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# STEREO

**THE GERMAN HIFI MAGAZINE**

**ISSUE #8 2017**

**> APPLIED SCIENCE**

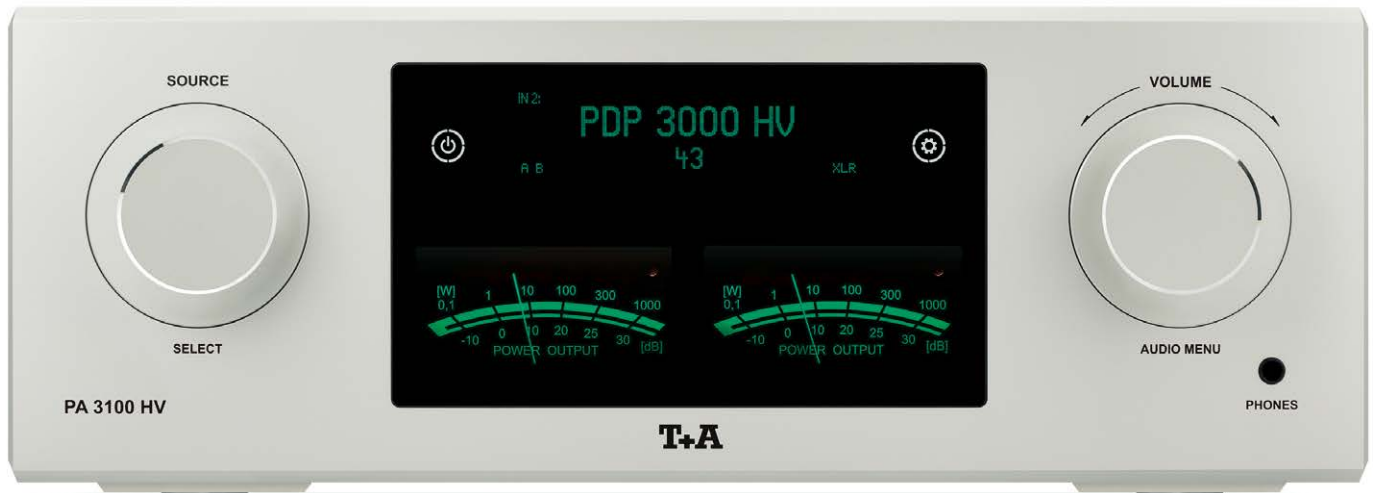
**Audionet  
raises the bar  
with Planck  
player and  
Watt amp**



**REVIEWS: ACCUPHASE E-370 AMPLIFIER, DYNAUDIO  
CONTOUR 60 SPEAKERS, PHONO STAGES COMPARED &  
VINYL LPS FLATTENED, NEWS – AND MORE!**

# PA 3100 HV

## The new integrated amplifier



The latest addition to our award-winning HV Series, the PA 3100 HV integrated amplifier features a major overhaul of the analogue mains unit and voltage supply system, bringing it in line with the A 3000 HV power amplifier. Significantly, users can now also connect the separate PS 3000 HV power supply to gain a further increase in stability and performance, whilst the preamplifier section has also seen major revisions and improvement. Although visually similar to the original PA 3000 HV, on power up, a pair of VU meters on the front panel offers a visual representation of the power under the hood.

The rear panel of the PA 3100 HV clearly shows the symmetrical build and wide range of connectivity options on offer. Both single-ended and/or balanced options are available, whilst two sets of loudspeaker outputs offer the ability to connect two pairs of speakers or bi-wirable connectivity. When combined with the HV-Link, a LAN socket and the PS 3000 HV supplementary mains connection, the PA 3100 HV offers everything required for a versatile analogue audio system.



# T+A

# FULL SPEED AHEAD INTO OUR SECOND YEAR



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It's always a big challenge to explore new territory, especially if doing so in a way no-one has ever tried before. Yet that's what we decided to do around a year ago when – after long and careful planning, months of internal discussions, many conversations with manufacturers and HiFi fans around the world, and a good dose of suspense and excitement – we launched our international online version of STEREO Magazine.

