

# STEREO

THE GERMAN HI-FI MAGAZINE

ISSUE #10 2017

**> SAME TECHNICS, LESS MONEY**  
**The classic direct-drive turntable just got real-world**

**> HIGH END 2017**  
**All the big launches and excitement from the world's best hi-fi show**

**Technics**

DIRECT DRIVE TURNTABLE SYSTEM SL-1200GR

**REPORTS: BURMESTER'S SURPRISE DUO ++ SHAPING THE SOUND OF TOP CONCERT HALLS**  
**REVIEWS: AMPS WITH STREAMING EXTRAS++PROGRESSIVE AUDIO EXTREME 3 ++ THÖRESS EQUALIZER ++ T+A 3100 ++ AUDES MAESTRO ++ BURMESTER B18 - AND MORE!**

# The Foundation Comes First



## Advancing the Science and Efficacy of Power Conditioning

There are many approaches to reducing the noise associated with AC power—conditioner-filters, regenerators, isolation transformers, battery inverters, and more—and all can yield meaningful results. However, some of these techniques also cause ringing, current compression, and non-linear (obnoxious) distortions. **Some cures are worse than the disease**—some are not as good as plugging straight into the wall.

Niagara Low-Z Power Noise-Dissipation Systems address the many variables and forms of interference that compromise **the very foundation upon which an entire audio/video system is built**. When power is optimized, when a system's foundation is a Rock of Gibraltar, the system is able to deliver maximum articulation and emotional stimulation.

Niagara designer Garth Powell has devoted 20 years of intense research to furthering the science of AC power. His exceptional ability to apply an insatiable thirst for knowledge, a musician's deeply personal passion for music, obvious brilliance, and many hard-won insights is clearly evident in the products he creates.

AudioQuest invites you to experience the proof that Garth has successfully advanced the art, the science, and the efficacy of power conditioning. We believe that by adding a Niagara 7000 or Niagara 1000 to your system, you'll experience **clarity**, dimensionality, frequency extension, **dynamic contrast**, and **grip** that your system was just waiting to reveal.

Sincerely, Bill Low

"The Niagara 7000 better resolved fine detail and threw a deeper, more expansive soundstage.... Transients of the struck notes sounded faster, less thick, more naturally expressed through the Niagara, as did the length of the notes' decays."

—Michael Fremer, *Stereophile*, February 2016



**audioquest**®

# THE ULTIMATE HI-FI SHOW



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As German hi-fi journalists, we're lucky: we don't have to pack a heavy suitcase and take flights to visit the world's biggest high-end audio exhibition. The annual HighEnd show takes place on our doorstep, and in a city which is always worth a visit.

More than 900 brands from all over the world came to Munich this year, giving the event a new exhibitor record, while total visitor numbers were up 10% and the number of trade visitors – from 78 countries – showing even greater increases. But just that number of brands only scratches the surface of the incredible range of products on show at the M.O.C exhibition center: whether retro-hi-fi, vinyl, portables, headphones or network music - everything was amply represented.

The trends, however, were rather more undercover – literally so, being hidden inside many of the products on show. New sound formats such as MQA and DSD are implemented, and analogue and digital linked – a pleasing development, removing the question of whether vinyl really sounds better than network hi-fi. You see, anyone who owns a high-performance phono preamp like Pro-Jects "Phono Box DS2 USB" can do both, so end of discussion!

On the following pages we will give you a comprehensive insight into this year's HighEnd. And if you are thinking about coming to the show next year, here's another incentive: to sit in one of the famous Munich beer gardens, you don't even have to leave the show...

**Carsten Barnbeck**

editor@stereo-magazine.com

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

# AVID

## THE WHOLE STORY



TURNTABLES - PHONOSTAGES - AMPLIFIERS - LOUDSPEAKERS - SUPPORTS - CABLES

[AVIDHIFI.COM](http://AVIDHIFI.COM)

**TECHNICS 1210 GR**

the latest in the reinvented turntable line is the most affordable yet – and it's very close to the flagship models



**BURMESTER B18**

Celebrating its 40th birthday, the Berlin company has a new standmount speaker. It's very good – and temptingly priced



**FIRST AMONG EQUALIZERS**

Reinhard Thoeress has developed a smarter phono equalizer, and it can bring new life to even the oldest recordings



**AMPS WITH EXTRAS**

In the streaming age, just amplifying isn't enough. We test future-ready designs from Electrocompaniet, Naim and Simaudio



**MUSIC MAESTRO, PLEASE**

the Audes 146 was built to mark its maker's 80th anniversary, and you can hear all that experience in its performance



**DESIGN FOR LISTENING**

how the greatest concert-halls are tuned to deliver the best acoustic environment, wherever you sit



# HIGH END®

**HIGH END 2017**

The annual show in Munich is now the world's must-visit hi-fi event. We were there to bring you all the latest news and trends



**T+A PA 3100 HV**

Look beyond those alluring meters, and you'll find an amplifier with a mighty heart – and a power supply option for even greater thrills



**PROGRESSIVE AUDIO EXTREME III**

Don't let the compact dimensions put you off – this is a fast, tight, full-range loudspeaker to delight

MUSICAL FIDELITY

## NU-VISTA 800 AMPLIFIER



### State of the art design for reference level reproduction

The Nu-Vista series is a passionate labour of love for all of us at Musical Fidelity.  
We hope that at least you get a chance to hear this combo because we  
consider it the ultimate expression of our art.

Experience it for yourself at your local Musical Fidelity dealer.



*Burmester*

# GREAT SOUNDS IN MUNICH

The annual High End show is the world's most important stage for the sensations and innovations of the world's audio manufacturers. STEREO was there to bring you all the news and experiences, and was particularly impressed – not to mention completely surprised by one presentation in particular.



It was an almost sacred moment when Antonio Carlos Jobim's "Girl From Ipanema" – of course the famous Verve original from 1963 with Stan Getz and Astrud Gilberto – was played in the Burmester room. The unpretentious, but mind-blowing, presentation of the familiar piece created an unprecedented spell, the music completely integrated and softly flowing, but still concentrated and controlled to deliver real goosebumps.

Two novelties from the Berlin company were involved in the experience: one of them, the tremendous BC350 loudspeakers, was immediately apparent when walking into the room; to other was hidden, ready to be revealed. Surprise! The company's first-ever record player, the "175", is part of its top-flight "Reference Line" and comes with an aluminum base, MC cartridge and the phono equalizer/preamp from the Phono-Pre 100, allowing it be connected directly to a line-level input, for a complete price of approximately 30,000 euros.

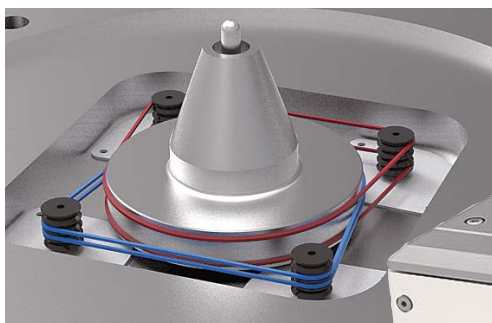
The BC 350's 32cm bass drivers breathe through double-walled porcelain ports made by KPM produces, and the record player offers a four-motor drive for



perfect synchronization. Together they create fascinating high-end superlatives for the ultimate listening experience.

The inaugural demonstration was preceded by the official introduction of new CEO Andreas Henke, who switched from Porsche to Burmester during the company's 40th anniversary "Chrome Jubilee". Company founder and mastermind Dieter Burmester died in 2015, and his

widow Marianne recalled this great personality of the German high-end before Henke gave an outline of the company's origins and position as one of the most renowned in the industry. That makes its past triumphs hard to top but, as well as the two new additions, Burmester has set its car hi-fi sights on one of the most exclusive vehicles in the world – the Bugatti Veyron. **MB**



## THE DOUBLE STROKE

The four-motor drive of the turntable not only smoothes out fluctuations, but also relieves lateral pull on the main bearing, while the tonearm and MC cartridge are manufactured for Burmester by renowned suppliers. The gigantic BC350 loudspeaker weighs its name in kilograms and can be turned precisely on its solid base for optimal imaging. If you want, you can also turn on an extra tweeter on the top for „Live mode“. The price? Just under 200,000 euros a pair.





## MULTIFORMAT

Acoustic Arts has reworked its „reference“ D/A converter, and the 9990 euro DAC II-Mk3 can now be used straight into a power amplifier and can also handle all digital formats up to 24 bits / 192 kilohertz PCM, and DSD. There are five digital inputs including USB.

## THORENS MOVES UP

With the models 903, 905 and 907 announced two years ago, Thorens is sticking to its subchassis tradition. The series is now available with a number of changes in the construction - and considerable price increases.



## 45 YEARS CANTON: „A45“

The outstanding-sounding A45, celebrating Canton's 45th anniversary, won't be available through the usual shops: to be able to offer it for the price of 3,000 euros, Canton is selling it directly.



## ALL ABOARD

The new Nagra Classic Preamp is in the company's uncluttered style, matching the Classic DAC and INT integrated amp, and the tube-powered design build on the performance of the Nagra Jazz preamp. The traditional Modulometer shows the output level, and the 15,900-euro preamplifier uses separate power supplies for each channel.



## COMPLETELY REVISED

T+A owner Siegfried Amft explained the technical details of the new multisource MP 3100 HV SACD player/DAC/streamer/tuner (€ 14,000). Apart from the style, this heavyweight has been upgraded in virtually every detail.



## NAIM'S NEW UNITIS

After minor delays, Naim's new Uniti series will be launched by the end of the month with three models. Pictured is the Uniti Star network system, which costs around 4000 euros.



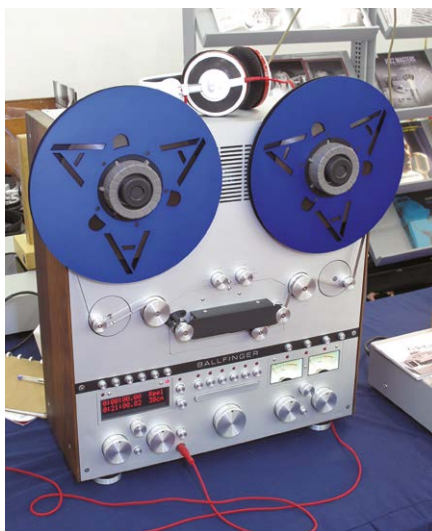
## BETTER THAN YOURS

With that confident statement, Hegel introduces its H90 integrated amplifier: it's a classic design, but besides two RCA inputs also provides digital inputs and is network-capable. 60 watts of power per channel at eight ohms may not seem too menacing, it does not seem threatening, but the „SoundEngine 2“ is designed to help the H 90 achieve maximum bass control and naturalness. Price: 1695 euros.

## ALL IN ONE



The latest Technics model is the SC-C70 „Compact Stereo System“, expected to sell for just under 1000 euros. A total of five loudspeakers are to be used for the best sound, and the device has a CD drive, can be used with a myriad of sources and is network-capable.



## IN THE STARTING BLOCKS

It is not quite finished, but at the high end show Ballfinger's tape recorder, the first to be developed and produced for decades, was available for listening via headphones and for its functionality to be assessed. The company is still waiting for the output electronics, which come from the Danish amplifier specialist Gamut, but says that soon everything will be ready for sale, still at the originally targeted price of 30,000 euros.

## MCGEE'S LEGEND

The McGee „Legend“, competitively priced at under 700 euros, is a hybrid integrated amplifier, with Bluetooth and Wi-Fi. It's from Sintron sister company QVK.



## BLOW YOUR HORN

The „Seraphin“, at around 124,000 euros a pair, is the midrange model of three new super-loudspeakers from Odeon Audio. The central two-way system uses a passive crossover, and is extended by a subwoofer operating up to 38 hertz, as well as a super tweeter, which rolls in at 17 kilohertz. Odeon CEO Axel Gersdorff proudly points to the 110-centimeter long reflex channel, which emerges upwards.



## RELEASED FROM THE AUDIONET

At Audionet the new launches continue: after the Planck CD player and Watt power amplifier, further world-class novelties were introduced in Munich, especially the Stern preamp and Heisenberg monoblocs, impressively demonstrated by Sven Schlicher.



## IN-WALL OFFENSIVE

With the new „Phantom“ series DALI CEO Lars Worre wants to deliver „statement in-wall loudspeakers“, the top model being the S-280 3000 euros apiece. Their woofers use the company’s innovative SMC technology, which keeps distortions and stray fields at bay, while the outer “drivers” are in fact passive radiators.



## OPERA HERO

Verity Audio from Canada has replaced its „Leonore“ speaker with the 18,000 euro/pr „Otello“, the new model being distinguished by the detachable sound guide around the midrange and tweeter, similar to that on the existing Verity. As usual, two woofers are located in the back of the bass box, and co-owner Julien Pelchat says the Otello has four-ohm nominal impedance.

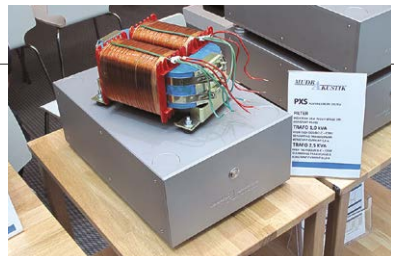
## LITTLE BLACK NUMBER

Oppo’s „Sonica DAC“ (around 1700 euros) is a musical all-rounder, handling PCM up to 768 kHz and DSD 512 and with a flexible Wi-Fi Streamer.



## MODULAR POWER

Mudra Akustik’s modular power cleaning system uses separating transformer blocks and filter networks, which can be used individually or combined. The highlight is a hefty 2.5kVa transformer, together with the control and fuse. Prices? Around 2500 Euro. 1800 euros and down to 1500 euros for a version with 1.0 KVA transformer and a filter equipped with five outputs. Damping feet under all components ensure a safe stand as well and decoupling.



## STONE WITNESSES

The Fischer & Fischer SN 670 (23,600 euro a pair) is a downsized version of the SN 770: it consists of two modules instead of three, is made of slate, and uses the same drivers as its big sister, including the fast-paced AMT film tweeter. Also new is the SN 470 M with forward-facing rather than side-firing woofers, at 14,700 euros / pair



## HEADPHONE AMP

Beta is the name of the new, two-piece headphone amplifier from SilentWire. It sounds excellent, and also allows both signal and power wiring to be changed.



## NOT TO BE MISSED

**G**rabbing the attention at the entrance was the new gilded Berlina AC 7 by Gauder Akustik. Roland Gauder says the new housing, with its with individually milled, layered 40 mm aluminum discs, not only allows a variety of different coatings, such as gold or chrome, but also has sonic benefits.

## DENON HEOS IN THE HOME CINEMA

**W**ith its „AVR“ (around 900 euros), Denon expands the Heos range with a full-fledged AV receiver, which brings some exciting options like Wi-Fi operation of the rear speakers.



## NEW GIANT BOX

**B**oss Günther Nubert provides a handy size-comparison for his company's new nuVero 170 speakers. The large floorstander has been in the range for just a few weeks.



## AURUM CUM LAUDE

**A**ccording to Quadra's Sascha Reckert, its Aurum electronics are getting a new generation. The C8 CD player and A8 amplifier are soon to arrive in the STEREO listening room.



## EARTHQUAKE GENERATOR

**A**scendo boss Stefan Köpf not only exhibited out his 50cm subwoofer, which was conceived for top-home cinemas, but occasionally also fired it up, which left a powerful impression. The driver alone weighs 130 kg.



## CONGRATULATIONS

**O**n the occasion of its 40th birthday, Dynaudio – the legendary manufacturer of two-way speakers – launches the „Special Forty“, at around 3000 euros a pair. The drivers – a 17cm woofer and a tweeter based on the famous „Esotar“ – have neodymium magnets and have been specifically developed for the Forty.



## REGA NEWS

The British company has reworked its „Apollo“ CD player and „Brio“ amplifier. The work concentrated on fine-tuning, according to Paula Knorn from the German distribution, but the visual appearance is also modernized. The two cost about 800 euros each.



## COMEAU'S ELEVEN

Developer Peter Comeau was on the IAG stand to launch the new Wharfedale Diamond 11 speakers, designed to set new standard in the entry-level sector.

