



The first solid state 'Premier' series amp turns out to be a massively powerful stereo chassis at a highly competitive price. Can this 350W monster really match C-J's best tube models? Martin Colloms finds out

Conrad-Johnson Premier 350

Review by Martin Colloms

A solid state Premier grade power amplifier has been on the cards for some years, but it comes as something of a surprise to find it revealed as a stereo chassis, presented at a relatively sensible price. And if the Premier 350 does reach the best audiophile standards, then the £8000 UK price tag for a load tolerant 350W per channel amp makes it truly competitive.

Conrad Johnson's eminently respectable Motif and MF series power amplifiers built with MOSFET power amplifiers have been around for a while, but the honours for absolute performance from cj have remained with tubes. So some kind of tech-

nical and philosophical breakthrough would be required to elevate solid-state into the Premier Class.

Some of the purity and simplicity of the zero loop feedback ART preamp proved to be the key, together with a recognition that bi-polar and FET sections could co-exist in the design. Very careful selection of passive components, resistors and capacitors, also helped refine the design.

I can't say that the Premier 350 is a thing of beauty and we have yet to prove it'll be a joy forever. It's bluff, workmanlike, and crushingly heavy, while its extreme mass imbalance to the right makes it very awkward to pick up. There are no frills, no special lights or displays – you just turn it on and away you go.

There's no intention to deliver exceptionally low distortion and the specifications

relate more to music reproduction than to the needs of an exacting test laboratory. Conrad-Johnson states that with both channels driven the power for 8 ohm loads is 350+350W (25.5dBW) for 20Hz to 20kHz for less than 1% total harmonic and intermodulation distortion, implying a degree of soft clipping. Other load conditions are not specified. Rated frequency response is 20-20kHz +/-0.1dB; hum and noise at 104dB below rated power, not particularly silent in my view. Sensitivity is high at 1.1V for 350W and the kind input impedance of 100k ohms makes it easy to drive, even from passive control units. The makers offer a three-year warranty. General electronic fault protection for the amplifier – short circuit and the like – is provided by 4 supply rail fuses [10A, 1¼ inch Buss, quick-blow] accessible on the rear panel.

Input is single ended, via gold plated phono sockets. A detachable power cord is provided using the high current type '30A' IEC connector. You may experiment with power cables. Speaker connection is via single gold plated binding posts, which will need a hex wrench to properly tighten for spade connections. 4mm sockets are also present if the rubber safety shrouds are removed. The terminals are a bit small and close together for such a powerful amplifier, considering the kind of cable likely to be connected, and secondly, they have those awkward insulating shrouds, which many customers will take off.

Technology

Earlier generations of cj solid state amplifiers have used FETs at the output stage, taking advantage of their tube-like characteristic curve or distortion function, their generally benign self-limiting overload behaviour and easy drive feature. Conversely some feedback is necessary as their distortion is rather dependant on output current. Like for like, it's also harder to design for the kind of higher peak output current which is often required to drive modern large speakers to full sound levels.

Conrad Johnson have chosen modern highly linear bi-polar transistors for the 350's output stage and have taken no chances in respect of the current delivery. The Class A-B compound output stage offers at least 65A peak, with tolerably low output impedance and without loop negative feedback applied. Such output stages can sound open and dynamic and are generally less load and cable dependant than usual.

Designed using a philosophy of 'simplicity' – much like the single ended ART preamps – the main voltage amplifying section of this powerful design comprises two complementary FETs, series connected and operated without feedback – the classic cj 'auto linear' configuration. The residual non-linearity of one FET is mirrored and thus virtually cancelled by the other. This highly practical circuit was first used in the original Motif preamplifier.

A total of ten high current transistors are paralleled for each output channel, five per phase. With music level tracking operating bias, the amplifier idles at a fairly moderate power, barely warming the heat-sink. Details of the other circuits and components include discrete, low coloration regulation for the driver stages; generous use of costly Vishay metal foil resistors, custom polystyrene, Teflon and polypropylene capacitors, plus selected internal wiring. It is said that the Teflon capacitors require extended running in, 100 hours plus, before their best sound is achieved.

A massive E & I lamination power transformer supplies the low-noise, fast recovery rectifier diodes, feeding a bank of selected 100V rated reservoir capacitors which total 80,000uF. Such a reserve should provide powerful bass at high power, even into 4 ohm speaker loads.

The Sound

To be honest when I first listened to the 350, I was not that impressed. I thought 'here's a clear contender with solid musical appeal' but it also seemed out of balance, restless and in some respects (by amplifier standards) even coloured. Early test scores of 35 to 40 would have earned qualified approval in its price sector but no great enthusiasm. Frankly I was disappointed. I'd waited a long time for this, and the 350 was supposed to rank alongside the legendary Premier 8, 200W tube monoblocks!

