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STEREO

THE GERMAN HIFI MAGAZINE

ISSUE #6 2016



► FUTURE PERFECT **Burmester's** **vision of hi-fi's** **third age**

**HEAD
MASTERS**
EXCLUSIVE TEST:
three reinvented
headphone
classics

REVIEWS: PCM TWENTY 5.23 +++ ELAC DISCOVERY DS-S 101 +++ GRYPHON DIABLO 300
BASICS: D/A CONVERTER **COMPANY PORTRAITS:** MARTEN SPEAKERS +++ BTB TUBESTORE
VINTAGE HIFI: KEF MAIDSTONE



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The British writer L P Hartley once famously said that, ‘The past is a foreign country; they do things differently there’, and sometimes we think it’d be a fascinating experiment to take a short journey back in time to visit a Hi-Fi fan in – let’s say – the year 2003. We’d probably sit around a table with tea and biscuits and predict that, 13 years later, he would likely be trying to figure out which DAC/preamp to get in order to be able to combine his Hi-Res portable and his brand-new record player without having to compromise. The poor guy would probably think we were off our rocker – and you could understand why.

Hi-Fi has gone exactly through an enormous transformation in an incredibly short time - 8 to 10 years depending on how you count: Vinyl is more popular than it’s been for a quarter of a century, while computers, portable media players, headphones, and even USB and home network devices have developed into superb playback media. In the meantime, the classic topics of the ‘90s and the ‘noughties’ are beginning to retire: just recently, when we were looking for devices for a comparison in our warehouses, we discovered that basically we no longer have CD players – and our choice of purely analog preamps is also rapidly shrinking. Of course, there are still a number of these devices on the market but, since manufacturers’ development work increasingly focuses on digital integration, analog-only devices appear now appear less frequently..

Our friend from 2003 wouldn’t recognize today’s DACs as such: in his day they were plain boxes with two or three digital inputs and one analog output, mainly designed as a means of upgrading already elderly CD players. Today the connectivity of some models can compete with AV receivers: many have volume controls, support incredible data rates, process raw SACD raw signals, and almost always have a headphone amp on board: with another nod to that AV preamp idea, there are even a few with HDMI inputs.

That’s why, in addition to other exciting topics, this issue of STEREO International has an overview of everything you need to know about these digital jacks-of-all-trades – we even let you in on which features are actually important for a DAC to sound good, and which just gadgets.

After all, we wouldn’t want you to looking at us all moon-eyed, like our friend from 2003, now would we?

C. Barnbeck

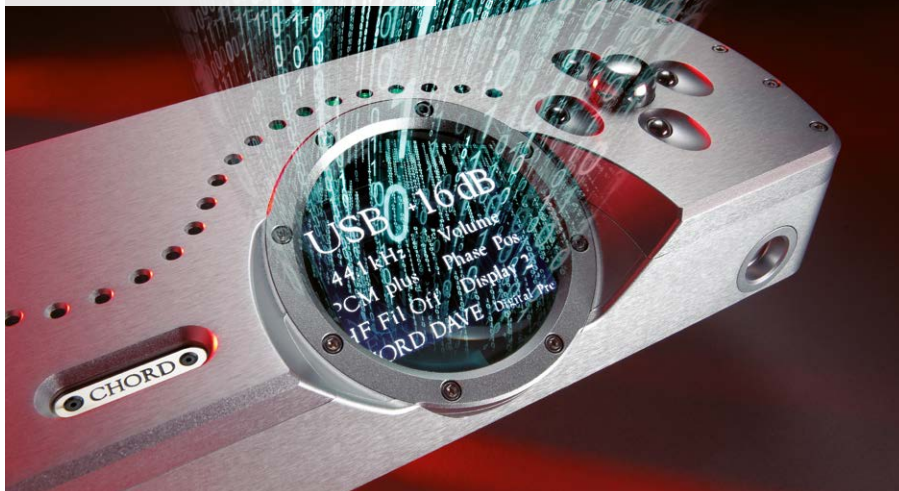
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All prices listed in this magazine are German retail prices incl. VAT valid at the time of evaluation.

DACS: THE FACTS

From asynchronous USB to oversampling and dither – all you need to know about the modern converter



NOW WE ARE 25

Launched to celebrate PMC's quarter-century, the twenty 5.23 proves a remarkable floorstanding speaker



HIGH END REINVENTED

The Phase III was the late Dieter Burmester's vision of hi-fi's future – we've heard it, and he was



MARTEN MAGIC

The Swedish Olofsson brothers have built a superb new facility to develop their speakers: we visit them



VOYAGE OF DISCOVERY

To develop its out of this world Discovery network player, ELAC has been exploring the Room

DEVILISHLY GOOD

Gryphon's latest Diablo 300 carries a hefty price-tag – but also has the performance to match its price



FAMOUS 'PHONES, NEW TRICKS

Refining a classic is always a tricky task, but HiFiMan, Sennheiser and Stax know what they're doing



KENTISH CLASSIC

Named for its British manufacturer's home town, the KEF Maidstone is still a classic almost 20 years on



CLEAN MACHINE

There's an art to washing records, and Hannu has it perfected with its superb high-end Mera model



THE TUBEMASTER

We meet Michael Kaim of BTB, one of the world's biggest sellers of tubes ancient and modern. If it exists, he can find it and supply it!

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WORD DAVE Digital Pre

DANCING TO A NEW TUNE

D/A converters are developing towards the core of Hi-Fi systems. In this article we explain what technical aspects really play a role in current converters.

Digital-to-analog converters have been rising like comets in the last few years and, considering the digitization of many entertainment systems, the boom will continue to go strong for a while. No matter whether streamer, CD player, portable, or mobile phone, all

these devices can profit from a good converter. The industry is reacting to increasing demand with ever more variations on the converter theme, the most important of which you can see on the right.

For many consumers, the sheer volume of models and versions is both a blessing and a curse: whereas once you only needed decide whether you wanted one, two, or three digital inputs, you now need an electrical engineering degree to understand terms like upsampling, oversampling, digital filter and ditherer. In order to distinguish themselves from the

CONVERTER TYPES

Long gone are the days in which D/A converters were pure signal transformers, which exclusively improved the playback of CD players or drives. Since the digitization of almost all

Hi-Fi components, they form the focus of many systems. The industry responds to changing requirements by inventing ever more forms and combinations of the D/A converter which

appeal to different user types and are supposed to guide them through their musical life. We have distilled this selection down to five basic converter types.

THE ORIGINAL: PURE D/A CONVERTER



Even though they are rarer these days, purebred D/A converters are still around. Models such as the V90-DAC by Musical Fidelity (pictured) receive signals from at least two inputs (optical/coaxial) and pass them to the amp via analog outputs. USB is also often used. They all share uncomplicated layouts and at times – for example in that case of that V90-DAC – these little grey boxes can be hidden away behind other components. If you want to beef up the sound of an old CD player, streamer, or TV, they are still the best choice.

D/A CONVERTER IN COMBO DEVICES

Network and hard drive players cannot work without converters, so even if one is already on-board, why shouldn't you get another one for them? More and more manufacturers have started thinking this way because quite a few CD players or streamers, like the Marantz NA 8005 (depicted) offer external inputs for its integrated DACs. Integrated amps also increasingly offer this feature: Pioneer's N-70 for instance, offers DAC inputs and can be connected to a notebook via USB, while other models, such as NAD's 356 BEE, have a modular construction to allow an optional DAC board to be added.



DIGITAL PREAMP



We get the sneaking suspicion that this device type might play an important role in the future: D/A converters with many inputs and remote controlled volume control (pictured: Pioneer's U-05) can serve as hub for all sources in an AV setup. Streamers, CD players, portables, PlayStation, AppleTV etc. – everything converges here and, after signal conversion, can be directly fed into a power amp or active speaker. In order to complete this step in the evolution, some models (e.g. Pro-Ject's Pre Box RS Digital) even offer one or several analog inputs.

THE LITTLE ONE FOR ON THE GO

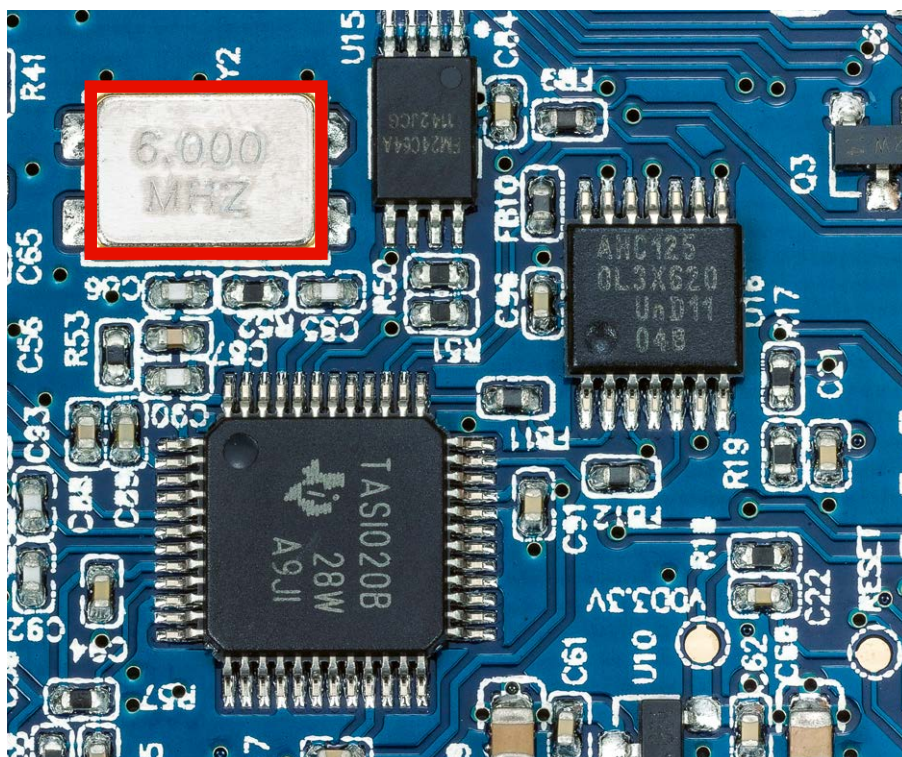
No matter whether on the beach, family parties, or in the office: today nobody has to go without a D/A converter. Mobile devices like Denon's DA-10 (depicted) are able to match almost all technical aspects that home-bound DACs offer, and since they are designed as portable playmates and often also as mobile headphone amps, they have powerful batteries on-board and can even extend your mobile phone's battery life. Some models (e.g. Teac HA-P90) also offer simple media player functions.



D/A IMPLIES A/D

Unfortunately DACs with integrated analog/digital conversion are still rare. But such devices are indispensable if you want to, say, play or record old tapes using a computer. ADL (depicted: „Stratos“) has specialized in this and even integrates excellent phono equalizers for digitizing records. And before you ask: the quality of such Hi-Fi A/D converters is light-years ahead of that of a standard computer soundcard.





◀ Clock generators (red frame) are installed right next to the processors and ICs to keep the signal paths short.

competition, more and more DACs offer switches and menus for such functions, whereas manufacturers simply used to just decide on the optimal balance and settings, and leave it at that.

So, since we decided that this issue of **HIFI DIGITAL** should feature current converter news, we wanted to take the opportunity to get you acquainted with the most important basics.

On the clock

The brochures for many devices can lead you to believe that higher clock rates automatically mean better sound. However, this is true only to a certain extent: the increase of amplitude resolution from 16 to 24 bit removes distortion and inaccuracies (see box) – but only during recording, not playback. Greater sampling rates let you capture an analog original more

accurately in the studio, but a D/A converter can't play the data of an audio CD with more sound just because its ICs can handle 384 kHz. In brief: the enormous resolution of current DACs only comes to bear if you are planning on buying high-resolution albums in online shops. If you simply want to improve the playback of your CD player or ripped CD collection, the data bandwidth of the device is more or less trivial.

These days, we believe it is much more important that the processors and switches of many D/A converters have better timing: when you open a current model, like the Accuphase DC-37, you find a great number of silver clocks, installed next to the associated ICs. While it used to be standard to control complete signal processors using a single master clock, today at least the most important components get their own customized timing impulses.

The actual converter chip often has two clocks – one for 48kHz and its multiples (96kHz, 192kHz and so on) and one for 44.1kHz multiples (88.2kHz, 176.4kHz, etc.), thus avoiding re-sampling – and this has particularly catapulted the quality of affordable converters which by their very nature also use more affordable clocks. Of

LOWER SIGNAL DISTORTION THROUGH GREATER DIGITAL RESOLUTION

The three stylized images illustrate the benefits of greater digital signal resolutions:

In figure 1 you see a sample audio signal (blue) going into an A/D converter. It samples the signal in regular intervals (red), but since it can only process integer values, it quantizes or rounds the signals corresponding to its preset bit resolution, for example the 16 bits of audio CDs. And since the rounded values are merely approximations, the digitized samples do not

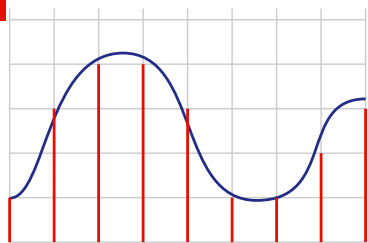
always agree with the actual audio signal. In figure 2 you see the amplitude values as they are later stored in the audio file and on the CD.

When a D/A converter (Fig. 3) converts this data back into electrical voltages, we get a signal very similar to our original material in figure 1. However – other than with the original signal – the amplitudes now completely match the quantization points of its digital equivalent, to the extent that this minute change is probably difficult

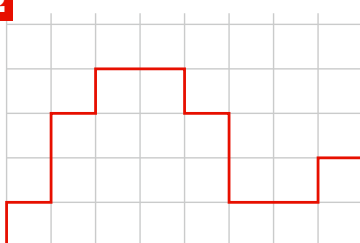
to hear even if comparing it directly to the original. However, the signal distortion is a reality.

Higher signal resolutions can't remove this phenomenon completely, but they do reduce it greatly: an A/D converter at CD resolution (16 bit) has about 65,000 amplitude increments available to represent the signal, but at 24 bit this rises to 16.7 million amplitude increments. You don't have to be a computer scientist to see that the rounding of the signals for HD audio has a clearly smaller impact.

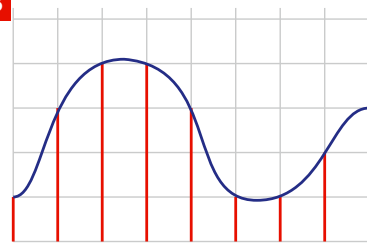
1



2



3



ARE YOU CONNECTED PROPERLY?

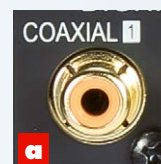
People keep asking us for the best digital connection method. Unfortunately, the answer is more complex since all five connection types – see below – can operate on comparable levels if

all the environmental variables are right. However, there is of course a basic trend: the easiest way to the optimal sound leads over three electrical connections (Cinch, BNC, and AES-3). Optical

cables can definitely solve trickier problems. The best performance comes from USB – however you do need at least rudimentary knowledge of driver alternatives.

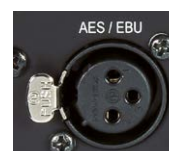
COAXIAL

The most frequently used digital interface is the electrical coaxial connection in the form of a Cinch jack **a**. While it is very wide spread in professional circles, BNC connections **b** are unusual in Hi-Fi systems. They are technically identical: both transport digital audio data in the PCM format and use the S/PDIF transfer protocol designed by Sony and Philips (Sony/Philips Digital Interface). Originally designed for 48 kHz, the interface can now handle bandwidths which make transferring 24 bit/192 kHz signals no problem. If you need more or want to transfer exotic formats like DSD, you need to go to USB. For short transfer distances, coax connections offer outstanding sound quality.



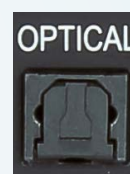
SYMMETRIC

The Audio Engineering Society (AES), the largest professional association for sound technicians, and the European Broadcast Union (EBU) were not satisfied with the S/PDIF specification. Its impedance of only 75 Ohm makes the interface unsuitable for long transfer distances, which is why both associations defined their own standard: the „AES-3“ interface, usually called AES/EBU, has an electric impedance of 110 Ohm and works symmetrically. In this way, digital signals can be transported over several hundred meters at events and installations. This really does not make much difference for Hi-Fi systems, which is why the pro interface is only rarely found in consumer devices. Other than that, the technical capabilities of AES-3 are identical to those of S/PDIF.



OPTICAL (TOSLINK)

Like coax, optical cable transfers PCM signals using the S/PDIF standard. The bandwidth is lower than in electrical connections, which is why only 24 bit / 96 kHz are possible. In addition, this connection is susceptible to dirt and the glass fiber cables can easily be damaged when bent. Still, the optical interface has its upsides: since sender and receiver are not electrically connected, devices cannot spread electrical irregularities and network distortion among each other. When operating many digital devices, optical transmission also prevent interactions between the mass connections which often result in a buzz in electrical cables. In brief: despite technical limitations, the „susceptible“ light conductor can be the better solution for sound in some cases. And the quality of the cables play a smaller role here.