## PHONAR GETS ACTIVATED

Kai Henningsen demonstrated at the booth the new active module, including WLAN / Wi-Fi, for the Phonar Veritas series. As well as amplification it also had the most advanced network technology. The smallest pair is 2000 Euros.



## VINTAGE LOOK

TEAC is strengthening its role as a retro brand in the Pioneer / Onkyo conglomerate, the latest proof being the flexible streaming receiver NR-7CD (around 3500 euros): the latest technology is hidden behind a great aluminum façade.

## FIRST DIGI-HELP

With the DAT RS 05 (around 500 Euro), the „Lake People“ presented a digital solution with FEMTO clock, jitter killer, re-clocker, resampler and volume control – it's an ideal partner for digital active monitors.



## NEW 70S

As smiling Jürgen Timm showed us Pioneer's N-70AE (around 1300 euro), the successor of one of our network favorites. The new entry offers better DACs, more streaming services and extended Wi-Fi connectivity.



## MICRO PRECURSOR

768 kHz capability is available from the new Pro-Ject Pro Box S 2 Digital, which uses the highest-quality components within despite a very affordable 370 price



## LONG-AWAITED, NOW AVAILABLE

NAD's M 50.2 (top, around 4500 euros) is now available. The music server fulfils the function of the former M 50, 51 and 52 and is recommended as a comprehensive music center.



## AUSTRALIAN GENIUS

Keith Louis Eichmann was the first to question established RCA plug thinking with his mass-reduced bullet plugs years ago. Now available under the „KLE“ brand are the latest ideas on the subject.



## CODENAME „WASHING MACHINE“

The high-end „Fink-team“ WM-4 speaker from Karl-Heinz Fink sounded excellent: it weighs 140 kilograms and costs around 65,000 euros.



## JUST LISTENING

Try-out counters for headphones proved highly popular: pictured is Focal's powerful headphone suite.

## A LITTLE LIME

Limdemann has ported the qualities of its MusicBook series into a more affordable miniature format: the Limetree Bridge has a LAN input and two USB outputs for any DAC.





### ALL ABOARD!

A new class of record players is growing, complete with integrated phono and headphone amplifiers. Clearaudio reacts to the trend in the USA with the 2450 euro „Concept Active“, complete with MM cartridge and available in four different housing variants. The headphone volume is adjusted by means of a small knurled wheel, right front on the top.

### ONE BECOMES THREE

Under the umbrella „The Ones“, Genelec transposes the striking design of the superb 8351 active speakers into a whole range.



### MQA-READY

Moon's high-quality 780D DAC can decode MQA data, has a streamer on board and can be controlled by the „MIND“ app. The price is 12,500 euros.



### FURTHER DISCOVERIES

Elac expands its electronics range with three models: a pre-amplifier and power amplifier as well as an enhanced version of the superb Discovery streamer with tuning by Alchemy Audio. Each of the three devices will cost approximately 2500 euros.



### TUNING GOOD, ALL GOOD

He just can't leave things alone! Audio Physic developer Manfred Diestertich equipped his „Codex“ with ceramic foam tiles. They bring stability and cost hardly any volume. Well done!

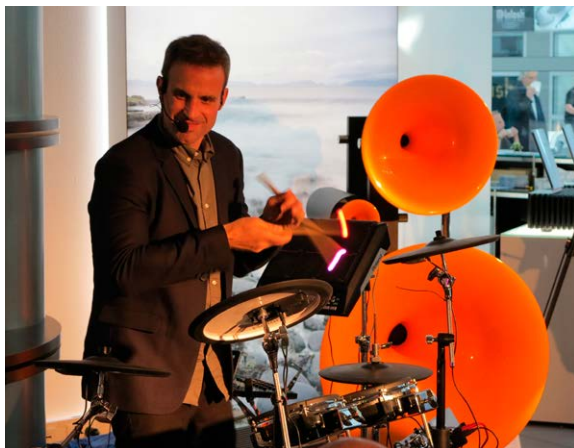


### GROWING ON A BUDGET

Another prototype: an affordable turntable by Perpetuum Ebner. The PE800 is expected to cost just under 1000 euros.







## DYNAMIC PURE

In order to prove the qualities of the „Trio XD“ (from 40,000 euros) along with a huge horn subwoofer, Avantgarde Acoustic recruited Hamburg-based Oded Kafri. The agile percussionist literally heated the audience in his always-packed sessions.



## HIGHER GRADO

Arriving just in time for the show was Grado's high-end PS 2000e headphone (around 3000 euros). Two years in development, it has a completely new chassis with reworked geometry, and special materials in the hybrid metal and wood hanger.



## HECO IN HARMONY

After the huge „Dreiklang“, this year the small „Harmony“ (unit price 1000 Euro) arrived to complete the Heco Direkt family. The wide range of the prototype sounded outstanding in the demonstration.



## NEW HEADPHONE AMP

Manuel Ricke from Sennheiser holds the new HDV 820 (around 2400 euros): it's equipped with better D / A converters and has two connectors for the new 4.4mm Pentaconn plug in addition to the jack and four-pin sockets.



## BLUE HOUR

Wolfgang Linhard from the McIntosh's German distribution had decorated the company's presentation room all in blue, complete with the matching blue LP cover. It was an oasis for the eyes amidst all the show's bling.



## PLENTY OF HORNS

Musical „walking acts“ such as the first female Alphorn group „Werdenfelerinnen“ attended the fair: here the ladies turn on the alpine atmosphere.



## ELAC DOWNSIZES

As a smaller model in the „Concentro“ line, ELAC developer Rolf Janke presented the „Concentro M“, using a big coax driver for mids and treble. The price is open.

## BROUGHT TO HIS KNEES

Robert Czesany from the Grazer „HiFi Team“ with his Ayon demonstration system together with „Conquistador“ flagship preamp and Lumen White’s brand new „Kyara“ loudspeaker (48,000 Euro / pair). four ohms, and has four analog inputs. It’s based on the company’s pricier models, and has a D/ A converter module and a phono stage available as options.



## BEST CONNECTIONS

WBT’s 710 is the most advanced speaker terminal from the Essen plug specialist, being designed to combine the lowest mass with an optimum grip including the best contact damping. There are three surfaces of choice (gold, copper, silver), and the unit price is exactly 46.55 euros.



## SWISS FIRECRACKERS

Solution makes its range more affordable with its 3 Series models. The 330 integrated starts at 17,000 euros, is rated at 200 watts per channel into four ohms, and has four analog inputs. It’s based on the company’s pricier models, and has a D/ A converter module and a phono stage available as options.



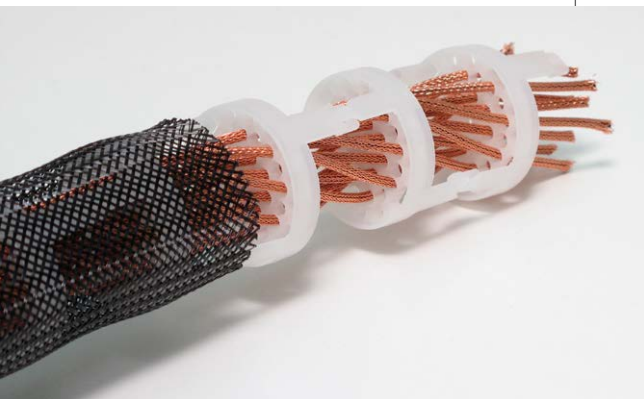
## DUNNING NAME

Metaxas Audio could hardly have come up with a more appropriate name than „Memento Mori“ for its skull-shaped headphone amplifier (from 5000 euros). It’s certainly memorable...

## HAVE AN ORANGE!

Ralf Koenen, owner and developer of Progressive Audio, introduced the brand-new „Extreme 4 USM“ in flashy orange. Like all Extreme models, these are also available in classic design.





## AIR-CORED

Since air is the best isolator after a vacuum, In-Akustik's new LS-4004 AIR speaker cable keeps its 16 hollow conductors separated in a matrix. Banana or spade connections are available, and these foldable to facilitate connection in tight corners. A three-meter pair is around 5600 euros.



## KEF FORMS A NEW Q

KEF carries its core Q series into a new generation, with sharper, cleaner styling, new drivers and retail prices between 230 and 775 euros.

## THE ANNIVERSARY CONTINUES

AVM Managing Director Udo Besser presented at the fair more models in the 30 series, launched to celebrate the company's three decades. The MP 30 (around 2400 euros) is a highly flexible streamer, and the 30 series, originally only sold in Germany, will now be exported too.



## FAMILY MEMBERS

Hans Manfred Strassner presents the new HMS Suprema cable with the extremely charming accompaniment of his wife and daughter.



## UTOPIA EVOLUTION

Under the „Evo“ name, Focal is updating its Utopia series to the latest state-of-the-art with fresh insights. The new Scala Evo, for example, benefits from the „TMD“ (tuned mass damping) bead, which reduces the inherent resonances of diaphragm clamping and reduces distortions. Further improvements affect the other drivers and the crossover, and the Scala Evo costs around 32,000 euros a pair.

## THE LEGEND LIVES

The Dynaco 70 tube amplifier was an early high-end model, and became a bestseller. The 70X is a modernized reincarnation.



Return of an icon.

MIRACORD 90  
ANNIVERSARY

ELAC Miracord remains an iconic name from the era of the long-playing disc.

Miracord 90 Anniversary  
ELAC revisits a golden era with a turntable to mark its 90th birthday.



The motor is double-decoupled from the chassis and therefore from the tonearm by rubber dampers and fabric spiders that have proven themselves in ELAC speakers. The variable pitch control allows the speed to be varied by up to 5 %



The tonearm is manufactured in Germany and was developed exclusively for this ELAC turntable. An extremely light carbon tube forms the arm, while the remaining parts are made of aluminum and brass.



Aluminum platter weighing approximately 6.5 kg sits on a sub-platter whose hardened steel spindle rotates on an 8 mm ruby bearing. The spindle is axially guided in two sintered bronze bearing bushings.



# MUSIC MAESTRO

In the past, Estonian company Audes was better known as a supplier for established brands, rather than for its own products. But that's not quite the whole truth...

**T**he Audes 146 speaker is part of the Estonian company's "Maestro" line, launched in 2015 to mark the 80th anniversary of the establishment in Tallinn of Raadio-Elektrotehnika Tehas, the earliest ancestor of the Audes brand. And while best-known as a supplier to other brands, Audes has been making its own products since 1958, with the arrival of the Estonia 2 compact radiogram. In fact, Estonia was the brand-name of RET all the way through to 1992, when Audes was adopted.

## **Complex mirror symmetry**

For the anniversary "Maestro" models, the design was deliberately classical: it harked back to the company's history while incorporating more modern advances in speaker design, thus making it stand out from the mass of today's loudspeakers.

Somewhat unfashionably, the speakers are supplied in mirror-image pairs, with the tweeter and midrange driver offset in the vertical plane from the woofer, the manufacturer intending that the speakers be used with the higher-frequency drivers 'inboard' of the bass units. Though this complicates production, as batches of speakers must be split in half to accommodate the design, this increasing costs, it has acoustic advantages: the unavoidable diffraction effects on the cabinet edges are not the same on both sides of each speaker,

but can be distributed more advantageously in the audio spectrum.

The loudspeakers, each weighing 20 kilos and standing slightly over a meter tall, are marked with “L” and “R”, indicating the designer’s preferred set-up. However, depending on the room and the position of the speakers within it, you can still experiment with the alternative setup - with the mid/high speakers ‘out-board’ - as the effective bass width is slightly increased.

**Pure Playing Pleasure**

The focus of the development work was on making the speaker easy on amplifiers, which has been achieved with a claimed 91dB sensitivity, while creating a design not just effective when it came to the delivery of the emotion of the music, but also enormous value for money. But there’s nothing inexpensive-looking here: the 146 is available in black, white, and walnut, or in additional special veneers or a high-gloss version for an extra charge.

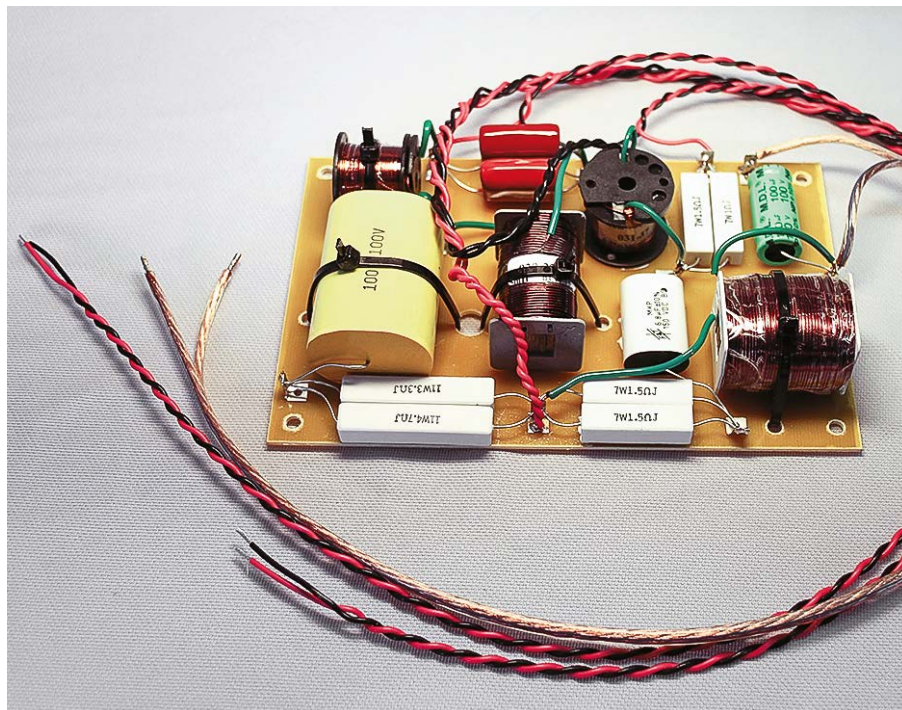
The crossover divides the signal at 250Hz and 4kHz, with the combination of a 25mm fabric dome tweeter and a 13cm polypropylene midrange driver intended to guarantee exceptional

dynamics. Audes’ self-made, long-stroke 21cm woofer, using a sturdy coated paper diaphragm in a heavy aluminum basket, provides a solid foundation and “punch”, giving a slightly warm, lively sound.

The tuning here is neutrally to minimally midband-forward, and with suitable electronics delivers an extremely pleasant sound probably ideal for many people. However, the perceived sound is not at all what one might expect from the measurement results: one does not miss the last nuance of resolution or the heavy bass which would round off the enjoyment of large orchestral works or even hard rock. Rather, the Audes balance relays Fritz Reiner’s orchestra playing Dvorák’s 9th Symphony in a superb manner, both temporally and spatially.

The loudspeakers ‘disappear’ like no other participant of the test, becoming almost invisible in an impressively solid soundstage picture, extending not only out beyond the sides of the speakers but also up and over them.

In a direct comparison, it’s clear why the Audes is twice the price of the Canton: the Estonian speaker is always stays a touch on the warm side and its pronounced musicality – as well as its timing – is likely to make the brand even more popular.



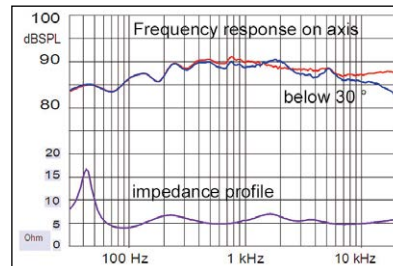
▲ Low-inductance twisted cables and high-quality – but not exotic – components characterize the Audes crossover

**AUDES MAESTRO 146**

Pair from € 2500  
 Dimensions: 24.3 x103.6 x34.9 cm (WxHxD)  
 Warranty: 5 years, Contact: TCG GmbH  
 Phone: 05921/7884927  
 www.audes.de

Although Audes may be unknown to many, this brand has a long tradition. Extremely pleasant to warm-sounding, the Maestro is a classically-designed, superbly-made loudspeaker delivering with a wide soundstage and an unobtrusive, rounded bass.