So I looked at the system set up and began to test again, this time imagining that I had just bought the 350. I set about installing it from scratch as the primary source component, taking care over supports, cable runs and layout, selection of cables, association of mains sockets and related power spurs. With all audio components such consideration brings rewards and all review products get such treatment before finishing off an assessment, but in the case of the 350 the benefit was out of all proportion to my expectation. I should have remembered my experience with the ART line preamp a few years ago, where the performance can vary from 'very good' to 'pure excellence' according to the quality of final set up and the care taken matching all the relevant parts. That early, if convenient, multiple-component set up really gave no hint as to the performance potential of the Premier 350.

At this point I can see no reason to prevaricate. This really is a top class power amplifier, so much so that in this context, price is not an issue. The Conrad Johnson 350 disposed of its competition in much the same manner as the little Robertson 40-10 did when it was launched onto an unsuspecting market some two decades ago. That amp sounded fresh, clear, upbeat, lively and communicative, leaving the competition and many more costly models - sounding dull, tired, dated and two-dimensional.

When the Krell FPB series hit the streets a many years later, it became apparent that a similar order of magnitude gain in performance had been achieved in the high power class and the descendants of the earliest FPB have continued to set reference standards in their price sectors. For all round performance under all loads and conditions, the FPB 400cx and 700cx are class leaders – powerful, imperturbable, essentially clear, structured, resolving, controlled and neutral.

And now we have the Premier 350. It has that quality that has made the ART preamplifier so special – a sense of inner life, exuberance, commitment to performance, a powerful reach into a recording where the feeling of presence and space is more powerfully conveyed.

Sheer performance may be qualified and quantified in many ways, and here I will try to do this by conveying what I experienced. However it is self evident that in the face of genuinely superior quality almost every aspect of the reproduced sound and the musical experience is improved.

The System

For this review the listening system included:

CD: NAIM cds3, Marantz CD-7, Krell KPS 25sc

Disc: Linn LP12-Lingo-NAIM ARO-AN IO II, AN-S4

Loudspeakers: Avalon Eidolon Diamond, Quad 63, BBC LS3/5a 15 ohm.

Amplifiers: Krell FPB 400cx, 700cx, Halcro DM38, Karan Acoustics 450, NAIM 250 Mk1.

Control units: cj ART, Krell KPS25sc, XTC PRE II

Cables: Transparent XL, Cardas Golden Cross, Wireworld Equinox

Supports: Finite Elemente Pagode, Soundstage Superspikes captive points to wood floor for sound tables and loudspeakers.

(The Premier 350 is inverting of absolute phase and during testing was set in-phase via an inverted connection for the loudspeaker cable polarity)

I admire and respect the big Krell '700. It can be relied upon under any circumstances but as regards the musical message, in this comparison I found the '350 just locked you in. Towards the highest power limit the Conrad Johnson bass may be heard not to reach quite as deeply but its bass was undoubtedly powerful even with sub 6 ohm speaker loadings. The energy, speed and impact heard in the bass all set new musical standards for this high power range. The Premier 350 kicks almost persuasively like a good NAIM in the bass, something which I have found is so rarely achieved with the much larger 'audiophile' power amplifiers.

While most of the other solid state amps are 'whiter' sounding, leaner, even 'harder' and more 'forward' than the quoted Krell references, save those exceptional Karans, the new Premier had a mid tonal quality that was perceptibly deeper, more richly balanced and more like a classic tube sound than the accepted solid-state result. You hear greater weight and natural scale, with fuller and more explicitly resolved chords in the lower mid range, and a more natural 'bloom' on massed orchestral strings. The upper mid was certainly not dull by comparison. Here the '350 proved punchy, dynamic, 'present', articulate and focused.

The treble also set a high standard, at least as good as the solid state references, but perhaps not quite as delicately resolved as the tubed Premier 8 or an early incarnation of the Cary 300SE. The treble certainly had sufficient energy, and I discovered early on that the matching cables needed to be neutral in the treble. As such the sweeter Cardas Golden Cross here outplayed the theoretically superior but slightly brighter Golden Reference type by offered more natural upper range timbres.

I have been known to describe the broad sound of some review amplifiers as bleached or threadbare, (a terms first used across the Atlantic). Well, the sound of the '350 is precisely the opposite. It presents a sound stage that is significantly closer to the experience of listening to live musicians. It

conveys complex textures, digs deep into harmonic and chordal relationships and tells you more about the instruments themselves and how they are played. This is accompanied by genuinely high resolution, with a great sense of transparency of ambience and a rich reverberant field, anything but threadbare in fact! Stereo stages were wide and deep, with excellent focus and perspective.

This is all is well and good, but if the sound doesn't engage the listener, it just wouldn't matter. Fortunately the '350 is very strong on this aspect, possessing a vibrant, upbeat quality, dynamic, expressive and well paced. It was most rewarding to visit familiar programme and feel that one was hearing it anew, with fresh insights into recorded quality and musicianship. On several occasions I had to tear myself away from over extended listening sessions.