Not only were we 'going digital', but we were doing so in English, making us the first German magazine to dare to take the first step in competing with the top sites and titles from England, the USA, and even Asia.

A year on, we're delighted we embarked on this venture: our baby is growing and thriving, the number of friends showing their approval for this venture has steadily increased, and our following on Facebook is growing at an encouraging rate.

Clearly, you like our strategy of offering a free magazine on the world market, not just betting on a string of tests to win over readers but also bringing much of the DNA of the printed German STEREO to a global readership. Buoyed by this vote of approval, we plan to expand and extend our blend of tests, magazine reports, manufacturer portraits, workshops and more – and all in a form understandable for hi-fi beginners while also appealing to true enthusiasts, thus paving the way for this incredible hobby.

Come with us on our further journey, giving us your critical feedback, and we'll look forward to great times together. What's more, we'd love to expand our community of fellow travelers, so why not introduce STEREO magazine to friends who share your passion – and ours – for music and hi-fi?

We look forward to our future voyages, discovering new equipment and greater musical experiences – after all, who doesn't love music?

**Michael Lang**

[editor@stereo-magazine.com](mailto:editor@stereo-magazine.com)

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

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## WORKSHOP

Take control of your environment with digital solutions to tailor the system's sound to the room

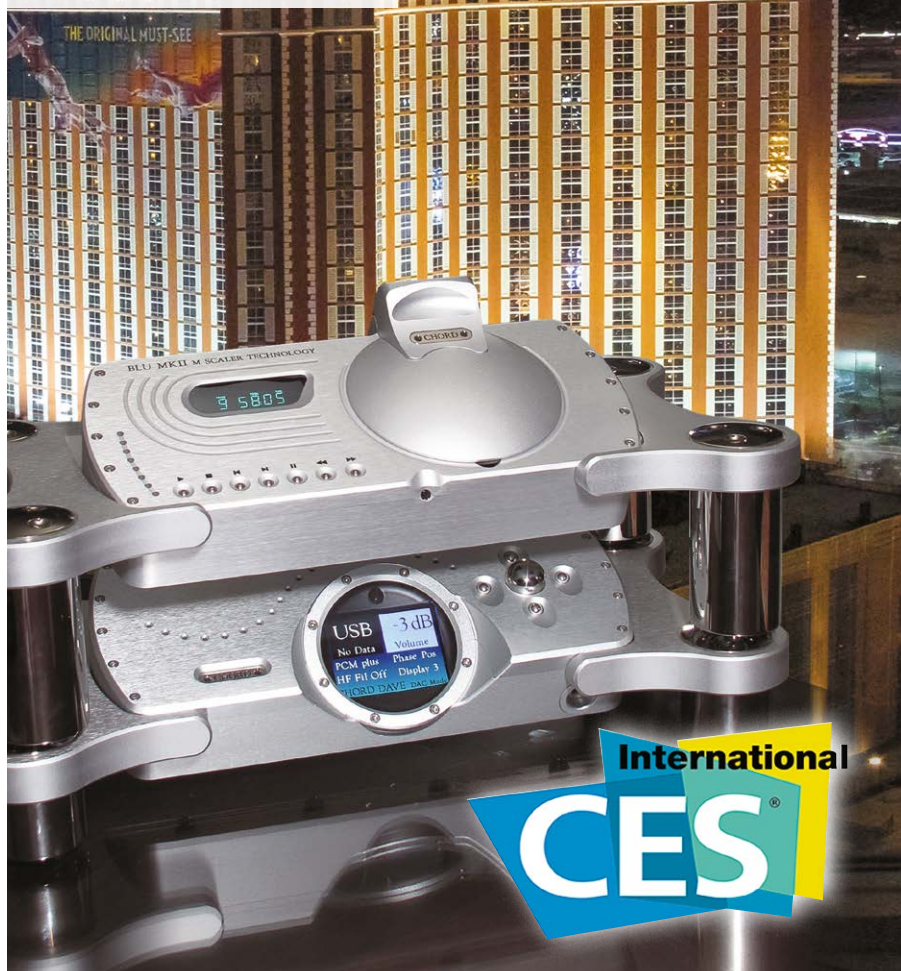


## THE FLATTERER

Now you can make those warped records play much more smoothly thanks to the hi-tech AFI flat