USB

The USB interface was introduced to converters in order to make it easier to connect notebooks or desktops to the Hi-Fi system. This integration is simplified by the circumstance that many USB converters are „class compliant“ and can be recognized by computers without a special driver. Since a Windows or macOS PC in itself is no friendly environment for audio signals, you have to use tricks to bring USB to the level of coax S/PDIF: special output drivers like WASAPI and Kernel (PC) or the Amarra and JPlay software for MACs make this possible. USB makes up for this complication with flexibility and bandwidth: theoretically there is no upper limit to bit number and kHz. Also, if you want to transmit special sound formats such as DSD or the new MQA (Master Quality Authenticated) between devices, USB (and Ethernet) is the only possibility. It, too, transfers only PCM sound data using the S/PDIF standard. For this reason some tricks are necessary for DSD (DoP, see glossary).



course, expensive DACs also benefit from this lavish use of clocks, just not to the same degree since a clean clock impulse was always the focus here. For instance, the superb timing of current converters avoids much of the feared jitter, which has a great impact on sound.

In the periphery of clocking we hear terms such as “upsampling” and “oversampling”, which are related but have their own separate goals: converter chips are designed for a specific, unalterable

maximum clock speed. For instance, it is 24bit/192kHz in BurrBrown’s popular PCM 1796. If you want to feed this IC with the signal from a CD (16/44.1), it first has to be converted so it can be translated into voltages without errors.

This is the job of the upsampler, which shapes input signals using mathematical operations in such a way that they fit to the DAC. Converter chips, like the BurrBrown, have their own built-in scaler, but many manufacturers don’t trust these, preferring to place their trust in high-performance signal processors (DSPs) whose software is able to round better using complex decimal operations.

First “up” then “over”

The oversampler is more harmless: it is responsible for clock artifacts, as the clock generates a quick sequence of needle pulses which can enter into the analog playback via the digital audio signal. When playing back at CD quality this is very critical since these impulses of 44.1 kHz are close to the audible frequency range, but if you double or quadruple the base clock speed – which is exactly what an oversampler does – then the clock impulses move into the range of 88.2 or 176.4 kHz, where they no longer have any impact on the sound. Since oversamplers work with integers (2x, 4x, 8x etc.) in their data manipulation, they have basically no impact on the sound, but for HD quality (over 88.1 kHz) they’re not needed, as the clock speed runs far outside our hearing range anyway.

However, there are still more elements in D/A converters, which remove digital artifacts: filters have the job to remove remnants of signal processing by completely removing disruptive frequencies. Unfortunately filters – no matter whether analog or digital – not only affect the frequency response of the music, but also the phase, thus potentially disrupting the time-coherence of the playback. Developers always have the choice whether their filters work more true to frequency – i.e. linear without audible coloration – or to the impulse – i.e. with exact timing. More recently, the alternative of “apodizing filters” was added which provide a compromise between timing and linearity.

Filter selection is a difficult decision, which has led some manufacturers to install several filter types even in CD

players (e.g. T+A) and then let the customer choose. For current DACs there can be up to five filters, which may only have different characteristics in fine but sometimes decisive nuances – sound tinkerers like us have a lot of fun playing with these possibilities. However, you can also get lost, which is why manufacturers like NAD continue to work out the optimal filter for their components and spare their customers the dance with the switches – an approach which also has appeal.

Even in these basic set-ups there remains one constant: a final, usually simple, analog low-pass filter in the output stage finally removes aliasing artifacts. Users cannot control this part.

Volume control on board

More and more converters have a volume control and can thus be used as digital preamps: that’s an exciting feature, but also raises some doubts, since a digital volume control works by reducing the bit resolution.

When listening relatively quietly, this could mean that – at CD resolution – only 12, 13, or 14 of the 16 bits are used, limiting the dynamics and increasing noise. However, no current D/A converter works this clumsily: the devices use a volume control with 24, or more frequently even 32 bits, ensuring dynamic reserves which nip sound discussions in the bud – indeed, we have never been able to detect losses in our test patterns at low volumes. Should doubts remain, however, there are also DACs which use an analog volume control – various models by Violectric or Cambridge Audios CXA80, just to name a few. We don’t even need to discuss their high-quality Alps potentiometers.

However, digital control has one small card up its sleeve: it is based on mathematical operations. If you set the control of a digital preamp to the maximum level, there is no calculation since the input signals are converted and outputted without change, and some devices the volume control can be turned off completely. An analog potentiometer remains on the signal path as a component even if you operate the D/A converter with line levels. If you want to connect the DAC to a power amp as a high level source, you might as well just get a model without volume control.

Carsten Barnbeck

GLOSSARY

BNC: lockable coaxial bayonet connection named after its inventors „Bayonet Neill/Concelman“.

Clock: quartz is used as clock for digital components. Under electrical voltage they oscillate at a fixed rate. All other clock impulses are derived from this stable basic oscillation.

Dithering: when reducing signal resolution, repetitive quantization errors appear which can make the signal sound artificial. Dithering is a mathematical operation which distributes such errors more randomly, which sounds more natural.

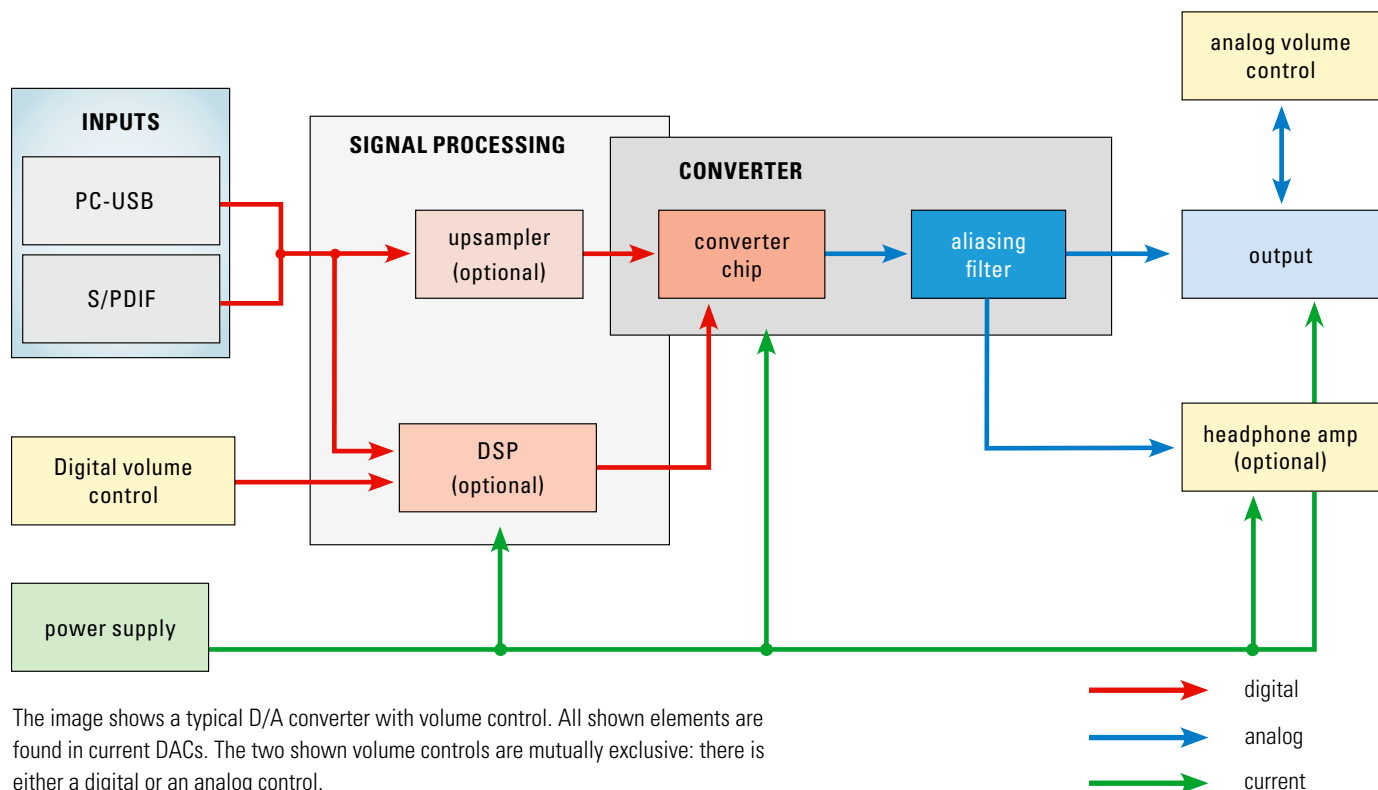
DoP: (DSD over PCM): DSD is a „single-bit format“. The data are not organized in bytes (groups of 8 bits each), which is why a computer or streamer cannot process them. In order to circumvent this problem, DSD is nonetheless bundled into bytes during storage and given a file shell which tricks the computer into thinking it is PCM data. The D/A converter unpacks them before playback and processes them as intended bit by bit. This „trick“ does not result in any loss of sound quality.

IC: Integrated circuit.

Jitter: Digital signals are transmitted as electrical pulses. Various factors (component tolerances, temperature etc.) can result in data going out of phase, resulting in fluctuating timing (thus „jitter“). Under the right conditions, these minute fluctuations can build up to the point where D/A converters can no longer interpret the data correctly.

PCM: („Pulse Code Modulation“) Process for the conversion of analog current into digital data. The foundation of many sound formats and media (CD, DAT etc.). Analog currents are sampled in regular intervals (clocking) and stored as binary values, so-called samples.

THE ELEMENTS OF A D/A CONVERTER



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GO WITH THE FLOW

At just about 1m tall, the slender PMC twenty 5.23 speaker charmed us at the High End show in Munich in May. Now we've finally got it into our sound booth.

We were surprised when, in the halls of this year's Munich High End show, in the midst of all the overbearing and unmotivated noise erroneously labeled as music, we stumbled into an oasis of sound. The British manufacturer PMC, a recognized force in England and in many audio studios across the world but in Germany still a „secret tip“, was showing off its brand-new „twenty 5“ series. And the twenty 5.23 model on demonstration made us curious, combining a clean and deep bass in combination with almost effortless speed and voice reproduction which sent shivers down the spine was a real trade show highlight.

The price of about € 4,000 per pair seemed very fair considering its quality, especially when company founder and boss Pete Thomas explained to us in detail what the series, issued for the 25-year anniversary of the company, had gained over its predecessors. It turned out to be a long presentation: the man really likes to go into great detail.

Aerodynamics in speaker design

The development of the anniversary series was directly influenced by the technology in the company's flagship studio monitor, the QB1-A. Oliver Thomas, son of the company founder and, thanks to his apparently inherited talents, already the chief developer in the PMC team, used the experience he gained in the Formula 1 racing world and christened his brain child ATL – Advanced Transmission Line.

It's the good old transmission line seen in all PMC designs, severely reworked and motivated to soar even higher: swirls are reduced by the clever construction of the bass labyrinth and the 'laminair' openings – derived from F1 ground-effect air-flow design – thus increasing efficiency. In principle, this is a variable mechanical filter which offers more or less air

resistance depending on frequency and volume, promising that flow-generated noise when the air exits at the end of the transmission line is supposed to be a thing of the past. The much greater benefit is said to be a faster, better defined bass, with simultaneously optimized timing and enhanced dynamic range.

Polypropylene adieu

Of course, every change in one spot requires further measures somewhere else – an experience which has already frustrated quite a few DIY tinkerers. So for the latest range PMC has developed completely new woofers and geometry, driver, diaphragm material – in fact, nothing remained the same. If you still equate English speakers with classic polypropylene, you couldn't be more wrong: the driver diaphragms are meshed with fiberglass using a patented technology, which only makes sense for this special application with the transmission line.

Father and son believe that the mid-range in particular profits from this design, with extraordinary transparency and liveliness, while the 'motor' – the

voice-coil and magnet system, are almost 80 % more powerful than in previous models. The geometry of the hand-made Sonotex tweeter, already been one of the best on the market, was further refined to give it even wider and more even dispersion, further supported by its perforated metal cover.

The cabinet, too, benefited from a search for ways of extinguishing resonances, this time using accelerometers to detect the movements of the enclosure in order to eliminate them subsequently.

The crossover network performs its task quite rigorously: it separates the working range of the 27 mm soft-dome tweeter found throughout the entire series and the tiny 14 cm mid/low driver with a slew rate of 24 dB per octave. According to the Thomas family, this produces a greater load capacity for the individual drivers – and better dynamic performance.

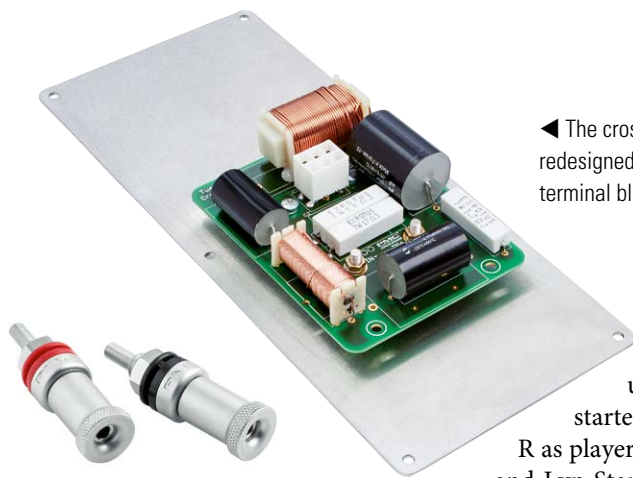
By the way, somewhat unusually in this price class, the crossover is populated with military-grade specifications and uses especially thick copper circuitboard tracks. And since PMC is extremely meticulous, even the alignment

KEYWORD

Laminair: Air outlets for the transmission line tunnel, which were optimized using aerodynamic principles.



◀ They do look fast: the ventilation slits of the Transmission line are doubled up.



▲ Even the massive terminals were custom-made for PMC, and can handle banana plugs and cable lugs.

and arrangement of the components, which are selected by hand, is calculated. Other details are just as convincing, with high-quality, in-house cable terminals, and spikes which are inserted into the steel floor plate and which can be adjusted from above.

We should also emphasize that all models in this anniversary edition offer some latitude in positioning, making them very room-friendly, and work well with just about any decent amp.

Small & large amps

The slender speakers, which somehow reminded us of current and past super-models after a diet, immediately showed



▲ Design down to the finest detail – the magnetic grille fixings keep the front baffle smooth and clean

◀ The crossover network was completely redesigned and is attached directly to the terminal block on the rear panel.

plenty of promise even using smaller amps – we started out with the Rega Apollo R as player and Exposure's 1010 amp, and Lyn Stanley walked onto the stage with grace and breathed her version of „Black Velvet“ into the space. Next, we connected a Symphonic Line and sat in awe, missing not a nuance of emotion nor – for that matter – anything else, whether with Beethoven's piano sonata No.8 as played by Arthur Rubinstein in 1962(!) or Josephine Baker's „En Avril à Paris“.

Even more fascinating was the feeling of having arrived: the music was consistent and complete, presented with lightness and dexterity, and yet full of detail while the bass came in with power.

With the speakers around 2m apart, plenty of room to breathe behind them and a slight toe-in, we moved on to new heights, Octave's fantastic V80 tube amp and Gryphon's Diablo 300 (see test on page 42) making their presence known. In the end, the Gryphon's DAC was used to great effect, and the PMC showed how magical music from small and relatively cheap speakers can sound if the developers know what they are doing and the rest of the system is trimmed to uncompromising quality.

Hardly anyone does that, we know, but if these speakers make you curious (and we can't think of a reason why they shouldn't) then ask your dealer to set up these speakers with the best supporting cast on offer – we'd love to hear your feedback!

In the meantime, we continued to enjoy the presentation in our small sound booth, as Leontyne Price took to the stage for Verdi's „O patria mia“ and the PMCs chased away any thought of canned sound from the 1960s, instead inundating our ears with torrents of shudder-inducing sounds and beating on our skin, due to the twenty 5.23's clean, deep, bass delivery. Fantastic!

Michael Lang

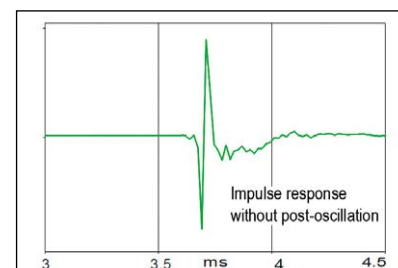
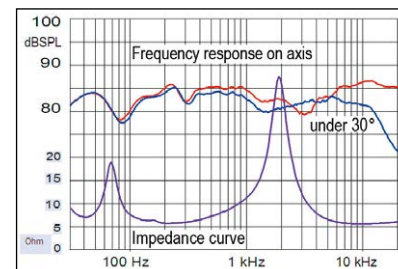
PMC TWENTY 5.23

Pair starting at € 3960
(three veneers or black)
Dimensions: 16.2 x 90.7 x 33
cm (WxHxD)
Warranty: 20 years
Contact: Audioconcept
Tel.: +49 6709 / 439
www.audioconcept.de



Hook this speaker up to a decent amp – and off you go.

MEASUREMENT RESULTS



Nominal impedance	8 Ω
Minimum impedance	5.6 Ω at 9000 Hz
Maximum impedance	37 Ω at 1900 Hz
Nominal sound pressure (2.83 V/1m)	85.2 dB SPL
Power for 94 dB (1m)	10.1 W
Lower cutoff frequency (-3 dB)	32 Hz
Distortion at 63 / 3k / 10k Hz	0.3 0.1 0.1 %

LAB COMMENTS

The speakers should be used toed-in, the exact degree depending on the distance to the listener. Inconspicuous to very good measurements. The skinny Brit convinced us with its very spacious, peppy, and neutral sound character. Just one look at the cleanly worked housing and the strict selection of all components proves that the product was designed with a love of details – probably one of the secrets behind the sound, which is extraordinary for the price.

