

Most equipment reviews start with a potted history of the company. But the history of Quad deserves a book, so this introduction can do no more than mention the predecessor to the 99 Series, which was, of course, the 77 Series. Although there have been two changes of company ownership between the launch of the first 77 model and the final arrival of the 99, the new series upholds the basic objective of combining 'lifestyle' convenience, compactness and versatility with genuinely audiophile sound quality.

Launched in the early 1990s, the 77 Series was intended to bring the then old-fashioned Quad range up to date with a bang. But with its advanced design and 'smart' remote control system, the 77 Series was an ambitious project. There were delays, and individual models fell behind schedule. The Series had to be introduced without the remote control; and when the remote did appear, its software design had changed, so that some earlier products had to be modified to make them work with it.

Even loyal Quad owners, who'd been prepared to update their whole system, sometimes got fed up with waiting. The company made huge losses and, in 1995, was sold to Verity Group, already the owner of Mission and Wharfedale. Verity cut staff levels, began out-sourcing circuit boards, streamlined the almost legendary Quad service department and generally tried to modernise and rationalise. But by 1997 Verity itself was strongly

focused on the new NXT flat-panel speaker venture. It sold the now much slimmed-down Quad operation, along with Wharfedale, to the newly-formed International Audio Group (IAG). This company was and is headed by Stan Curtis, whose experience in the UK audio business goes back to the original Cambridge Audio amp of the 1970s, and who had spent five years as MD of Wharfedale within the Verity Group.

SYSTEM DESIGN

With new energy and new resources available, the design of the 99 Series has built upon the design of the 77 Series and, as Stan Curtis says (with what I think is judicious understatement), it 'incorporates some lessons learned from that system'. The remote control has been simplified to the level of a comprehensive television remote, no longer risking the complexities of two-way communication.

The whole 99 system is interconnected by the QuadLink 'bus', only requiring a multi-core link between component and its neighbour. Computer-style D-shaped 15-pin plugs and sockets are used, but the cable is far from resembling a computer ribbon cable: it is armoured and shielded for reliability. Inside, it carries multiple, balanced audio lines (allowing multiple channels for surround sound), plus data lines and 30V AC power supply lines.

Pre-amp, CD, tuner, and power amplifier are thus neatly linked by simple, short, tidy cables.

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Each Quad 99 unit contains two micro-controllers. First, there is a PIC device which drives the display and accepts instructions from the front-panel controls or from the remote. This communicates with an Intel processor, which in turn communicates with any other 99 Series units that are connected. The operating software, proprietary to Quad, is completely new, not a modified 77 code.

In hardware terms, says Quad, the 99 Series uses digitally-controlled analogue circuitry. Every function is controlled digitally, but the signal path is entirely analogue, using 'very high quality components and circuits'. Multi-layer circuit boards are used to isolate the digital and analogue signals and to prevent digital noise affecting the audio signal. This aim is also furthered by the fully-balanced audio inputs and outputs

QUAD 99 COMPONENTS

Despite its modernity, the Quad 99 Pre-amplifier really deserves the old-fashioned term 'control amplifier', because it actually is the control centre for the whole system. It provides power (at 30V AC) for the 99 CD player and tuner, and these components only work as part of the 99 system. It also has a suite

Quad's 99 Series pre-amp, CD player and tuner aims to deliver much more than your average one-make system

by STEVE HARRIS

QUAD 99
MORE THAN A MIDI

of equalisation networks in the traditional Quad manner, including high-frequency ('scratch') filter, a 'tilt' control and separate bass compensation (a choice of boost of 4.5dB in the 30-60Hz region, or a similar amount of cut below 40Hz).

As the name suggests, the 'tilt' control subtly tips the audio band frequency response up or down, by rotating it around a central point of about 500Hz. There are three steps up or down, reaching a maximum boost or cut of 3dB at around 150Hz and 1500Hz. It is intended to offer unobtrusive compensation for tonal imbalances in recordings.