**MEASUREMENT RESULTS**



Nominal impedance	4 Ω
Minimum impedance	4 Ω at 88 hertz
Maximum impedance	17.2 Ω at 44 hertz
Sound pressure (2.83 V / 1 m)	90 dB SPL
Power for 94 dB (1m)	5 W
Lower limit frequency (-3 dB)	36 hertz
Distortion factor at 63 / 3k / 10k Hz	0.3   0.1   0.1%

**LAB COMMENTS**

The Audes frequency response shows a slight midrange emphasis, which is quite common and can sound very pleasant. The bass range extends below 40 hertz, and the speaker with an excellent efficiency of 90 dB. The impedance pattern appears linear and undemanding, and the speaker demonstrates excellent distortion behavior and very good. For the best results the speakers should be toed-in toward the listening position.

**STEREO - TEST**

SOUND QUALITY **73%**

PRICE/PERFORMANCE

★★★★★  
**OUTSTANDING**



*Burmester*

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## Phase 3 Retrostyle

PHASE 3 is an extension to the traditional Burmester product lines, joining ultimate demands on sound quality with musical culture and modern lifestyle in a perfect blend.

*"The most coveted product"* at the High End show in Munich 2016.  
The Absolute Sound

# THE TRUE HEIR



There's no question that the Technics SL-1200G is a masterpiece. But while desirable, it's too exclusive – simply because it's too expensive to replace its celebrated predecessor. That's where the SL-1200GR comes in...





It was the sensation of last year when, at the 2016 Las Vegas CES, Technics launched the SL-1200GAE – a turntable based on the celebrated design it discontinued in 2010, but revived with significantly upgraded technology. And it wasn't only analogue audiophiles cheering: word of the resurrection of the Japanese record player legend was seen in all kinds of media around the globe.

Those who wanted to be among the first to buy the reinvented model faced a bill for a whopping 3500 euros – without cartridge – and yet the limited edition of 1200 units sold out within a short period of time. Since then the turntable, with its excellent design and sound, has been running as SL-1200G in identical form, but without the "limited edition" sticker. However, the anticipated price-drop

between limited initial launch edition and standard model didn't happen: Technics chose to ride the wave of demand.

### Striking similarity

But now well-heeled fans of the SL-1200 can revive their dreams, as the turntable icon is now available in a technically simplified, but visually identical, "GR" version. And the price is markedly more



◀ Red dot action: Like the signal connections, the power socket is also mounted under the housing (L.). For best sound, always pay attention to the correct phase assignment (see diagram and Marker). Below the rubber-damped platter sits the drive's ring magnet, which is driven by the coil in the chassis.

attainable, at 1500 euros – though again that's without a cartridge. What's more, for those who prefer black instead of the classic silver finish, there's the SL-1210GR at the same price.

And you really have to look very closely to distinguish this new version from the SL-1200G, even with two silver-finished examples side by side, as we had in our listening room. The fact that the surface of the cheaper 1200 is made of plastic instead of aluminium is all but invisible, as is the simpler aluminium tonearm tube, in place of the '1200G's magnesium.

To notice that the GR's platter lacks the brass support of the G's, you have to lift the mat. The damping rubber liner on the underside has inherited the flat aluminium die casting part from the more expensive brother. Yes, money has been saved on the GR's casework, but it's still a two-component sandwich of a resonance-free composite frame material plus an inner aluminium-molding frame, in place of the G's four-layer chassis. The damping feet on the "GR" are also simpler.

### Direct Drive

However, the most important and cost-relevant difference is in the direct drive system: instead of the double rotor in the top Technics models, the GR has just one revolving around the ironless core, yet after the start/stop button, the platter comes up to speed just as quickly. The digital, quartz-controlled motor ensures the precise adherence to the target speeds, as the strobe marks show – at least as long as you don't disable the control and use the slider to make adjustments of up to +/-16 percent. Musicians appreciate this function to be able to vary the pitch for playing, and it's a solid part of the 'pro' appeal of this design, road-proven in the hard dance music environment.

However, enumerating all the ways in which the 2000 euro more expensive "G" is superior might suggest the "GR" is no more than a poor relation, but that couldn't be further from the truth: the differences are barely noticed and the cheaper newcomer also impresses with flawless performance. This is especially important when you consider that many competitors provide no more than stripped-down simplicity for 1500 euros, whereas Technics delivers what is still a high-tech machine, and one very close in performance to its 'big brother'.

With the "Your Town" intro of the just released live LP by rock band Deacon Blue, a wide-set soundstage was drawn up, the synths flickering seductively and the bass full and well-contoured. At the same time, the iconic turntable attracted attention for the reverberation and noise from the audience, thus ensuring an authentic concert atmosphere.

We put the Hana-MC (see box) on the "G", which was connected with identical network and cables to Brinkmann's Edison reference phono preamp, and while the sound was a little bit more detailed and created a deeper image from the front edge of the stage to the back, which was useful for clarity, it had little more to offer in musical impetus. We formed a very similar impression at Diana Krall's familiar "Live in Paris" album: the SL-1200GR swept through the rapid "I Love Being Here With You" with clarity and brightness, yet without sounding rushed or flustered. With the pricier "G" the sound initially seemed more forward, but on

The design is very helpful when adjusting the overhang of the cartridge: the headshell is plugged in here, and if the stylus is exactly at the height of the small notch, the overhang is correct. ▶

listening carefully was revealed to be tighter and cleaner, and able to deliver a more balanced overall impression.

But then who cares? Even the supposedly budget version has safe, infectious timing far from the common idea of conventional high-torque direct drives, which can sound somewhat rushed and hustled. "Breathless through the Night" may have been the song of the old disco-1200s, but their modern successor maintained musical tension even in quiet passages, always ready for what may happen next.

### Listening pleasure for decades

We tried everything the SL-1200GR has to offer, although we soon tired of slo-





◀ The tonearm is designed exactly the same as that on the more expensive model, but for this model Technics chose simpler materials, for example for the main tube. The large ring at the base provides stepless adjustment of the height, and with a steady hand this can even be done while a record is playing. Packed with the turntable are two additional counterweights, allowing cartridges between 5.5 and 25 grams to be used.

So, which one? It's not so easy to distinguish the new, less expensive SL-1200GR (L.) from its big brother, which appeared last year. It's not really obvious in a picture, and even in reality it can be tricky, the 2000 euro price difference resulting from many small details. In our listening room, both of them played harmoniously side by side. ▶



wing or speeding up the musicians using the pitch slider. And as for scratching – well, the cartridges we had to hand were hardly ideal! So instead we stuck to treating the turntable as it was designed: as an absolutely serious, fully-fledged hi-fi record player for the dedicated listener.

If you want to make an instant improvement, it's worth replacing the admittedly rather good phono cable supplied with something of even higher quality, which will improve the three-dimensionality and organisation of the sound. In addition, the Technics, like every turntable, appreciates a level,

low-vibration support. And of course you should have lots of records!

The predecessors of the new Technics were always regarded as tireless runners with no expiry date – and we wouldn't be at all surprised if the SL-1200GR proved a worth successor to that.

*Matthias Böde*

### THREE CARTRIDGES TO SUIT THE TECHNICS



Most modern cartridges match the medium-weight tonearm of the SL-1200GR, but it would be a pity to use it with a budget design, thus limiting sound tone quality and failing to reveal its true potential. We tried out several cartridges with no „mismatches“, but the following sensible combinations were particularly appealing.



If you want a moving magnet cartridge, or your amplifier lacks a moving coil input, the Audio-Technica VM540L (top) is a good choice: at less than 260 euros it still has a „micro line“ diamond stylus, and sounds exceptionally airy and agile. However, it also offers substance, a wide soundstage and a dazzling, and for 285 euro can be bought as the VM540ML/H fixed and ready assembled in a headshell.



Energetic, powerful and rich-sounding, Ortofon's MC Quintet Blue (seen in the middle, at around 430 euro) has a „naked“ elliptical diamond stylus, and while there's somewhat less space in the sound than with the Audio-Technica, making it less detailed with small-scale music, the Ortofon can be considered a fine choice for rock listeners. However, its intensity benefits any style, such as symphonic music.

In the Technics arm the Hana SL (bottom, at around 650 euros) sounds fine-detailed and exhilarating, but also sturdy and gripping, its Shibata needle bringing out all the facets of the music. It gives the SL-1200GR a classy, audiophile sound, the turntable and cartridge complementing each other ideally to fine effect.

### TECHNICS SL-1200GR



Price: 1500 euro (without cartridge), also available in black as SL-1210GR at the same price  
 Dimensions: 45.5x18x38 cm (WxHxD)  
 Warranty: 2 years  
 Contact: Panasonic Deutschland  
 tel.: 069/22221313  
[www.technics.com/de](http://www.technics.com/de)

The appearance of the „G“ model was a sensation in 2016, but the considerably cheaper „GR“ is going to be the company's big-seller.

STEREO - TEST	
SOUND QUALITY	74%
PRICE/PERFORMANCE	
★★★★★	
OUTSTANDING	

# MP 3100 HV

The brilliant all-rounder



The MP 3100 HV is our latest and finest multi-source player. Its brilliant design philosophy enables the machine to reproduce virtually every imaginable source in totally High-End quality. It is equipped with an SACD / CD drive which is a completely new development, and also features our latest streaming client, an outstanding digital tuner offering FM, FM-HD and DAB+ capability, an aptX™ Bluetooth module and a digital input board with seven professional inputs. The converters are unique: DSD signals up to DSD 512 are converted in native form by the T+A True 1-Bit converter, while PCM signals up to 384 kSps are handled by the T+A double-differential quadruple converter.

The back panel shows that the MP 3100 HV is a true all-rounder: High-End analogue outputs in symmetrical (XLR) or asymmetrical (RCA) form, LAN, WLAN and USB ports, digital tuner, FD 100 radio remote control handset, Bluetooth aerial and Digital Connecting Board with seven inputs for external sources. There are separate mains sockets for analogue and digital mains sections.



## T+A

# AMPLIFIERS WITH ADDED VALUE





Digitization goes hand in hand with miniaturization, allowing ever-more functionality to be built into one device. Sometimes the components don't even hint at their innumerable abilities – like these three integrated amplifiers from Moon, Naim and Electrocompaniet, all of which can double as complete systems.



## THE POWER FROM THE DEEP

Naim's compact all-round Uniti 2 is also a convincing as an amazingly powerful amplifier

**W**e still regularly overlook a small circle of manufacturers who consistently produce desirable Hi-Fi. In addition to Dynaudio, Naim is one of the first names to fit into this exquisite group, but don't misunderstand – we're not talking about our test ratings, which regularly reflect the high quality of the components, but rather the longevity of the products, and the way this means they have their moment in the spotlight when new then tend to slip in to the background.

You see, British company Naim Audio insists on its traditional product running times, so that the still outstanding HDX music server has been available for almost ten years now, and is being built

unchanged apart from minor modifications – for example, in the case of hard disk capacity. The strange effect is that such devices are announced, anticipated, reviewed and then disappear for a long time from our focus.

That's rather unfair, as this fidelity to the product is a real quality feature: the streamers, servers and other network products in Naim's 'full-size' series obviously had such performance 'headroom' that they could easily be retrofitted with new features over many years – because via software updates the functional spectrum of the Uniti 2 has been inflated in the past few years. In the same vein, in our upcoming issue we will be looking at the company's NDX

super-streamer in its current and original versions, as the software has changed a lot.

But now to the Uniti 2, which has slipped into this test rather like a cuckoo, simply because two other candidates weren't available. At first we were unsure about mixing this CD receiver unaccompanied with purebred integrated amplifiers, but this doubt was unfounded: after all, the other two amps here can also be interpreted as complete systems – and in addition the powerful Naim, in its capacity as a value-added amplifier, can still teach them something.

### Everything but DSD

In addition to a CD drive, in the form of Naim's familiar swing-out loader, the Uniti 2 offers four inputs for analogue sources, one of which is naturally on a four-pin DIN socket, slightly confusingly labeled as "phono", as the Uniti doesn't have an onboard phono preamp. In addition, there are five S/PDIF digital inputs, one of which is designed as an optical mini-jack – besides their design fidelity and the long product life, the British also remain loyal to their very own interpre-

tation of "connectivity".

The surprisingly diverse range of connections is garnished with two mono subwoofer outputs and one fixed/variable analogue output, the latter on another four-pin DIN socket. The digital sockets feed a 192kHz/24bit DAC, with this maximum resolution available from the coaxial input, from USB storage, or via the network streaming capability.

The streaming part is equipped with all features: in addition to wide format support via DLNA streaming – it does everything except DSD – the network board can also handle music via Spotify, Tidal or Web radio. While Spotify control is possible from any Smartphone, computer or portable via the "Connect" protocol, Tidal depends on the use of Naim's own control app, which makes a thoroughly sophisticated impression in its current version, and can control all of the company's network devices from the two Mu-so systems all the way up to the HDX server and NDS flagship network player. It work slickly, with only Tidal a little dodgy – this being not Naim's fault, but down to Tidal's idiosyncratic data organization. However, with the touch on the Tidal icon you can switch to the proprietary streaming software, with which playlist creation is somewhat more.

## FORMATS & SERVICES

Supported formats: WAV, AIFF, FLAC (up to 24/192), ALAC (Max 24/96) and AAC, MP3, OGG, WMA up to the maximum data

Web streaming services: Tidal, Spotify (incl. Spotify Connect) and web radio

Network: Detects UPnP and DLNA data sources on the local network, WLAN, Bluetooth

Control: Remote App for iOS and Android

The Uniti 2 also offers Bluetooth connectivity and can access data from all sorts of portable, Apple devices and data sticks via that front-panel USB port, and also offers an FM, DAB and DAB + radio, with preset management via the main controls or that Naim app.

## What a Power

After a few minutes in the listening, however, we considered the amplifier part of this all-in-one its most impressive part. 2 x 69W into eight ohms and 2 x 102 W into four doesn't sound like an amplifier animal on paper, but in practice, things were quite different. This little amp sounded very punchy with both the Dali Epicon 6 speakers and Canton's 896, delivering complex percussion – as in the intro of "Green Chimneys" from the album "Monk – A NYC tribute" – with a deep rumble and precise strokes. But it's more than just a fun machine, also delivering a high level of insight and discipline at the same time. Even at high listening levels, Carolin Nos' voice in "Still Waters run Deep" was excellently separated from its musical background, standing with beguiling presence and solidity in the listening room. Yes, you could say "So what? Lots of amps do loud", but the Uniti 2 delivers this kind of performance at any listening level, and due to its precise timing and phase accuracy, it fills the space with music in an almost spherical form. Tonally, too, it's both rich and crisp, and gives the timbre of a voice or a guitar a velvety golden sheen. We like to be enchanted by such a mature power plant.

*Carsten Barnbeck*

Connections à la Naim: the small complex offers many possibilities. However, don't forget to plan for at least one DIN-plug adapter. ▼



▲ The juice gives strength: the grandiosely over-proportioned, cloth-wrapped power supply of the compact music system has an important part to play in its unconditionally powerful character.



◀ Of course, a remote control is included in the carton. But the free app opens up the full range of the Uniti 2's possibilities







## ACE UP ITS SLEEVE

Simaudio's Moon Neo Ace comes damn close as to being the do-it-all integrated amplifier for the audiophile

**T**he finest sounding and most complete [all-in-one] available" is the kind of statement that grabs the attention, and with the Neo Ace the Moon brand – and Simaudio, the manufacturer behind it, claims to have a music system of the Extra class. Which, for 3500 euros, you should probably expect it to be.

What we have here is a high-performance and moderately powerful integrated amplifier, into which the Quebec company has added its MIND (Moon Intelligent Network Device) technology. This encompasses a network player with a graphical user interface and, in addition to the streaming client, an HD DAC, which handles PCM data up to 32 bits/384 kHz and DSD256. It also supports even the most demanding streaming service, Tidal.

Five digital inputs are provided plus Bluetooth (aptX), WiFi and Ethernet/LAN, and there are also two analog line-level inputs (with an addition 3.5mm analog input on the front panel for portable devices), and a headphone output along with the speaker connections. The analog inputs are configurable, so that you can set one for example at fixed level for use with a home theater processor.

