NAIM AUDIO NAP 250 DR

POWER AMPLIFIER

Reviewer Edgar Kramer

As one of the longest running companies in the industry, Naim Audio not only offers a very complete set of products – from source to speakers and everything in between – but has the resources to employ a well-staffed R&D department (led by Steve Sells – see interview p18). This result is an ongoing schedule of products that continue to display the company's reputation for individuality and, in recent years, an especial penchant for combining its traditional analogue strengths with intelligent digital features – as evidenced in the impressive multitasking app-empowered and Bluetooth-equipped NAC-N 272 preamplifier/streamer/DAC supplied to pair the power amp under review here.

△ THE EXTERIOR OF THE NAP 250 DR MAY BE INDISTINGUISHABLE FROM THE PREVIOUS VERSION, BUT ITS CIRCUITS FEATURE A HOST OF NEW 'STATEMENT'-DERIVED TECHNOLOGIES.

And if further evidence of Naim's ambitions were needed, what better proof than the recent project to produce an absolute 'statement' of the company's highest engineering capabilities in a preamplifier and power amplifier combination that was effectively budget-unlimited, no holds barred.

The result of thus letting it rip was the near-$360,000 'Statement' *tour de force* landmark pre-power combination (see *Audio Esoterica* #3-2014), the pinnacle of Naim Audio's achievements in amplification. But such a peak presents a problem. Having manifested your greatest artistic creation, what next? The challenge, of course, is then to bring aspects of the new technology trickling down into more affordable bread-and-butter products, within the obtainable scope of the bulk of Naim's ardently loyal client base.

VERY DISCRETE

One of the key technological aspects of the Statement amplifier was Naim's decision to engineer its own output devices. In Naim's view, standard-issue transistors possess limitations in terms of power and thermal saturation unsuited to the all-out Statement design. So, in conjunction with a specialist semiconductor manufacturer, the company went about creating its own transistor, the NA009, with high tolerances in all aspects of its construction.

This ceramic-insulated NA009 transistor has now been implemented in the NAP 250 DR power amplifier too, as has the extremely quiet Discrete Regulator (DR) from the flagship product, now in the NAP 250 and added informally to its nomenclature (it's still listed as just NAP 250).

△ MADE FOR EACH OTHER – THE MULTI-SKILLED NAC-N 272 PREAMPLIFIER/DAC/STREAMER CAN BE APP-CONTROLLED VIA iOS AND ANDROID DEVICES.

SPECIFICATIONS

NAIM AUDIO NAP 250 DR

AUDIO INPUTS: 1 × XLR

INPUT IMPEDANCE: 18k-ohms

GAIN: +29dB

FREQUENCY RESPONSE: 3Hz-50kHz (-3dB)

MINIMUM LOAD IMPEDANCE: 2 ohms

SPEAKER OUTPUTS: L/R 4mm 'banana' sockets

POWER OUTPUT: 80W per channel, 8 ohms

SUPPLIED: standard interconnect

DIMENSIONS (HWD): 87 × 432 × 314mm

WEIGHT: 15.8kg

PRICE: $8000

WARRANTY: Two years

CONTACT: N.A. Distributors on 02 8005 0670 www.naimaudio.com.au

Naim states that this new DR implementation lowers noise by up to 30 times compared to the previous-gen NAP 250, while also lowering dynamic impedance, which provides a more steady current supply to meet the speakers' demand. While this is, in the main, a review of the NAP 250 DR, sonic comparisons to the non-DR version will serve to provide some context both to owners and to interested readers.

The NAP 250 DR's specification for power output is 80 watts into an 8-ohm load, while the frequency response is quoted as 3Hz to 50kHz within a -3dB envelope. The input impedance is 18-kohms while the amp's gain is 29dB.

Typically for Naim, connectivity is… different. Firstly, only banana connectors need apply at the amp's speaker outputs, with the almost flush sockets accepting neither spades nor bare wire. Then there's the lone XLR input —it's not a mono amp, rather the pins 2 and 3 are wired to conduct the stereo channels. Naim provides the connecting cable wired for its preferred XLR arrangement at the amp's end and DIN-terminated at the preamplifier end – so using anything other than a Naim preamp is not possible unless you obtain an appropriately-terminated cable for transferring your preferred preamplifier's twin output (whether RCAs or XLRs) to the single XLR input on the NAP 250 DR. Regardless of the claimed benefits this arrangement may provide in principle, it's… somewhat limiting.

So, in order to facilitate this review Naim Audio's Australian distributor (N.A. Distributors) supplied the NAC-N 272 preamplifier with the appropriate DIN-XLR cable, while the rest of the system's regular loom remained as per reference.