All input and output sensitivities may be preset using the remote control, the three settings on line level inputs being 150mV, 500mV and 775mV. For the phono stage, there are similarly three sensitivity options for moving-magnet (1mV, 3mV, 7.75mV) and three for moving-coil (100, 300 or 775µV). These options will cover the needs of almost any cartridge.

Equalisation, sensitivity and other non-daily-use preference functions are accessed by multiple presses or hold down of the main controls. Settings are retained in memory when power is off.

The old Quad 77 Series CD machine was made in two forms: in a QuadLink 'bus' model, only connectable to other Quad units; and as a standalone player, suitable for use with other makers' products

POWER AMPLIFIER OPTIONS

THERE are (or soon will be) three power amplifier options for the Quad 99 purchaser, all suitable for use with current Quad speakers.

Basic choice is the 99 Stereo (£499), housed in a 321x70x310mm (whd) case to match the other units in the stack, which despite its small size, is capable of delivering 90W/ch into 8 ohms (120W into 4 ohms). Coming soon (not in time for this review) is the 99 monoblock, which for slightly more than twice the price (£1199/pair) offers upgraded performance and 150W/ch into 8 ohms (220W into 4 ohms). But the final option, occupying much the same space as the pair of monoblocks, at 321x140x240mm (whd), and providing 140W into 8 ohms (250W into 4 ohms) at a rather lower price, is the massively-built Quad 909 (£799). The 909's lineage goes all the way back to the original current-dumping amplifier

the Quad 405. A layman's explanation of the principle is given below. While the early 405 was saddled with a complex protection circuit (preventing possible damage to original-type Quad ESL loudspeakers) which stopped it from putting out more than a couple of amps – and hence from driving many other loudspeakers speakers satisfactorily – the 405 Series II was a great success, as was the long-running 606. The 909 seems a worthy descendant.



in the conventional way. However, the Quad 99 CD player can only be used with the 99 Pre-amplifier via the QuadLink connection, and is not even sold separately at present.

On the premise that the finest DAC is of no use if the signal data is not fully and accurately read from the disc, the design aim here was to recover the cleanest possible signal from the CD to start with. Accordingly, though based on the

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Philips CD-ROM mechanism, the player has Quad's own servo board and control software. The DAC is delta-sigma, using a Burr-Brown IC, selected 'for its comparatively high tolerance of jitter timing problems with clock signals'.

The 99 Tuner (£699) is said to have been designed to produce a natural and convincing sound quality on the UK's relatively high-quality FM broadcasts, rather than aiming at high measured performance. Two inputs are





Inside (from left to right) the 99 CD player, pre-amplifier and tuner. Servicing should be easy, with access by simply removing the base plate

provided, one for an FM antenna and one of lower sensitivity) for a cable connection.

On the Quad 99 stereo power amplifier's back panel, a rotary switch provides connection to different lines on the 99 QuadLink bus to allow selection of different surround channels. There is also a pair of phono sockets for (unbalanced) audio input for use with other pre-amplifiers.

QUAD 909 POWER AMPLIFIER

The 909 has been developed from the 606, which in turn was developed from the original Quad 'Current Dumping' power amplifier, the 405.

The current dumping principle, which was originally patented by Quad's founder Peter Walker and his then chief electronics designer Mike Albinson, is still said to be unique to Quad. It was originally conceived as a way of building amplifiers that did not need the usual potentiometer adjustments, to trim voltages and quiescent current, during production. Every Quad 909 should perform identically without any such adjustment. Additionally, the current dumping principle means that the performance should remain unchanged throughout the lifetime of the amplifier despite the inevitable ageing of components.

In the current dumping topology, each channel consists of two amplifiers. The main amplifier is a relatively crude Class B heavy-duty design, which provides large currents for the loudspeaker load. This amplifier is not very linear, and so distorts the signal, but it provides the 'muscle'. In the case of the 909, it can deliver more than 20A. There is also a second amplifier; a very low-power Class A amplifier, which is extremely linear in operation. This is regarded as a theoretically-perfect amplifier, and in practice great efforts have gone into making it distortion-free.