There's no radio or CD drive, cementing the role of the Ace as an integrate amp with benefits, as described in the headline of this article, but there is a high-quality phono preamp. So the ACE also works with turntables, adding to its living-room appeal in this age of the 'vinyl revival'.

There's a superb OLED display, and the Ace can be used directly or via the remote supplied, or controlled from a

smartphone or tablet using its own MIND app.

Of course, it's not news that Moon can build amplifiers. Previous models we have tested from this 'stable' have all performed way above average, and the Canadians even had their fingers in first Magnum Dynalab receiver, which was our top stereo receiver reference for years. And the ACE – its stands for 'A Complete Experience' – feels promising even before you listen: 11kg of weight suggests that the 2 x 54/82 watt (into 8/4 ohm) amp is more than moderately

### FORMATS & SERVICES

Supported formats: WAV, FLAC and ALAC to 32/384, DSD 64, DSD 128 and DSD 256 as well as MP3, AIF, AAC, Ogg Vorbis, WMA

Web Streaming services: Tidal

Network: Detects UPnP and DLNA data sources on the local area network, LAN, WLAN, Bluetooth

Control: Remote App for iOS and Android

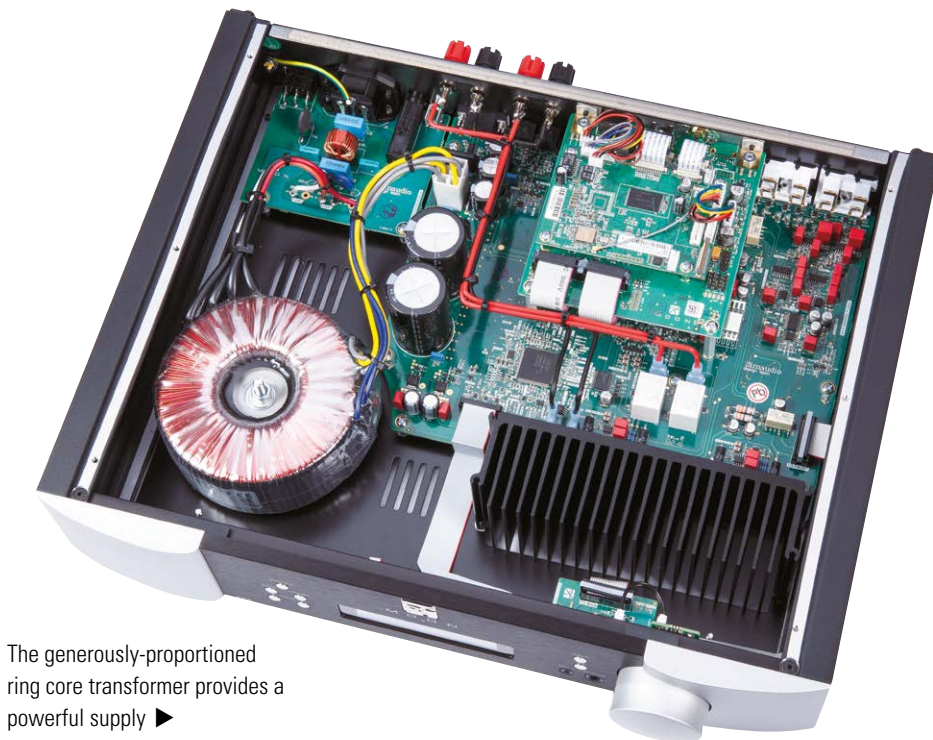
strong, and that its broad-band design will offer a serious challenge to its rivals broadBand designed amp a very serious gauntlet for competition.

In the listening, we exchanged the moon initially against Symphonic Lines' Outstanding RG-14 edition, a comparably priced integrated amp of purist design – without the network functions or DAC – but with twice as much power, with the Canton Vento 896 speakers. Unlike with other comparisons, this was no demolition job, with the Moon offering a very high standard of competition to what is already a highly-accomplished integrated.

### Moon in Listening

The Moon, initially fed by the STEREO Listening Test CD played both via a Rega player and then from the network, drew up a well-layered, clearly defined soundstage imprinted with vigor and rich timbres, filling the room with sound. The presentation was emotional and music, but without being overblown, underpinned as it was with a solid foundation of bass.

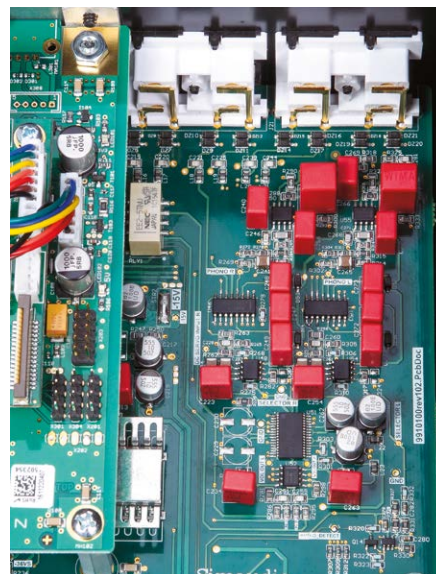
With the change to Norah Jones's debut album, the singer was delivered in an almost sculptural, believable three-dimensionality and so finely depicted in the microdynamic details, that with eyes closed one could almost imagine her standing in the room inviting the listener to "Come Away with Me".



The generously-proportioned ring core transformer provides a powerful supply ▶

The Moon was wonderful with the rather large, potent Canton loudspeaker, keeping it on a short leash, but it worked just as well with the compact B&W 805 D3. All the way up to massive levels, the sound of Pink Floyd's "The Wall" remained stable and audible, rarely leaving us wishing for even more performance. And while the amplifier here is of exquisite quality, neither the DAC nor the entire network-compatible digital part hampers these qualities, the sound quality being just as impressive. One cannot fail to give this ultimately inexpensive all-rounder a judgment with distinction – "Moon cum Laude". Musicality, equipment and technology are in harmony with each other.

Long-time, passionate staff currently own Simaudio, including audiophiles and experienced engineers, and one can only hope more such convincing products follow from Quebec! **Tom Frantzen**



▲ The material and workmanship quality of the Moon are high, the internal layout being both multi-layered and functionally divided for optimal sound quality.



◀ The remote control sensor is good, but it does not work as well as the device itself.

The moon has connections for up to four analogue and five digital devices, preamplifier and speaker outputs plus Wi-Fi, LAN and Bluetooth. ▼





## STREAMING BY HOUSE RECIPE

Electrocompaniet upgrades its top ECI 6 integrated amplifier from DS to DX status. The changes between the generations are subtle – and still have enormous implications.

Taking as your starting point the Electrocompaniet ECI 6 DX, you could start a fascinating discussion concerning the point at which a device stops being just an integrated amplifier and crosses over to being a receiver or even a complete stereo system. This distinction isn't too clear these days, because we're in a new digital age, while the definitions are rooted in the old conventions: if it wants to be a receiver, then it needs a radio tuner, or for a complete system a

CD drive would be quite good, right? Electrocompaniet's battleship doesn't fit either of those requirements, and yet the Scandinavian designers have equipped the latest incarnation of their largest integrated amp – ECI stands for "Electrocompaniet Integrated" – with all the modern equivalents of those sources.

So, no radio tuner, but the built-in streaming board has comprehensive Internet radio capability, and also allows access to the web-based libraries of

Tidal, Qobuz and Spotify, the last of these using the "Connect" protocol to allow full playback control – including volume – from any available variant of the Spotify software.

In place of the missing CD drive, there's a full-featured network player, which recognizes data sources on the home network via UPnP and DLNA protocol, but after activating the source indexes the music according to a proprietary protocol. This offers advantages in terms of transmission speed and enables a more flexible, especially permanent management of the Media Library, since it does not have to read out the contents list of the connected NAS or computer after each start of the ECI. In short, it is a latest-generation media player. Other digital services can be accessed via Airplay from iOS mobile phones or tablets.

So, what do we think: Is this a full amplifier, or do we have a plant in front of us? Like its predecessor, the new DX

offers a juicy 193Wpc of continuous power into 4 ohms, with peak power of 255 watts. Its outstanding and uncompromisingly executed amplifier layout, the addition of high-quality components, fully symmetrical signal processing and an almost sprawling transistor array and an oversized power supply, allows it to maintain control and insight even at high levels, if you really want to let off steam.

The topology and capabilities of the built-in D/A converter section are also unchanged: like its predecessor – and indeed little brother ECI 6 D (around 4600 euro) – the DX offers four digital inputs, as well as a USB port for computer. The DACs process signals up to 24-bit / 192 kHz (USB and electrical S/PDIF), and up to DSD128 (5.6MHz) from computers. The optical TosLink input offers the advantage of galvanic isolation, but with the usual small shortcoming that a maximum 24bit/96kHz can be transferred.

### New digital board

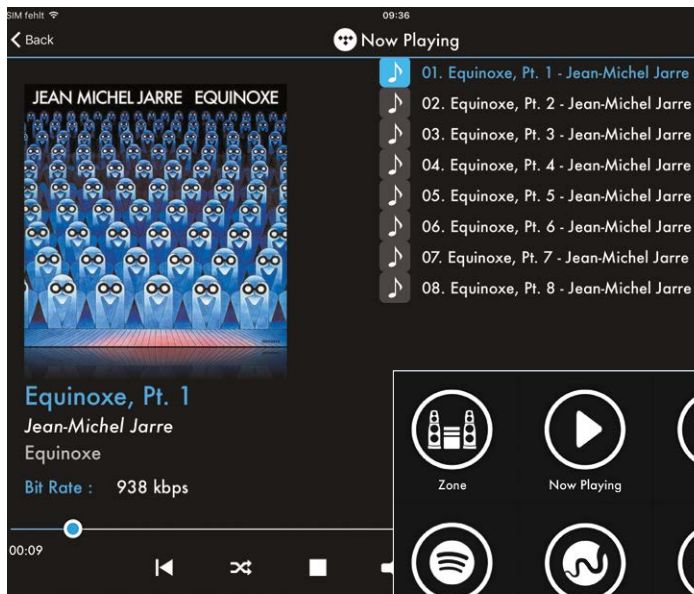
The real innovation compared to the DS sleeps in a board mounted on the back of the unit directly under the enclosure cover. Instead of the previously used Audivo chipset, the media player of the ECI is based on a powerful microcomputer with a real operating system, into which media player abilities can be added as programs or plug-ins.

The homemade solution benefits are evident: on the one hand the library management can be better adapted to better

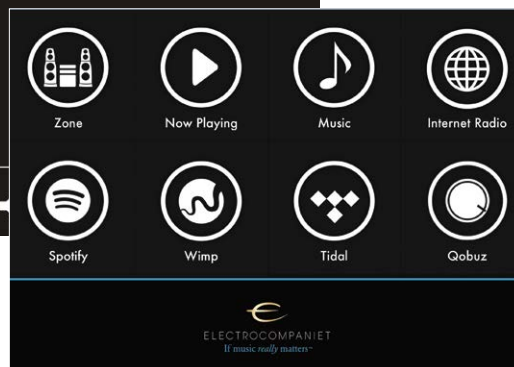
**KEYWORD**

**Galvanic Isolation:** This refers to connected devices not having direct electrical contact. In addition to optical transmission, this also works via transformer.

meet the needs of the amplifier and its D/A-converter, while the designers can also respond much faster to new developments in the streaming market, simply placing an order with their own programmer instead rather than launching into elaborate and costly negotiations with a supplier. Instead of a handful of developers to adjust and to learn, the manufacturer has bought a complete American software company, "Kopera Software", which is well positioned mainly in the areas of cloud management and smart technology.



The ECI's remote app captivates with its clear information and excellent overview. ▶



◀ All inputs at a glance: in the Start window you select the controlled zone and the desired source.

In addition to operating system and Player ability of the DX, the programmers have also created a communication protocol for the in-house streamer in the "EC Living" lifestyle systems it announced recently. Once these components are available, you will be able to build complex multi-room networks, which can be controlled using the intuitive remote app. This application is free for Android and iOS offered, and will operate the

Thanks to symmetrical signal processing, the ECI is also connectable via XLR. ▼



network capabilities, which are beyond the supplied remote control handset. And while some companies have started to get a bit ‘creative’ with music tagging and the like, Electrocompaniet’s solution is consciously straightforward, but very clear. The start screen is a view of all available sources and inputs. On the level below are tabs with artists, albums and titles. If you select a sound carrier, you will get a cover view including alphanumeric title listing and a clear text display of the current bit rate, which allows you to identify the sound format you are playing.

On first use, the app takes the user through a short set-up menu, which covers all necessary basic settings in four to eight steps (with or without Web services). The whole thing seemed to us quite intuitively implemented. In addition, there is a web interface via which you can control the ECI by entering the IP address via the Internet browser from the PC or notebook. If you do not know this address, this is not a problem because you can have it displayed in the settings of the application. The web interface is resembles the app, but is more generous and allows the scaling of the covers. Big praise for such platform optimization.

## FORMATS & SERVICES

Supported formats: WAV, FLAC and ALAC to 24/192, DSD 64 and DSD 128 as well as MP3, AAC, Ogg Vorbis, AC3, DTS, APE, WMA

Web streaming services: Tidal, Qobuz, Spotify (incl. Spotify Connect) and web radio

Network: Detects UPnP and DLNA data sources in the local network, WLAN, airplay

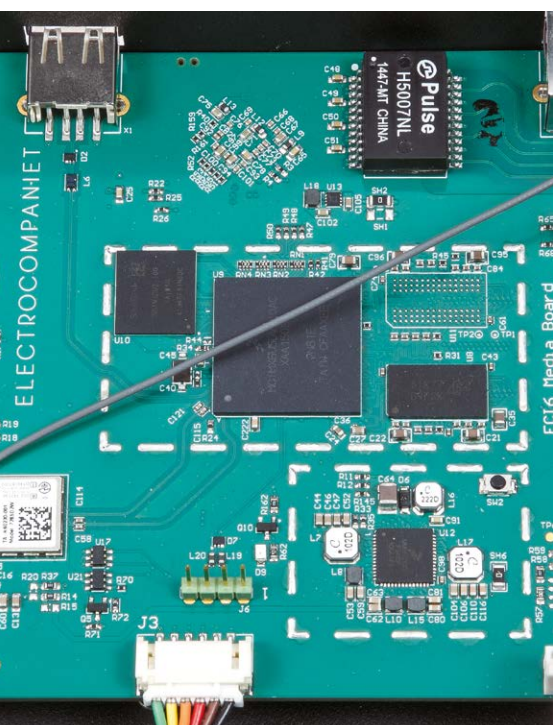
Control: Remote App for iOS and Android, also controllable from the desktop via web interface

We should mention that our test device was messed up if you mixed the level control via remote access and remote control – but this was the only drawback and, given the current rate of updates, this bug should be fixed soon, if it hasn’t been by the time you read this. Updates must be triggered by the user, by the way, and are not forced.

