

# Audio Research Reference Six

## Fully balanced triode line preamplifier

THE LATEST GENERATION OF AUDIO RESEARCH'S REFERENCE PREAMPLIFIER COMBINES LUXURY IN STYLING AND SOUND WITH FLEXIBILITY AND SWEET CONTROLS. AND IT PARTNERS WELL THE COMPANY'S REFERENCE 160M MONOBLOCK POWER AMPS

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The first Audio Research Reference preamp I owned was a 'Three' dating from 2003, and subsequently I also ran a REF 5 and 5 SE for many years: both are clear forerunners of the *Reference 6* reviewed here. Despite touches of luxury techno styling – such as a large green display readable from a distance, and full remote control of almost all functions under the control of a comprehensive microprocessor – at its heart this preamp remains a classic design: it's a vacuum tube triode, line level, control amplifier.

I was surprised by the modern technologies employed to get the most out of the six amplifying double triodes, plus those additional valves/tubes in the high voltage power supply. Also striking was the considerable versatility, and build quality further improved from previous versions, which were already of a high standard. There's now a much thicker, non-resonant perforated acrylic cover plate as standard, offering good ventilation for the eight valves.

Comprehensively equipped, the *Reference Six* offers multiple facilities combined with superb muting, with no clicks or pops from any control operation, and great thought has also been put into the user interface. Facilities include four SE single ended inputs and four balanced, with three SE outputs and three balanced, while another set of outputs are available in SE and balanced modes at fixed/bypassed unity gain, designed for home theatre feed-through.

There are trigger and RS232 control inputs, plus a wired remote control socket for an external sensor of wider range and sensitivity, while the comprehensive remote handset is a metal alloy cased unit using standard AAA batteries.

Facilities include phase invert, this operating without any detectable electrical disturbance or gain change: likewise the mono switch is silent, simply joining the stereo channels up (as it should). The volume control has been enhanced by a new I/C chip, the customary passive resistor ladder offering 103 high resolution steps typically of 0.6dB, even finer at 0.3dB in the central control region, and a useful 2dB in the low volume range. Precision

control of volume is often underestimated but here you really understand its valued contribution.

Zero is truly zero, at -141dB measured against full level, and there are also memory settings for source output to help match volume levels across inputs. Display brightness is also controllable, as is custom source naming for the inputs and settings.

The specification is comprehensive, with a frequency response of -3dB 0.4Hz to 200kHz and less than 0.01% distortion for a 2v balanced output from 600ohms (300ohm SE) Maximum input is 9V (18V balanced), while channel separation of better than 88dB channel separation is claimed up to 10kHz. Input impedance is high, loading sources very little i.e. 60kohm SE and 120kohms balanced.

The preamp weighs 17kg (nearly 40lb) and benefits from decent support of larger area than usual, as its footprint is 48cm wide by 42cm deep. In standby it consumes 2W; powered up this rises to 160W, and is fused with a 5A slow-blow, with mains input on a 20A IEC socket, as on the matching power amp. The preamp auto-mutes during a brown-out.

All the tubes are current production selected devices, comprising 6H30P triodes and a 6550 power tetrode for high voltage regulation, with the microprocessor monitoring usage and tube life and retains this data in memory.

### Sound quality

The *Reference Six* is so neutral in timbre that it's hard to ascribe a particular sound: instead you could say what it lacks is any solid state hardness, deadening of dynamics, treble grain or edge, or indeed veiling of image depth. Conversely it doesn't sound in the slightest 'tube-like': it's neither softened, nor with weaker and less tuneful bass or blunted transients. Instead it delivers velvety black silences, with stereo images emerging out of deep, wide and very well focused soundstages: distortion is inaudible as is any warping of the frequency response, the preamp sounding wide open, even and well balanced.