The third vital component is a

simple bridge circuit, made up of four impedances (actually, two resistors, a capacitor and an inductor). Normally, a bridge is used for measuring component values, because there will be no voltage differential across a bridge when the bridge is balanced, that is, when the components are matched in value. Equally, a bridge of accurately-matched components may be used to measure the difference between two voltages accurately.

In a current-dumping amplifier, a bridge is used to measure the difference between the input signal (the pure signal) and the output signal (the pure signal plus distortion). The bridge output is the difference between the input and output signals; in other words, everything that shouldn't be there (noise and distortion). This signal is amplified without further distortion by the small 'perfect' amplifier and fed, out-of-phase, back to the output, to effectively cancel out the distortion.

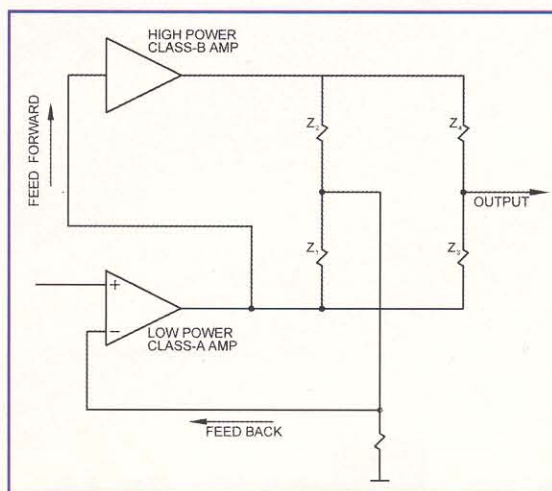
Just as important as the amplifier circuit design is the power supply, because, as Stan Curtis says, 'no amplifier can put out more than it gets in'. The 909 has a substantial

supply built around a 600VA toroidal transformer, which has separate secondary windings for each channel, thus giving a high degree of isolation between them. Each channel has its own reservoir capacitors. These are said to be unique Quad components, developed by working with the supplier to ensure that their low-impedance characteristics will be maintained for the many years of the amplifier's life. Ordinary commercial-grade capacitors are not designed to operate at high temperatures and will age quickly, degrading performance; but it is the essence of the current-dumping philosophy that the performance of the amplifier should stay the same year after year.

When connected to the 99 Series pre-amplifier, the 909 is fully balanced, and so no audio component is on the ground wire. The 909 benefits further because the output 'negative' is not a ground connection but a virtual ground. So the output is isolated from the noise or interference which sits on the common ground connection in most audio systems.

The current-dumping design of the 909 not only gives neutrality of sound, but also has the ability to drive almost any loudspeaker load. According to Stan Curtis: 'This is a testament not just to the reserves of output current, but to the fact that inherently the output signal is not affected by the output loading'. With conventional feedback amps, he says, the distortion and bandwidth change as the output loading worsens, and the negative feedback can only partly mitigate these effects; the sound worsens with difficult loudspeaker loads. But with a current-dumper, the difference between input and output signals is always removed; the sound remains the same until its operating limits are reached. The

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Simplified diagram to show the principle of 'current dumping', patented by Peter Walker and Mike Albinson and first used in the Quad 405

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909 case is formed from massive aluminium castings, giving ample heatsinking. A longer (1m) QuadLink cable allows it to be sited conveniently away from the 'stack'.

SOUND QUALITY

It proved very easy and in fact very enjoyable to listen to the 99 System, but it was surprisingly difficult to analyse the sound quality it produced.

For a start, it was impossible to separate the CD and pre-amplifier. I made many CD comparisons between the Quad 99 player and other players, including a Musical Fidelity E624 and the Exposure CD Player. But the comparisons were always unfair in that the 99 CD had the benefit of the short, balanced QuadLink connection (just 160mm long), while the alien player had to go in, unbalanced, through a normal interconnect (I used Chord Siren).