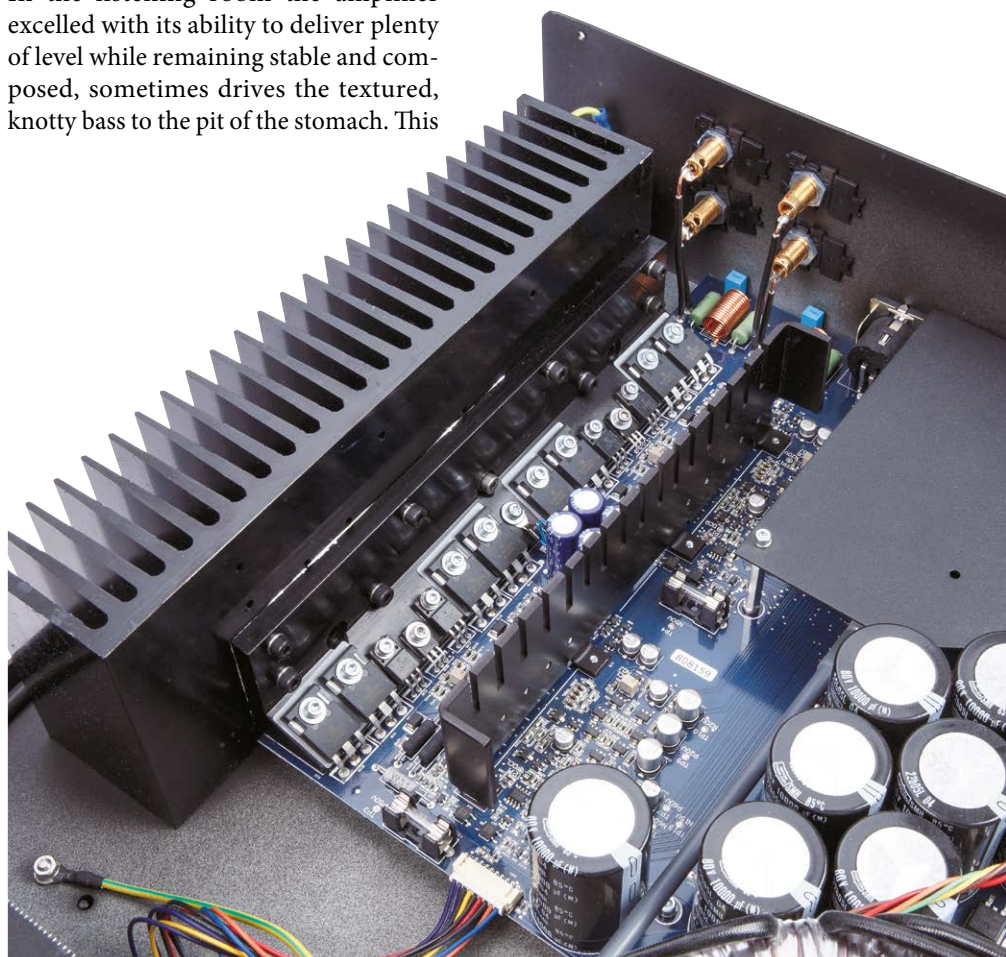
## Fun machine with Level

In the listening room the amplifier excelled with its ability to deliver plenty of level while remaining stable and composed, sometimes drives the textured, knotty bass to the pit of the stomach. This

raw power is blended with a superb sense of timing and speed, which makes the sound both lively and outrageously musically. Although it requires lots of discipline, one should attempt to remain objective during the listening test and keep the feet still, so it’s to be noted that the Electrocompaniet gently rounds off the extreme treble, but does so without concealing details. The soundstage image the amplifier creates is never excessively large and deep, but it created with our Epicon 6 realistic dimensions rand placed John Pizzarelli in "I Like Jersey Best" so vividly and tangibly in our listening that one could almost feel the darkened club atmosphere in which this live recording arose. Yes, you can use the ECI 6 DX to listen deep into the subtleties of a recording, but that may not work for long: this is an amplifier always leads the listener back to the point where all you want to the do is simply wants to give it some gas. **Carsten Barnbeck**



▲ Only this board distinguishes the DX from the DS: the new streaming board is an in-house Electrocompaniet development.



▲ The phalanx of power amplifier transistors (center of the image) illustrates very well the way the Norwegians construct their devices.

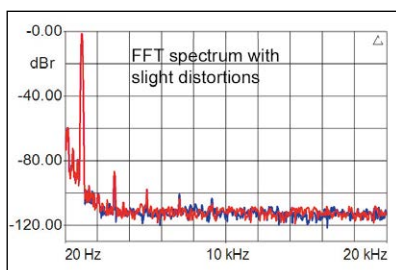
**NAIM UNITI 2**



At €4000  
 Dimensions: 44 x 9 x38 cm (WxHxD)  
 Warranty: 5 years  
 Contact: Music Line, tel.: 04105/77050  
 www.music-line.biz

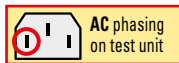
Timeless design, superb workmanship, wide-ranging possibilities and a powerful sound character. There's no reason why you shouldn't call Naim's Uniti 2 a perfect all-in-one system.

**LAB MEASUREMENTS**



<b>Continuous Power</b> at 8   4 Ohm	69   102 Watts per channel
<b>Pulse Power</b> at 4 ohms	131 watts per channel
<b>Distortion factor</b> at 50 MW   5 Watts   Pmax-1 dB	0.04   0.01   0.4%
<b>Intermodulation</b> at 50 MW   5 Watts   Pmax-1 dB	0.3   0.02   0.5%
<b>Noise ratio CD</b> at 50 MW   5 Watts	63.3   80.7 dB
<b>Channel separation</b> at 10 kHz	72.3 dB
<b>Damping factor</b> at 4 ohm	15
<b>Upper cutoff frequency</b> (-3 dB, 4 Ω)	61 kHz
<b>Connection values</b>	Practice-friendly
<b>Talk Tuner/CD</b> (10 kHz/5 Kohm)	66.9 dB
<b>Synchronisation error</b> volume controller up to-60 dB	0.01 dB
<b>Power consumption</b> Off   StandBy Mode   Idle <	2   -   27 Watts

**LAB COMMENTS:** The majority of the measured values are in order. Noise levels are the same at 50mW and 5W while channel separation and volume control tracking is also impressive



**FEATURES**

4 x line-in, 4 x S/PDIF, 2 subwoofer and one line-out, Recorder connector, USB for storage and portable devices, CD player, German instructions, remote control.

**STEREO-TEST**

**SOUND QUALITY** **90%**

PRICE/PERFORMANCE

★★★★☆

**EXCELLENT**

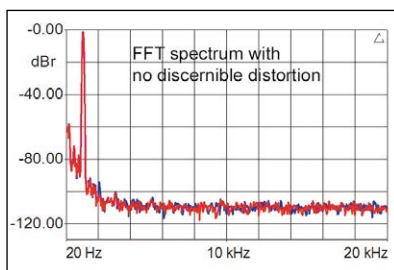
**MOON NEO ACE**



At €3490  
 Dimensions: 43x9x41 cm (WxHxD)  
 Warranty: 5 years  
 Contact: Audio Components  
 Tel.: 040/2785860  
 www.audio-components.de

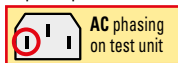
Attractive design meets current technology with high-class sound! The moon concept with phono, streamer as well as comfort (OLED display!) convinces all the way, as does operation via the app.

**LAB MEASUREMENTS**



<b>Continuous Power</b> at 8   4 Ohm	54   82 Watts per channel
<b>Pulse power</b> at 4 ohm	109 watts per channel
<b>Distortion factor</b> at 50 MW   5 Watts   Pmax-1 dB	0.01   0.002   0.003%
<b>Intermodulation</b> at 50 MW   5 Watts   Pmax-1 dB	0.01   0.005   0.06%
<b>Noise ratio CD</b> at 50 MW   5 Watts	75   91 dB
<b>Noise distance phono</b> mm (5 mv/1k) at 5 Watts	75 dB
<b>Channel separation</b> at 10 kHz	68 dB
<b>Attenuation factor</b> at 4 ohm at 63/1k/14k (Hz)	50/50/60
<b>Upper cutoff frequency</b> (-3 dB, 4 Ω) >	80 kHz
<b>Connection values Practice-friendly</b> Talk Tuner/CD (10 kHz/5 Kohm)	80 dB
<b>Synchronization error</b> volume controller up to-60 dB	0.05 dB
<b>Power consumption</b> Off   StandBy Mode   Idle	11   -   39 Watts

**LAB COMMENTS:** Good, for most applications sufficient amplifier performance and superb measured values in all sound-relevant areas. High standBy consumption for the test specimen.



**FEATURES**

Remote control, own operating app, three analog inputs and total (with WLAN, LAN, Bluetooth and USB) 9 digital Inputs

**STEREO-TEST**

**SOUND QUALITY** **83%**

PRICE/PERFORMANCE

★★★★☆

**EXCELLENT**

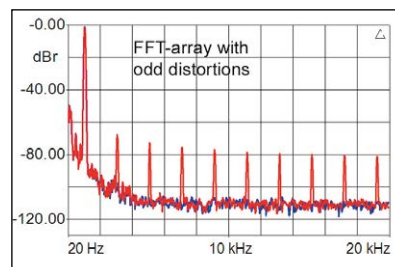
**ELECTROCOMPANIET ECI 6 DX**



At €5900  
 Dimensions: 47 x 13 x47 cm (WxHxD)  
 Warranty: 3 years  
 Contact: Electrocompaniet  
 Tel.: 0228/92394291  
 www.electrocompaniet.no/de

Strong, musical, sophisticated: the ECI 6 DX conjures up Electrocompaniet's familiar strengths and is huge fun. And since its has some important digital sources directly on board, it scratches the threshold of being a complete system.

**LAB MEASUREMENTS**



<b>Continuous Power</b> at 8   4 Ohm	110   193 Watts per channel
<b>Pulse Power</b> at 4 ohms	255 watts per channel
<b>Distortion factor</b> at 50 MW   5 Watts   Pmax-1 dB	0.01   0.004   0.01%
<b>Intermodulation</b> at 50 MW   5 Watts   Pmax-1 dB	0.004   0.003   0.3%
<b>Noise ratio CD</b> at 50 MW   5 Watts	77.8   91.5 dB
<b>Channel separation</b> at 10 kHz	62.3 dB
<b>Damping factor</b> at 4 ohm	100
<b>Upper cutoff frequency</b> (-3 dB, 4 Ω) >	80 kHz
<b>Connection values Practice-friendly</b> Talk Tuner/CD (10 kHz/5 Kohm)	74.5 dB
<b>Synchronization error</b> volume controller up to-60 DB	0.3 dB
<b>Power consumption</b> Off   StandBy Mode   Idle <	2   -   59 Watts

**LAB COMMENTS:** Excellent measurement data in all relevant points, but relatively performance-hungry in idle mode.



**FEATURES**

1 XLR-IN, 3 RCA inputs, 2 coaxial and Toslink digital inputs, USB audio, 2 pre-amplifier outputs (XLR/cinch), 2 speaker connectors, remote control

**STEREO-TEST**

**SOUND QUALITY** **92%**

PRICE/PERFORMANCE

★★★★☆

**EXCELLENT**

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# EVERYTHING ON THE FORTY





For its 40th birthday, Burmester is hitting the hi-fi world with a new standmount speaker, the B18. And by Burmester standards, it's very moderately priced

In July, Berlin-based high-end manufacturer Burmester celebrates its 40th birthday – and though sadly founder Dieter Burmester didn't live long enough to see the celebrations, we're sure he'd look with full enthusiasm on the latest addition to the range, the B18 loudspeaker.

Visually rather discreet, this two-and-a-half-way bass-reflex standmounter is packed with many good (and expensive) things, and weighs a substantial 35kg. The case is neatly veneered or varnished - five different finishes are available – and a sturdy aluminum plate, designed for mass and low torsion, reinforces the mounting of the tweeter and midrange driver. The 17cm bass and midrange drivers use glass-fiber cones, and the bass unit is mounted in its own enclosure; the crossover, meanwhile, high-quality components between its single-wire terminals and the drivers, and is also isolated in its own enclosure.

The user can tune the reflex bass enclosure with a bung depending on the room and the position of the speakers, and in addition there's a bass range adjustment switch. Measurement suggests this is making only a marginal difference, but the effect is very easy to hear.

At first we were somewhat disappointed that, instead of the hoped-for Burmester jet-tweeter the speaker "only" has a ring-radiator for the high frequencies, but the seamless acoustic integration with the midrange driver soon reassured us – but more on this later on. For now, it's worth noting for the technically interested that the crossover frequencies are at 400 and 2300 Hertz.

### Decoupling instead of spikes

Burmester is particularly proud of its housing construction, and not just that aluminum/MDF baffle, almost 5cm thick: the bracing of the housing was developed in cooperation with the TH Berlin using finite element analysis to prevent unwanted energy losses and ensure lean, crisp bass and a highly dynamic performance.


Cabinet vibrations are often tackled via grounding them using three or four spikes, but here the problem has been solved differently with a newly developed spring-mass-damping system to decouple the loudspeaker from the ground. The loudspeaker enclosure is actually decoupled from its base, and while threads are provided for spikes, they're there not out of necessity, but to allow users to experiment without complications if they wish.

### Flawless laboratory performance


The photographer was delighted, the tester full of anticipation, but the B 18 still had a date in the test laboratory inbetween – and this was completed without any abnormalities: clean frequency response



▲ The massive aluminum baffle houses the midrange driver and tweeter, and has a total thickness including MDF of almost 5cm!




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on axis to 30°, a non-critical impedance, a very decent efficiency at 87 decibel and very low distortion – new Burmester chief Andreas Henke and his team obviously did a good job.

We started the listening in our small, 20 square meter room, and with the speakers used in free space: i.e. about one meter from the wall behind them, about 50cm in from side walls, some 2.5m apart and almost 3m from the listening position. The bass switch set to Plus, and the port undamped, we started with the Technics SU-G700 was initially used as an amplifier.

However, it quickly emerged that while the Technics was up the job in electrical terms, and a very good amplifier for the money, sonically the B 18 is in a different league. Changing various cables didn't help: the sound remained comparatively uninspired and uncontrolled, especially with Yello's "You Better Hide" and "Till Tomorrow", which lacked sonic magic.

Combining the B18 with the complete Marantz system of SA-10 and PM-10 brought significantly more solidity and better dynamics, with more distinct

information about the recording venue and instrumental timbres. Suddenly the sound was joyful: Haiou Zhang's performances of Liszt "Piano Works" darker-toned, with the resonance and the sense of hammers on the strings of the Bechstein D 282 concert grand piano were palpable.

Authentic and real, and very emotional the Burmester worked extremely well with this amplifier/CD combo: Yello flew around the ears, with taut and powerful bass pulses in the room. The attack and decay of notes was depicted with ease, even with the speakers now set with the bass adjustment to negative, still without any plug in of the reflex tube.

Here, the B 18 delivered in Till Brönner's trumpet playing neutrally, conveying the joy of the performance, and the speaker was also able to make our armchairs stand, even with the seemingly cool techno music of Mr Meyer & Blank – an effect it managed again and again. Not only that, but also the lower registers of B 18 were deeply impressive, being both bone-dry and yet a musical warmth. This bass challenged at times many more expensive speakers in a manner until now unknown from Burmester designs. And all this despite the fact that the last few Hertz have deliberately been sacrificed in order to increase efficiency and the speakers' dynamic capabilities, including maximum volume, to beyond the average for this size and price level.

**Acoustic gentleness**

Despite our initial skepticism, the ring radiator tweeter turned out to be integrated perfectly here, compensating for its slightly less spectacular resolution (when compared to a Jet tweeter) with very dispersion characteristics. Combining it seamlessly with the partnering midrange driver, the B 18 showed a mildness of tone in which the critical sibilants in voices were reproduced cleanly and without distortion.

An important aspect was that the soundstage image was maintained even at low volume levels - Grammy Award winner Shelby Lynne showed her vocal facets in the song "You Don't Have To Say You love Me" even when played quietly. The decoupling concept of B-18 with the sprung base is also proved – we didn't ever miss the spikes. Burmester has done it again!

*Michael Lang*



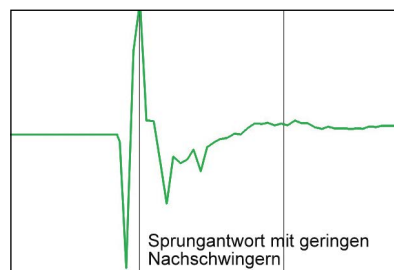
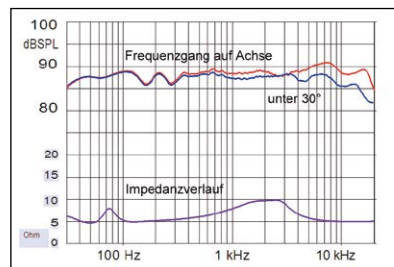
▲ The finely built housing has a recessed terminal plate for single-wiring.

