

# On the Up!

Martin Pipe plugs into the Drachenfels headphone amplifier from Lehmann Audio.

The story of this proud German firm begins in the late 1980s when founder Norbert Lehmann – then an engineering student – discovered that amplifiers of identical specification sounded different. Naturally, he wanted to find out why. Its first product, launched in 1995, was the Black Cube phono stage; nine years later Lehmann Audio branched out into headphone amplifiers with its release of the Linear. We reviewed one of the latter's descendants, the £1000 Linear D, a few months back. This model boasted an internal DAC as well as traditional analogue inputs.

The diminutive Drachenfels (literally: 'Dragon's Rock') is named after a hill in the Siebengebirge uplands of Germany's North Rhine-Westphalia region. It's perhaps closer in spirit to the original Linear insofar that it's an all-analogue design. Appearances are very similar too, both have pairs of headphone sockets and large volume controls.

Having said that, one of the benefits of the Drachenfels is its modularity. In the near-future, you'll be able to upgrade it with a digital-

input module – the case has internal space with mounting bushes for the extra circuit board, which will be supplied with a replacement rear-panel. A connector on the amplifier board provides the necessary interface.

Norbert told me that a USB (planned to sell for 400 euros) and SPDIF/TOSLink boards (450 euros), which will both have the same DAC as the Linear D are currently in the "pre-production stages." An autumn launch is planned for both. Bluetooth and Wi-Fi modules are to follow; however, I was warned that there is "no concrete time schedule for these yet".

So, for the time being we'll have to make do with analogue. Like previous Lehmann headphone amplifiers, the Drachenfels has rear-panel phono outputs – as well as inputs. They allow the unit to double up as a line-level preamp (up to 12dB gain – a factor of 4 – is offered) with active speakers or power amps. Plugging in headphones mutes the line output.

Instead of an internal transformer like the physically-larger Linear D, the Drachenfels relies on a 24-volt

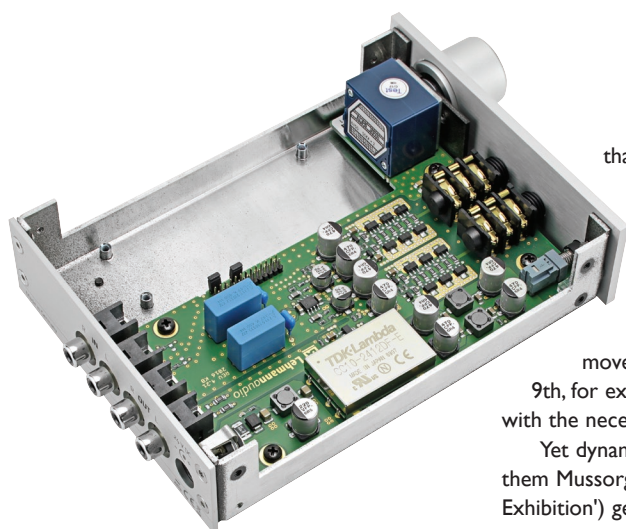
DC wall-wart for power. Inside, the construction is up to Lehmann's usual high standard – audiophile quality components (an ALPS pot for volume control, expensive silver-mica capacitors, a multi-layer glass fibre circuit board, Neutrik headphone sockets) are much in evidence.

The "totally high-tech" electronics makes more use of surface-mounted components than the Linear D – especially when it comes to the output stage. One of the largest components is a TDK Lambda DC-to-DC converter, which provides the Drachenfels with a "very low-noise" split-rail supply. Norbert informed me that Rohde & Schwarz uses the same device in its test gear.

"The basic amplifier technology of the Drachenfels" Norbert explains, "is practically the same as that inside the Linear". It consists of a "high-class op-amp" for voltage-amplification, followed by a discrete Class A bipolar output-stage "which is not inside a feedback loop".

The amplifier is restricted to audio frequencies by an input low-pass filter and a voltage-gain stage that's limited in its bandwidth. Just as well, given that that the output stage





**The Drachenfels interior has been laid out with military precision. Note the high-quality capacitors.**

– which consists of “three pairs of ultra-fast transistors in parallel” – could deliver a usable output at 35MHz.