STEREO-TEST

SOUND QUALITY	78%
PRICE/PERFORMANCE	
★★★★☆	EXCELLENT



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MP 6.2

Media Player

Incl. Hi-Fi Streaming



CD 6.2

CD Player with 6 digital inputs

Slot-in Pure CD drive



SA 6.2

Class A/AB high current

MOS-FET stereo amplifier



MA 6.2

Class A/AB high current

MOS-FET mono amplifiers



ML 6.2

SSD-based music server

Incl. CD ripping & mastering



SOUND WITH STYLE

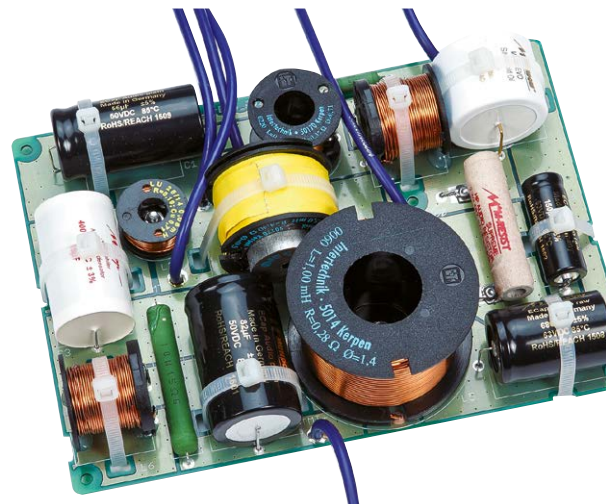
High-end company Burmester is launching „Phase 3“ – probably the world’s best, most modern, and most beautiful complete system for upmarket living spaces.





◀ The 17cm mid/bass driver of the B15 uses a glass-fibre membrane with an aerodynamic shape for powerful drive and low distortion.

The tweeter uses the highly dynamic air motion transducer folded ribbon. ▶



▲ For a two-way speaker, the crossover design is quite complex.

Hardly any other exhibit at the High-end 2015 created as much of a stir as “Phase 3” – a project the late Dieter Burmester initiated and developed personally as his solution for the ‘third age’ of the audio industry. Inspired by the Berlin company’s extremely successful partnership with Mercedes-Benz and Porsche, as well as innovations in the field of network technology, the team wanted to create an all-in-one concept to meet the most stringent demands of operability and sound quality.

The “Phase 3” is a self-contained “retro” sound system, of the kind one might imagine (or only wish for) in a luxury loft or designer office. And the name? Well, in an interview given before his death at just 69 last year, Dieter Burmester explained that “Phase 1” of audio was all about sound, while “Phase 2”

saw the growing introduction of computer-based networking, and the convenience that brings. “Phase 3” was his vision of bringing those elements together while adding “lifestyle” acceptability, making high-end hi-fi discerning consumers would actually want to showcase in their homes, offices or wherever.

At the heart of this posthumous culmination of his dream is the Burmester 161: it’s based on the refined technology of the company’s 151 music server, here supplemented with high-performance amps already proven in the Burmester 101 power amp to form a powerful receiver. These power amps are modular Class D amps but, since Dieter Burmester was never satisfied with the sound of any finished product, the module was developed in-house in Berlin, and supposedly can compete with a very good Class AB amp in every aspect of performance. We will see...

Adequate speakers

The newly-developed Burmester B15 compact speaker used here is an easy-going, room-friendly design, based on the B10 monitor: however, outstanding though

the B10 was, for this model the design was substantially upgraded with an expanded cabinet for a deeper and even more powerful bass. The JET tweeter is also new for this model, using the especially dynamic, high-resolution air-motion-transformer principle.

The complete kit, selling for € 29,800, is designed so the buyer can just unpack the substantial boxes in which it arrives, connect it up and have music playing – minimal fuss, and instant gratification! For that reason, as well as the 161 receiver and B15 speakers the package also includes stands – for both speakers and electronics – along with a remote control and Burmester’s extremely high-quality speaker cables.

The remote manages all basic functions, but we do recommend using the Burmester MC-App and an Apple iPad to exploit the extensive network functions. The original product idea had an iPad included with the system but – as the company realised many customers would already have an iPad – it’s now an option: take it up, and the tablet will arrive preconfigured and ready for use.

Two finishes are available for Phase 3, both equally breathtaking: there’s a grey/shale “Loft Style” version, and the “Retro Style” one received for review, in its exquisite chrome finish with red detailing to the sides and rears of the cabinets. The style is enhanced by the stands, which are made from curved steel pipe in a tasteful and functional manner: they’re both very sturdy and tilt the system components backwards for easier operation (and to maximize the



◀ The size of the bass reflex opening is generous to prevent port noise, even at higher volumes.

sound from the speakers). The tubular chromed steel is replaced with more industrial-looking, 'slabby' metal should you go for the 'Loft Style' version, giving the system an almost 'reclaimed' look.

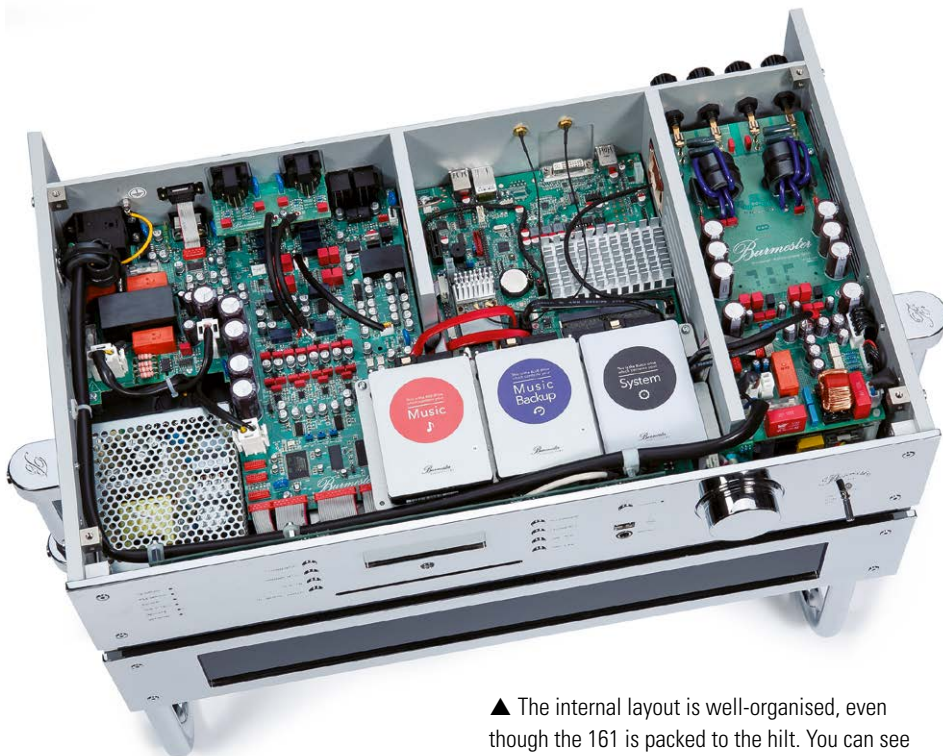
Sooner or later every observer will spot the second 'box' below the 161 and say 'Wait – I thought you said all the electronics were in one box?': under the darkened flap of the lower housing is an empty cubby, another clever idea from the Burmester engineers or designers (depending on who had the final word here).

After all, even discerning users of such a system may well have a lowly satellite receiver, cable box or Blu-ray player for their TV, the sound from which they want to play through the audio set-up, but which would ruin the aesthetic of the Phase 3 design – after all, such boxes are never what one could call pretty. Here's the solution: you hide the ugly box behind that flap, which is transparent to remote control signals, and you can integrate it without detracting from the designer look. Clever thinking: our hats are off!

The lid of the Burmester 161 enclosure overhangs at the back (presumably to conceal the connections), which does interfere with the pivot range of the two Wi-Fi antennas: however, this is nitpicking, as it does little to detract from the overall impression of such a perfect music machine. By the way, two Wi-Fi antennas ensure greater reception stability, and we (like Burmester) also recommend installing them even if you prefer hard-wired networks, because they will make it a lot easier to communicate with the iPad.

The Phase 3 only requires a single power outlet, and all you have to do is screw in those two stub antennae, connect the speakers and turn it on. The system starts up within a few minutes, thanks to operating software again developed in-house by Burmester: this no ordinary computer dressed in designer clothes, but has been sound-optimized down to the smallest detail, and then partnered with uncompromising electronics.

The remote control is exemplary, being of high quality and a pleasure to hold, but you should use an iPad for the network functions. ►



▲ The internal layout is well-organised, even though the 161 is packed to the hilt. You can see the mass storage in the foreground.

Once the Phase 3 has been installed, you can immediately start ripping your music collection: the robust slot-loading drive performs this function and also doubles as a high-quality CD player. Music can be written to the hard drive as a quick rip, but also in real time – as FLAC files with the highest level of accuracy and error correction, such that it's even possible to rip scratched CDs. The sound quality in the fast mode should more than satisfy even demanding listeners, but audiophile CDs copied in

'Best' mode are something special, even if ripping a complete CD collection takes time.

Phase 3 uses both an external NAS and internal storage, containing a SSD hard drive for the operating system and two identical 2 TB drives for the music archive, using RAID to mirror one drive to the other against drive failure. A huge proprietary database retrieves metadata, covers, etc., and downloads all this from the network, using it to make the iPad browsing/operation experience simple

The clever additional cubby below the main unit can be used to hide other devices, like a Blu-ray player or satellite/cable receiver. ▼



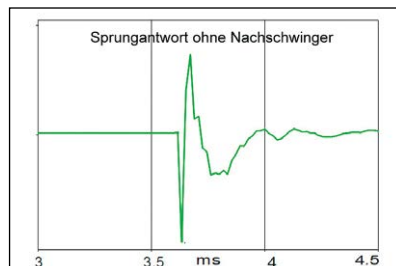
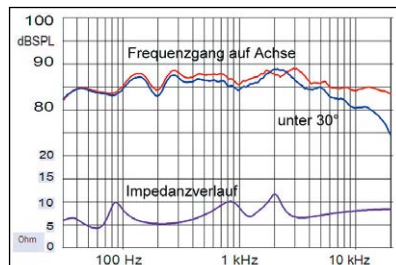
BURMESTER B15



Not available separately, included in the system price. Dimensions: 26x53x29 cm (WxHxD), height-adjustable, individual colors possible. Warranty: 5 years

The class of Burmester's B15 is apparent at a glance. In fact, it offers high resolution, the authority of a small floorstanding speaker and, most important, pure musicality.

MEASUREMENT RESULTS



Nominal impedance

Minimum impedance	4.4 Ω at 60 Hz
Maximum impedance	12.5 Ω at 2000 Hz
Nominal sound pressure (2.83 V/1m)	89 dB SPL
Power for 94 dB (1m)	5.5 W
Lower cutoff frequency (-3 dB)	45 Hz
Distortion at 63 / 3k / 10k Hz	0.3 0.1 0.1 %

LAB COMMENTS

The frequency response of the Burmester Phase 3 B15 – only available in a set with the 161 receiver, and best described as a large compact speaker – is mainly balanced and has no eye-catching features. The bass extends down to about 45 Hz; the impedance curve is benign and will pose no problems for any amp; there's very little distortion, and the timing (impulse response), which also impacts the sound, is excellent. The speaker is ideal for medium spaces between 20 and 40 sq m. The included stands are well thought-out and height-adjustable, though we recommend toeing the speaker in slightly towards the listener.

Contact:
Burmester Audiosysteme
Tel.: +49 30/787968-0
www.burmester.de

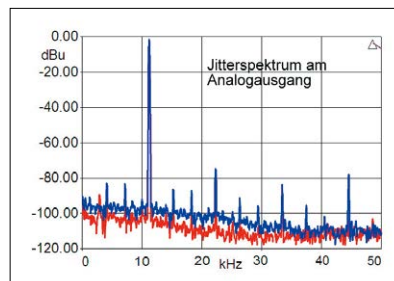
BURMESTER PHASE 3



From around € 29,800. Complete system consisting of Burmester receiver 161, Burmester B15, LS cables, additional compartment, and stands. Warranty: 3 years

Burmester's 161 plays and rips your CD collection, is a music server, network player, DAC, radio, and amp all in one – and makes music like it's from another world. Absolute top class or, to put it briefly, perfect.

MEASUREMENT RESULTS



Continuous power at 8 4 Ω	2x110 182 W
Impulse power at 4 Ω	– W
Distortion at 50 mW 5 W Pmax -1dB	0.009 0.008 0.02 %
Intermodulation 50 mW 5 W Pmax -1dB	0.01 0.004 0.03 %
Attenuation at 4 Ohm 63/1k/14k (Hz)	50/71/100
Signal-to-noise ratio CD at 50 mW 5 W	88 103 dB
Upper cutoff frequency	>80 kHz
CD read time	11 s
Total power consumption: Off Standby Idle	0 <2 38 W

LAB COMMENTS: High output power for a complete system. Extremely low distortion and outstanding signal-to-noise ratio. The bandwidth of 80 kHz is very good for Class D. with channel separation at 66 dB. The DAC measurements are also excellent

EQUIPMENT

Remote control, optional iPad with Burmester-App (highly recommended). Music server with 2 x 2 TB music storage (RAID mirrored) on-board; 1 analog input, 2 digital inputs and outputs, LAN/WLAN, USB, AirPlay, gapless reproduction, audio formats FLAC/WAV/MP3/AIFF/AAC/ALAC (m4a), stereo 16 and 24 bit, up to 192 KHz, optional upsampling to 24/96 or 24/192, internet radio, VHF, smooth filter for low volumes, exclusive music data base with 3.5 million albums for ripped CDs.

STEREO-TEST

SOUND QUALITY	100%
PRICE/PERFORMANCE	
★★★★☆	
VERY GOOD	

and enjoyable. There's also the option to have the symmetric D/A converter upsample all tracks – and other digital sources – automatically to 24 Bit/ 96 kHz or 24 Bit/192 kHz.

Internet radio and VHF are of course also included, while access to HIGHRES-AUDIO downloads and a Tidal account – both extremely quality-aware music sources – are integrated, too

Pure high-end

In terms of sound, Burmester's Phase 3 leaves nothing to be desired. Every part of this compact system can hold its own against the leading components on the planet. True, I am always skeptical of Class D amplification, but Dieter Burmester managed to keep his promise of making more of this topology, and his ideas of the ideal sound also live on in this masterpiece.

The first impressions are of very pronounced detail resolution, solidity, and a surprisingly powerful and contoured bass. The space opens up, takes a deep breath, and fills with emotion and driving rhythm: this doesn't sound like an all-in-one system at all but simply like pure high-end, the Phase 3 projecting Sacred Spirit's "Legends" onto a large canvas and making you feel like you can reach out and touch the individual instruments.

Of course, in addition to the known qualities of the network player, this is also due to the uncompromising amplifier implementation and the exceptional B15 speakers, whose confident sound is more reminiscent of that of a small floorstanding speaker.

If you recall, when testing the closely-related music server 151 we complained about the lack of "AirPlay" function; the 161, as well as incorporating two DC-coupled 100 W power amps, now has that facility. True, there's no sign of the currently fashionable DSD capability, but to these ears that omission doesn't seem like a big deal – too often I feel it is here to bulk up the feature-list, rather than being of any real everyday use.

In truth, I just can't find anything to complain about with Burmester's Phase 3 – nothing at all. It may not be the subtlest system, but it's definitely one of the most sophisticated, best, and most versatile anywhere. And the most beautiful.

Tom Frantzen

New DragonFlies!

€99 Black &
€199 Red



Powerful, Immersive Sound from Computers and Mobile Devices!

Four years ago, AudioQuest shook the hi-fi world with our first DragonFly DAC–Preamp–Headphone Amp—the rare audio product that brought more compelling sound to *all* music lovers, playing high-res files to MP3s on perfectionist systems and modest laptops.

Now, the new DragonFly Black and DragonFly Red exceed their predecessor in every way, delivering more beautiful music, boasting software upgradability, and providing compatibility with **Android** and **Apple iOS** mobile devices.

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Let the joyful experience begin!

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NEW FUN WITH DIGITAL MEDIA



Elac is getting back into electronics production – and doing so with a bang: the Discovery DS-S 101 could be the future of streaming.

It's been a while since we've been this excited about an upcoming test: Elac's Discovery is a handy network player the company has romantically dubbed „DS-S 101-G“, making it clear that Discovery is a family, not a single product. We were filled with mischievous joy when we were finally able to hold one of the exclusive prototypes in our hands, the manufacturer assuring us it was 100% the same as it would be in series production.

However, we first met the DS-S 101 at the evening press event for IFA 2105, at which time the electronics were still in a preliminary housing with photography prohibited: however, the audience was hypnotized by the TV screen hanging above it, showing the image of the associated control software mirrored via Airplay. It took mere moments for the audience to realize this was going to be something completely different.

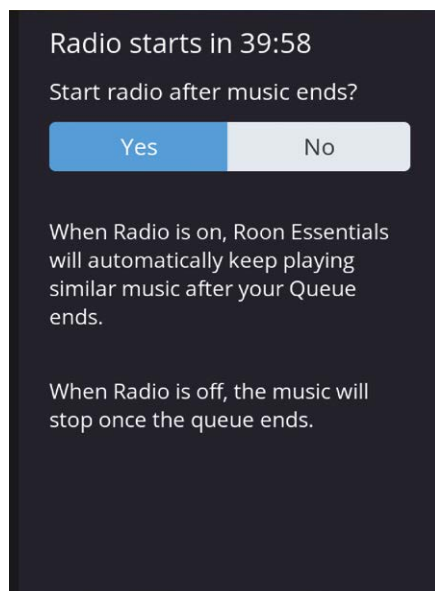
The history of the extraordinary streamer had begun just nine months earlier at CES 2015, where Elac managing director Gunter Kürten ran into the programmers behind then start-up company „Roon“. They explained to him they were still looking for partners for their out-there music cataloging service, and also that this idea was actually not all that new: something similar already existed under the Sooloos brand for Meridian, from which operation the company was spun off to become Roon. Only a crazy person would have just let them walk away after that, and so Elac returned to electronics production as a result of that Las Vegas meeting.