**BURMESTER B 18**

from €7800  
 Warranty: 5 years  
 Contact: Burmester  
 Phone: 030/78796868  
 www.burmester.de

This 2.5-way speaker from the Berlin-based manufacturer uses a novel damping concept between the main cabinet and base. Top-quality components and workmanship ally themselves with a very harmonious and dynamic sound.

**MEASUREMENT RESULTS**



DC resistance	4 Ω
Minimum impedance at	50 Hz
Maximum impedance at	2700 Hz
Sound pressure level (2,83 V/m)	87.2 dB SPL
Performance for 94 125db SPL	11.2 W
Lower cut-off frequency (-3dB SPL)	40 Hz
Total harmonic distortion at 63 / 3 k / 10 k Hz	0.3 / 0.1 / 0.1%

**LAB-COMMENT**

Excellent results in all areas. Good efficiency, linear frequency response, good dispersion and very low distortion. Impedance curve fluctuates only slightly from the ideal.

**FACILITIES**

Single-wiring, switch for bass boost; Damping material for the bass reflex opening; five different cabinet finishes; detailed operating instructions.

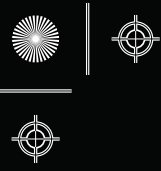
**STEREO-TEST**

**SOUND QUALITY** 90%

**PRICE/PERFORMANCE**

★★★★☆

**EXCELLENT**



CHORD  
Chord Electronics Ltd.

# Hugo<sub>2</sub>

Portable DAC/headphone amplifier



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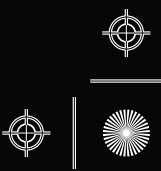
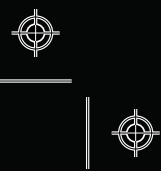
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# FOR THE EYE AND THE EAR?

Even the best high-end system can't replace the live experience - simply because a living room will always sound different to a concert hall. However, what constitutes a good concert hall? Opinions differ...

**B**etween 1998 and 2008 alone, around 120 concert halls were planned and built around the world. In Germany, the Hamburg Elbphilharmonie and the planning of a new concert hall in Munich have made headlines, the issue being the (horrendous) costs. Proponents argue that a fine concert hall enhances the reputation of a city, and in fact they are often landmarks: think of the Opera House in Sydney, the Oslo Opera, or the Palau de les Arts Reina Sofia (Valencia).

But how does impressive architecture coalesce with acoustic requirements? Often not well, according to architect Stephan Braunfels in an interview with the magazine FONO FORUM. He

explained that „creative freedom applies only to the outside, the façade. Inside, however, there are strict laws: the acoustics have to be right, and there are always problems with free forms. Many concert halls are beautiful but not good „.

Also Gerhard Steinke criticized builders and architects who rush through bold visions at the expense of functionality. For the renowned acousticians Funkhaus Nalepastraße good acoustics is „no matter of luck, but has scientific bases“. A space should be neither too dry acoustically, nor over-reverberant. While the Studio Standard for small listening rooms is a reverb time approximately 0.3 to 0.4 seconds, in the range of 1 to 4 kHz 2 to 2.3 seconds are ideal for a classical concert hall,

though this should slop away below 1kHz to ensure the transparency and clarity of low-frequency sound.

„Equally important is an even sound distribution. This means high levels of diffusion, which requires correspondingly strongly structured ceiling and wall design,“ emphasizes Steinke. Decisive is the balanced balance between direct sound and room reflections for the majority of visitors, so sound waves should not only reflect in one direction.

The 89-year old is even more annoyed when rules are flouted that promote good acoustics, such as when rooms are built too big for economic reasons, many attendees meaning greater revenues: „A capacity of 18,000 cubic meters should not be exceeded, because otherwise the dynamics of an orchestra can not be experienced, from extremely quiet to impressively loud, in all seats.“

In addition, Steinke pleads for a “shoe box” construction, similar to the one realized in the historic Viennese Musikvereinsaal, where the audience looks forward to the stage. The planning of the acoustics





Elbphilharmonie (Westansicht)



Elbphilharmonie, Hamburg

Osloer Oper

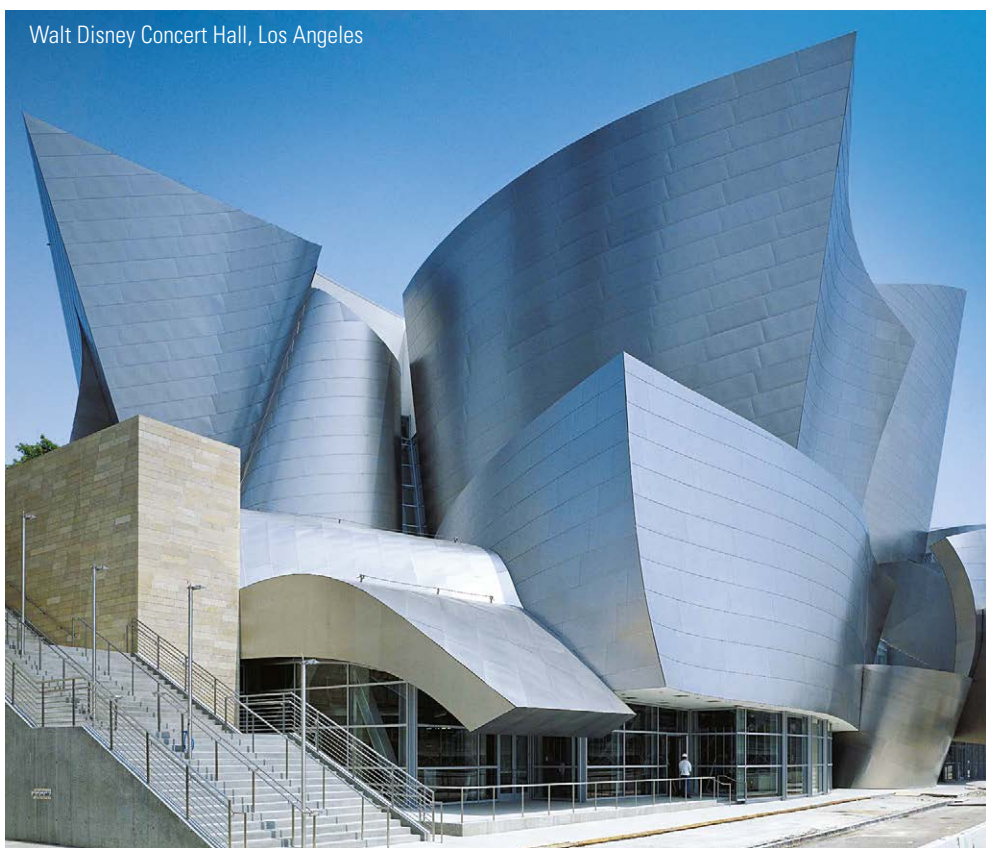


Palau de les Arts Reina Sofía, Valencia



FOTOS (IM UHRZEIGERSINN): PR (LINKS), MAXIM SCHULZ (RECHTS), ERIK BERG/PR (UNTEN)

Walt Disney Concert Hall, Los Angeles



is much more difficult in the case of the form in which the audience sits around the orchestra, and it is also ignored that, for example, most music instruments and singers radiate sound more forward than backwards. For these and other reasons, „in the Berlin Philharmonic, only about 30 percent of the audience could hear“, complains Steinke.

Yasuhia Toyota, an acoustician of the Elbphilharmonie, has a different approach: for visual reasons, he emphasizes the vivid nature of the chosen colors and materials in a concert hall: „We do not hear without seeing.“ Although he works with computer simulations and 1:10 models, the 64-year-old Japanese says this doesn't immediately determine how the Elbphilharmonie will sound: „The sense of hearing is as complex as the sense of taste. Listening perception is subjective and depends on many factors, including

architecture. In a beautiful setting, where one feels comfortable, an orchestra sounds quite different from the way it does in an ugly place. That also depends on the experience of the musicians. „

In the discussion about the perfect concert hall, Eckhard Kahle finds himself somewhere between these two extremes between these two poles is to settle in the discourse on the perfect concert hall. At the new concert hall in Bochum, the acoustician took the tried and tested shoebox construction, then modified it to the extent that some concertgoers surround the orchestra. „Neither orchestra nor audience want today an absolute ‚frontality‘, both sides want a common experience,“ is his argument (See interview).

And the first impression is that the new hall sounds promising – at not even a twentieth the cost of the Elbphilharmonie.

**Andreas Kunz**

## „OUR EARS ARE THE BEST INSTRUMENTS“

Before its opening in late October, STEREO was able to get an impression of the Anneliese Brost Musikforum Ruhr, and spoke with acoustician Eckhard Kahle, the director of Kahle Acoustics (Brussels) and Professor of Acoustics at the Hochschule für Musik Karlsruhe.

### Is there a perfect acoustic?

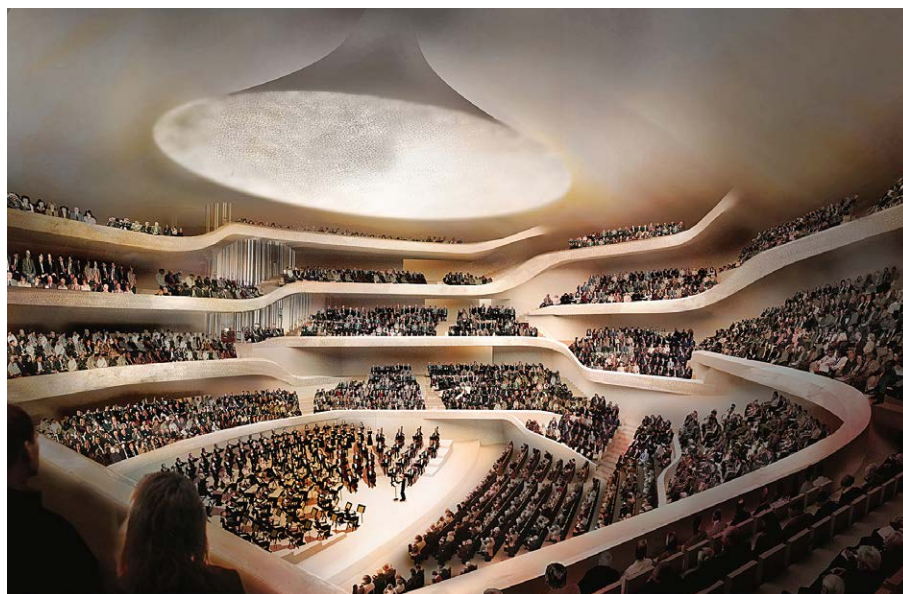
You can't define good acoustics, because they're always to do with what's happening on stage. The music forum is designed especially for the Bochum Symphony Orchestra, who play Mahler's symphonies and other repertoire of the 20th century, where sometimes lots of percussion is involved. The orchestra thus needs a large stage and a hall with acoustics able to deal with a large symphony orchestra. Since there is only a manageable floor space with almost 1000 spectator seats, we have therefore built the hall in relation to the floor area.

### How would you describe your sound ideal?

I want a room that sounds strong and long, in all places. When I go to a concert, I want to experience the space. We have strived for a long reverberation, but at the same time we have precision in the representation of the instruments. The orchestral test this morning has confirmed that we are on the right track. But we still have to improve, because the reverberation time is still well over two seconds, which is the rule of thumb in our space volume.

**In principle, I had a positive impression, the woodwinds and strings sound fantastic. But due to the long reverberation time the orchestral tutti still sound queasy, and the brass players too sharp.**

The sharpness in the brass may be due to plastic covers up in the cavity, and there are still some chairs missing. Still, we must educate the space to deal with the tutti for large orchestral forces. To absorb the sound, curtains will be added to the back of the stage and the ceiling vaults, and we'll make small readjustments, for example when positioning the five ceiling sails. These first rehearsals with the Bochum Symphoniker are extremely helpful, and I think at the end of the two days we will be much closer to the sound ideal.



PICTURE: HERZOG & DE MEURON/PR



PICTURE: LUTZ LEITMANN, STADT BOCHUM

▲ Architecturally ambitious, acoustically controversial: The large Elbe Philharmonic Hall has a 'vine' form (above).

◀ The new concert hall in Bochum continues, however, on the best shoebox construction (left).

**Is the distance of the orchestra from the back wall also a factor?**

Yes. The stage is large, which means that the orchestra can move a bit if required. For example, there is the possibility to place it further backwards or to move the especially brass and percussion closer to the other musicians. On top of that comes the arrangement. This morning the orchestra was placed flat. As a result, the strings came through well, while the brass had a lot of free floor space in front. We are now experimenting on whether it is no better to set the brass players on a pedestal and to make the entire orchestra more compact so that there is a more melded sound. In addition, the Bochum Symphony Orchestra must play in the hall, and you realize the brass section is used to playing hard, so they come through. In the new hall, that's no longer necessary.

**What else is important for you as an acoustician?**

Silence in the hall! And this includes a well-functioning air conditioning system, which is not perceptible. This often means a lot of work for us, because air makes noise when it blows quickly. In order to get the temperature right, I need large volumes of air, which is why every seat in the hall has its own ventilation outlet.

**The Anneliese Brost Musikforum Ruhr costs just under 40 million euros, which is only a fraction of the cost of the Hamburg Elbphilharmonie. Did the low budget mean you had to cut back on your ideals?**

There was going to be a motorized stage, as used in Berlin and Cologne, for the staggering of the orchestra I mentioned – but this was not compatible with the budget. But we can still work with mobile podiums, and when we have found the right line-up, we can definitely make those mobile podiums in the same wood as the stage. The improvements must also be kept within the framework: for example, we have more curtain rails than blinds, so the question is where we hang them – at least they'll be where the main reflections of the brass arrive: behind the stage.

**The hall is designed according to the so-called shoebox construction. Why?**

We know from experience that a shoebox room is cheaper than other shapes, due to the relatively simple structure of parallel sidewalls with roof girders that repeat themselves – in other shaped halls every wall or girder looks different. In addition, this fits into the site, because we have a road that runs parallel to the sidewalls. But

we've modified the shoe box construction to the extent that the orchestra will also be surrounded in our auditorium, because neither orchestra nor audience want absolute frontality today – both sides want a common experience.

**For piano music, however, this is a disadvantage for the rear-seated audience, because a grand piano radiates above all to the front...**

That's so: pianos and singers are always problematic. But we still have enough space in our room, and we have also provided special reflective surfaces. I've already tested the seats behind the stage and the result is promising.

**There are experts who claim that a 'vineyard' hall cannot sound good.**

Today we are a step further, in that we can simulate a whole room through computers. And more importantly, more or less in real time, individual wall surfaces can be changed interactively, so that it is possible to see, for example, where the violins reflect. On this basis, I can 'teach' a vineyard hall what makes a shoe box – and vice versa. Musicians surrounded by the audience is an increasingly popular request, as already mentioned, and we're a society in which borders are to be blown up – and that's also a good thing. But one thing is clear: we have our ears on the sides, and according to psycho-acoustic studies sound coming from the side affects us differently to that from in front. With reflections from the side you are more wrapped in the experience, you have stronger feeling of belonging. And with a shoebox, quite a lot of reflections come from the sidewalls and/or over the balcony fronts or under the balconies. In an arena, on the other hand, it is difficult to create lateral reflections.

**So the sinfully expensive Elbphilharmonie could disappoint?**

We'll hear that soon. In order to counteract this effect, the arena-like style of vineyard halls is broken up by graded areas with walls producing lateral reflections – for example in the Berliner Philharmonie.

**There are architects who are said to want to put their own mark and a hall – at the expense of acoustics.**

Yes, everyone has his or her mark, but in our project the cooperation was extremely good. In intelligent people, the ego does not win, but one tries to find exactly the right mix. In the design, for example, the hall was much straighter, but Director General Steven Sloane said: "I want

something round, less frontal." But I can't tell you exactly who is responsible for exactly what detail now, because at the end everything was from a single cast, that is the beauty of a good cooperation.

