



Review of the ZÄHL HM1 REFERENCE HEADPHONES MIXING AMPLIFIER on Musicalhead.de

Here I am again. And today I'm reviewing the first headphone amplifier HM1 REFERENCE HEADPHONES MIXING AMPLIFIER from the German manufacturer ZÄHL Ton-technik in Bergisch Gladbach for you.

By the way, this is also a perfect opportunity to finally compare the two DAC sections of DAVE and HUGO TT2 in Part 2 of my review and moreover to measure the quality of the integrated headphone amplifiers of the two CHORD's on the new ZÄHL HM1.

Michael Zähl has more than 35 years of experience in the development and manufacture of highly professional audio products and designed, among other things, the analog mixing console for the legendary Conny Plank Studios in Wolperath, which marked one of the most significant creative centers for rock and pop music in Germany in the 1970s and 80s.

World-famous artists such as Annie Lennox, Kraftwerk, Eurythmics and Ultravox mixed their albums at Conny Plank. Michael Zähl also designed and produced the mixing console for Can Studios in Weilerswist, which is well-known among studio professionals and can still be admired today in the Rock'n Pop Museum in Gronau.

In addition to small series and exquisite High-End valuables for recording studios and public broadcasters such as ARD, WDR and RTL in Germany, Michael Zähl also manufactured analog broadcast products for customers worldwide.



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Since 2012, the focus of the Bergisch Gladbach-based equipment manufacturer has again been on the production of the unique AM1 mixing console and the associated pro audio equipment.

The concentration on consistently analog circuit designs also sets the German manufacturer apart from the competition, which relies primarily on digital software solutions.

All products are handmade exclusively in Germany with the highest standards of precision. Michael Zähl not only uses components that have been tried and tested for years, but also incorporates the latest components into the development process, as long as this serves the best possible qualitative result.

All circuit designs also undergo extensive listening sessions with highly qualified sound engineers in order to achieve the absolute optimum in both technical and musical terms.

Due to astonishing leaps in development, headphones have not only been able to catch up with, but often even surpass, the mostly common loudspeaker-based solutions in terms of professional assessment of musical mixes over the past 10 years.

To meet the demand for an absolutely neutral and dynamically unrestricted headphone amplifier, Michael Zähl developed the HM1 REFERENCE HEADPHONES MIXING AMPLIFIER, originally for professional use in the best recording studios of this world.

The general design language as well as the functional orientation, however, follows a pleasantly puristic approach, so that the ZÄHL HM1 stands out from the mass of pure studio devices, especially due to its aesthetically pleasing design, and, in my view, thus also easily fits into the home environment of every grail knight of the fine tones.

ELABORATE TECHNOLOGY

The intelligent circuit layout of the ZÄHL HM1 is not only completely linear, the transistor amplifier has as it were the possibility to play the respective partner both in the pure Class-A, as well as in a combined Class-AB operation.

According to Michael Zähl, the carefully constructed, powerful and low-impedance Class-A power amplifier made of strictly selected precision components is the consistent result of a circuit board design that has been thought through down to the smallest detail, optimal signal routing and a perfect grounding concept.

The seriousness of the developer with regard to the Class-A operating principle is already evident from the high power consumption of 40 watts, regardless of whether only the input signal is present or the playing partner has already been connected. The generous arrangement of the cooling fins are therefore not an optical accessory.

The perfect operating point of the power amplifier was also determined not only by measurement, but also in numerous listening sessions. The often common AB-mode also has a technical peculiarity, since the high currents in the Class-A output stage are maintained when switching to the „Class-A & Servo“ mode, where negative feedback is added to the circuit.

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The following listening test should be able to presumably verify potential sonic differences of the two modes - or even not.

The amplifier technology of the ZÄHL HM1 is also uncompromisingly designed in double-mono technology. Each side thus has its own power supply circuits and windings in the generously dimensioned mains transformer, which, by the way, has been very consistently outsourced to a self-sufficient unit.

And also the two preamp sections are of course supplied separately with clean power - even the grounding is strictly and concept-appropriate separated.

Although the respective headphones should ideally be played via the XLR-input of the HM1, since the signal currents flow without mutual interference of the two channels, the principle-related disadvantages are kept low by an optimized cable routing of the ground connections even in unbalanced jack operation.

EXTENSIVE SOUND PROCESSING

A precise and at the same time fine-grained tone control also offers the professional correction of treble and bass in 3 firmly defined steps.