**SOUND QUALITY**

Primary sources were a Cambridge CXN streamer, connected via its analogue phono outputs or via Prism Callia/Chord Hugo TT DACs, and analogue tape - notably the Philips N7150 featured in this month's Olde Worlde. Headphones partnered with the unit included Focal's reference-class Utopias and, perhaps more representative of what will be used with this unit, Oppo PM3s. I also tried the Drachenfels line output with an Arcam A49 integrated amplifier driving my Quadral Aurum Wotan VIII reference 'speakers, and an Onkyo A-9010 with Wharfedale E50s.

It's difficult to characterise the sound quality of this device – because it's so neutral. And I mean that in a good way. It contributes no audible noise or distortion, and tonal colouration is conspicuous by its absence. Control of volume was impeccable across the available range with no audible shifts in imaging or tonal impairments.

If the track you're listening to is propelled by energetic rhythm (e.g. Kraftwerk's 'Tour de France Soundtracks') then that dominant aspect of the character emerges intact. With the 'bite' of jazz and funk horn sections, such as Brass Construction, you hear it in the right proportions; nothing is added, or taken away.

And it plays ball with the subtleties too. I have been enjoying the Radio 3 FLAC (i.e. lossless) feeds that the BBC have put into place for the Proms via conventional hi-fi gear,

thanks to some tweaks that are outlined elsewhere in this issue. The delicacies of quieter and moderately-paced pieces (the third movement of Beethoven's 9th, for example) are conveyed with the necessary detail.

Yet dynamic pieces (among them Mussorgsky's 'Pictures at an Exhibition') get the headroom they need... And with the lunchtime chamber music performances you get intimacy and a sense of the room the musicians are playing in. Stereo imaging fared well across a wide variety of music, while binaural material (John Adams' 'Harmonium', another BBC Proms experiment) made for an engaging listen.

The Drachenfels is certainly capable of illustrating just how limited many of the cheaply-implemented headphone outputs built into equipment tend to be. Playing a couple of vintage quarter-track pre-recorded tapes (Joan Baez's 'Farewell to Angelina', Dave Brubeck Quartet's 'Live at Carnegie Hall') on the Philips via the Drachenfels yielded cleaner, less-congested and more musical listening. Maybe that's why built-in headphone amps are so rare on sources nowadays.

There's plenty of drive

available and the Drachenfels was able to sustain the Utopias and PM3s simultaneously at quite high listening levels with no audible signs of strain. My only minor criticism of the Drachenfels is that the blue power-on LED is bright and was a little distracting during late night listening sessions.

**CONCLUSION**

The Drachenfels is one of the best headphone amplifiers you can buy at the price. It comes highly recommended.



**A key component of the Drachenfels is its volume control - an expensive ALPS dual pot.**



**The Drachenfels can act as a line-level preamp - the output phono sockets are active when no headphones are plugged in.**

**MEASURED PERFORMANCE**

The Drachenfels has x4 gain from its analogue inputs to both the output sockets at rear and both front headphone sockets. Headphones typically need 1V to go very loud so it will work with a 250mV input and that is about right to match either Tape output sockets, a portable player or a phono stage. Maximum output was high at 7V, this being well above a level usable with headphones. Distortion was low at 0.001% at 1V output, our analysis shows.

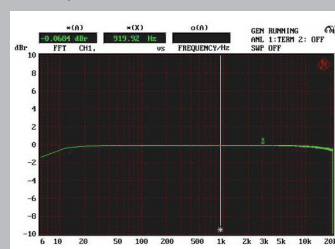
Frequency response measured flat across the audio band, rolling down slowly above 30kHz. The lower limit was 6Hz. Response did not change with volume control position, as can happen with poorly designed analogue controls.

The Drachenfels measured well all round. **NK**

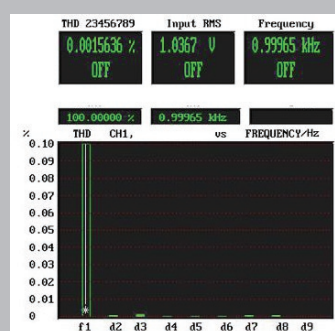
Frequency response	8Hz- 30kHz
Distortion (1V, 1kHz)	0.001%
Separation	82dB
Gain	x4

Noise Overload **-68dB**  
7V out

**FREQUENCY RESPONSE**



**DISTORTION**



**LEHMANN AUDIO DRACHENFELS £450**



**OUTSTANDING - amongst the best**

**VERDICT**

Beautifully made, soundly-designed, fine performance - and an upgrade path too. What's not to like?

**FOR**

- musical and transparent  
- built to last

**AGAINST**

- no remote control  
- bright blue LED can distract

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