## CES 2017

Yes, there was less hi-fi than before, but our team still hunted down all the hidden audio gems



## PHONO PREAMPS

They can make or break your analog playback – we test phono stages at prices from €200 to €5000+



## AUDIONET PLANCK & WATT

The style of this player and amplifier is a great leap forward – and the engineering is even more special



## ACCUPHASE E-370

Japanese super-integrated is even better than the E-360 it replaces – and more affordable, too!



## REL T9/i

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## DYNAUDIO CONTOUR 60

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# PACE, ALGORITHMS & TIMING

Are the acoustics of your room ruining your listening enjoyment? Intelligent programs can improve your sound without the need for reconstruction. We put two of them to the test at Bremen's Studio 45.

**A**n important plus of a STEREO PREMIUM PARTNER is its competence, and the team Jörg Arlinghaus, owner of Bremen's Studio 45, has built is deeply immersed in digital room correction – which even in an environment optimized for HiFi can improve the sound significantly. For instance, Studio 45's large demonstration room is already top-notch: the company has tamed many acoustic pitfalls with hidden bass traps or ceiling absorbers, so that the frequency response at an average listening position presents a balanced curve with only slight spikes in the range between 80 and 200 Hz.

One would think this would leave little need or scope for optimization, but this latest the workshop applied two acoustics programs which record the room via microphone measurements and then calibrate to compensate for any weaknesses of the space: Lyngdorf's "Room Perfect" and Audionet's latest v4 iteration of its "CARMA (Computer Aided Room Analyser)" software.



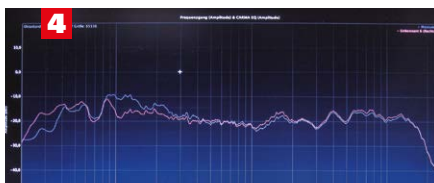
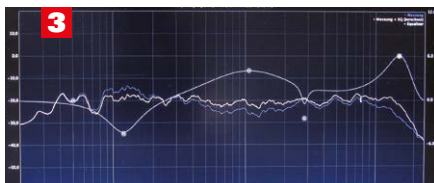
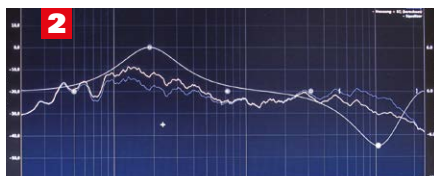
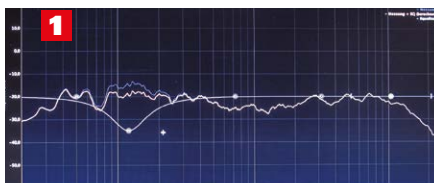
„Until now I had mainly known mechanical means for improving acoustics, such as damping or reflectors, and digital technology purely as an analysis system. I was surprised and impressed that

you can also effectively correct room errors with 'Room Perfect' and 'CARMA' systems"

➤ Workshop participant Marcus Kosche

◀ In the comfy, large Studio 45 listening room, the workshop demonstrated the performance of programs for acoustic room correction. The impact of Audionet's "CARMA" software was shown on a MacBook.





Frequency responses and correction curves with CARMA: the most natural reproduction came from pure bass management **1**. Raising the bass and lowering the treble made the sound muffled **2**. Linearization by filling the light dip in the mid-range plus raising highs also did not lead to good results **3**. This is how Room Perfect corrected for the room (pink curve) **4**.