Versatile music catalog

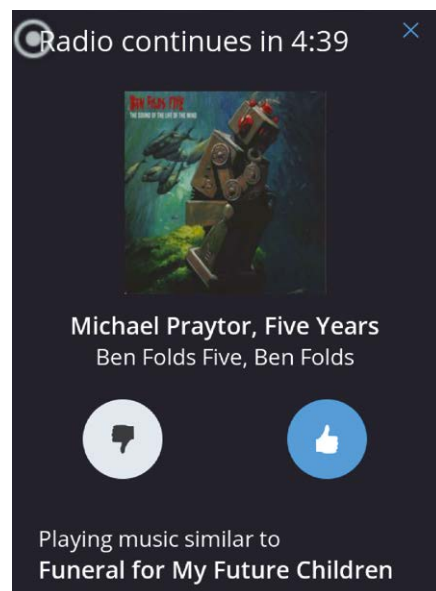
You can definitely consider Roon as the next generation of the Sooloos concept: while the excellent software Meridian implemented when it acquired Sooloos originally only managed local data on hard drives on the home network, in addition to many other innovations,



▲ Tags are at the basis of everything: the classification details of albums and songs are displayed in the remote app of Discovery (frame). You can add your own data using the green button on the right. The warning on the top of the screen tells us that somehow we have gone past the Roon Essentials license contingency of 15,000 titles.



▲ Superb shuffle play: just before reaching the end of a playlist, Discovery asks whether it should continue with random titles. The songs selection is based on the previously played album or artist. The feature can be trained and refined using the rating system (image right).



the Roon version is capable of including web-based streaming services into its very special media analysis. At the moment this only means Tidal, but there are „ongoing negotiations with other providers“ (as both Elac and the Roon home page proclaim).

The DS-S 101 itself is a small high-performance PC with its own audio interface. On the inside of the robust, sophisticated anodized aluminum housing is a main circuitboard roughly 20 x 10 cm, which houses the power supply and audio signal processing based on Cirrus Logic's low-noise CS 4350 converters and op-amps by Burr Brown, with each section placed

discretely. The output stage supplies two analog outputs, which can be grouped or individually deactivated, and two digital outputs: one optical and one electrical S/PDIF.

The center of the board features a houses the actual brain of the Discovery: the size of a credit card, incorporates a quad-core processor with its own ROM, RAM, and whatever else is needed. This is also where resides the licensed Roon software, a cut-down version of the full package, which controls all media matters from network connection via library management to decoding and playback of titles. All standard sound formats are



▲ Discovery series: the network player is to obtain a number of siblings, like this power amp (depicted as a concept) which can serve it as Wi-Fi supplier. The DS-S 101 will also be able to address via wireless an active module, which can be installed in various Elac speakers.

supported up to 24/192, but unlike the 'full-fat' version of Roon, this implementation doesn't support DSD, which didn't bother us unduly.

The developers of Roon software had the goal of making music more than just a purely acoustic experience: they believe

own database with extended tag information, and the artist view based on it displays a colorful tile screen with band pictures. If you click on the artist, you receive an overview with a biography, concert dates, web links, and discography of albums from this artist. If you scroll

THE ROON SOFTWARE LETS USERS FORGET THEY ARE OPERATING A COMPUTER: FUN WITH MUSIC IS CLEARLY THE PRIORITY HERE.

that the new media offer plenty of possibilities, currently only scratching the surface of what is possible. And we agree – in our experience, many streaming systems present digital music collections with the charm of an Excel table.

This is where Roon wants to set itself apart: The so-called „Overview“ forms the top control level, a snapshot of various aspects of the music collection including statistics, music recommendations, and artist bios, meaning it looks a bit different every time the program starts up. If you set up a Tidal account in the setting of the software, it will even serve news from the streaming portal. You can also select user profiles – Discovery can be operated by several users with individual settings.

The next level focuses on the actual music collection. In the side bar of the Roon Essentials app (available for iOS, Android, macOS, and Windows) you can see a list of titles, albums, artists, or genres. On top of everything there is a web radio which you set up by copying and pasting the URL addresses of the desired web streams which then remain stored.

The programmers have created their

down, you can see lists with similar artists and other bands which may have inspired or were inspired by this artist – all of it clickable and leading to new information. In fact, interacting with Discovery feels like rummaging through a CD booklet or music catalog.

Shuffled intelligence

A great example for the creative use of this huge store of metadata is the automated playlist completion: if you listen to one song or album, the Elac streamer continues with its own playlist after it is over. And it is very good at selecting music which fits. The playback view shows you what song is next. Below that you have some rating buttons. If you click thumbs down, the song will be suggested less in the future. Thumbs up, and the song will be played more. The system gets to know its users and refines its results accordingly,

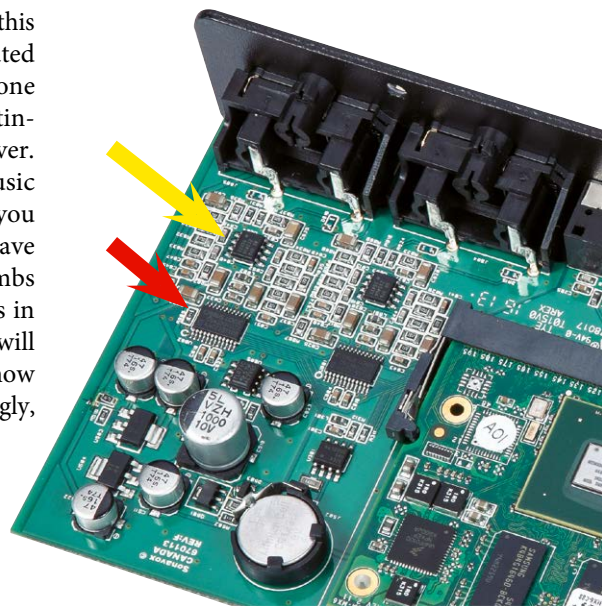
A quad-core computer makes up the central part of the DS interior. Top left: the DACs (red arrow) and a small op-amp (yellow arrow). ►

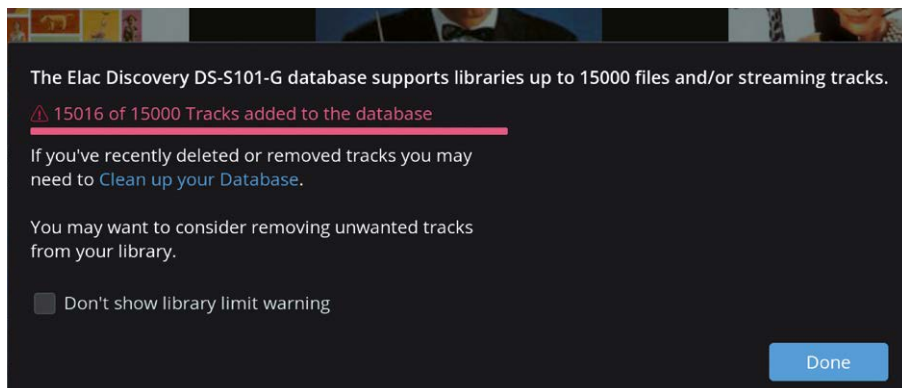
as became obvious during our one week test period.

But this is just the start. In addition to „usual“ tags, the Roon database also includes song texts, with adjustable text size, which are displayed by clicking a small microphone symbol. The „Focus“ button brings you to an overview screen which displays statistical data for the music collection and depicts genres or publication years in a graphic. All aspects can be used as filter criteria when discovering.

If you click on the „Credits“ field during playback of an album or song, you receive a list of band members, conductors, soloists, producers, and other involved personnel. Some of these names appear in a rich blue: this means that you have additional albums in which they were involved. If the name is pale... no such luck! Roon won't comment on where all this knowledge comes from; in Sooloos's day, the developers used the extensive AMG data base but we didn't see that company's logo anywhere.

We should note at this place that the system is still considered „under development“ and correspondingly still has some gaps here and there. Not all backgrounds, biographies, and information come with the same amount of detail. In some rare cases there is even none at all. Also, until now everything has been in English – a fact that is supposed to be remedied in the next few weeks with an update.

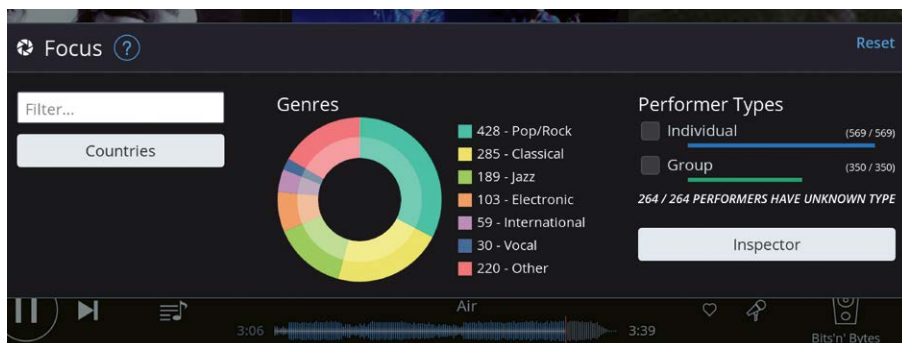
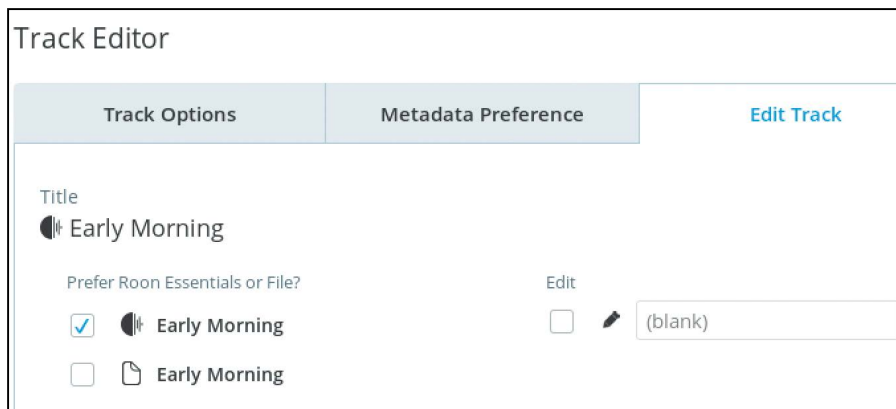




◀ Painful restriction: The Roon system processes only up to 15,000 titles.

The app provides a simple tag editor which works great. Entered data can be firmly embedded in the ID 3-tags when exporting the titles. ▼

The „Focus“ button lets you access numerous statistics on the music collection. The image shows our „genre pie chart“. You can set for each song and album whether the survey should use your own tags or those in the Roon data base..▼



First some work ...

We should note that experienced streamer users may have to overcome a small initial hurdle. Since the control of the Elac systems is different from standard network player on a few points, it is possible to end up with the wrong view or simply be unable to find the artist. In these cases, search function comes to the rescue: it can always be found on the top right of the screen.

In addition to this reasonable acclimatization period, the Discovery requires its user to cooperate with it: the package delivers very good data, but may not satisfy user tastes in some details, so in order to prevent conflicts the program offers the possibility of switching between Roon tags and the ID 3 information stored in the

file for every song. As a third option, you can enter your own details directly in the app, and even insert your own cover and artist images, and we found the implementation of the tag editor used for this very successful.

There is just one fly in the ointment: Elac and Roon agreed to the integration of the „Essentials“ licence, which is limited to 15,000 songs. Don't worry: should you have more titles you can manage and play them all via the DS-S 101, but the remaining titles won't be matched with the online Roon database of the provider, and so won't benefit from the extra data. That's a pity, but understandable since the full license at USD 500 costs almost half as much as the entire Discovery streamer. However, Gunter Kürten told us there

were still negotiations for alternatives. It is possible that you will be able to upgrade the full license via „in-app purchase“ in the future.

We devised a cunning plan and moved artists which we really liked onto our NAS in a separate folder which we imported first. Only then did we move the rest. Any losses there would not be that bad.

Up to now you may have gotten the impression that we're only discussing the Roon software, but this impression is justified since the bits and bytes marshaled by the New York software team form the heart and brain of this network player. Elac was tasked with the relatively humble responsibility to instill it all with a soul, which no doubt was to be found somewhere between the D/A converters and op-amps.

Resounding hardware

In our sound studio, the DS-S 101 proved as energetic and very neutral: we let it run through the entire list of our sound test CD and again and again it stood up to CD players like the Rega Apollo-R or Exposure 2010 S2 with its powerful but in no way colored sound. We especially liked that the bass, while powerful, always remained rich, tight, and precise, with the Rega in particular seeming to have



▲ Input via LAN, plus digital or analog output – this is how simply the DS-S 101 is structured. The streamer can do a lot more since it can target further playback devices via LAN and Wi-Fi.

less bass definition by comparison. The higher frequencies are open and transparent, but seemingly taken back just a hair in the setting of the sonic balance, giving the streamer a fine, velvety tone while increasing presence in the midrange.

The soundstage is certainly not the deepest and widest we have ever heard, but it does have excellent focus. Adele's performance in „Chasing Pavements“ was so tangible and defined when using the DS-S 101 through Symphonic Line's RG-13 that you could have sworn the singer was in the room. Voices and instruments can be located fantastically and have realistic size and spatial relationships.

Like many of its class members, the Discovery has built-in tuning potential, the two digital outputs prove themselves as neutral data suppliers. With a separate D/A converter you can shape and modify the character of the Elac almost at will and lift the depth of soundstage to a level at which the streamer could even be imbedded in a fully grown high-end chain – in our case T+A's supreme 3000 HV electronics.

In addition to all the sound challenges which the little aluminum box passed with flying colors, we should not forget to address the flexibility which Elac dreamed up for its new network concept. The four physical outputs were displayed in the app as a trio since the two digital outputs can only be addressed together. These outputs can be arbitrarily renamed in the control software and can work in groups or supplied with individual songs, while multiroom is also a built-in concept element of the Discovery series.

Yes, you heard me right: It is already a done deal that the DS-S 101 will have siblings. Firstly, Elac will probably issue the power amp DS-A 101 which can also be networked via Wi-Fi using a router, in contrast to the streamer. In addition, there are plans for a spin-off of this Wi-Fi amp as insertable module for Elac speakers: we've already seen a sample of this active solution at the High-End event, and it is designed to 'activate' most of the company's peaker models by the company. In addition, there is also to be an Airplay version via a software update, meaning that the DS-S101 would, for instance, be able to supply an Apple TV with music. All these sources will be added to the current three outputs.

Even more Discovery

The hardware of the network player can output a maximum of eight parallel audio signals, and since the possible playback devices „fetch“ the data and thus do not add any stress to the DS, you could theoretically supply an infinite number of amps and speakers with the eight stereo channels. Elac's vision of the Discovery network is thus an extraordinarily flexible and comprehensive concept which can be used in simple households and professional environments alike.

However, we don't want to drift too much into reveries of the future: at the moment these products have only been announced, and aren't on sale. What we do know for sure is that the streamer can already now offer a meaningful outlook on the future of digital media: instead of just offering pure data administration, Elac in cooperation with Roon has found a way to make a tediously assembled

music collection a tangible experience: a colorful cornucopia of new information and aspects which remains easy to digest despite its versatility. Purists may disagree, but we had a lot of fun with this innovative media juggler!

Carsten Barnbeck

ELAC DISCOVERY DS-S 101

about € 1100
Dimensions: 21 x 4.5 x 11 cm (WxHxD)
Warranty: 2 years
Contact: Elac
Tel.: +49 431/647740
www.elac.de

Elac surprised us in several ways: The Discovery not only represents a more than successful re-entry into the electronics market in terms of sound but also a milestone in the interaction with digital media. This is what the streamer of tomorrow will look like!

EQUIPMENT

Connections: LAN, USB (for sticks and hard drives), 2 S/PDIF outputs (coax, optical, both 24/192), 2 analog outputs

Audio formats: WAV, AIFF, FLAC, ALAC each up to 24/192, AAC, MP 3, OGG up to biggest data rate

Features: Roon tagging system with expanded presentation and information options, the Roon essentials license is for at most 15,000 titles tied to the device, intelligent shuffle function, uninterrupted playback, title display, web radio, can be expanded into server via USB storage medium, up to 8 individual streams can be played via the three main outputs (2 x analog, 1 x digital) or future Discovery products, the sources can be grouped, power input 4.8 W.

