



It came as a bit of a surprise when, earlier this year, Neumann announced their first pair of headphones in the company's 90-year history. But in fact, it's only consequent as the microphone experts from Berlin have, in recent years, addressed the rear end of the signal chain, too, with their very successful studio monitors. The NDH 20 aspires to be the complementary pair of studio headphones.

# At Last!

## Neumann NDH 20 – studio headphones

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→ Most premium headphones, these days, come in oversized, radically stylish packaging, but looking at the NDH 20's carton, I wonder how Neumann managed to fit a pair of full size headphones in a box this small. The answer is, the ear cups may be rotated so the NDH 20 takes up less space for easy transportation. The carton box even offers enough space for an accessories compartment containing a dust bag, two exchangeable cables (one straight, one coiled), and the owner's manual.

## GERMAN SILVER

I would have expected Neumann headphones to be black or dark grey like their monitor speakers, with a bright red Neumann diamond like on their TLM series microphones. However, the pair of headphones I hold in my hands looks very different ... yet totally Neumann-like. The predominant color is silver matt, similar to the classic Neumann microphone finish. The black of the ear pads is a nice contrast, while the drivers are covered with a bright orange fabric. The latter adds a touch of playfulness to the otherwise serious design and corresponds to Neumann's corporate color scheme, which has included orange as a contrasting color for quite some time on their website and official documents. The famous Neumann logo is engraved on the lower ends of the headband, but without the typical fill colors such as red or purple it appears rather understated.

What impresses me most about the NDH 20 is its high mechanical quality. While most headphones, even in the upper regions of the price scale, are made out of synthetic materials, these days, Neumann's headphones are made out of metal, mostly. The ear cup covers as well as the joints and parts of the headband are made of aluminum; a spring steel band ensures the right amount of pressure. Due to its metal construction, the NDH 20 is a bit heavier than some other headphones, but its weight of 388 g is evenly distributed and causes no discomfort or fatigue – at least not to me.

The perfectly round ear cups are circumaural and offer sufficient space for large ears. The cushions are made of memory foam and are covered in a skin-friendly velours. The ear cup joints move in three dimensions, thus ensuring a snug fit. Although its clamping force is quite moderate, the NDH 20 surprises with excellent sound isolation. Neumann's first pair of headphones is a closed-back design.

As was mentioned before, two cables are provided, one coiled, one straight, about three meters each, as well as a 1/8" to 1/4" jack adapter. The cable plugs into a locking 2.5 mm jack socket at the base of the right ear cup. Most manufacturers feed the signals to the left ear cup, one major ex-

ception being Sennheiser. Neumann, of course, have been part of the Sennheiser Group for quite a while. Still, the NDH 20 is not just a Sennheiser product with a Neumann badge. Although some mechanical components were taken over from a discontinued Sennheiser model, key components such as the 38 mm drivers and the acoustic design of the ear cups were newly designed. The sound adjustment, too, was done by Neumann.

The NDH 20 uses dynamic transducers, i.e. they work like small loudspeakers. Thanks to neodymium magnets, their sensitivity is quite high at 114 dB SPL re 1 V<sub>rms</sub>. Their impedance is rated at 150 ohms, which is a good compromise. In short, a very low impedance below 50 ohms allows for high sound pressure even on "underachieving" phones outputs. Higher impedance (about 250 to 600 ohms), as was customary for studio headphones in the old days, reduces distortion because it presents a lighter load to the phones amp output stage. Unfortunately, many devices, these days, won't power such higher impedance headphones to adequate listening levels. Thus, 150 ohms is a good medium value to achieve sensible volume with low distortion. So much for theory. Now let's do some close listening and discuss the NDH 20's sound!

## IN USE

The first thing I notice is the NDH 20's carefully balanced sound image. The midband resolution, in particular, is quite extraordinary. Closed-back headphones often suffer from an uneven response as well as resonances in the mid frequencies. And while we've seen (and heard) serious improvements in the past few years, many manufacturers simply cut the mids significantly. The resulting smiley curve makes for a pleasantly painless listening experience but is less than optimal for mixing. Neumann's engineers were able to tackle the real problem by eliminating those distracting resonances in the midband almost entirely. The NDH 20, thus, is one of the few closed-back headphones I would recommend for mixing purposes – usually the prime application for open-back headphones (and loudspeakers, of course).