Nonetheless, I concluded that the 99 player was very neutral, even a little cool, but certainly not lacking in life or pace. The 99 CD's bass was quite dry, with bass lines easy to follow. It could produce very good depth, with a lot of believable space around instruments. By comparison, even the neutral and generally convincing E624 had a slight hint of splashiness on cymbals, a slightly warmer and arguably less firm bass quality. On a mono recording, the Quad player's sonic image remained firmly in the centre and, correctly, restrained in size.

Ever since the days when, at least according to the publicity, be-slipped Quad owners, pipe in mouth, lounged in a G-Plan chair listening to a single ESL (wifey, having brought in the tea, seated respectfully to the side), Quad tuners have presumably been tuned permanently to the Third Programme, or Radio Three as the remains of it are now known. Fortunately, the Quad system arrived just at start of the BBC Proms season, and I can only say that it did provide an appealing and convincing sound on this material. It was spacious-sounding and well-balanced, neither thin and bright nor over-warm on BBC voices.

I used the complete system with the 99 Stereo Power Amplifier and with the 909. Switching from the 99 Stereo to the 909, there was an obvious increase in dynamic punch, sense of scale, and particularly a more 'socking' bass quality, that had me immediately convinced that the bigger amp was well worth the

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extra £200 — even though the 99's nominal power rating will be more than adequate for most users. However, I also tried listening to both power amplifiers on the end of other sources and pre-amplifiers (using the unbalanced phono inputs), and here the result was not so clear-cut.

The 909 certainly delivered a big sound, and, on orchestral music I found it had quite a good sense of air around instruments, if not up to the standards of the most lucid and transparent amplifiers. It made the orchestral textures of the 99 sound a little thin by comparison, though the latter was always pleasantly 'airy'. There's no doubt that, like its long-established and well-liked current-dumping predecessors, the 909 delivers a lot of very clean watts for the money and is good value. Although the 99 Stereo is cost-effective in context, the 99 Monoblocks might be worth waiting for.

CONCLUSION

Anyone who talks to Stan Curtis will realise that he has a great personal commitment to Quad and that he is determined to build products that live up to the great tradition. In the 'old days', as he says, Quad made as many components as possible in-house, but by the 1980s, more and more components were being out-sourced.

Now, with its large factories in China, IAG has the capability to design and make virtually all parts for electronics products as well as speakers. Designing, tooling and making its own parts lowers costs, and, equally important, it allows the company to maintain quality

standards. So, Stan points out, things have come full circle, with a return to making parts 'in house', even though this no longer means 'in Huntingdon'. And actually, although administration and R&D remain at Huntingdon, the products are now assembled at IAG's Yorkshire factory.

Future Quad products, it seems, will fall into two categories. On the one hand, there will be an exciting new valve amplifier, complementing the expanded electrostatic speaker range; and on the other, additions to the 99 Series will include a Dolby Digital multi-channel pre-amplifier and a DVD player. Thanks to the multi-channel-ready QuadLink, these should integrate painlessly with the existing components.

Although it has all the functions you could really want, the 99 stereo system is not as trendily clever-clever as Meridian or Linn, nor as beautiful as B&O. But then, the Quad is really designed for the owner-driver who wants convenience but still likes to have some idea of what goes on under the bonnet, and who'd like to set his system up without having to rely on some laptop-wielding installer. I personally don't much like the rather rubbery front-panel buttons (admittedly, you never use them unless you mislay the remote), or the bright green displays. But I admire the solid metal casework, the sensible QuadLink connectors, the genuinely good sound.

The styling is a matter of taste; in the end, you're probably either a Quad customer or you're not. If you are, the 99 System will not disappoint you. +



SUPPLIER

Quad
Electroacoustics
Ltd, IAG House,
Sovereign House,
Ermine Business
Park,
Huntingdon,
Cambs PE18
6WA
Tel: 01480
433777