DIFFERENT TWINS

Auditions started with the previous-gen NAP 250 in order to ascertain the original's sonic signature. And yes, let me state this straight off the bat, the clichéd PRaT descriptor does apply here. The NAP 250 jumps at rhythms in a most propulsive way – across the frequency range, not just in the bass response. So there's an impression of attack and speed in the way that drums, for example, fire towards the listening seat. The snare and kick drum crisply and tightly pulse energy and establish an engagingly fast rhythmic pace. Also on offering were superb low level detail retrieval, good separation of dense mix layers and an overall smooth tonality. Bass power was good, if not hat-blowing, while the NAP 250 presented excellent image accuracy laterally within a very wide if somewhat shallow-ish soundstage.

On an operational level, our sample NAP 250 displayed a noticeable turn-on 'thump' via our reference 91dB-sensitive Wilson Audio speakers. Your speakers' sensitivity will determine the volume of the thump.

Enter NAP 250 DR. No more thump – first thumbs-up. Subsequent and numerous thumbs-ups came via both subtle and not-so-subtle sonic improvements over the NAP 250. For starters, the new amp has a noticeably more dynamic presentation, with contrasts in musical amplitude being both more pronounced and real-sounding.

Several of our dynamics torture tests (featuring well produced drums, powerful orchestral, rock and World Music recordings) showed the DR could just as well stand for 'Dynamic Range' when compared with the straight NAP 250.

One surprise came via Argentinian prog-tango "Sera Una Noche" where the NAP 250 DR showed a clean set of heels to its predecessor in the way it handled treble decay with instruments such as bells and cymbals in a number of tracks throughout this revelatory recording. The DR beautifully conveyed the harmonics and delicate detail of upper high frequencies while maintaining superb timbral signatures throughout the bandwidth.

The soundstage on the NAP 250 DR is now also deeper and seemingly more layered, while its width and image placement are on par. In our room, there was most definitely an impression of increased distance between the vocalist and instrumentalists in live recordings, as well as an increased sense of the venue's ambience.

The transient attack and 'speed' noted above for the NAP 250 are maintained with the NAP 250 DR. The superbly-captured snare on "Like a King" and "Whipping Boy" from Ben Harper's *Welcome to the Cruel World* snapped with terrific projection while cutting through the solid bass foundation without impinging on the clarity of Harper's subtle vocals. Appropriate weight and emotional connection were given to Johnny Cash's aged and deep growl on "Hurt" from *American IV: The Man Comes Around*. And although the track may seem simple enough for any competent amplifier to reproduce effectively, it's an astutely balanced one that can produce clarity in the vocals juxtaposing the crescendo as it builds to accentuate the sentiment behind the lyrics' message. Similar findings applied to Patty Larkin's "Winter Wind" from *Angels Running*, where Larkin's voice is present and floats on a platform of warm and full-bodied guitar chords.

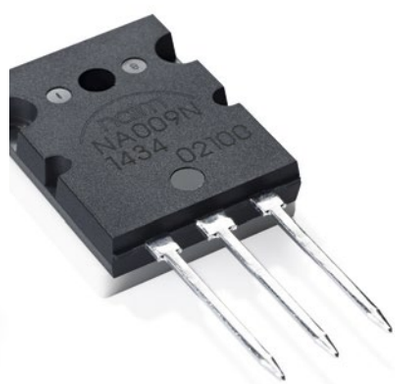
The one consistent factor with both amplifiers (but more so, to a considerable extent, in the 'DR') is the connection with the music being replayed – immersion in the performance and the listening experience; it took conscious efforts to don the 'Reviewer's Hat' in order to compose these evaluations. These amplifiers invite listening and involvement.

CONCLUSION

Naim does things in a distinctively individual way; from the minimalist styling carried across all its products to the circuitry and proprietary connectivity. There's a clear statement here: 'follow us on our path and we'll take you to the music'. And indeed, with the NAP 250 DR, that's exactly the destination. And really, what more can you ask of *any* amplifier...

△ NAIM'S NEW 'SUPER LUMINA' CABLES FEATURE HIGH QUALITY CONDUCTORS AND BESPOKE 'AIR-PLUG' CONNECTORS MANUFACTURED IN-HOUSE.

▽ TRICKLED DOWN FROM THE STATEMENT FLAGSHIP, NAIM'S NEW NA009N TRANSISTOR WAS CUSTOM MANUFACTURED FOR THE NEW RANGE OF AMPLIFIERS BEARING THE 'DR' DENOMINATION.



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INTERVIEW – STEVE SELLS

Amplifier statements

EDGAR KRAMER: *It's clear that serious trickle-down has come from the Statement amplifier to the NAP 250 DR. What have been the benefits compared with the pre-DR NAP 250?*
STEVE SELLS: It's benefitted in two areas – the high current regulated power supply, and the new NA009 output transistors in the amplifier and DR power supply. The actual circuit of the power amplifier hasn't changed, except for a little tuning to the new power supply and transistors. The result is incredible clarity throughout the audio band, and more perceived power. We think of amplifiers as having one input – the audio input signal. In fact they have many. They are susceptible to vibration, electro-magnetic fields (RF), magnetic, temperature and power supply noise. Any noise on the power supply will ultimately appear at the speaker terminals, albeit very attenuated.