**What influence do the acoustics have on the floor and walls being clad in American cherry?**

Commonly, there is the opinion that all the wood must resonate in the concert hall. This is not true in general, because it is mainly the stage floor that resonates, though the seats can also be exciting if they deliver a haptic effect to complete the acoustic image. Otherwise, the wooden surfaces in the hall should not resonate, but rather reflect the sound, so the surface treatment of the wood is extremely important. When the pores are closed because they are sealed with three centimeters of varnish, the acoustics are basically no longer about wood surfaces; if, however, I leave the wood unfinished or oiled, then the pores remain open and I have a slight absorption of the high frequencies, which removes a bit of sharpness from the sound. Of course, architecture and geometry are also crucial, and in general, uneven structures provide diffusion. For example, to transport the sound in all directions, we have slightly scaled the lower sidewalls, and also rounded surfaces scatter the sound reflections. The side balconies, on the other hand, are straight, but their angles are different.

**Despite computer simulations, you only know how a room really sounds when it's finished, right?**

Computer simulations are extremely intelligent, fast and helpful, and measuring microphones are extremely good these days. With our ears, it's very difficult to determine whether the reverberation time is 2.1 or 2.2 seconds, but they are still by far the best measuring instruments. Listening for five minutes is often much more insightful than two hours of measurement, three hours' analysis and then five hours discussing the measured values!



FOTO: IN&B BARTEK

In parallel with his studies in physics and acoustics, Eckhard Balde worked as a violinist in various orchestras and ensembles, collaborating with the likes of Claudio Abbado, Christa Ludwig and Leonard Bernstein.



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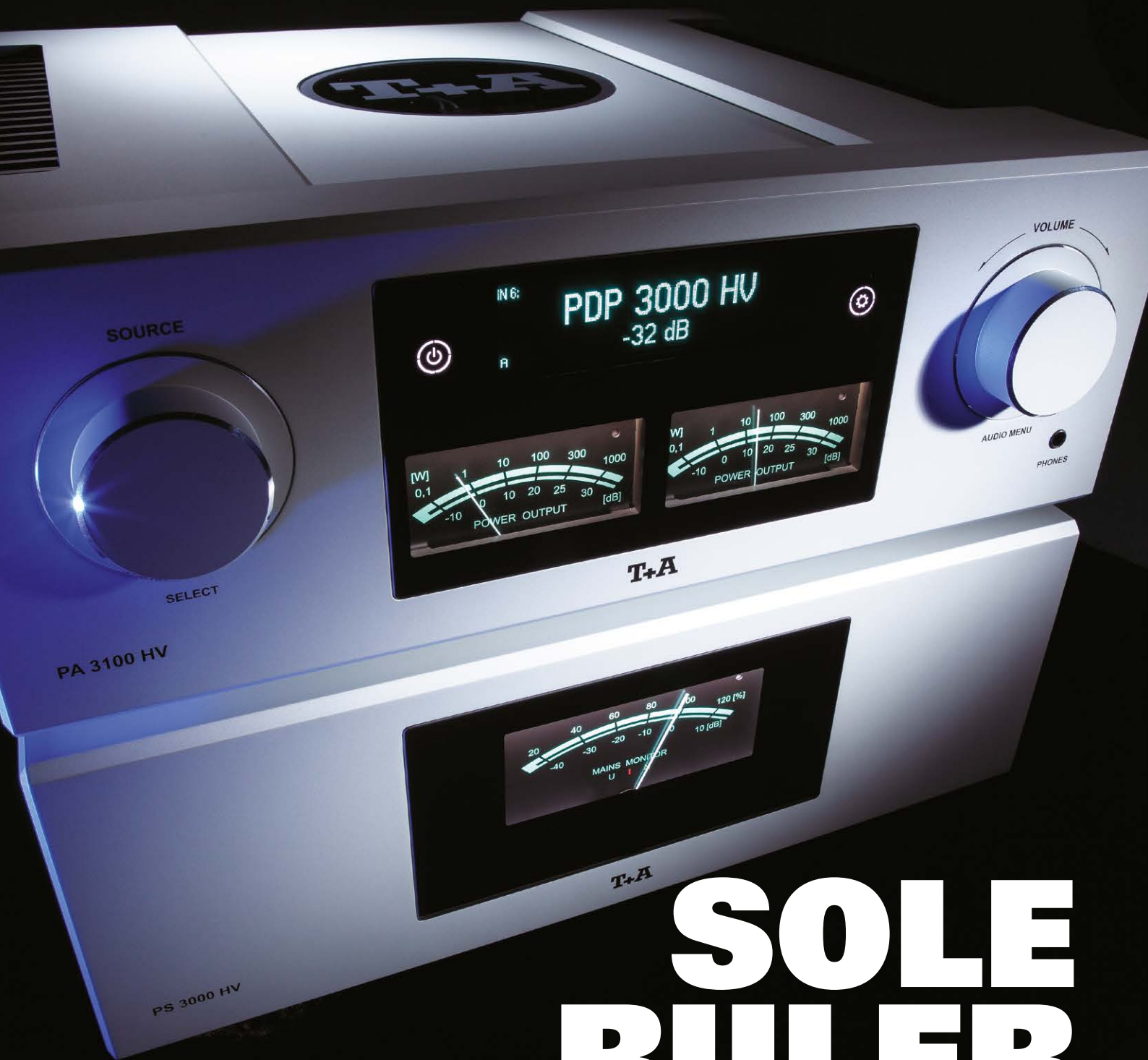
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# SOLE RULER

In stereo's top echelons it's not all pre/power amps – there are some integrated amps up there, too. T + A's brand new PA 3100 HV aiming at top honors – and it has a secret weapon in the form of a powerful auxiliary power supply.

The development department at T + A never stands still: hardly has one new model been waved out of the door by its proud ‘parents’ than a new challenge is underway. And with the HV series, named for its ‘high voltage’ working, the Herford company has at last made the breakthrough onto the world stage, and shown the competition the way to do things.

The 3000m ended the era of tube equipment at T + A, thanks to the use of that HV technology in the voltage amplifier part – responsible for sound and dynamics and with extremely good linearity, but still the company’s engineers saw further development potential, this time in the preamplifier section. In its new 3100-series form, it has a strong similarity to the P 3000: all the boards have been reworked and the entire preamp is now DC-coupled. From these measures, development manager Lothar Wiemann promises more control over the sound image, more imaging precision in the spatial depth and a further increase in bass dynamics.

When trying DC coupling, without servo control, many designs fail, and go back to the ‘safe’ way of doing things. At T + A the most stringent component selection and adjustment as well as stable thermal conditions ensure that the 3100 series doesn’t drift, despite the lack of a servo. To achieve this, T + A designs the product to heat up quickly, so that within around 30 minutes the same temperature prevails throughout the enclosure.

But it’s helped by its design principles: since the late 1980s, T+A has used a combination of long-term stable, gas-tight relays and high-quality single resistors from Vishay for volume regulation: if the red pencil of the bean-counters has been in evidence anywhere in the design, it’s not here!

**Meters on board**

But it is not only the inside that things that have changed, because now on the front of the amplifier are two large meters, of the kind especially popular in Japan and America – it’s a long way from Westphalian understatement. Attention has also been paid to the sensitivity of the controls, which now react to the lightest of touch, and the functionality of the remote control, which now has improved range and a wider ‘arc of view’ – both are said to have been improved by a factor of ten.

When we picked up the review sample from the factory, it was already fitted with a moving coil phono board, an option

adding around 1100 euros to the bill: it’s of a double-mono construction, with a wide range of adjustment available to suit the maximum range of cartridges, while a similar board for moving-magnet fans is also available. Could we want for any more? Well, it would be handy to have the adjustment options adjustable by remote control...

Oh, and if you’d like a parametric equalizer built into the amp, T+A already has a solution which we have seen in the past in the P3000 HV preamplifier. It’s a 2000 euro add-on here.

**High end is expensive – why?**

Again and again we are asked why high-end devices are so expensive, and whether it would be possible to deliver such performance at a more favorable price. T + A’s Lothar Wiemann and Siegfried Amft have their own views on the subject, explaining that they produce almost everything in-house, with sub-assemblies built by a company located opposite their premises. Approximately 100 permanent



◀ Even the remote control is made in-house. The cable connects the amplifier to the power supply.

▲ The solid aluminum chassis is laid out mirror-symmetrically around the transformer; the power supplies have almost inexhaustible reserves, but still sounds sensationally open and transparent even in quiet tones: PA 3100 HV/PS 3000 HV.

employees are kept busy throughout the year thanks to clever production planning – there’s no ‘hire & fire’ here –, with a dozen development engineers on the team, one of whom works purely on apps.

Anyone who has ever been caught in a service queue and ultimately received an unsatisfactory response from an overseas call-centre will be pleased to know that T + A’s in-house service provides telephone support for owners of the company’s equipment, while parts are still held even for the very first CD players made. But the company also minimizes the chances of buyers needing such support: a failure rate in the thousandths, of the standard normally ascribed to makers of studio products, maximizes customer satisfaction, while the desire for perfection and the uncompromising search for ever better solutions often ensure updates are made available within a very short time.

So man-hours in development and service back-up are no small factor in the pricing here, but the quality of components and assembly is also readily apparent: turn the input selector or volume control, or look at the 40 mm thick front panel – and you’ll see and feel that precision in action. However, some carefully sophisticated detail remains hidden from the viewer, unless you’re in the habit of looking at components to see whether they’re antimagnetic!

Wiemann and his team do just that, shopping for every one of the approximately 2000 components that make up a 3100-series product – from screws and nuts made from nickel-free rhodium or gold-plated, to capacitors manually soldered onto copper their copper ‘legs’ in the quest for quality. For all that, some 50% of the power transistors the company receives are rejected: this has nothing to

do with the absolutely excellent quality of the transistors, which have a constant idle current regulation and a built-in temperature sensor, but with the fluctuations of the gain factor. Eight of these transistors are used for each channel of the 3100R per channel, each amplifier taking two days to complete. Then it goes to the high temperature and humidity of the torture chamber, and the whole thing is vigorously – and extensively – shaken.

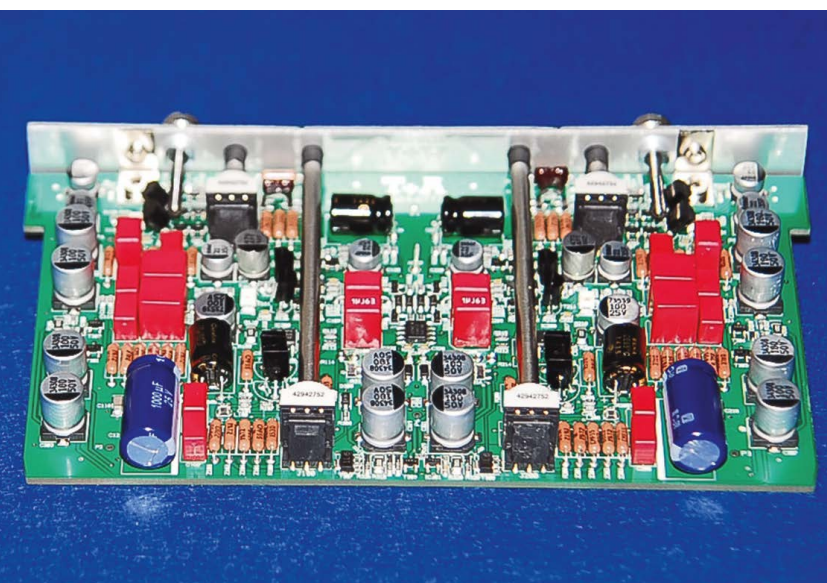
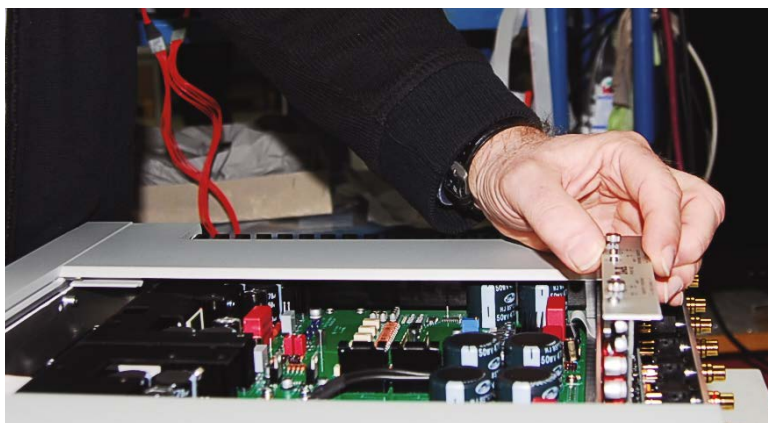
Only then is it measured again, to check for consistency. And that’s why high end is expensive!

**Auxiliary power supply: pure luxury?**

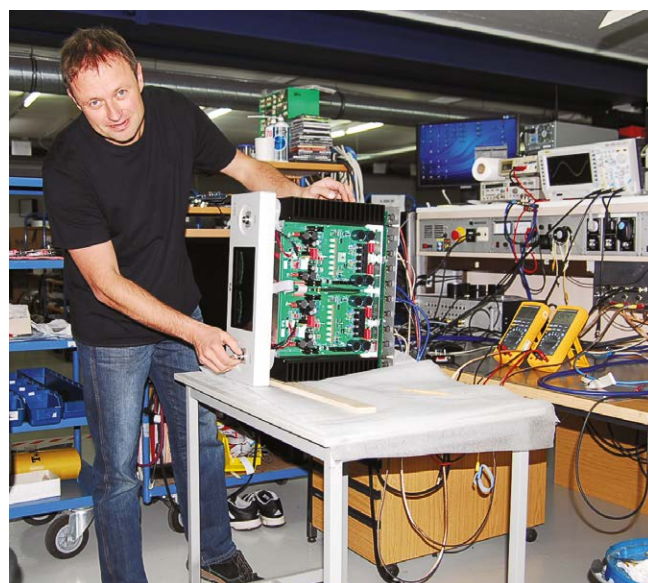
Given all this effort, one wonders why the 3100R can now also be upgraded with an optional auxiliary power supply? Well, in Herford they listen to their customers, and such an arrangement was a



▲ Here, the versatile phono module is plugged in: there are mm and mc versions, each of a strict dual-mono design.



▲ All components are antimagnetic and, where required, are custom-made, meaning a single resistor can cost eight euros instead of eight cents.



▲ Every single device is thoroughly tested for two days – including the climatic chamber and the vibration test.

frequently expressed wish, so even the perfectionists of T+A didn't stand the way of customer demand. At any rate, the power provided – about 30 watts/channel of pure Class A – should be enough to get any speaker voice-coil near to a state just before, or even beyond, its melting point. Want even more? You can, of course, add on an additional power amplifier should you want.

With all the possibilities offered, the operation remains simple and clear – and we were already asking ourselves after some pieces of music why Wiemann had spoken so modestly of small tonal progress. You see, there was no need for an ultra-revealing speaker to make it clear that this amplifier delivers an easily-heard and readily comprehensible step towards greater authenticity of reproduction. The Rolling Stones live on Cuba on vinyl is no sonic delicacy, the tonal balance leaving much to be desired, and yet the T + A conjured up the atmosphere of the concert in front of 1.2 million spectators in our listening room – in the middle of December there was a holiday mood. We wanted more, so we put Dizzy Gillespie on the French Riviera in the T + A 3000 CD player of T + A, and discovered that the

sound of the waves was a little more authentic with the 3100 than it had been with the 3000 amp.

### So when is the power supply worthwhile?

Some tests with different loudspeakers were necessary until we were sure the auxiliary power supply could bring something extra to the party, this being especially the case with older loudspeaker designs having critical impedance and phase characteristics. However, current models from Bowers & Wilkins, Canton, Dali, Dynaudio and T + A itself also benefit from the luxury power supply, and there's more to it than just a little extra ease in the sound. The gain of stability in driving beats should be tested by anyone interested in their loudspeakers, but with every speaker we tried the difference was greater than that between the 3100 and its excellent – and still-made – predecessor, the HV 3000: Dee Dee Bridgewater's voice on her tribute to Ella Fitzgerald from 1997 never sounded more detailed, multifaceted and fascinating. After all these years, this excellent recording was able to reveal new facets – and all thanks to the T + A 3100!