The selection was not arbitrary, since Room Perfect (in this case built into Lyngdorf's TDAI-2170 integrated amplifier, which starts at €2800) is very easy to use, basically fully automated, while CARMA is managed externally via a PC or Mac and can be used in Audionet's streamer/DAC preamp DNP (ca. € 9990).

In our tests, the Lyngdorf amp was used with DALI Rubicon 6 speakers, at around €3700/pr, while the AudioNet preamp was used with DALI's Epicon 6 (ca. €9200/pr), driven by NuPrime audio monobloc power amps. C.E.C.'s CD5 CD player was used as the source for both systems.

We started with the Lyngdorf/Rubicon 6 system, and Christoph Bouet's furious "Suzanne" from the STEREO Phono Festival album. In its natural state, the powerful recording created a lot of sound pressure, which was well received. However, once we activated Room Perfect, the visitors noticed how muffled and thick the playback had previously been: with the equalization in operation the

lower registers tightened, and details and nuances, previously drowned out in a dense, dark cloud, became audible.

This also helped the midband and treble become more clear, free and spacious, and the sound detached itself from the speakers and stood more confidently in the room. Using the remote control to make A/B comparisons – Room Perfect on or off – it was astonishing that the linearization of mainly the bass also created more openness and grace in the higher ranges, although the system had made almost no corrections at all in these frequencies (see measurement).

It was great to hear in "Var nära mig", a seductive, finely-woven piece by the Goteborg Chamber Orchestra which has almost no bass, that the deep resonance of the church nave in which the recording was made played a part in smearing some detail. With Room Perfect correction, the projection became wider and deeper, and the multi-voice choir became airier and moved clearly away from the front of the soundstage.

We stayed with this piece and moved on to the AudioNet/NuPrime Audio/Epicon 6 we moved to the larger setup. While Room Perfect does not offer any means for subsequent adjustments, CARMA opens unknown possibilities to its users. We would soon see how useful they were in practice.

First we listened with a curve which was very similar to the Lyngdorf software – and achieved similar improvements, even



"I'd already experimented with room calibration via signal adjustment in the 80s, but in those days it was very complex and difficult. It is fascinating how much flexibility and certainty modern programs can offer listeners due to their sheer computational power."

> Workshop participant Frank Becker



"My insight from the workshop? Linearity at the listening space cannot be the goal of the correction. In this case the voices appeared overly present and sharp, even anemic. There was no warmth or sonority. It sounded more natural with slightly lower highs and less mid-range attenuation."

> Workshop participant Jan Schlotmann



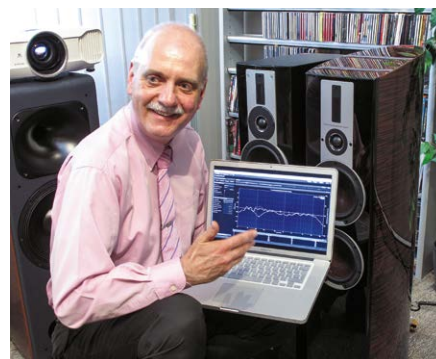
"The sound of my multichannel system clearly profited from the room calibration in the NAD-A/V receiver, so I wasn't surprised this also works for stereo. But I was impressed with how meticulously and precisely you can address acoustic problems with the 'CARMA' software."

> Workshop participant Oliver Entelmann



"A vivid and comprehensible presentation. I was particularly excited by the presentation of the different correction approaches. However, this is probably too complex for a layman and you would easily get lost in the multitude of possibilities, so it's good to have a dealer who knows how to use this stuff."

> Workshop participant Ernest Biermann



▲ Curve discussion with Matthias Böde: just because you can do something doesn't mean you should.

if at the higher level of the superior electronics and speakers. Again, the correction ensured improved clarity and transparency in the bass as above it. And again, the comparison was easy, as we were able to switch between corrected and uncorrected versions at the touch of a button.