Focus was really good, with sharp, clear, highly detailed stereo images, while the overall effect was

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## The System

Constellation *Inspiration 1.0*, Townshend *Allegri+* Audio Research REF6 control units; Naim *NAP500DR* power amplifier, Audio Research D160M monoblocks, Linn LP12 player with *Keel* chassis and *Radikal* motor control, Naim *Aro* arm, Lyra *Delos* Cartridge, Naim *Superline DR* phono pre, *UnitiServe* and *Core* network server and S/PDIF source; NAIM *NDS* and *ND555 Streamer-DAC*, with *555 PS(DR)*, Auralic Aries G-2 USB streamer, Meridian 200 CD transport, Wilson Audio *Sabrina*, Sonus Faber Sonetto VIII, KEF R5, Magico *S-5II*, Quad *ESL63*, BBC *LS3/5a* (15ohm), Wilson Audio *Sasha DAW* speakers; Naim *FRAIM* and *Artesania* audio racks; Transparent XL *MM2*, Crystal *Ultra Diamond*, and Naim *NAC A5* speaker cables, Naim *Super Lumina*, Transparent current series *MM2* and van den Hul *Carbon TFO* interconnect cables.

upbeat and communicative. The bass was crisp and well extended, reaching deeply with the company's *160M* mono power amps driving either the Magico *S5II* or the Wilson *Sasha DAW*: classical piano was particularly clean-sounding, with excellent delineation of complex note patterns.

All kinds of music were handled with confidence, readily holding the listeners' attention, and while I was able to drive the Naim *NAP 500DR* to a high standard, the preamp really came into its own feeding the higher input impedance matching provided by the Audio Research *160M* monoblocks, in full balanced connection.

## Conclusions

The *Reference Six* is now fully grown: accurate and well matched, it's both versatile and has a host of useful facilities to support its innate high performance, delivering the character and sound quality we would like to get from tubes. While it's perhaps happiest driving tube power amplifiers, I nevertheless found it neutral and revealing in general service, the sense of very high quality reinforced by the sweet operation of the controls.

The Audio Research *Reference Six* is highly recommended and clearly achieves the HIFICRITIC Audio Excellence award.

## Lab Report

Some findings have been mentioned already, and further lab testing showed quite surprising accuracy for valve/tube technology combined with very low noise levels. Channel separation was excellent, typically 110dB mid band and still an extraordinary 98dB at 20kHz high frequency. Into a standard load the frequency response was wide and flat, just 0.15dB down at 10Hz and a negligible 0.2 dB down

at 10kHz: I doubt that the 0.84dB loss at 20kHz would be audible, while the rolloff beyond is gentle, to -3dB by 43kHz so HD bandwidth material gets a good look in. There will be a small variation of bandwidth with the volume setting and these figures were taken at '88'. The maximum gain is 12dB: 0.5v input will give an output of 2V. It also converts balanced inputs to SE and vice versa, to high accuracy. There is also substantial headroom, over 10V RMS of output.

The precision and accuracy inspires confidence: the 'signal invert' 'absolute phase' facility was nicely silent, and showed no measureable change on 'invert', just as it should be. Technically speaking it is quiet, accurate and neutral with very good input/output matching. Power amplifier loads of less than 10kohm may result in slight loss of dynamic headroom, and of low bass extension, but need not be ruled out, so good is the performance, as most are 20kohm and above.

At a nominal 2 volt output the total harmonic distortion including noise was exceptionally good for the genre, -98dB at 20Hz, -99dB at 1 kHz and -94dB at 20kHz. Even when heavily loaded by 600ohms (well outside the specified limits) distortion held below 0.1% at 2V, 1 kHz and fell to 0.01% at normal volume settings. At full output, 2V, the high frequency I/M, or 19.5/20.5kHz intermodulation, was superb at -102dB, this amounts to just 0.0008% !

At a volume control setting of '80' the typical signal to noise results were excellent, at -105dB with or without hum – as there wasn't any – and for CCIR 2k weighted noise we got a fine -104dB. When 'A' weighted it was a superb -108dB.

This is a most accurate and well designed line control unit, and it's all achieved with triodes – who'd have thought it?