Michael Lang



▲ The T + A-team: From left to right, boss Siegfried Amft, chief developer Lothar Wiemann and sales manager Oliver John direct the company's fortune, and have plenty of ideas in store for new products and strategies. The future of T + A is in safe hands.

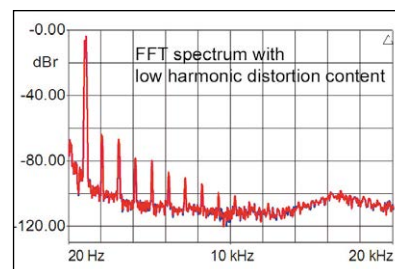
## T+A PA3100 HV / HP 3000 HV



around €16,000, PSU € 8500,  
phono € 1090  
Dimensions: 46 x 18 x 53 cm (WxHxD)  
Warranty: 3 years  
Contact: T + A, Tel.: 05221/7676-0  
www.Ta-HiFi.com

Those who can afford it should not hesitate. Currently, we do not know a better amplifier – even without the additional power supply.

### MEASUREMENT RESULTS



<b>Continuous power</b> at 8.4 ohm	280   468 W p. channel
<b>Peak power</b> at 4 Ω	606 W p. channel
<b>Total harmonic distortion</b>	
50 MW   5 W   Pmax-1	0.03 dB   0.05   0.09%
<b>Intermodulation</b>	
50 MW   5 W   Pmax-1	dB 0.006   0.03   0.04%
<b>Signal to noise ratio</b> CD 50 MW   5 W	71   89 dB
<b>Signal to noise</b> PhonoMC 0, 5mV, 10 Ohm	74 dB
At 10 kHz	79 dB channel separation
<b>Damping factor</b> at 4 Ω	100
<b>Cut-off frequency</b> (-3 dB, 4 Ω)	> 80 kHz
<b>Practical connection</b>	values
<b>Crosstalk</b> tuner/CD	81 dB (10 kHz/5 kΩ)
<b>Synchronous error volume control</b>	up to -60 dB 0.1 dB
<b>Power consumption</b>	
From   Standby   Idle	0   -   220 W

**LAB-COMMENT:** Excellent in all relevant respects, with almost inexhaustible power reserves. Even less noise with the extra power supply

### FEATURES

including 4 x cinch/XLR, phono optional; Pre out cinch/XLR, tape monitor, remote control, balance and EQ, headphone output, 2 pair of LS outputs, display, mute



### STEREO-TEST

SOUND QUALITY CD	98%
SOUND QUALITY PS	100%

### PRICE/PERFORMANCE



VERY GOOD

progressive audio



# ACTING ON IMPULSE

Progressive Audio boss Ralf Koenen focuses  
its development work on impulse accuracy.

What do you do if the first impression of speaker, at least on appearance, is something like "That's a lot of money for such a light and delicate box"? Dismissing it out of hand would be foolish: so then begins the process of exploration in depth, to find out how the manufacturer justifies the price, and what customers will get for their money. That's the process we carried out to discover the inner values of the Progressive Audio "Extreme III".

After our very positive experiences with the smaller Extreme I, we'd already realized that this wouldn't be "just another speaker" claiming floorspace in our listening room: even the material from which the speakers are constructed is something special, being more commonly used in turntables than speakers: the Extreme III cabinet is made from acrylic.

Koenen is able to cast the 10mm thick panels, which are as strong as 28mm MDF, and stick them with by skillfully placed braces and a special gluing plan so that the joints are almost as inseparable as welded metals. Due to the extremely high internal attenuation, the resonances otherwise unavoidable in this material disappear as if by magic, meaning that as a supplementary means the Essen company only needs some damping material on opposite walls to prevent reflections. Compared to aluminum, Koenen says he saves a lot of additional damping measures that rob take the sound of life.

### Division of labor has advantages

The coaxial midrange/tweeter, which combines a magnesium midrange cone and a fabric dome, is carried over from the smaller models, but since it only operates from 170Hz upwards here, it's doing a lot less work. Koenen says the smaller cone excursions required ensure an improved transient response and further reduce the already low distortion.

The woofers, which are connected in parallel, have an impedance of more than 20 ohms, which at this point avoids an adjustment by means of a crossover. Koenen's goal in the choice of the woofers was to bring a high degree of efficiency with a low bass despite the modest dimensions of the loudspeaker. The usual approach of a complex crossover is thus avoided, thus removing the chances of phase error and diminished dynamics.

### Nothing off the shelf

To achieve this, Koenen had to delve deeper in his bag of tricks: he needed a woofer with a long coil former, untroubled by large excursions, while at the same time having a very deep lower resonance frequency to allow it to work up to the maximum displacement allowed by the coil gap. To implement this he chose magnesium, a lightweight but very strong cone material, driven by a large and powerful magnet, specially "baked" for him at Krupp, and of the kind commonly found, in a much smaller format, in cardiac pacemakers. Their secret lies in high permanence – in other words, they retain their magnetic force unchanged over a very long period of time.

This approach is preferable to the kind of designed sometimes found in drivers from Seas, using several magnets glued together, would have had the counterproductive effect of causing sound losses through eddy currents.

### Bass tunable

The large dust-cap, stabilizing the diaphragm, is also not standard, allowing the driver to operate pistonically over a wide range the stabilization of membrane dust cap is also not as standard - the chassis operates over a wide range of piston-shaped. And while the mid/tweeter is in its own chamber, the enclosure for the bass units is reflex-ported, and tunable: if low frequencies tumble or roar, one merely pulls the reflex tube out a



▲ Elegant outriggers give the slim box the necessary stability. The spikes can be easily adjusted.



▲ The bass reflex tube is variable and can be adapted to any room to avoid bass droning – clever.



▲ The milling of the cone thickness is one of the many sound-enhancing details.

little. This means the bass level drops slightly sooner, but to a mild degree, which can even extend the usable bass response – clearly some serious work gone into this practical and cost-effective solution, which enables the bass to remain airy and agile even when the speaker is close to a wall. That’s not always the case with the more common ‘port bung’ solution.

### Construction

The pictures of the crossover reveal quite a complex, separate network dividing the signal between the bass and the mid-range chassis, but the connoisseurs among you may be wondering why, in addition to parts from Cologne-based manufacturer Mundorf, there are also iron core coils. Koenen says this is a low-saturation iron material with advantages over air coils, because the resulting distortions in the working range of the driver are irrelevant.

It’s all a matter of the right material in the right place, which is why the Furutech terminals are rhodium-plated, this providing more durable protection against oxidization of the underlying copper than would gold.

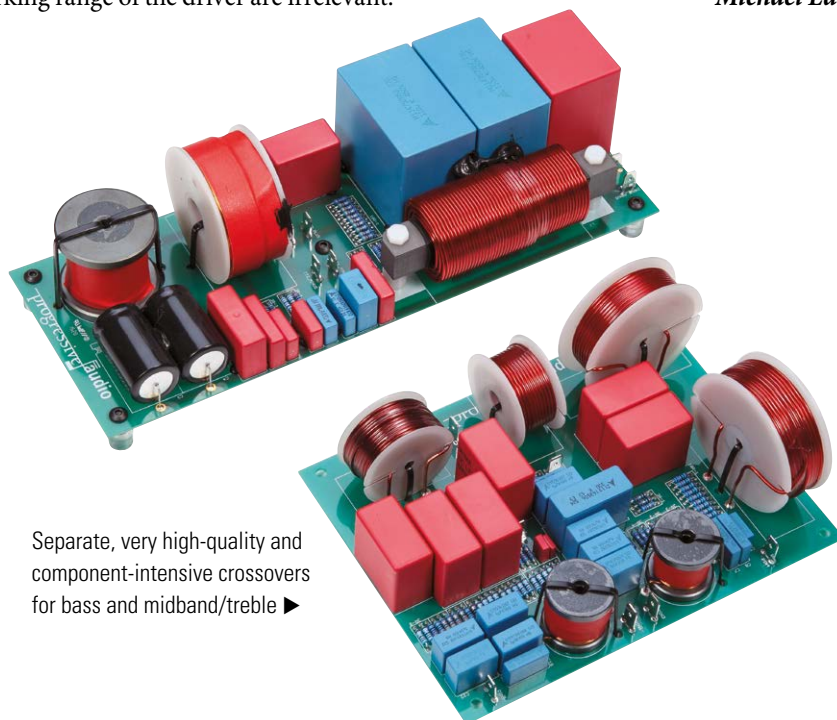
### Spatial, impulsive, and bassy

Used with T + A’s PA 3100 HV and MP 3000 HV, Koenen’s creation immediately demonstrated its qualities. For the powerful amplifier, Extreme III proved no challenge: its smooth impedance and over 90 decibels of efficiency would even be well-suited to small tube amps.

We started with "Solitary Man" by Johnny Cash, and the Extreme III was convincing with a genuinely effective solidity and fine resolution. The sound was colorful and the timing steadfast, as it was with the Concerto de Aranjuez. Cellos were not faceless a rumble, but had contour and weight, while the speakers made a wonderful job of reproducing piano strings with both fine definition and excellent dynamics – whether from Jarrett or Argerich!

That this speaker, weighing just 25 kilos, could also plumb the depths of the frequency range without thickening up was never in any doubt: Koenen has mastered his craft, and created here a loudspeaker successful in every respect, and defying those initial impressions. Use it with honest electronics, and you’ll be richly rewarded.

*Michael Lang*



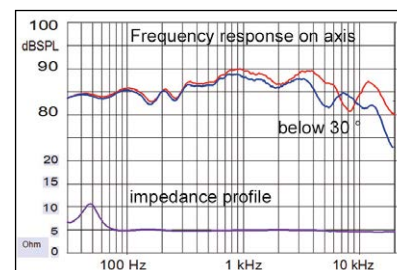
Separate, very high-quality and component-intensive crossovers for bass and midband/treble ▶

### PROGRESSIVE AUDIO EXTREME III

Pair from €7900 (in white or black),  
Dimensions: 17 x 100 x 38 cm (WxHxD)  
Warranty: 5 years  
Contact: Progressive Audio  
Phone: 02054/9385793  
www.progressiveaudio.de

The Extreme III delivers a picture of impressive solidity, with speed, and amazingly wide frequency response and fine resolution making it a real highlight. The treble is adjustable by + 1 db.

### MEASUREMENT RESULTS



Nominal Impedance	4 W
Minimum impedance	4.8 W at 15000 Hertz
Maximum Impedance	11 W at 48 Hertz
Sound pressure (2.83 V/1m)	90.4 db SPL
Power for 94 db (1m)	3.2 W
Lower cutoff frequency (-3 db)	31 Hertz
Distortion factor at 63/3k/10k Hz	0.3   0.1   0.1%

### LAB COMMENTS

The spatial frequency response isn’t exactly ruler-flat, but neither is it rough, nor an ear-wrenching mistake. The bass reaches deep down and without being overstressed. The impedance – which stays above four ohms – is makes the speaker as easygoing as does the surprisingly high efficiency and low distortion. The speakers should be toed in for listening, while the adjustable reflex tube makes the bass easy to adapt to most rooms.

### STEREO-TEST

SOUND QUALITY	92%
PRICE/PERFORMANCE	
★ ★ ★ ★ ☆	
<b>EXCELLENT</b>	



# BACK TO REALITY

Old recordings, whether in mono or stereo, can often sound bad.

In the STEREO listening room, Reinhard Thores's „phono-equalizer“

brought them back to life

**A**achen-based equipment manufacturer Reinhard Thores has a, let's say, relaxed relationship with audiophile purism. As an admirer of early jazz musicians and lovers of their historical recordings, which are generally mono, he's gone beyond being annoyed by bad sound quality, and is actively doing something about it. He's doing so with his phono-equalizer, with which the time

constants of the RIAA-equalizations for three frequency ranges – bass, midband and treble – can be changed in five stages, which could drastically alter the target curve when compared to the correct RIAA setting (see diagram).

Purist Hi-Fi teaching might not approve, but Thores's argument is sound: "Why should you be annoyed by dull or shrill sound, which has nothing to

do with a reproduction that's even half-way lifelike?" He prefers to bend the sound images to his taste, and to demonstrate how useful this is and that it is not about arbitrary "sounding", Thores built up his phono equalizer in the STEREO listening room. The device's industrial design is complicated, almost entirely free-wired, and costs around 9100 euros. Tubes provide the amplification of MM



or MC signals, and up to six cartridges can be connected at the same time.

We initially tried the phono-pre in linear mode alongside the proven Brinkmann Edison – and, to our astonishment, it almost equalled our top reference, perhaps even sounding a little more lively beside the more serious and serene Edison. Both were hugely impressive, what differences there were between them being a matter of taste – a strong performance for Thoress' phono preamp.

But the show had only started. While the Brinkmann always stubbornly re-equalizes the cartridge signals according to the "Recording Industry Association of America" standard, the Thoress device does so only when its three "tone" controls are set to "RIAA". If you move the "bass" control to the left, the frequency of the bass lift gradually slips downwards from the original 50Hz, allowing you to perceive more bass, so that thin-sounding discs can be spiced up. Similarly the bass-midtone control, which also corrects the range up to 500 Hz in the RIAA preset, thereby reducing the presence and thus supporting the fundamental range, can be "softened" to sound more natural, pleasant and homogeneous. With the "tweeter" frequency, it runs the other way around, increasing from the 2120 Hz until at "flat" no adjustment takes place at all,

and so is effective in counteracting the musty, dull reproduction.

Its all works amazingly well. We listen to Mozart's " Kleine Nachtmusik", and while the performance isn't without charm, most of what's happening is in the upper frequencies is not without stimulus, but covered in the upper layers. We leave the high-frequency at the RIAA position, set the middle direction to the root and move the bass down by three levels: now the sound is more balanced, graceful and far less annoying.

The exact opposite is a true of a reissue of "Don Elliot sings" from FreshSound Records, which sounds exactly the opposite of the label name's promise, as though a thick rug had been placed over the speakers. We set the high-frequency control to maximum, corresponds to a whopping + 20dB at 16kHz, and pull the presence back by one step. Amazing! The trumpeter, singer, vibraphonist and arrangement peel themselves out of their oppressive musty sound cocoon, breathe more freely and appear much more believably in front of the listeners.

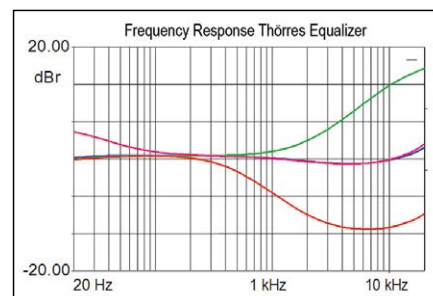
A music-historical event, in the form of a two disc set of the last recital of the legendary, early-deceased Romanian pianist Dinu Lipatti, recorded in 1950 at the "Festival International de Besançon", doesn't have much wrong with its sound

– but even here, there's room for improvement. A moderate lightening of the treble, a gentle boost of the lower mids and some sensitive bass amplification does the trick, and as with the other tracks we tried, it doesn't just sound "right": the music gets more fluid, becomes more catchy. Now wonder owners of the Thoress report significantly increased listening pleasure.

That pleases Thoress himself, who records the respective setting on the covers of his LPs. We try it for ourselves, adjusting some inadequate-sounding recordings to our own taste, and – lo and behold – the settings we have chosen coincide conspicuously, sometimes exactly with those of Thoress, whose motto is "What doesn't fit is made fit!"

Could you do the same thing with a conventional equalizer? Basically, yes, but the important difference is that the Thoress-Pre performs its corrections in the course of the equalization, instead of re-adjusting an already distorted signal. Thus, it achieves more sonic authenticity – for all his avoidance of purist, RIAA-centric thinking, Thoress is actually working his magic in the purest possible way!

**Matthias Böde**



▲ A significant change of the RIAA characteristic is possible in order to alter the tone, the graphs representing maximum values. Blue: RIAA, Green: Treble max., Red: Midtone max., Magenta: bass max.



◀ The Thöress phono-equalizer is completely handbuilt in Aachen, using tubes and point-to-point wiring, with power from a transformer wound in-house. Up to six cartridges can be connected in a „5 + 1“ configuration – ie five moving coils and a single moving magnet, or vice versa 5.

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