

# AVI 2000 PRE/POWER

*No-nonsense design*

*and ample power*

*output characterise this  
pre/power-combination*

by **PETER J COMEAU**

**Although front panel controls are highly accessible, the majority of commands can be relayed from a remote handset which is well laid out and labelled, and handles pre-amplifier source switching**

It may not be the best known hi-fi company in British electronics, but AVI is slowly and surely making a name for itself with a series of highly competent amplifiers, a tuner and a CD player. Known as the 2000 series, the aim is to integrate high-performance hi-fi electronics with a domestically acceptable package.

Standing proud of the pre-amplifier's dark grey Nextel casework, encapsulated in a profiled surround is an acrylic front panel studded with buttons. With source components being housed in midi-sized (310mm wide) cases, the whole effect is elegant and unobtrusive. Although front

panel controls are highly accessible, the majority of commands can be relayed from a remote handset which is well laid out and labelled, and handles pre-amplifier source switching, 16 tuner preset stations, CD transport and programming options, together with volume and mute. The system is almost as easy to use as the Quad 600 series, and non-techies should understand its commonsense functions immediately.

A few months after the S2000MP pre-amplifier, through its utter neutrality and transparency, had inveigled its way into my home system, Martin Grindrod, the man behind AVI, brought along the company's most massive (in terms of size and output) power amplifier to date. AVI's original power amps were 150W monoblocks, housed in the same midi-sized case as the pre-amp, but the new addition to the range is stereo, full width and very deep. With an output of 250W per channel most of the size is taken up by internal ventilated heatsinks and a substantial power supply.

If the AVI pre-amp, the company reasons, can drive long cables without distortion (and the S2000MP certainly can) then the minute power transmission in the pre-amp interconnect into the pure resistive load of the power amp should be more manageable than the horrendous current flow that travels through speaker cables. With only short lengths of cable to the speaker drive units, the power amplifier will be able to control these directly, providing the necessary bursts of current for cone acceleration and braking without encountering the impedance restrictions of long speaker cables.

This is very much a horses-for-courses technique. The low-level signal transmission in long pre-amp interconnects is also prone to airborne interference, and demands good screening and transmission characteristics in the cable. If the source impedance is very low, however, and the cables are specially chosen for the job (I used Belden microphone cable) then the technique does offer a predictable performance compared to the vagaries of speaker cable behaviour.

With this in mind the 0.5ohm output impedance of the S2000MP pre-amplifier, and the incredible drive capability and stability of the power amplifier, together are ideally suited to remote siting. The wide dynamic range of the ATC speakers places considerable demands upon any power amplifier, yet the S2000A proved eminently capable of driving and controlling such beasts. Both units are transparent and neutral enough to be hardly noticeable as hi-fi components and throughout the past three months, there has never been a noticeable intrusion of coloration or character that has prompted me to reach for alternative amplification.

## **SOUND QUALITY**

Perhaps the stiffest test of the pre-amp's capabilities came when it was forced to act as a source for the Cabasse Atlantis speakers (*HFN 3/94*). The entirely unforced and realistic nature of the Atlantis required a pre-amplifier which was equally as 'hear through'. The AVI proved itself equal to the task, readily showing up differences between CD players as Christophe Cabasse and I selected suitable source components.

Similarly the power amplifier shows few vices. The power and driving capability seem effortless, and one can pour on more and more volume without any sign of distress. As power levels increase there is also no audible change of character, a distinction which it shares with the Chord SPM3000. Unlike the latter, however, its performance at high fre-

quencies is a model of smoothness and, in contrast, sounds a little reticent. This is not due to an excess of warmth elsewhere, a feature which is noticeable from the likes of the Musical Fidelity F15, but is better described as restraint and civility.