The excellent resolution in the midband is enormously helpful in gauging levels correctly. With many headphones it is quite difficult to balance the lead vocal in relation to the musical arrangement, but with the NDH 20 I end up pretty much where I'd set the levels using loudspeakers. Since my studio is fitted with Neumann KH 310 A speakers, my mixing test also reveals a certain compatibility to the same manufacturer's studio monitors. One benefit of this



**NDH 20 Manufacturer** Georg Neumann GmbH  
**Price** 499,- Euros [www.neumann.com](http://www.neumann.com)

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very well-balanced,  
Neumann-like sound

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midrange resolution is  
extraordinary for closed-back  
headphones

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high sound isolation combined  
with high long-time comfort

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also suited to mixing

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a bit sensitive regarding the  
phones output's impedance

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sonic congruence is the fact that you can swap between headphones and loudspeakers quite effortlessly as it takes little time to readjust your ears. So it's safe to say that the NDH 20 is the ideal complement for anyone working with Neumann speakers. For, even as all manufacturers claim linearity and neutrality for their monitoring systems, there remains a large margin of interpretation as to what exactly that means. This is of particular relevance for headphones because, unlike loudspeaker systems, their linearity cannot be measured objectively. The way headphones interact with the human ear is just too complex. So it basically comes down to comparative listening tests – which may account for the sonic resemblance to Neumann's studio monitors: During the development process the NDH 20 was compared against Neumann's own studio monitors by the same group of engineers and test listeners who were responsible for the sonic refinement of said monitor speakers. The result is a sound image that's thoroughly Neumann-like: clear yet smooth highs, rich mids and a well-balanced bass response – without the undue focus on sub frequencies that many other closed-back headphones exhibit.

As was mentioned before, another prime feature of the NDH 20 is its excellent sound isolation. Which comes as a surprise because its clamping force is not terribly high. The soft cushions seal perfectly while distributing the pressure evenly, thus allowing for long listening sessions without discomfort. The NDH 20's sound, too, lessens ear fatigue as it remains smooth even at higher volume. Its rare combination of high long time comfort and outstanding isolation

makes the NDH 20 an excellent choice for musicians playing overdubs as well as engineers working in loud environments, for instance FOH applications or optimizing the microphone position in the live room. The NDH 20 is also excellently suited to mobile applications such as location work, (pre-)mixing on the road, and working on songs free from disturbance.

The NDH 20 does not require a terribly powerful headphones amplifier; my MacBook Pro gave me more than enough volume. I did notice, however, that the NDH 20 is a bit sensitive regarding the phones output's impedance. On my Drawmer MC2.1 the sound balance became slightly mid-heavy. As it turned out, the Drawmer's phones out has an unusually high output impedance of about 100 ohms. Most devices, these days, have impedance values in the single digits, sometimes even below 1 ohm. Higher impedances are sometimes found on studio equipment, though: Some manufacturers put a series resistor behind the actual output stage as a quick and easy short circuit protection and to keep the device from producing ear damaging volumes. Phones outputs on mobile devices are almost always low impedance as it is the only way to produce powerful output despite low voltage rails. More recent audio interfaces, too, tend to have (very) low impedance headphone outputs, according to my findings; I measured all the devices I could get hold of during the review period, a Universal Audio Apollo Twin USB and an Apollo X6 as well as a MOTU 1248. Subjectively, too, they all worked well with the NDH 20. Even my tiny Olympus recorder was able to power the NDH

20 adequately and produce excellent sound. High impedance headphones outputs like on the Drawmer MC2.1, thus, are rather an exception, these days. But it's something to keep in mind: If it doesn't sound "right", you may want to try a different phones output.

## CONCLUSION

Of course, Neumann build excellent microphones, but, as should be known by now, they've shown the same level of competence with their studio monitors. At last, the Berlin manufacturer now offers a complementary pair of headphones. That's not to say you shouldn't think about the NDH 20 unless you use Neumann loudspeakers. But the sonic congruence between the two adds another benefit: You'll find it easy to switch between both playback systems.

That being said, it's not merely its "Neumann sound" that makes the NDH 20 an excellent pair of headphones. Its clean and mostly linear midrange is exceptional among

closed-back models. While many other headphones try to impress with extreme low end and glossy highs, thus going for effect and "HiFi"-pretense, Neumann's headphones impart confidence and authority – both sonically and visually. The NDH 20's presentation is not hyper-detailed or analytic. Its true strength lies in the overall balance of its sound image: All frequency ranges are in perfect relation, so you're never unsure where to look and what to do, if what you're hearing is not yet what you envision. Levels, too, are easy to gauge correctly. The NDH 20, therefore, is one of the few closed-back headphones I'd recommend for mixing.

Another key feature of the NDH 20 is its high sound isolation in both directions while offering excellent long time comfort – an uncommon combination! The mechanical construction, too, is of high quality: it's quite rare to find so much (lightweight) metal on a pair of headphones, these days, even in the premium segment. Considering this, the price of 499 Euros seems quite reasonable! ■ [8165]

Thanks to its even sound balance, the NDH 20 is suitable to many applications, e.g. sound editing and synth programming.