With regard to the nuanced adjustment of the sound image in the respective frequency range, Michael Zähl's many years of experience are clearly noticeable. Especially professional users in the studio area use this set of rules for the final optimization of the individual mixes.

Another special feature is the 5-stage modulation of the stereo base width. Instead of the usual Crossfeed circuit, Michael Zähl uses a stereo base width setting for the HM1 based on the so-called center-to-side technique, which - in simplified terms - converts the stereo signal into center and side components.

If the „parts“ are reassembled unchanged, the original stereo signal is reconstructed. If, on the other hand, one changes the relative ratio before the composition, one subsequently modifies the stereo base width and thus the spatial perception.

In the circuit concept of the ZÄHL amplifier, however, the center signal remains untouched; only the lateral components are level-adjusted and the spatial impression is thus only extremely subtly modeled.

The balance control, which in my opinion is always useful, is also designed as a high-precision potentiometer in 21 individual steps. The center position is precisely calibrated and clearly defined by a corresponding grid. The control range is only 3 dB, so that a very differentiated adjustment is possible.

The puristic design of the ZÄHL HM1 is taken into account in that all the control options described above can be completely bypassed at any time via a direct relay circuit if the DIR-buttons on the front of the headphone amplifier, which are useful for this purpose, are activated.

MIXING AMPLIFIER

For professional users, there is also the extraordinary possibility of mixing different signal sources.

Two independently acting level controls and pushbuttons allow not only a qualified sound engineer to perfectly combine corresponding music signals, but also the ambitious grail knight of the fine tones to directly compare two devices at the very highest level. But even here the puristic approach comes to the fore again - if the corresponding control is set to the minimum position, a relay immediately switches off the input stage. Of course, this also applies to a deactivation via the corresponding pushbuttons.

WORKMANSHIP & FEATURES

In terms of build quality, the ZÄHL HM1 is without any doubt one of the most impressive audio devices I have reviewed on Musicalhead so far. This applies to both the build quality and the choice of materials used.

Furthermore, the headphone amplifier impresses with outstanding features as well as numerous and professional connection options. On the input side, the HM1 can be driven fully balanced via two pairs of XLR-jacks - or classically via the corresponding RCA-connectors.

In addition, switching the gain of the input signal by an astonishing +15 dB allows even low-efficiency representatives of the headphone guild an impressive because dynamically always unlimited play at all desired level settings.

The RCA-input A also has an additional „Thru“ output, which allows the direct „looping“ of an applied signal. The same signal can be fed back in via the B-input without any problems, in order to enable a comparison to the original musical signal, if necessary.

If desired, the HM1 can also function as a pure preamplifier by offering the knight of the grail of fine tones another pair of stereo jacks on the output side - and as a result also allows easy connection of recording devices, power amplifiers or adequate active loudspeakers.

PREPARATION

Due to the qualitative claim of Michael Zähl, I naturally select only first-class components for the following sound test.

While my Apple iMAC is responsible for an accurate preparation of the digital data by means of current Audirvana+ software, CHORD DAVE and HUGO TT2 provide for an exquisite conversion into the analog musical fare via 2 Chord (Cable) Epic USB-cables in dynamic interplay.

This is then transported loss-free via 2 Chord Epic XLR-cable sets to the ZÄHL HM1. The HIFI-MAN SUSVARA is recommended as a suitable playing partner, especially in order to explore the dynamic reserves of the ZÄHL amplifier as fully as possible. The SUSVARA makes contact with the German reference amplifier via a Cardas Clear headphone cable.

And as so often, the usual suspects from classical, jazz, blues, pop and rock serve me as musical test material.

For more information on the ZÄHL HM1 REFERENCE HEADPHONES MIXING AMPLIFIER, please visit: hm1.zaehl.com or also from Michael Zähl directly, by simply writing him a short mail on his homepage at: zaehl.com/contact and/or making a corresponding request.

SOUND TEST

By means of a short warm-up phase the ZÄHL HM1 is first brought to Class-A operating temperature. Of course, in addition, all tone controls are deactivated via the DIR-buttons described above, so that the transducer sections of the two CHORD's can be compared as objectively as possible.

Moreover, the DAVE and the HUGO TT2 can be precisely leveled via the two separate potentiometers of the HM1, so that only a short switch-over on the Apple iMAC is required to evaluate the respective test subject. Very practical, especially since the switching times are only a few milliseconds. Perfect conditions for an exciting comparison.