## TECHNOLOGY

Removing the lid of the pre-amp reveals an exceptionally neat interior, with the only wiring being the AC leads and a ribbon cable that transfers the control logic to the main board. Most of the components are logic ICs driving high quality sealed reed relays that route the signal to the volume control and record outputs. The logic makes it easy to listen to one source while recording from another, and front panel lights show the selections made. A small toroidal transformer and separate regulated supplies feed logic and audio circuits, while the double-sided PCB includes an extensive layer of screening to reduce the possibility of interference. A simple signal path is effected via the reed relays, straight from the rear gold-plated phono sockets to a motorised ALPS volume control, and thence to a fully discrete line amplifier and buffer output stage. Logic ICs are confined to the front of the board so they can be kept well away from the audio signals.

This pre-amp is close to the 'volume control plus buffered output' ideal, yet offers an ease of use that is totally unlike the minimalist passive pot switchbox. Two tape outputs and two main outputs increase the flexibility, and the input labelling includes LaserDisc and VCR; the former cunningly matching the front panel 'Disc' annotation. Should you wish to include input from a vinyl record player, a separate phono amplifier, called S2000PP, is available for £199.

In contrast to the relatively feather-weight lightness of the pre-amp, the power amplifier trades elegance for machismo. Starting off with a gigantic 750VA transformer wound for low peak flux, each channel has its own bridge rectifier feeding 13,600µF of capacitance. This is plumbed into four pairs of complementary bipolar output transistors per channel, each device capable of 30A peak current. The internal heatsinks take up all the space at the rear of the amplifier and help it remain cool in use. If ventilation is restricted, or if low impedance loads are driven at very high levels for sustained periods, thermal trips cut the AC input until safe operating temperatures are reached.

Signal input is routed to a differential input stage feeding an ultra-linear Class A amplifier. The design concentrates on wide band-

width and excellent linearity before applying feedback, so transients are handled without distortion and stability is ensured. Output protection is via individual fuses for each voltage rail plus current limiting. This has been set up to limit voltage and current within a safe operating area for typical loudspeaker loads. While the amplifier will perform satisfactorily with 2ohm loads and above, current limiting is likely to set in if speakers less than 4ohms nominal impedance are used. Although this rules out high volume levels with some of the exotic panel loudspeaker impedances hailing from across the water, dynamic speakers with impedance dips to 2.2 ohms across part of their frequency range can be driven with ease.

Remarkably for an amplifier with this power, there are no switch-on thumps or delays, and the music starts flowing as soon as it is turned on. Cable choice is left to the user, providing heavy-gauge, stranded wire is selected, and is rendered less critical by a Zobel network in series with each output, complete with suitably substantial coil. Rear panel speaker connectors are sturdy and will take bare wire, spade terminals or 4mm plugs. Like the de-luxe quality phono input sockets, these are gold plated.

## CONCLUSION

In many ways the AVI reminded me of a bigger and beefier Quad 606, retaining the same sense of control and unflustered driving power, but greatly exceeding the limits of the Quad with enhanced dynamics and a careful etching of fine detail. Never troubled either by loudspeaker load or quality of source material, the AVI nonetheless allowed the expressiveness of a musical performance to shine through. It can genuinely excite the aural nerve endings where the music involves flourish and drama, yet its sound never put a listener on the edge of the seat except in cases of heightened emotional fervour.

The pre-amplifier's sound was as clean as a whistle, and its ability to drive long leads without making a fuss about partnering equipment is a bonus. The power amp let the speakers sparkle rather than bringing out any character of its own, and was dedicated to ensuring loudspeakers gave of their best without losing control. It was a pleasure to listen to this combination, which caught just the right degree of invulnerability and transparency to remain neutral and accurate in reproduction, while being musically involving too. If your speakers need a firm hand, and many do, there aren't many power amplifiers that can deliver such *fortissimo bravura*. And at the price this duo is difficult to resist. ✦