There are two primary types of noise that appear on amplifier power supplies. There's the noise the power supply makes itself and the noise the amplifier imposes on the power supply as it drives the speaker. The new DR power supply – the DR stands for 'discrete regulator', made from individual parts – addresses both of those. The actual noise of the power supply is 30 times quieter thanks to the DR design. It also maintains a more constant voltage under heavy speaker driving conditions.

There are many schools of thought in designing amplifiers and their power supplies. You can either design the amplifier to reject supply noise, or alternately make the supply quieter. To make the amplifier reject the supply will require more components – and the extra components can be detrimental to the sound. By making the power supply better, the amplifier can remain simple and tuneful. The new NA009 power transistors from the Statement amplifier are now fitted to the NAP 250 DR. The new transistors have a better thermal connection to the heatsink. This reduces temperature fluctuations in the transistor silicon. The temperature fluctuations cause the transistor's characteristics to dynamically change. The new transistor also has no ferrous materials – they have copper legs – and the lack of ferrous materials makes them mechanically quieter. Ferrous materials are more susceptible to magnetic forces. Due to the high currents in amplifiers there are many unwanted magnetic fields generated.

EK: *Can you tell us a little about the circuit technology in the NAP 250 DR and the major differences between this and the non-DR version?*
SS: As I said, the amplifier circuit on paper looks identical, just a few component values changed to tune it to the new power supply and new output transistors. But the power supply is completely new – this DR power supply is a smaller version of that found in Statement NAP S1. A regulated power supply can be thought of as an amplifier with a DC voltage at the input instead of a musical signal. The DC signal is multiplied by the power supply amplifier to the required voltage needed to power the audio amplifier circuit. The DC reference in a DR supply is a 7-volt buried zener diode, the quietest voltage reference you can get. They were invented in 1970 by refining standard zener diodes from the 1950s. The buried zener is powered by the output of the DR power supply itself, and this technique makes the circuit very low noise and simple.

EK: *We have to ask about Naim's cable preferences! DIN connectors as well as standard RCAs and, in the NAP 250 DR, a dual-channel-configured XLR. What does the DIN offer that the other connector types don't, and how does this fit in with the new Super Lumina range of Naim standard cables?*
SS: There are two main areas of difference between RCA and DIN. One is vibration control and the other is signal ground quality. RCAs, while excellent, are made completely rigid. Any vibration picked up in the leads due to sound waves appear at the contact point. With DINs the pins in the sockets float – the same vibrations in the leads are now absorbed by the floating pins and the contact is therefore mechanically quieter. Most RCAs have a large contact area for the ground connection; the DIN has a gas tight 'point contact'. Secondly there is only one ground in a stereo DIN lead and two in an RCA lead. The two ground connections form a loop and so are more susceptible to noise pick-up.

The Super Lumina cables take the connectors' mechanical principles to the ultimate conclusion. We can also make detailed choices such as ensuring plugs and sockets have similar contact material. The similar contact material removes any nonlinearity in the contact points due to galvanic scale differences. Super Lumina cables also have newly-developed wire using advanced insulators and differing diameter conductors.

EK: *You could say that Naim has been almost stereotyped with the PRaT (Pace, Rhythm and Timing) sound descriptor. Have the multi-generational circuit refinements leading to the current amplifiers purposely kept this sound trait? What other inherent sonic qualities do you aim for at the design stage?*
SS: By keeping the amplifier essentially unchanged and improving the power supply we were able to not only keep the renowned Naim sound but enhance it.

EK: *Has being part of the same entity as Focal changed some of the design philosophies or aspects of your amplifier design – perhaps to benefit or promote amp/speaker synergies?*
SS: Working with Focal has allowed our design teams to exchange ideas, to refine what we both do already. Having the Grande Utopia at Naim for tuning was also great fun. The big Statement amplifiers are incredibly fast and have enormous current delivery capability; they make the big speakers sing, and their scale is captivating.

EK: *So what have the lessons been from the idea exchange, given two very different disciplines of loudspeaker and amplifier design?*
SS: Amplifiers and speakers are very different disciplines of design, but both benefit from a deep understanding of physics principles. For example material science, thermal distortions and eddy current minimisation. It's also interesting that we have common ground between some of our speaker philosophies. Probably the most notable is that for very high performance speakers, separate boxes for the drive units can add considerable clarity. Naim has nearly always incorporated decoupling between drive units, and this can be seen on the Utopia speakers too.