And how does the new ZÄHL HM1 REFERENCE HEADPHONES MIXING AMPLIFIER sound in combination with the DAVE and the HUGO TT2?

Well, to jump right in now, Michael Zähl's first headphone amplifier actually doesn't sound at all. Or better - this acoustic precision weapon has no inherent sound at all. And in my opinion, this is one of the greatest compliments that can be paid to a device for reproducing music.

HM1 & DAVE

For already in the first minutes of listening in combination with the CHORD DAVE I notice - that obviously nothing stands out to me. The ZÄHL HM1 acts against a pitch-black background with exemplary neutrality and freedom from coloration over the entire frequency range and also convinces with authentic, completely natural sound colors.

The HM1 does not thicken the outstanding bass of the DAVE at any time unduly, but inspires with an amazing depth as well as an impulse-fast and also bone-dry attack in the interaction with the SUSVARA, which I have rarely heard in this conciseness from the orthodynamic ear-loudspeaker of Dr. Fang Bian.

The amplifier section of the DAVE also does not have this outstanding control in the bass range, which is acoustically more noticeable especially at higher listening levels. At the same time, the CHORD's punchy bass at no point overpowers the comparatively slightly more substantial fundamental tone in conjunction with the HM1.

In addition, the German transistor amplifier neither adds an inappropriate warmth to the top DAC of the British, nor does Michael Zähl's master piece seems too undercooled with regard to its sound image. The performance in the fundamental range in connection with the DAVE is simply perfect. This applies to the same extent to the mid-frequency spectrum in combination with the great CHORD. Interestingly, the HM1 also does not fall short in terms of the breathtaking airiness of the internal DAVE amplifier, but instead creates an extremely realistic spatial atmosphere in any musical context.

With this first-class front end, the HIFIMAN SUSVARA can of course effortlessly prove its world-class claim and shines with exorbitant localization sharpness, the fantastic separation of even complex acoustic events, as well as a spectacular fine dynamic accuracy in the meticulous elaboration of micro details.

Especially since the ZÄHL HM1 knows how to skillfully showcase the strengths of the DAVE in the high-frequency range as well. Because with regard to the exorbitant resolution of the CHORD-DAC, the HM1 is in no way inferior to the in-house amplifier solution, but rather sets its own accents, for example, with regard to very credible reverberation tails.

The impressive power reserves of the HM1 naturally come into their own when low-efficiency ear loudspeakers such as the HIFIMAN SUSVARA are also to be played macrodynamically convincingly. There is (usually) no substitute for performance. Except, of course, by even more power.

Especially when it is presented in excellent combination with such a musical gala performance. The ZÄHL HM1 thus easily plays on a par with the CHORD DAVE, whereby the reference amplifier also knows how to impressively implement the outstanding sonic characteristics of the British world-class transducer in my view.

HM1 & HUGO TT2

The interaction of ZÄHL HM1 and CHORD HUGO TT2 holds a fistful surprise for me with regard to the sonically outstanding and at the same time powerful internal amplifier solution of the British - because the reference amplifier of the German manufacture catapults the DA converter of Chord Electronics without doubt into (even) higher sonic spheres.

In particular, the staggering of musical events in the depths is slightly more extensive via the HM1 in conjunction with the HIFIMAN SUSVARA than via the integrated TT2 amplifier, and the achievable stage base width also benefits from the congenial interaction with the German professional device.

The spatial representation not only appears somewhat less compressed, but also experiences a slightly more precise focusing of the actors involved via the HM1. At the same time, the REFERENCE MIXING AMPLIFIER confidently maintains the overview of the game by not only perfectly separating all events in the room, but also maintaining the correct proportions at all times.

And also with regard to bass reproduction, the HUGO TT2 comes dangerously close to its big brother DAVE by means of the acoustic ZÄHL-support. Because the slightly warm timbred bass of the TT2 original amplifier now gives way to a much more contoured and tighter version in conjunction with the HM1.

As a result, the bass of the SUSVARA gains in speed, whereby the large HIFIMAN seems to get closer to the timing of the electrostatic faction in the bass range, although it is still able to distance the assembled (STAX) competition with regard to its low bass qualities.

Only by direct switching processes between the two CHORD-TOTL-transducers finally also over the ZÄHL HM1 slight tonal differences become perceptible.

