be affected where a good aerial is used.

Test results	Meridian 500/563		
Relative output level (rel 2V pk))	+0.6dB		
Output impedance	15 Ohms		
Outputs	phono, XLR balanced		
Signal-to-noise ratio	96dB		
	200Hz	**1kHz**	**10kHz**
0dB	-97	-97	-92
THD at -30dB		-86	
THD at -70dB		-45	
Channel separation		-107	-94
Resolution (linearity error):			
At -60dB		-0.26	
At -70dB		-0.28	
At -80dB		-0.23	
At -90dB		-0.32	
At -100dB		-1.45	
Track access (to track 99)		5.5 secs	
Digital output		co-axial, optical	
Digital inputs	three co-axial S/PDIF, XLR AES/EBU, Toslink		
Dimensions (hwd, mm)	88 x 321 x 332mm		
Typical price (inc. VAT)	500, £975; 563, £695		

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