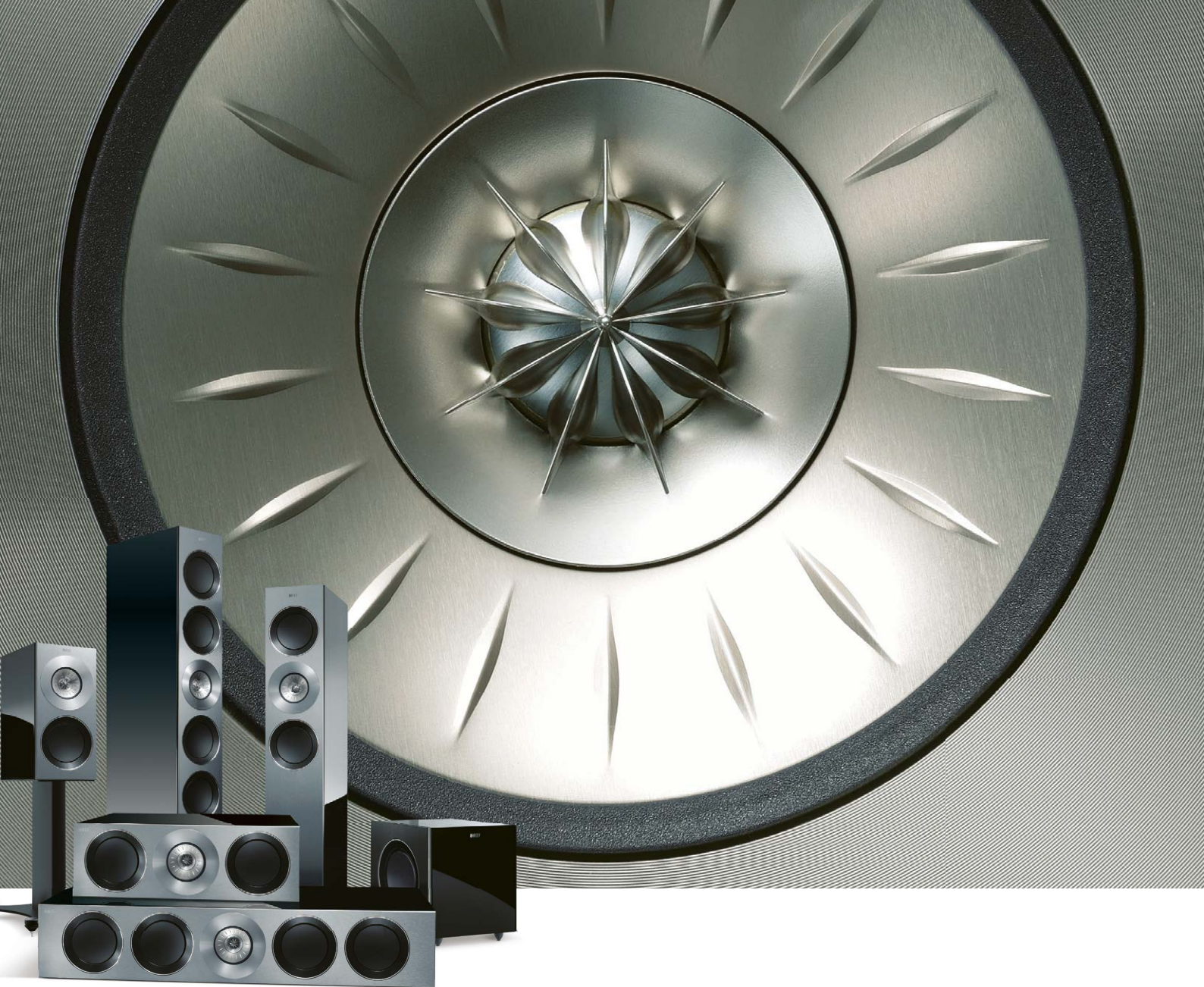
Accessories: external power supply, German manual, free Roon app for iOS, Android, macOS, and Windows

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PRICE/PERFORMANCE

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OUTSTANDING



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B&W P3: New Generation

The lightweight Bowers & Wilkins P3 on-ear headphones have moved on to a new generation, the arrival of the €150 "P3 Series 2". The design been refined, with leather-covered earpads, and so has the driver technology within. Weighing just 130 grams, the new model is optimized for use on-the-go, and can be folded and stored in the included hard case. It comes with a standard cable, plus a special iOS-compatible version with an integrated remote control.



Now NAD Supports MQA

NAD's sister company Bluesound has long been a supporter of MQA, the innovative 'compact' hi-res audio format, and now NAD itself is getting in on the act, with its devices offering the "BluOS" operating system becoming MQA compatible via a software update. At present this extends to the M 12 preamplifier, the M 50 digital music player M 50 and the C 390DD digital integrated amp, with

additional models set to follow. All users will automatically be notified of the BluOS firmware upgrade (v2.2.5), and then the playback of MQA streams or MQA files is displayed in the BluOS app: a green or blue glow signals the recording heard matches the original material.

www.nad.de

New 14 Series from Rotel

Rotel is bringing an affordable series of new and classic hi-fi components to the German market: It includes three integrated amplifiers price from €480 to €1,280 euros, all of which are equipped with a moving magnet phono, powered by a toroidal transformer, and deliver 40 and 80 watts per channel. The two larger models also offer S/PDIF digital inputs, as well as USB inputs for memory sticks and PCs. Also in the new series are the CD14 CD player (€680 euros), the T11 FM/DAB+ tuner T11 at €400 and the €850 T14 tuner/streamer, which offers over Ethernet or Wi-Fi connectivity to access Internet radio and Spotify, Pandora, Tidal, Amazon Music, and Deezer streaming services, and of course music on your home network. All models are available in black or silver.



Technics Unlimited

Having sold out the entire 1200-unit run of its limited-edition SL-1200GAE, with which it returned to the turntable market, Technics is now selling the 'standard' SL-1200G version with many of the same features. So in September the SL-1200G is likewise coming out with a magnesium tone-arm and shock-absorbing feet made from a silicone/rubber mix, with only the plaque



with the limited serial number missing on the "unlimited" model. Like the 'special edition', the standard model closely resembles the famous SL-1200 turntable, which was a best-seller from 1972 until 2010, but Technics says that just about every component is newly designed for this 'revival' model. The SL-1200G is made mostly in Japan and costs €3500, but high demand means there's already a two-month waiting list.

AVM Ovation All-in-One

Baden-based AVM is expanding its flagship "Ovation" line with an all-in-one component. The CS 8.2, at about €10,000 euros, contains a CD deck, a network player with TIDAL input, a tube



preamp and a 2x500 watt power amplifier. Finished in either silver or black, with a chrome front available for an additional charge, the CS 8.2 displays its tubes through a glass window in the massive aluminum cover.

DALI's Portable Debut

DALI's first portable, battery-operated speaker is called "Katch." With a housing of extruded aluminum and a leather handle, it uses a 2x18 watt class-D amplifier to drive two-way systems on the front and back planes, each consisting of a 21 mm fabric dome tweeter and a 90 mm aluminum mid-bass unit. Inputs are Bluetooth with aptX, analogue through a mini-jack or via a Chromecast Audio USB dongle, and the internal Li-ion battery should last up to 24 hours, with a two-hour charge time. Selling for €400, the Katch comes in a choice of Dark Shadow, Cloud Grey und Green Moss finishes.



Super-slimline "Fortschritt"

Mini floor-standing speakers are Joachim Gerhard's specialty: in HIFI Analog No. 5 we tested his "Phänomen", and now the next model is already here: the "Fortschritt". Just 12cm wide and one meter tall, it uses two bass drivers in an opposed configuration, can be used with amps of up to 120W and has 4 Ohm impedance. Gerhard says the frequency response is 32 Hz to 25 kHz (-3 dB), and the price is € 3,600 a pair, with a high-gloss piano lacquer finish available at no extra charge.



www.suesskindaudio.de

Rega: All-new Planar 1

Turntable specialist Rega is bringing out a completely new version of its Planar 1 entry-level model. Selling for €380 complete with Rega Carbon moving magnet cartridge, it has inherited a lot from its big brother Planar 3 including its gloss finish, the new brass main bearing, and the RB330 arm-bearing supporting the RB110 tonearm. The Planar 1 can also be upgraded with a "Performance Pack", including the company's Bias 2 cartridge. The roll-out of the step-up Planar 2 model (about €520 euros) had been delayed, but it is now available for immediate delivery.



www.tad-audiovertrieb.de



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OD NEWS

B&W: The P7 Goes Wireless

After launching its wireless P5 model, Bowers & Wilkins is now also offering its P7 in a Bluetooth version. The "P7 wireless" supports the aptX codec, and has an internal lithium ion battery said to be good for up to 17 hours, or can be powered by via the included cord. B&W has treated this top model to materials like high-quality aluminum, and the sheepskin leather-covered earpads use memory foam for a close fit. For portable use the P7 wireless can be folded and packed in the included bag, and the price is €400. The company has also adjusted prices downward on their other headphone models, not least due to the weakening British pound exchange rate: the 'wired' P7 is now only €350 euros, the P5 €250 with the wireless version at €200, and the in-ear C5 €150.



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Anniversary Series from AVM

Audio Video Manufaktur GmbH, or AVM for short, was founded 30 years ago in Malsch, Baden and to mark this anniversary the company is reissuing completely new versions of three classics from the late 80's – but with contemporary technical features and a carefully refreshed design. The AVM 30 anniversary series comprises the A 30 integrated amplifier (around €2500) with three S/PDIF inputs and Bluetooth with aptX; the €1500 V 30 preamplifier, with a phono and three S/PDIF inputs, plus Bluetooth with aptX, and the M 30 mono power amplifier, at €3000 per pair. Also new from AVM is the MA 6.2 mono power amplifier, designed to complement AVM's flagship Ovation 6.2 series. Its forty selected MOSFET transistors are said to deliver up to 600W watts and peak currents beyond 100A, and the MA 6.2 features XLR and RCA inputs. It weighs 45 kilograms, comes delivered in a robust Flight Case, and can be yours for around €15,000, in the same choice of black or silver finish offered on all AVM models.



www.avm-audio.com

Beyerdynamic: New Studio Flagship

Beyerdynamic's "Tesla" headphone drive-unit is making more inroads into studio models: the DT 1990 Pro, at around €600, is a new top model from the Heilbronn company and, unlike the DT 1770 Pro, is an open-back design. A special acoustic fabric is used for the rear of the driver housing, and memory foam for the ear pads, of which two pairs are supplied to offer a choice of acoustic tuning. Two interchangeable cables – one straight and one spiral – are provided with the handmade DT 1990 Pro, which weighs 370g, has 250 Ohm nominal impedance and comes with a carrying case.



www.beyerdynamic.com

Sonus faber's All-in-One Loudspeaker

Sonus Faber is opening up a new luxury segment with the arrival of its all-in-one loudspeaker system with multiroom function. The SF16 costs around €10,000 euros, and has a housing of exotic wood and brushed aluminum, from which, when



the system is switched on, two satellite speakers extend out on arms. These are each equipped with two tweeters and two mid-range drivers, emitting forwards and backwards in a dipole configuration, while

the main housing contains two subwoofer drivers in an mounted in opposition to provide low-resonance bass. The whole ensemble is driven by 1,400 watts of amplifier power, and the SF16 accepts a wide range of audio formats over Wi-Fi from iOS, Windows and Android devices, music via DLNA from a home network, streaming services like Spotify, Deezer or Tidal, and Internet radio. There are also line and S/PDIF coax/optical inputs for local sources. 64 cm wide and weighing 25 kilos, the SF16 will be made in a limited quantity of just 200 units a year.

www.audio-reference.de

Plato Lite for Upgrade

The Plato media server from Convert Technologies – the company formerly called Entotem – is available in various versions, and those who already own a high-quality amplifier can now purchase the ripper/server/player as the "Plato Lite", shorn of its internal amplification and priced at €3,300. All versions of Plato play, record and archive all available audio and video content of analog or digital media, and also play Internet radio. A special highlight is the automated ripping of LPs, with the discovery of tags and album artwork, and all music is stored on an internal hard drive. The device is operated via a touchscreen on the front or with the Plato Control App for Android.

www.platoentertainment.com

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SCANDIC CROWN

One of the top high-end speakers comes from Marten, based in Göteborg, Sweden, where the founding Olofsson brothers have just moved into new premises. STEREO went there to uncover their recipe for success.

A crowning achievement: the floor-standing Marten Mingus Quintet speaker (top), which was recently presented at the Munich High-End show, is certainly great, but the new listening and development room of the brothers Jörgen and Leif Olofsson, who are behind the design, takes the cake. No need to beat around the bush: in a space of about 70 sqm with a ceiling height of around 2.9 m, we had a rare listening experience.

This is the new home of Swedish speaker specialist Marten, which STEREO was the first HiFi magazine to visit – and we were welcomed with a blast to the ears, the signal flowing through a flagship MSB DAC/preamp to exquisite tube monobloc power amps, then via Jorma cables to the new Mingus. „At the moment I’m crazy about this recording of Mahler songs for organ and soprano, made by a Göteborg label in a church just around the corner“,

developer Leif Olofsson tells us. His second name is „Mårten“, the little loop above the „a“ being blown up into the distinctive feature of the company logo.

A dream sound

And then comes one of these rare moments, in which you wish every Hi-Fi fan could get to sit down in this armchair for a second to experience the extraordinary listening experience. The sound is perfectly resolved, wide, deep and staggered to the ceiling, and appears entirely detached from the pair of speakers, around 110cm tall, which just stand there almost like spectators to the amazing performance. More than that, the presentation lives and breathes, is light as a feather, yet at the same time physical and substantial, and exudes an extremely appealing high-end aura.

The Mahler recording really is first class, but when we played titles with which we were familiar they simply served to underline the class of the system and space. Tiny Islands' inspired adaption of the Taj-Mahal piece „When I Feel The Sea Beneath My Soul“ becomes downright hypnotic, the sounds rushing gently yet fleetly like darting fish below the surface, the timing wandering on the narrow ridge of relaxed concentration. Here, too, is the combination of supreme openness and transparency without masking effects, imbuing the music with tangible solidity and a bass as full as it is mobile.

As it turns out, the listening room – in which voices appear so present that you hardly have to raise your voice to be understood from the other end of the room – uses diffusers to scatter sound waves rather than absorbers to dampening them. The acoustics are correspondingly lively, and a great deal of effort was necessary to prevent the wandering sounds from blurring the sound: with a number of reversible elements available to fine-tune the character of the room, which can also be used for recordings.

This is primarily the workspace of Leif Olofsson, designed so he can really hear what his speakers can do.

Early passion for Hi-Fi

We enter the room through two heavy, insulated doors, in the small clearance between which you can see air-holes in the walls to the volumes on the side. The entire structure is a Helmholtz resonator, which the Swedish brothers have used to great effect to counter the 17 Hz resonance of their room. A second, identically constructed damper is installed in the front wall of the space: „This way we can ‚remove‘ any impurity in the lower registers,” says brother Jörgen. Responsible for administrative affairs at Marten, he is clearly also severely stricken by the Hi-Fi bug.

The brothers' passion and devotion has helped the company they founded in 1998 achieve an outstanding reputation, and their speakers have caught peoples' ears: today they export to around 25 countries, with Asia making up the main market. Buyers there especially appreciate the explicit clarity of Marten speakers, as well as their ‚personal‘ background: in nations where craftspeople mix with giant

The crossover of the Marten Django is soldered by hand (►), the paint on the carbon housing of a Coltrane 3 is carefully polished (▼).



▲ Measurement and analysis programs are only used secondarily during development.



▲ Marten uses high-quality chassis with stiff, light ceramic membrane by the German specialist Accuton. Here, two deep/mid-rangers are being placed in a Miles5 (12,000 €/pair).

corporations, individual excellence seems to count even more.

Are masters born, or trained? Well, looking back, the path of Leif Olofsson appears to have been predestined: even before he was eight, he was fascinated by the stereo system of his brother, who's three years older. „I just caught fire“, he remembers, „and absolutely wanted one of those myself“. But money was tight, and so Leif wondered whether he could build himself speakers on the cheap: pre-fabricated kits bored him, so as a teen he began with his first designs and dug into the complex matter in both theory and practice.

„Considering I had no idea at the time, my first speakers, using an Audax mid/bass and Gamma ribbon tweeter, weren't all that bad“, Olofsson laughs. Obtaining a degree in electrical engineering, he

Two Martens, two characters: while the Django XL (right) combines its high-resolution tweeter with power, the Miles5 is very audiophile. ►





▲ Marten's crossovers use selected high-quality components, including Mundorf capacitors and condensers from Danish company Jensen.

worked as project manager in residential construction and designed high-end kitchens, and only when he received a set of the first game-changing Accuton drivers with ceramic diaphragms, sometime in the mid-90s, did he find his way back for good: „The treble unified incredible resolution with the kind of dynamic range conventional drivers just couldn't achieve, while the midrange had a lack of distortion I'd never heard before.“

„I WANTED TO BUILD
SPEAKERS EVER SINCE
I WAS A KID!“

From this point onward, Leif Olofsson was filled with the desire to build the best speakers in the world based on those drivers, and finally founded the company in 1998 with the help of Jörgen and third brother Lars, who developed the design. To date, the connection between Marten and the German driver specialist remains tight and symbiotic: they exchange information and support each other in various ways.

The move to the new offices opened up new possibilities for the small team – in addition to the three brothers there are also four employees in production and administration – and they now have everything under one roof. In the shop, we watch as the inside of the housing of a Coltrane3 (right), made from highly rigid carbon, is covered in a layer of liquid damping material, and the black paint on the outside is polished to a high gloss. In addition, the crossovers are soldered together, using in particular components from German specialist Mundorf, and the ceramic drivers placed into a Miles 5.

All this is done with care and love: despite the eleven models they now produce, Marten has retained manufacturing

throughout the years. The monthly production is about 20 pairs, and this in-house construction comes at quite a hefty price. For instance, the new Mingus Quintet, equipped with Accuton's superb diamond tweeter, comes in at 48,000 Euro.