Because the DAVE descends simply still a little more deeply into the frequency cellar and inspires in combination with the SUSVARA by raven basses and an almost infinitely pressure-full play. In addition, the HUGO TT2 does not quite reach the phenomenal ease of the DAVE to place voices and instruments seemingly weightless and at the same time with body and precisely focused in the respective spatial context, although the HM1 can also convince in this discipline and puts the smaller brother acoustically at all times in the best possible light.

And also in terms of detail work and resolution in the high frequency range, the DAVE has the acoustic nose slightly ahead, although the HUGO TT2 in conjunction with the HM1 is again able to reduce the sonic distance to the dedicated reference transducer. Thus the new transistor amplifier of Michael Zähl recommends itself emphatically for a future firm liaison with the British table top device.

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Especially since the extremely sensitive circuit for modulating the stereo base width is in no way inferior to the well-known 3-stage crossfeed from CHORD and delivers a convincing and very natural performance in a short comparison test of the two different room-concepts.

CLASS-A OR CLASS-A & SERVO

In order to be able to play the extremely power-hungry HIFIMAN SUSVARA at higher level settings via the ZÄHL HM1 dynamically without compression, it is first necessary to increase the volume by +15 dB via the corresponding switch on the back of the matt black device.

And of course, there is still the as yet unanswered question of whether and in what form the new „Class-A & Servo“ christened mode of operation has a more or less significant influence on the performance and sound of the German headphone amplifier.

To give credit where credit is due - I operated the big HIFIMAN primarily in the Class-A position during the course of my review without any dynamic restriction, since I usually favor monitoring volumes between 85- and 90 dB.

The optional switch to the more powerful „Class-A & Servo“ drive mode (up to 2 x 12 watts into 10 ohms) is, in my opinion, only necessary at higher level settings, which are understandably rarely reached during my listening sessions over several hours.

Interestingly, the differences are also rather subtle at practical listening levels. While the HM1 can claim minimal spatial advantages in pure Class-A operation, the performance in the AB-power version sometimes seems a touch more focused and punchy.

But of course I still tried to sound out the dynamic reserves of the ZÄHL amplifier in combination with the SUSVARA for you - but ultimately failed due to the fear of permanent damage to health. After all, I love my hearing.

MY CONCLUSION

With the new ZÄHL HM1 REFERENCE HEADPHONES MIXING AMPLIFIER, the small manufacturer from Bergisch Gladbach has landed a big hit. The HM1 impresses constructively with a lot of attention to detail, it is first-class processed and musically a power.

The German transistor amplifier also convinces with an outstanding timing and a precise spatial imaging and is both fine- and macro-dynamically capable of playing any (ortho) dynamic headphones on this planet effortlessly.

For the ambitious (hobby) reviewer, the mixing function is a veritable dream, since it allows the direct comparison of different players. Furthermore, the grail knight of the fine tones is happy about the excellent industrial design and the high audiophile standard in addition to the professional execution.

The fact that the ZÄHL HM1 allows an objective comparison of the two CHORD devices is primarily due to its exemplary neutrality. The reference amplifier really acts like the famous „wire“ between individual components, but thereby also reveals strengths and weaknesses in the corresponding playback chains in all ruthlessness.

Although this acoustic magnifying glass function should delight professionals and amateurs alike, proponents of a more euphonic reproduction of music might sometimes prefer the tube-armed amplifier faction. After all, the HM1 is neither suitable for compensating for tonal bottlenecks, nor does it turn every violin into a Stradivarius. And you have to like this unconditional honesty.

However, the ZÄHL HM1 in combination with the SUSVARA helps the DAVE and HUGO TT2 to great musical performance. The HUGO TT2 moves sonically even dangerously close to the bigger brother, without reaching however finally its fine-minded reproduction.

This master piece of Michael Zähl is manufactured together with the separate power supply completely by hand in Bergisch Gladbach and initially offered in a limited series of 50 pieces per year worldwide. So hurry up if you want to call one of the rare headphone amplifiers your own in the future.

The ZÄHL HM1 REFERENCE HEADPHONES MIXING AMPLIFIER will in any case, just like the CHORD DAVE, serve in the future as a new work tool for my reviews on Musicalhead and thus receives of course my express recommendation to all Grail Knights of good taste.

Yours Fidelio

FINAL RATING

Sound quality (60%) : 5 out of 5 ears

Equipment (20%) : 5 out of 5 ears

Workmanship (20%) : 5 out of 5 ears