## AVI 2000 PRE/POWER

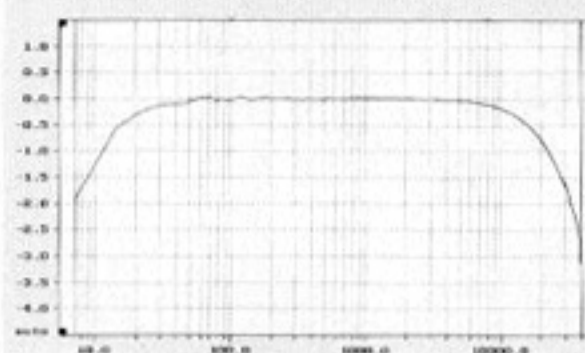


Fig 1. AVI S2000MP/S2000A: power response at 10W output

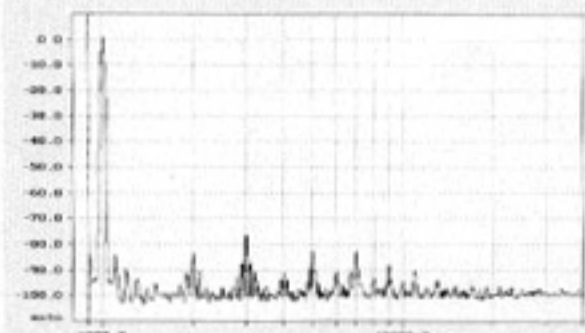


Fig 2. AVI S2000MP/S2000A: distortion spectrum, full output, 1kHz input

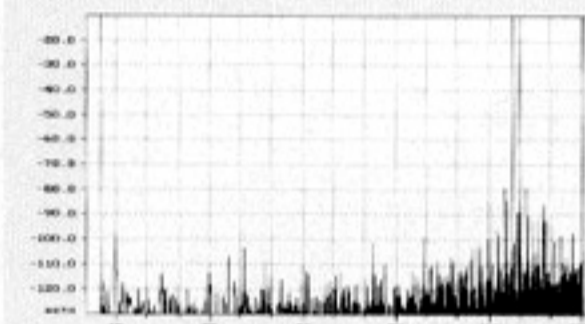


Fig 3. AVI S2000MP/S2000A: intermodulation spuriae from 19kHz/20kHz tones at rated power

## LAB REPORT

For the S2000MP pre-amplifier, distortion is buried in the noise, while the combination of pre and power-amplifier shows only the latter's low order odd and even harmonic signature, this reducing with frequency in a nicely graduated manner. The intermodulation graph has been increased in depth to show a sample of system noise. With all IMD artefacts -78dB below full output, and a general noise level of better than -108dB, this is an excellent result. Frequency response is deliberately tailored at the frequency extremes, and might be considered a little premature at -0.5dB, 16kHz. Power output shows the generosity of supply and output capabilities, with over 500W on tap into 4ohms. Current delivery is limited by the protection circuits; these cut output at 45A peak current.

### Test results AVI S2000A power amplifier

Power output	250W (24dBW*)		
Rated power into 8 ohms	20Hz	1kHz	20kHz
One channel driven, 8 ohms (dBW)	24	24.5	23.9
Both channels, 8 ohms (dBW)	23.5	23.8	23.5
One channel, 4 ohms (dBW)	24.2	24.5	23.7
Distortion (dB)			
At rated power	-82	-76	-78
At 1W/8ohms	-86	-84	-80
Instantaneous peak current	+45, -45A		
DC Offset (L/R)	26mV/28mV		
Dimensions (whd)	445X122X500mm		
Typical price (inc. VAT)	£1499		
*where 0dBW = 2.83V (1W into 8 ohms)			

### Test results S2000MP pre-amplifier

Inputs: LaserDisc, AV, CD, Tuner, Video, Tape (2)			
Distortion & Noise (dB)	20Hz	1kHz	20kHz
CD Input	-108	-114	-112
Stereo separation:			
CD Input	-110	-118	-88
Input overload:			
CD input	>30	>30	>30
Output impedance	0.56ohms		
Input sensitivity/impedance			
Pre-amplifier inputs	145mV/22k-ohms		
Power amplifier input	1.6V/470k-ohms		
Line inputs	75mV 10kOhms		
Dimensions (whd)	310X90X250mm		
Typical price (inc. VAT)	£749 (S2000TR System Remote handset, £99)		

## Supplier:

AV International Ltd, Bath Road Trading Estate, Stroud, Glos GL5 3QF. Tel: (0453) 765682