Leif Olofsson invests a lot of time and effort in development, listens to a lot of things, but not everything: „It's not possible to compare every capacitor on the market yourself“, he admits freely. He has a buddy for that who usually put him on the right track.

Elaborate, PC-based analysis procedures like the popular Klippel are a no-go at this Swedish company, Olofsson only using computers sparingly, and preferring to trust his experience and his hearing. This is how he found a breakthrough when Accuton presented their „CELL“ bass units, using a cone made

from a honeycomb shaped aluminum sandwich with a slight outward flare. They're now used in the „Coltrane“ and „Mingus“ series, and the

developer blushes with sheer excitement when he says „In connection with Accuton's other ‚CELL concept‘ drivers you get mostly time-homogenous emittance



▲ The flagship Marten speaker is the 2m-tall Coltrane Supreme 2: selling for Å395,000/pr, it uses ten active drivers and no fewer than six passive ones

because all sounds are created on the same vertical axis“.

„This is not to be confused with correct timing“, he goes on, „since in all our large models, all drivers react to impulses in phase, while almost all other speakers on the market use a midrange driver of opposite polarity“. He says he is convinced this is good for clarity and long-term listening comfort because the brain isn't confronted with an unnatural mix of over- and underpressure in the rising sections.

But that's just one of many details playing their part in the quest for perfect speaker, and Marten feels its has got close with the ultimate Coltrane Supreme 2, at about € 395,000 per pair. But it's not all about the big picture: sometimes the devil is in the detail, such as the spikes and pucks the company uses for optimal stability and resonance control.

It seems you always have to do something special to win the crown in Scandinavian speaker production.

Matthias Böde



▲ Leif MÅrten Olofsson with the Coltrane 3.

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BTB in Fürth is Germany's largest provider of tubes and a real treasure trove for fans of 'glowing bottles'. HiFi analog met the owner Michael Kaim (above) in his realm of the tubes.

This could be just about any parts-warehouse, but the long shelves at BTB in Fürth, extending up to head-height, house hand-labeled boxes containing all kinds of tubes. Here in the treasure vault of the company, it seems at first glance like there is nothing special, but our host gets tears in his eyes when looking at some of his special treasures.

Or maybe he is simply overwhelmed by the sheer quantities: “We have a total of about one million tubes in stock,” Michael Kaim tells us, as we take a picture of him with an old Telefunken medium-wave transmission tube dating back to the end of the 1920s (see picture).

The device above tests preamp tubes using stimulation via a wooden stick to assess microphonic sensitivity. The speaker reproduces any signals. On the right, EL34s in resistivity measurement. ▼

Kaim became addicted at the tender age of eleven, built his own tube devices, and got more and more into the subject: after technical studies and various jobs in the electronics industry, he built up BTB on his own, starting in 2002. Buying up the inventory of other tube providers which had given up, for instance for age reasons, the company rapidly became the largest domestic tube supplier for makers of HiFi components and guitar amps, as well as individual customers.

BTB mainly obtains goods from three large manufacturers: Shuguang in China, Reflector in Russia and Slovakia’s JJ Electronic, with a total of about five million tubes a year. “About half of them are needed for new devices, the rest goes to repairs and restoration”, Kaim says, pointing out that his warehouse is currently so well-stocked because he feared there could be a delivery bottleneck due to the Ukraine crisis. For that reason he put in

a large order, for instance for the new, increasingly popular KT150 performance tube – used, for instance, in the Ayon Spirit III and Octave V80SE power amps.

But BTB is more than just a middle-man and shipper of “hot bottles”. All incoming vacuum tubes are inspected upon receipt: not every single one – the numbers are too big for this – but at least random samples from each batch, which can reveal potential problems. There are measurement and test devices all around the busy company, and notes on stickers providing information about technical parameters. “If something’s not right we have no qualms about returning an entire shipment,” Michael Kaim explains, and we don’t doubt his resolve. His suppliers

Packaged like treasures, these powerful Type 845 performance tubes reach the customer (below). Shipping is the central business area of BTB. ▼





respect the standards he demands, and thus make sure the quality is right.

There's a rumor in the tube scene that everything used to be better – the old 'things aren't what they used to be' idea – but while this specialist doesn't agree, he says manufacturers are under a tremendous amount of pressure to meet steadily increasing demand while having to make ensure they're still providing high quality. Add to that, that tubes have become much more affordable in the meantime. "In the 60s, an EL34 cost about 15 Marks, equivalent to about 15 Euros today, and people do earn a lot more these days. On the other hand, this means that the manufacturers are supposed to provide the same quality at about one-fifth of the former price. This is difficult, even if labor prices for production are lower in the Far East or Russia."

Quality vs. supply pressure

The few remaining factories should be able to produce even better tubes than

decades ago but, due to the enormous pressure, a lot of mediocre products are delivered - sufficient certainly for average amps but not for listeners with high-end tastes and amps. For this reason, BTB begins its actual measurements piece by piece on top of its initial inspections of incoming goods: there are two selection steps, and some HiFi manufacturers still make their own subsequent selections.

Michael Kaim does not deny that the tube market overall is only a fraction of what it used to be: "Good," he says, adding that otherwise the EU might poke the tube industry with its strict requirements for the power consumption of electric devices, however disdainful a term 'device' may seem for a high-quality vacuum tube amp. "Our niche existence protects us from the bureaucracy!" laughs Kaim, and let's hope it stays that way!

Between 2005 and 2012, tube sales increased strongly, not only at BTB, but have been growing more slowly since then. Kaim, who has many HiFi studios

▲ The company has a measurement station with high-quality equipment by Audio Precision. BTB employee Norbert Dürr checks a batch of older Telefunken preamp tubes. Are they still good?

among his customers, believes that one reason for the success is the availability of often very affordable tube devices from China which were "simple and decent" and thus served as "gateway drug" to the tube segment. "Anyone who has his first positive experiences with the sound or even discovers a certain love for tubes is likely to move up to higher-quality components." That's the way it was for him, and this music lover definitely sees parallels to the rampant vinyl hype. "Of course, nostalgia is part of the deal with tubes but the sound is at least just as important among fans."

As a sales specialist who knows his range in depth, he believes fears of being unable to find a replacement tube for one's valued, expensive device at some



▲ A selection of popular preamp/power amp and rectifier tubes – 300B, ECC83, KT150, and GZ34 – in stock at BTB, in addition to many others.

point is unfounded: “We can provide any type in use today at the press of a button. And that is already 90 to 95 percent of all requests.” Of course, there are a few exotic ones, like the 6240G once used by Luxman and a few more, but these were fringe areas for which one could find solutions. “If such devices are used, we determine tube types with similar specifications which we can use instead. We simply make an upgrade!”

For instance, in the case of the rare EL503 one would move to the EL509 or EL519, after first checking whether the transformer can deliver the heating power it requires. If it can’t, one could move to the EL504, forgoing a bit of power but saving the device. Kaim emphasizes BTB’s role in informing the customer of the possibilities and helping him make a decision, and – time permitting – is himself available for questions on the phone. In addition, BTB has its own service shop exclusively for tube equipment, equipped with high-class measurement devices.

Service depending on purpose

This repair station handles not only defective HiFi but also guitar amps for which tubes have always been part of the good tone. The specifications and expectation of

the owners also vary widely. “When I first started, I trimmed guitar amps for optimal linearity and low distortion,” Michael Kaim remembers with a smile. “Oh, you should have heard my customers: they asked whether I had lost my marbles, and complained that their amp sounded completely dead, completely sterile.

“They wanted a ‘dirty’, distorted sound, and for that reason, I only set up guitar amps like HiFi a few times! Since then I always make sure there is some slight asymmetry in the push-pull circuit, in order to achieve the desired effects.”

Depending on the component, Kaim may have to descend into the basement vault of the company, where he has brand new old tubes lying around, some of which have been out of production for decades but are still in demand: “We can deliver anything, starting in the 1940s,” he confirms, “Sometimes even models from the 30s.” With proper storage these tubes could practically last forever: “Due to the vacuum on the inside, the structure encounters basically no degradation at all.”

Okay, but what when they are used? That depends strongly on the conditions and intensity of use, he notes: “Some have a 50-year-old music box whose tubes are definitely no longer new, but still work. Then there are the high-end owners with Class A power amps, who have to change performance tubes every two to three years. Preamp tubes only need to be replaced every five to ten years. In our service office we can find out quickly in what condition the respective tube is, for instance by sending short tone bursts through it and analyzing its peak currents.”

The industry likes to tap into the know-how which Kaim and his team have acquired over decades, for instance if a developer can’t get ahead in a project or requires special help because he does not like the distortion distribution, resistivity, or other parameters.

And are there “special” tubes? We’re always hearing that some tube types or certain batches of known models, for which fans are willing to put down a lot of money, have virtually “magical” sound characteristics, but Michael Kaim

grimaces slightly: “I know the physics and technology of tubes quite well. There may be things I can hear but can’t measure, but I’m happy to leave anything that has to do with ‘auras and esoterica’ to those who like to deal in these terms. This is certainly not the path of BTB.”

And when we scan the address labels on the outgoing packages – the number of shipped tubes per year lies in the six figures – we find names known for such claims. It seems they also only put on pants one leg at a time, even if the label says BTB.

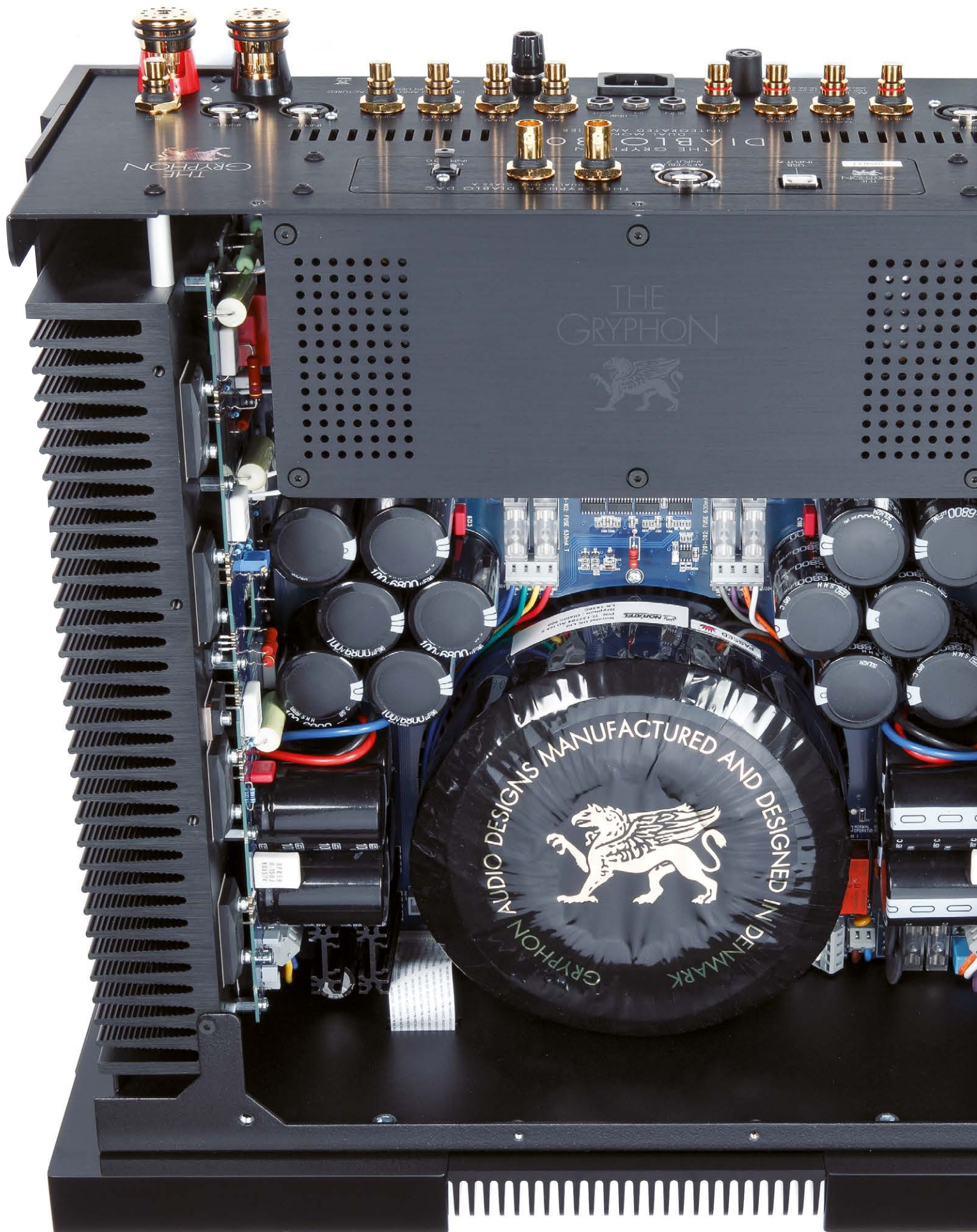
Matthias Böde



▲ One of the most used tubes is the ECC83 – a classical driver double triode for performance tubes – here in the popular „Gold Lion“ variant.



▲ Two desirable pearls in the form of the double triode ECC802S, an especially durable Telefunken tube. It has been off the market for a long time but BTB keeps buying residual stock – at three-figure prices.



BETTER THE DEVIL...

Some manufacturers rework details of devices and give them a new name, but Gryphon has completely revised the „Diablo“ from the ground up, while still retaining the same name.

Better the devil you know? Perhaps not: while it would have been simple for Gryphon merely to treat its Diablo amplifier to a refresh and a new name, instead it's done much more fundamental reworking to create the Diablo

300 we have here. The price has risen – we tested its predecessor in Issue 4/14 at € 12,000 but the “Diablo 300” comes at a hefty € 15,500, with the optional phono board up from around € 1,800 to € 2,140 – but the price is far from the biggest change here, as a glance inside the amplifier reveals.

Nine years is a lot of time, over which Gryphon has sold a four-digit number of Diablos: many of the insights gained in the development of other devices were also introduced into the new “devil”. For example, if your wallet is still healthy after the price increases, and you want to take one step closer to digital Nirvana, CEO Flemming Rasmussen and his team

can offer you a €6000 digital converter plug-in for the Diablo, which has supposedly inherited all the essential sound characteristics of the company's € 24,000 “Kalliope” über-converter.

So what's changed? Let's start with something seemingly trivial: the volume control. In the old Diablo, the balanced signal was squeezed through a non-balanced series of 7 resistors per volume level; the new version is fully balanced, yet uses only two resistors per damping stage. Strictly speaking, the Diablo is also not a classic integrated amp, as Möller explains: “We don't use a classic preamp stage, but instead have a power amp stage with variable amplification,

TEST COMPONENTS

CCD player: T+A PDP 3000 HV, Rega Apollo R
Power amp: T+A HV 3000, Octave V80SE/SBB, Symphonic Line RG9 MkIV Ref.
Speakers: PMC twenty 5 23, DALI Epicon 6, B&W 802 D3, Avantgarde UNO XD
Cable: Cardas, HMS, Chord Cable





Our basic circuit is simple and implemented with short signal paths, and it's mainly the oversized power supply that takes up a lot of space.

‘However, we keep a close eye on getting the structure as cable-free as possible. One reason is that we know that hardly any two cables run absolutely identically in the devices and thus microphonic effects always worm their way into the sound balance. We don't think that there will ever be cables which are better than no cable at all, and neither do we subscribe to the fairy-tale of synergy effects – to us this is simply a mix of different discolorations which more or less cater to the personal tastes of the developer.’

A big step up

The power supply of the Diablo has also gotten chunkier: the storage capacity of the electrolytic capacitors has increased from about 56,000 microfarads to 68,000 microfarads per channel, while the performance of the transformers has also been upgraded. This also shows in the power output: 250 Watts at 8 Ohm have turned into about 300 Watts, and while the cooling surface has doubled, the Diablo still gets hellishly hot since it runs in Class A operation well up the output range.

▲ Wall of sound: The Gryphon is constructed with mirror symmetry and comes with plenty of equipment – in this case an outstanding optional D/A converter.

However, power isn't as important as quality, and Rasmussen and his chief developer Tom Möller sourced especially low-capacitance transistors for the driver stage in Gryphon's top power amp, the “Mephisto”. Used here, the result is a further increase in bandwidth and greater current delivery capacity, while the circuits have supposedly also become “faster”, with all this was supplemented with non-inductive resistors in the output state.

Digital Nirvana

More big changes come in the optional digital section: € 6,000 is no trifle, but the technology behind the five digital inputs is quite something: the Sabre ES 9018 converter processes PCM and DSD signals separately, circumventing the usual forced conversion of PCM to DSD signals. The Diablo offers up to 32 Bit/384 kHz for PCM at the USB input and DSD is processed from Windows OS with up to 512 times the sampling frequency, and from

MacOS and Linux OS up to 128 times. If you would like to listen in a more conventional manner: the classic digital inputs handle up to 24 bits/192 kHz. Switchable filters round out the package and here as in the rest of Gryphon's designs, the mantra is the same: dual mono construction in Class A topology, no feedback and only the best components.

The phono stage, which is also optional and handles both MM and MC inputs, remains mostly unchanged – but the price has risen, which we thought was a pity: maybe someone can check and calculate whether this is really necessary. However, it does stick to Gryphon's usual feedback-free design..

The amplifier's layout was optimized for short signal paths even more than in the old Diablo, which also involved placing the power supply to the rear, and in the center. The power transistors are select, latest generation bipolar Sanken types, apparently delivering even more current than their predecessors, but Rasmussen feels that more important than the basic measurements are selection and manufacturing consistency – for each individual device and in the series as a whole. All components are produced to military specifications and are tested in-house, first

individually and then again after installation. After this, each finished device is also sound-tested – only possible for comparatively small batch numbers since it is simply too time-consuming. All measurements are entered into a test certificate and archived by Gryphon, meaning the quality of can be maintained in the case of repairs being required.