At close to 400W available per channel this should feel like a big amplifier, and it does. High level testing showed no weakness in overload clipping behaviour, no detectable change in sound quality with loudness, no dynamic shifts on transparency from low to high level or at different operating temperatures and power history.

A very slight hum was audible with my ear planted on the Eidolon mid driver. This might just be heard in a very quiet location with very sensitive speakers, say over 95dB/W. I couldn't hear it at all my listening locations.

I revisited this amplifier many times with many careful comparisons before arriving at the exceptional sound quality score of 125 marks on my usual subjective listening test scaling, a new record.

Conclusion

I think the Premier 350 will be the answer to many an audiophile's dreams. If you have admired the Premier 8 monoblocks for their combination of power, musical subtlety and staging, and you favour the fluid, well balanced mid range of tube amplifiers, yet at the same time crave the dynamic range, grip and slam of the best solid state, then you owe it to yourself try the Premier 350.

I found this Premier power amplifier agile, extended and very well paced in the bass. It sounded tonally broad and richly textured in the mid, as well as lively, clear and balanced in the treble. It proved capable of wide, very deep and well focused stereo images, and could play loud into any load, while remaining satisfying and well resolved at moderate volume levels. For me, above all else, it was musically dynamic, upbeat and involving, strongly portraying performance, rhythm and syncopation.

It can be fussy about power quality, matching components and location, and above all the quality of the programme fed into it, but with a good setup the musical rewards are blindingly obvious. Minor criticisms notwithstanding – and among them was definitely the unbalanced weight distribution– this first Premier solid-state power amplifier has nevertheless proved to be a winner.

The Premier 350SA is a natural - this combination of power, build, sound quality and price is the hallmark of a class leader. It has been worth the wait.

Martin Colloms

Lab Report

Nailing any possible concerns about load drive, I found that this Premier 350SA was found capable of at least 66A peak current. On normal 8-ohm speakers, it provided short-term programme power of nearly 500W per channel. Continuous power of 780+780W into 4-ohm loads was possible in the mid band for short periods and I could get 1.6kW per channel into 2 ohms for music related power pulses.

There are bigger amplifiers than this but they are few and far between. No wonder I didn't feel the need for more power when auditioning this fine example.

A thrilling dynamic range will be available using higher sensitivity speakers in larger rooms. Rated at 25.5dBW 8 ohms, 26.4dBW was available both channels driven, 20Hz to 20kHz, and the output on musical related pulse testing still exceeded the rated 8 ohm level when driving a taxing 2 ohm load. Except for discotheque use, this amp will drive anything! Unfortunately I did manage to blow it up at the end of the test when exploring maximum pulsed current into 1 ohm loads, this way beyond the manufacturers rating and not to be found in real life. I did not regard it as a sign of weakness, however it is simply not quite as unburntable as for example a Krell.

At rated level, total harmonic distortion was about 0.2% 20Hz [-55dB], measuring 0.15% mid band and 0.25% at 20kHz. The '350 proved less linear at high frequencies than a number of modern solid-state designs, but gave no cause for concern. Full power high frequency inter-modulation was -66dB, 0.05% and at 1 watt it measured 10dB better at about 0.014%, quite negligible.

Looking at total harmonic distortion at a range of powers and frequencies, this amplifier was seen to clip quite softly and nearly 3% of distortion was generated before visible waveform clipping was seen on the oscilloscope display.

Full power drive into 4 ohms at a non-destructive 20kHz level in fact blew the rail fuses, and the 4 ohm performance is clearly for music related use and not for room heating. For a symmetrical push-pull amplifier such as this, the distortion would be expected to be predominantly composed of odd harmonics, but in fact low order harmonics including second harmonic dominate the spectrum.

Channel balance bettered 0.1dB while the high input sensitivity and high input impedance aided compatibility. 1W output was achieved for just 53.5mV input, with full clipping level at 1.19 volts, this into 100K ohms loading and with less than 100pf of capacitance. DC offset was very slightly higher than usual at 9mV, 10mV for this sample, but not enough to cause any concern.

Frequency response easily met spec 20Hz to 20kHz, with +/-0.05dB limits applicable. A very slight fall is given for 10Hz, -0.25dB while the -0.5dB point in the treble measured at 32kHz. -3dB was noted for an extended 120kHz upper limit.

The output impedance was low, if not a 'high feedback super low'; 0.12 ohms is typical for the output source impedance, well controlled over the range and comparable with good audio cable. This power amplifier is inverting of absolute phase [there are a few other examples for example the original Naim 250]

Signal to noise ratios were good but not outstanding. Referred to full power figures of 102dB were typical unweighted, and there was just a trace of hum seemingly induced in the input circuitry. 'A' weighted it averages -113dB referred to full power, and -88dB for IHF 1W.

Mechanical hum was fairly low and the generous reservoir capacity ensured that a fine result was obtained for supply modulation. The amplifier had a good impulse performance and would stably drive any conceivable loudspeaker.