The open window

A Gryphon is not supposed to leave its mark on the signal: for Rasmussen, circuit design with high bandwidth and phase-stability is the foundation - the open window from which the music can escape, as he describes it. To stay as close to the original in terms of musical truth they have been using master tapes as a reference source, and not just since the renaissance of tape decks: these Danes especially love their dynamic range and resolution.

In addition to the trust-engendering detail quality and the connection jacks soldered directly to the circuitboard, we also appreciate the versatility and operational stability of the Diablo 300: there are two balanced inputs on Neutrik XLRs, plus single ended inputs, all of course gold-plated, a volume control, and the ability to integrate the 300-series with a surround system, connect it to two subwoofers or add a power amp.

Updates are available via a network connection, while protection that reliably prevents the death of the amp or connected speakers is as welcome as the easy-to-read and brightness-adjustable display and the sensor buttons, which reacted sensitively

and reliably to the lightest touches. By the way, the central on-off switch is on the bottom of the Diablo, close to the front plate.

With a small speaker

Right from the beginning we were impressed with how unbelievably well the Diablo 300 was able to project large and small spaces, and to represent the difference between sound recorded directly where it was generated and more ethereal recordings made with mics placed at some distance. Almost shocking was its ability to reproduce gnarly bass lines, such as “Carta de Amor” by Garbarek, Gismonti, and Haden with ease and to make them sing while at the same time preventing them from going off on their own. Meanwhile ZZ Top, not exactly known as sound tinkerers with a penchant for perfection, became unusually fun in “La Grange”, the amp delivering sheer sound pressure with grip, swing, and fun – all in one. Not an audiophile highlight, agreed, but this was gripping music.

The WOW factor

The next big moment came when we used the optional digital section: with Max Bruch’s violin concerto with Jascha Heifetz playing solo violin, an old analog fan had to catch his breath at hearing what sounds came out of the speakers, full of musicality, precision, and feeling for what was essential in the music. Depending on the speakers the sound was sometimes more or less elegant, but the playback was always gripping – and all that was achieved with a relatively modest digital source: the Rega Apollo R used as a transport.

The generous and yet precisely located presentation, in particular when listening to Verdi choirs and orchestras, lets the Diablo 300 stand up to any competition in the pre/power amp combo world, and it was especially cool that all the tendencies and differences in the sound were already readily apparent using comparatively cheap PMC speakers. No matter what power we pulled out of it, the Gryphon simply passed on it absolutely neutral but never distant sound character to the speakers.

Isn’t that exactly what we mean when we speak of high-end audio? This devil, it seems, does have all the best tunes.

Michael Lang



▲ The metal remote handset feels good, and is easy to operate.

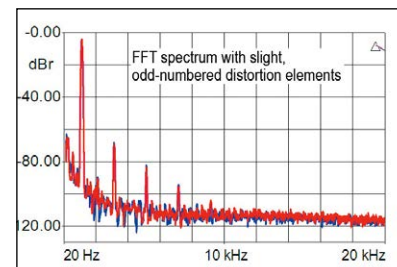
GRYPHON DIABLO 300



starting at € 15,500
Dimensions: 48 x 24 x 51 cm (W x H x D)
Warranty: 3 years
Contact: TAD HiFi
Tel.: +49 8052/9573273
www.tad-audiovertrieb.de

A monster of an amp. The expensive Dane won us over completely with seemingly old-fashioned amp technology and an optional state-of-the-art digital converter section!

MEASUREMENT RESULTS



Continuous power at 8 4 Ω	284 473 W/channel
Impulse power	protection switch W/channel
Distortion at 50 mW 5 W Pmax -1 dB	0.02 0.1 0.3 %
Intermodulation at 50 mW 5 W Pmax -1 dB	0.004 0.03 0.3 %
Signal-to-noise ratio CD at 50 mW 5 W	72.5 91 dB
Channel separation at 10 kHz	83 dB
Attenuation at 4 Ω	350
Upper cutoff frequency (-3 dB, 4 Ω)	>80 kHz
Load ratings	practice-oriented
Crosstalk tuner/CD (10 kHz/5 kOhm)	92 dB
Timing error volume control up -60 dB	0.1 dB
Power consumption Off Standby Idle	0 0.5 152 Watt

LAB COMMENTS: Very good to excellent measurements, only distortion and intermodulation just below full load are merely decent. More power than you can handle. High attenuation factor.

FEATURES

Two XLR inputs, 3 cinch inputs; 2 x subwoofer/pre out; tape input, switchable to home theater; display, dimmable, remote control; optional: phono MM/MC and digital board with 5 inputs for PCM and DSD signals

STEREO-TEST

SOUND QUALITY	100 %
PRICE/PERFORMANCE	
★ ★ ★ ☆ ☆	
VERY GOOD	



HEAD OF THE CLASS

You only invest high four-figure amounts into your hobby if you expect something extraordinary in return – so do these top-class headphones by HiFiMan, Sennheiser, and Stax meet those high expectations?

Lounging comfortably in an armchair at 30C, playing around with some top-quality headphones, we can't shake this certain feeling of „déjà-vu“: after all, didn't we do the same thing last year, during a heatwave? Yes, we did, and then we noticed very quickly and very clearly whether and how fast the ears start to burn under the ear-cushions and start sweating. One thing is certain: once your ears get too hot, the topic of headphones and their sound flies out of the window and you look for something else to do – but time, tide and temperature wait for no man when there are headphones to be auditioned.

Michael Lang



We tested the following:

HiFiMan Edition X	XX
Sennheiser HD 800 S	XX
Stax SR-L 700	XX

NO HALF MEASURES

The price for the Edition X was cut almost by half from the HE-1000i – how much sound did they lose on the way?

The only thing we had to complain about when we tested the €3500 HiFiMAN HE-1000i one year ago was its exorbitant price: considering the headphones were produced in China, we were unable to understand the brand's 'ambitious' pricing. However, the HE1000i's little brother, the Edition X, has been available for a while now at about € 2,000, so we wanted to know where money has been saved in order to get the price down by € 1,500.

One good thing is that the red ink didn't feature at the heart of the headphones, the magnetostatic drivers: those in the Edition X are based on the technology of the 1000 series, but have better efficiency. The idea behind this is simple: even with the lower impedance of only 25 Ohms, users of inexpensive portable devices should still be able to enjoy the sound of top headphones. And while this works technically, as a test with a

MacBook showed, overall it only makes limited sense since the quality available here is only apparent when you connect the Edition X to a DAC/headphone amp like an Audioquest Dragonfly. At this point the headphones become alive and dynamic, Johnny Cash's voice regaining its body and the vibrations of his guitar adding to the sonic experience. And when connected to the and even better headphone amp, from Lehmann, the timbre moves safely to a tiny hint of brightness.

If the "HiFiMEN" cut corners, then they probably only did so in the design of the headband construction – and the weight. The package they put together fits together very well.



▲ Headband and earpiece materials are simpler than in the flagship HE-1000i.



▲ The cables can be exchanged, with a balanced version available for a surcharge.

HIFIMAN EDITION X

Price: about € 2,000, Weight: 400 g
 Warranty: 2 years
 Contact: Sieveking Sound
 Tel.: +49 421/6848930
www.sieveking-sound.de

At 400 g, the weight of the HiFiMAN is still just in the comfort zone. Good efficiency and low impedance make it a sonic master!

FEATURES

Metal headband with leather, left/right labels, replaceable ear cushions; 3 m cable with 6.3 mm jack and 1.5 m with 3.5 mm jack included

STEREO-TEST

SOUND QUALITY **93%**

PRICE/PERFORMANCE

★★★★☆
VERY GOOD

UNMASKED

With its patented absorber technology, the German manufacturing legend Sennheiser wants to make its top-selling HD 800 future-proof.

The HD 800 has been our office workhorse for years: whenever we want to set a sonic benchmark, we turn to the Sennheiser. If we need to decipher the mumbled words of an interview subject, possibly even in English, we know which headphones to reach for: impossible to fool, and with the neutrality of a referee, the HD 800 helps our editors clearly distinguish good from better.

The Sennheiser secret? The company, which is based in lower Saxony, saw the potential in getting higher frequencies to the ear without interference, while at the same time still providing lower frequencies at great volumes. Preventing resonances arising in the space between driver and ear minimized this effect, known in the jargon as “masking”, the necessary mechanical modifications being not dissimilar from the principle of a Helmholtz resonator. However, it’s not a matter of soaking up those excess bass energies which do the masking, but rather smoothing out the frequency response in the upper range, which is supposed to lead to a more pleasant, rounder sound.

Not just painted black

Whether you prefer the black exterior to the traditional silver look is a matter of taste. But it is nice that this “S-Class” version comes with an alternative 4-pole balanced cable: with a corresponding amp, in our case a Malvalve, this results in audibly more dynamic range and openness.

Occasionally the ‘standard’ 800 is accused by some of being a little devoid of emotion – and not without reason if you take Ryan Adams’ “Invisible Riverside” as an exemplar. You can detect a slight wisp of coolness, with a gentle peak in the high range. The “S” has a bit more heart and soul, without sacrificing its qualities as a working device, due to the absence of those resonances.

It’s the holy grail of development: keeping all the good qualities and making something else even better: like a VW Golf which offers more interior space with the same body length, uses less gas, and corners with even more agility – that’s the scale of the task the development team had to tackle. But Sennheiser appears to have an eye - or ear - for this, just like their automotive counterparts in Wolfsburg.

The differences became even clearer in balanced operation. Complex orchestral music like Respighi’s “Pines of the Appian” on our STEREO Sound Test CD VI gained more detail and consistency than with the normal 800 – not worlds apart, but readily apparent, and the same was true with complex rock music like Wilco’s “Born Alone”, as if the door was simply opened wider. Even Jan Josef Liefers’s abilities as audio-book reader reached the listener airy, light, and with many facets: subtly better, if not dramatic differences. Owners of the 800 need not jump ship just yet, but the HD 800 S is easy to recommend if you’re in the market for a new pair of headphones. The fine-tuning, albeit with a moderate price increase, is definitely a success.



SENNHEISER HD 800 S

Price: about € 1,600, Weight: 330 g
Warranty: 2 years
Contact: Sennheiser
Tel.: +49 5130/6000
www.sennheiser.de

The Sennheiser weighs just about 330 g – and thus passes as light-weight. Good efficiency but relatively high impedance make it an ideal playmate for a high-quality amp. In terms of sound just a fraction better than the standard model!

FEATURES

High-quality housing, cushioned headband with leather cushion, left/right labels, replaceable ear cushion; 3 m cable with 4-pole XLR plug, cable with 6.3 mm jack included

STEREO-TEST

SOUND QUALITY 91 %

PRICE/PERFORMANCE

★★★★☆
VERY GOOD

STAX OF INNOVATIONS

Stax news – it's been a contradiction in terms in the past few years. Well, the wait is over.



The last time I put on a new Stax headphone was when we received the current top model, the 009, for testing three years ago. Since then these Japanese electrostatic models, which pretty much used to rule the high-class headphone roost, have gained some competition: the global boom in 'personal listening' has given a few companies the courage to enter into market sectors once seen as 'Stax territory'.

Needing good companions

Since the Stax SR-L700, like the company's other 'earspeakers', is an electrostatic type, it requires its own amp to generate the high voltage needed to drive the diaphragms. True, a few manufacturers have brought out electrostats without the need for this high voltage, but the Japanese have chosen to stick with this 1960 technology, to the extent of building amps to fit round their headphone range. In our case that meant the most affordable amp, the SRM 006tS, available in Germany packaged with the 700 'phones as the SRS 7106 Pro for € 3,375 – quite a saving over buying the two individually.

'More expensive than dynamic headphones plus a decent amp' you say? Not really – if you want to get the maximum out of the two other test candidates here you'd need to choose their balanced cable version and buy a correspondingly-equipped headphone amp. Do that, and it's pretty likely that the complete price such a set would lie above that of the Stax package.

However, if you are looking for a better price, you should look at the SR-L 500 Pro and SR-L 300 models, which come in at € 900 and € 525 respectively.

If a system has achieved a certain maturity, which we can safely assume Stax has after more than five decades, then progress usually arises more from changing details than from a complete redesign. Still, when you look at the 700 headphone, then quite a bit had to change to bring its performance closer to that of the flagship SR-009: so while the headphones haven't become bulkier on the outside, they do offer more volume within, the electrostatic elements being rearranged and the inner damping mechanism changed.

The conductor plates including the electrodes have been stabilized as in the '009: they now have a greater thermal capacity and can therefore handle high volumes

with less distortion. In fact you cannot manage the volume reserves here, you should probably visit your ENT specialist and subject your own sound detectors to a check-up and possible flush.

However, Stax was still not satisfied with these innovations: its engineers also added an extremely low-capacitance silver-plated 6N pure copper cable. It's 2.5m long, and connected permanently to the headphones, flying in the face of the current interchangeable cable trend, but if you need more flexibility, you can order 2.5m or 5m extension cables.

Two permanent points of criticism have also been resolved. The ear cushions used to be less than ideal for really long sessions, for instance when listening to a complete audio play or an opera, but the new design is, the manufacturer says, both ergonomically shaped and lined with lamb's leather.

And the plastic headband, which had always felt cheap, has been replaced with a metal version having 10 adjustment settings, particularly for the very demanding German market. To prevent these from damaging the plastic housing of the drivers when handled roughly, they are merely clicked in and jump out of the mount when lateral pressure is applied. Why wasn't it like that from the beginning, we wonder?

The SRM-006ts headphone amp: license to thrill

The recommended SRM-006ts headphone amp is worth a closer look, too, and tube lovers will prick up their ears when they hear the word "triodes": there are two 6FQ7 dual triodes in the output stage. The circuit design is balanced, the four-fold potentiometer with channel-separated volume control showing how consistent the designers were here: a balun isn't used, simply because Stax believes they limit frequency response.

The 006 has three inputs – one of which is balanced – switched with relays and with a red LED to indicate which input has been selected; the power button is also on the front, lighting up a green LED when running. However, we would have liked an LED on the volume control so that you can see how high it's set, even in low lighting.

It is important to know that the 006 provides the especially high bias required by the Pro series, and two headphones can be connected at the same time. But



One output, three inputs, one of which is symmetric, and a grounding clamp in case there is a buzz in the line. ►

◀ The headband is finally made out of metal, the housing still plastic, the cushions made from lamb's leather – very comfortable to wear.



the amp should be given plenty of space, rather than simply being stuffed onto a shelf with just a few centimeters of air around it: it can get quite hot.

Great, whatever the music

After a decent warm-up period any trace of dullness and an initial slightly nasal quality had completely disappeared, meaning that Jan Josef Liefers, who thrills audiences with crime stories in audio form, came across airily in "Dr. Siri und seine Toten", with finely nuanced volume differences from the wafer-thin membranes. The presentation was powerful and effortless, the various roles Liefers plays in this crime story set in China reproduced with ease and skill.

If I had initial doubts about its suitability for rock music, this Stax combo completely won me over: Mando Diao's unplugged "Before Rock 'n' Roll" sounded light and transparent, driving, and with a bass which came across completely clean. Similarly the Red Hot Chili Peppers' "Goodbye Hooray" sounded powerful, the bass figures of Michael Balzary as clear as the art of his colleague on the drums. The sound remained just as precise when things got wild.

Puccini's "Turandot" was projected onto a large canvas: a real XXL stage in which the light and pleasant 700 disappeared acoustically without neglecting to play out every single sound event in its precise location, with not a hint of diminution of scale and a simply magical

presentation of a Birgit Nilsson who was at the zenith of her art in 1959.

American singer Lyn Stanley certainly also belongs into the category of enchanting voices, and since she also has a keen eye for top recording quality, every piece on here "Interludes" set is a sonic jewel: listening to how Stax carves out every detail of her voice and her excellent accompaniment makes an investment into a headphone set of this caliber almost a must!

STAX SR-L700 SRM 006 TS

Set price: about € 3,750, Weight: 370 g
 Warranty: 2 years
 Contact: Audio Trade
 Tel.: +49 208/8826660
 www.audiotra.de

At about 370 g neither sound nor weight stand in the way of long sessions. The processing is more sophisticated than in earlier Stax models. It can get loud, bass and impulsivity are excellent. The 006 is the perfect supplement as driver.

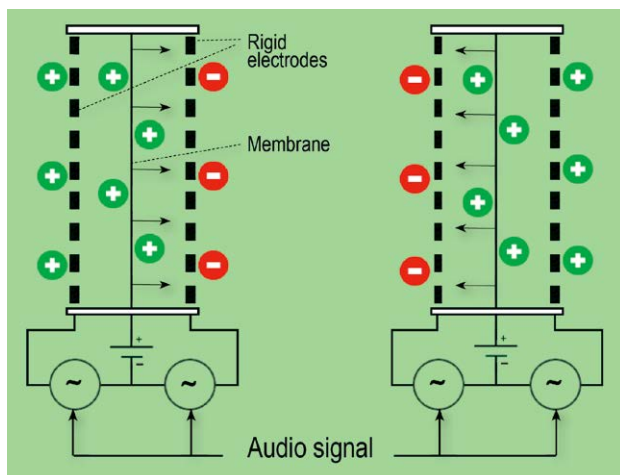
FEATURES

Plastic housing, metal headband with leather cushion, left/right labels, replaceable ear cushions; fixed 2.5 m cable with special plug

STEREO-TEST

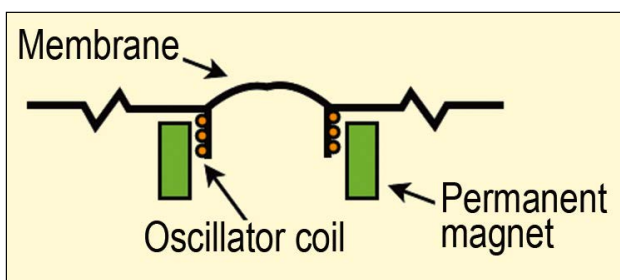
SOUND QUALITY **99%**
 PRICE/PERFORMANCE
 ★ ★ ★ ☆ ☆
VERY GOOD

HOW THEY WORK: ELECTROSTATIC, DYNAMIC, AND MAGNETOSTATIC HEADPHONES



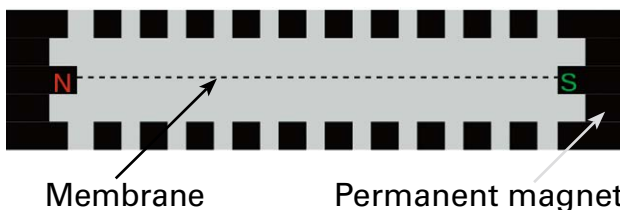
HIGH VOLTAGE: ELECTROSTATS

Headphones by Stax & Co. cannot simply be operated „passively“ on a jack plug but need a special supply system. It generates DC voltage for the diaphragm – a wafer-thin plastic film – and also supplies the two fixed grid electrodes with the music signal, which has been transformed to high voltage. The positively charged membrane is repelled by a positive electrode and at the same time attracted by the negative electrode on the opposite side. If the signal changes its polarity, the membrane is pushed/pulled in the opposite direction – it thus vibrates to the rhythm of the music. The benefit of this converter technology is the almost inertia-free driver, which can react to even the sharpest impulse.



CLASSIC: DYNAMIC HEADPHONES

Most headphones work on the electrodynamic principle, just like a loudspeaker. An oscillator coil attached to the diaphragm sits in the field of a permanent magnet. The so-called Lorentz force acts on a conductor with a current in the magnetic field, perpendicular to the magnetic field and perpendicular to the direction of the current. So the diaphragm is deflected one way or the other, depending on the direction of the current.



ALUMINUM STRIPS INSTEAD OF COIL: MAGNETOSTATS

Magnetostats work similarly to dynamic headphones, but in this case aluminum conductor strips are glued onto a thin plastic membrane in a meandering pattern. When current passes through the conductor in a static magnetic field, a force acts on the conductor and deflects the diaphragm. Due to the short conductor length, this force is lower than in a coil, which is why magnetostatic converters are usually less sensitive than dynamic ones.

CONCLUSION



MICHAEL LANG
Managing editor

Progress sneaks in silently – and yet cannot be missed: this test group featured versions of two proven models with further developments which showed what can still be extracted from a proven system by improving some details.

The mechanics of the Sennheiser HD 800 have been reworked to create the HD 800 S, helping the manufacturer suppress the resonan-

ces, which earned the original design the occasional reputation as a „cold customer“. This coolness has disappeared, and despite reduced high-range reproduction, the transparency has increased, which is especially noticeable when using the balanced cable included. However, the price increase of € 300 for the additional cable doesn't exactly make it a steal.

The Stax has been clearly reworked to a greater extent – with wide-ranging success. The overall sound, and detail resolution have been successfully refined, and while the design is still not exactly the most pleasurable to hold, the illusion of listening to speakers instead of headphones is almost complete, the airiness and transparency in connection with extraordinary comfort standing out among the competition. What's more, the supposed weaknesses like a lack of broad dynamics and

limited weight don't really exist, although the Stax is not suitable for on the road, and only marginally so for a quick drop-in at friends. The amp / supply unit is a must and requires mains power, although admittedly as well as its three inputs, one of which is balanced, there's a pass-through to output signal to an amp and two jacks on the front for listening together. With all this in mind, the price is OK.

The big brother of the Edition X, the HiFiMAN 1000, faced harsh criticism due to its €3000+ tag: for all its sonic ability, we thought the price was simply cheeky for a product made in China. However, the Edition X now does almost the same job for about half the price and can also be used on portable devices, the savings on mechanics and construction unnoticeable in everyday use. This is a truly successful instance of downsizing.

THORENS[®]

SWITZERLAND



www.thorens.com

KENTISH MADE

If a speaker is named after the home of the company it really needs to be something extra-special... and the KEF Maidstone is extraordinary in every respect.

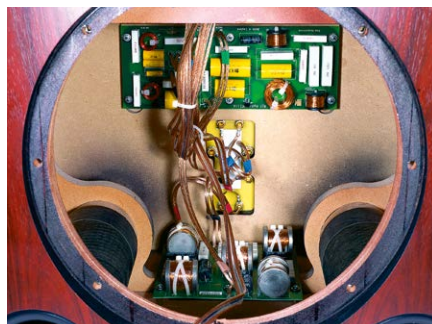


The Reference speakers of a legendary speaker forge like KEF – Kent Engineering Foundry – must of course be able to reproduce the entire bandwidth of music with perfection. For this reason alone, it's unlikely to be small. That's certainly true of KEF's Maidstone, named after the English company's hometown in Kent.

Almost defining the size of the speaker is a mighty 38cm bass unit weighing in at 17.5 kg, and this prestige object is partnered with a brand-typical, although especially exquisite, coaxial Uni-Q chassis for the musically important midband and treble.

From the start, this automatically meant a four-way system since the designers

couldn't simply couple the 16cm Uni-Q directly to the 38cm bass driver, but instead needed to insert a 25cm bass driver working in a closed volume. In



▲ Die mehrteilige und höchstwertige Frequenzweiche sitzt unmittelbar hinter dem Tieftöner.

this no-limits project, whose development took several years, KEF also decided on a completely separated housing for each individually optimized driver, stacked on top of each other like a tower. For the bass alone this meant a bass-reflex cabinet of 145 liters and 60 cm width.

All the drivers were developed in the company's own lab, and manufactured in-house in Kent. The only exception is the optional super-tweeter which is inserted later: Its ceramic dome comes from the German specialist Thiel, and the whole assembly resides on top of the massive speaker, can be pivoted like a bicycle light, and turns the system into a five-way design.

In view of freely positioned tweeter, one could get the idea – as some journalists surmised publicly – that the Maidstone was a reaction to the also technically brilliant and enormously successful Nautilus 801 from competitor Bowers & Wilkins, but any such comparisons hold only for the add-on supertweeter, the offer of which was a concession to the expanded frequency response of DVD video/audio and SACD – formats which were already on the horizon at the time.

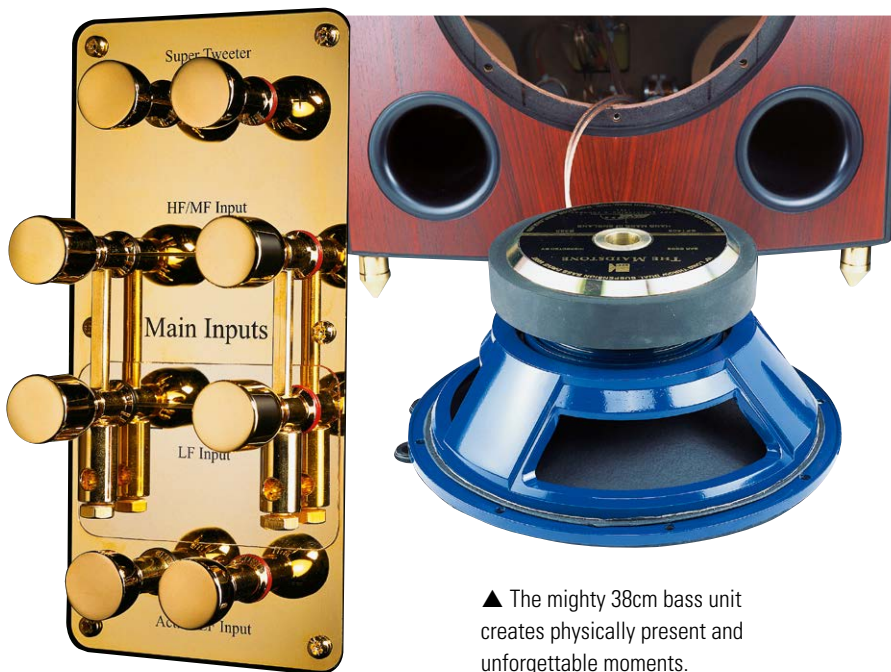
Let's be clear: the Maidstone appeared in 1997, i.e. before the Nautilus 801, and was initially designed and sold without the gold-plated addition which lets it stretch up to 50 kHz. And during its production, which reached into the 2000s, it was exclusively available in black with a rosewood front baffle, implemented in MDF varying from 25mm to 5cm (for example for the front panel). I heard the KEF flagship in 1998 in Japan, well-driven by Luxman electronics, and was absolutely thrilled – at least in terms of acoustics.

A lot of wood for a lot of green

42,000 DM with the supertweeters, or and 36,000 DM without: it was a hefty price, even for a heavyweight (90 kg) speaker. But with the Maidstone you have both something unique in your room – a real character if you compare its uncompromising technical look to its modern sibling "Blade" – and a milestone in Hi-Fi history which sounds as good now as it did then.

It's worth mentioning the unusual, gold-plated, and admittedly confusing terminal panel of the Maidstone, which permitted volume control for the tweeter and the expansion of the super-tweeter and could also be used to control the drivers individually in quad-amping or active operation, bypassing the crossover. A measured 88 dB efficiency is above average, but you should definitely spring for a potent, sturdy amplifier: the R109 has an impedance dip to almost 3 Ohm in the bass and thus is not easy to drive.

Personally, I could have done without



▲ The mighty 38cm bass unit creates physically present and unforgettable moments.

the supertweeter, even in the company's later Reference series. The following generation did just that, instead relying completely on the coherent capabilities of the Uni-Q chassis, in which midband and treble come entirely synchronously from exactly the same acoustic center. The idea is to come closer to the ideal of the point source than most other driver systems.

In the STEREO Test 2001, my colleague Barske was extremely impressed by the rotund British speaker, his only complaint being that the bass was a tad too dry to allow it into the exalted company of STEREO's top references.

I personally like it bass bit rounder and "juicier", which is why the Maidstone is among my all-time favorites, along with other classics such as the Duntech Sovereign, Dynaudio's Consequence, the Infinity Reference Standard, or Mission's Pilastro – I will skip current models from any brand for obvious reasons. However, in terms of looks I liked just about every other classic alternative better. That's just the way it is. Sorry.

The fact that it a Luxman created such a lasting memory with the Maidstone in Tokyo is also no accident; when visiting the factory in Kent, where the entire Reference series is hand-produced and subjected to painstaking quality tests, a fantastic Blade 2 played in the showroom (which also houses the company's museum) on Luxman Monos. It just fits.

Tom Frantzen

KEF Maidstone

Made-in year: 1997 (-2001)

Manufacturer: KEF (GP)

Price: DM 36,000 (1997)

Price today: starting at € 13,000



▲ A home for each driver. This appears to be the motto for this housing – with all the associated acoustic benefits and (possible) optical drawbacks.

LINKS

www.kef.com

http://www.hifihenkes.de/produkte/archiv/kef/pics/kef_109_entwicklung.pdf

CLEAN MACHINE

Cleaning your records isn't as simple as some think. The Hannl „Mera“ shows how it's done.

Good things get copied: it's a fact of life, and one Hans Günter Hannl learned the hard way. He created the „Waschbär [Raccoon]“ record cleaner about 20 years ago, commissioned by Blue Danube, before developing his own machines in the middle of the analog slump – machines whose basic concept convinced people all over the world. Who then promptly copied it.

But Hannl, a clever and experienced tinkerer, has managed time and again to stay at least one step ahead of the competition, and his love for detail is immediately apparent when unpacking his latest machine, the „Mera“. All accessories are included: two bottles of cleaning fluid, antistatic replacement lips and rubber nibs, a spray bottle for the round brush cleaner, a puck to secure records during cleaning and a few tools to enable simple maintenance. You also get first-class design and manufacture down the smallest detail, and everything is „Made in Germany“.

In addition, news has spread of the first-class service, the readily available spares, and the upgrade potential via chip replacement, not to mention the technical innovations, such as the processor-controlled

automatic functions and the possibility of regulating the quantity of cleaning fluid yourself. However, Hannl is especially proud of his patented round brush including its special cleaning fluid Vi3C, which we will pick up a bit later.

You can of course clean records a lot cheaper than with the „Mera“... but will that budget cleaner be as quiet, as fast or as perfect? After several weeks of work and cleaning innumerable records, some hot off the press, some worn out from the flea market, we can safely negate any questions of the value for money offered by the „Mera“.

The machine is operated using just two knobs / pushbuttons. There is also a multi-step status display which provides information about revolution speed and suction level. The user can decide whether he would like to control cleaning fluid quantity, turning direction, suction level and duration of the cleaning process manually, or whether all these functions should be taken care of by the machine, in which case the user can still tweak the settings.

The „Mera“ produces convincing (and gentle) results for all normal to dirty records, and despite the many adjustment possibilities, proves easy to operate: even

after just a quick glance at the manual there should be no major problems. But if you want to delve deeper, the design of the cleaning and suction arm is explained in exemplary manner, and there's a heap of other useful information for operation and care, to ensure long-term use.

The manual also helps when you need to learn about the ultimate cleaning tool – the round brush. Contrary to the first instinct of wanting to press the round brush onto the record, all that is required is a gentle contact between the two, primarily to swirl the almost foamless cleaning fluid under the bristles and thus rinse the grooves thoroughly.

Skip to pop

We were able to find out how incredibly well this works in practice using a few records we had actually already cast aside because they were skipping, even after being cleaned a few times by other means. In some cases, after a few minutes under the round brush, the apparent skip on the vinyl had reduced to a mere small pop – and the record had been saved.

Since all the settings of the „Mera“ are really easy to adjust, it is almost fun to take a day and clean your collection – in great contrast to other washing chores. And since the noise level during suction is also pleasantly low your ears won't ring after going through a whole stack of records. I don't think there is any quieter method around.

Michael Lang

Hannl Mera ELB 24V
complete about 3100 Euro
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www.hannl-vinylcleaner.com

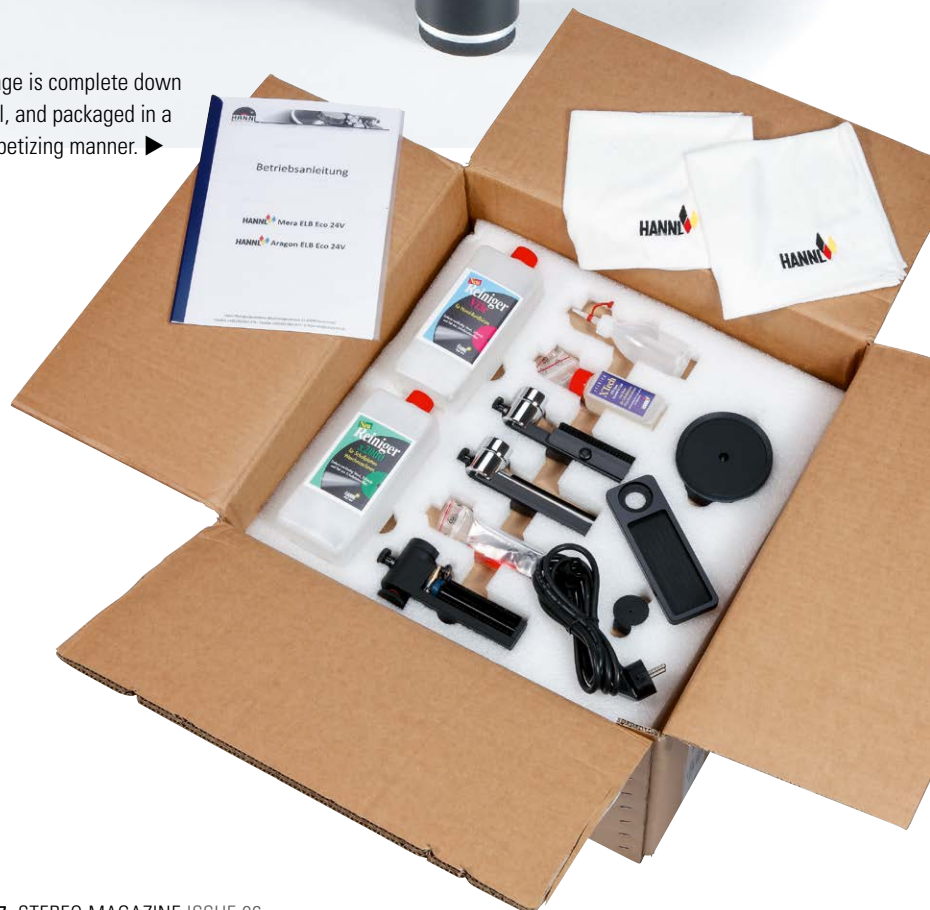


▲ The Mera is very comfortable and yet easy to use. A ventilator on the bottom sucks air out and dehumidifies it. The Mera is also available in a shiny chrome coating.

The accessories package is complete down to the microfiber towel, and packaged in a very organized and appetizing manner. ►



▲ Exemplary: The suction arm (below) is made of metal and is grounded against static electricity charges. The velvet lips are also antistatic.





Gryphon Kalliope

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