This made us want to play around: would a bass emphasis deliver an even more impressive performance? The Bremen folks called up a corresponding preset, and – no thanks, much too thick! This emphasis is something only for Disco freaks, and nothing to do with natural sound. Clearly, just because you can do something does not mean you should.

This was sort of expected, but what followed wasn't: based on the dictum of the greatest possible neutrality we adjusted



For the workshop, two demo systems were set up for Room Perfect and CARMA in the already optimized Studio 45 listening room. ►



„I have been fascinated by the topic of digital room correction for quite a while. I have delved into theory and practice around the subject. As owner of the Lyngdorf preamp DPA1 which comes with ‚Room Perfect‘ I am a big believer in this process, which sadly is still not quite recognized.“

► Workshop participant Klaus Dörner

for maximum frequency linearity in the listening space which, according to standard theory, would provide the best sound. However, when Sara Maria Anderson sang her „Jerry, Who Runs The Wine Shop“ there were a lot of skeptical faces.

The sound simply had too much presence, the singer’s clear but never obtrusive voice sounding almost icy, and sibilants standing out sharply.

What was happening? Well, speakers are supposed to have a linear sound at short distances, but the room’s attenuation reduces high frequencies at the listening position, as also happens with natural sound. Adjusting for this natural attenuation makes no sense: the subjectively „correct“ curve had reduced high frequencies as well as a little dip in the midrange, which Room Perfect predicted perfectly. This supports the sonority and expression without making the result too round or even full, showing that with competent advice and some experience you can quickly figure out how to use the algorithms for acoustics.

Matthias Böde



Room Perfect is integrated into Lyngdorf’s amplifier (right), with a measurement microphone included in the kit, while the AudioNet DNP digital network preamp corrects using CARMA. Since the signal processing is handled in the digital domain, we fed both systems with a digital source. ▼►



You can find pure HiFi spirit in Bremen’s Studio 45, directly by the flyover not far from Central Station, where you can see or hear something in every corner of the smart, well-organized business. The team, headed by owner Jörg Arlinghaus (middle), covers all areas of High Fidelity – from analog to PC audio, streaming, and modern media – with presentations on these topics set up in several acoustically optimized demo spaces. Tube fans or people interested in multi-room solutions can find something, and even home theater is represented by this freshly installed „Dolby Atmos“ system. Thorsten Kahle (right) is a speaker specialist who is familiar with all technical details, while Lars Gosler is the audiophile generalist – no wonder they enjoy a resounding reputation.

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# TREASURES FROM THE DESERT

The MegaTrade Fair in the gambling city of Las Vegas was a prize for us HiFi fans too. STEREO sniffed out the jewels among the innovations, as well as the latest trends, at the Consumer Electronics Show.



What a view! Which glittered more, the „Treasure Island“ hotel or the **CHORD** BLU Mk 2 drive and DAVE DAC in its sharply-styled mini rack? For HiFi fans it's no contest: the new CD drive (approx. € 10.500) can upscale data-streams to 705.6kHz and process them with a newly-developed filter.



Sad but true: HiFi no longer calls the tune at CES. At the annual event, held at the beginning of January, the crowds of visitors in the giant Las Vegas Convention Center were more interested in drones, car entertainment and smart fridges. Things were more relaxed – or perhaps that should simply be ‘quiet’? – in the corridors of the elegant „Venetian“ hotel on the famous „strip“, where the High End theme has hidden away – maybe rather too well – for some years now. However, we didn’t have to search long to find the jewels among the novelties on offer. **Matthias Böde**



Under the „Grand Class“ label, **TECHNICS** presented their new digital amplifier SU-G700 (above), which claims to deliver 140 watts per channel (4  $\Omega$ ). Like previous ‘new Technics amplifiers’, the new model has the company’s jitter correction technology and automatic adaptation impedance characteristics of the speakers with which it’s used. Meanwhile the SB-G90 loudspeaker (r.l.) is again equipped with a coaxial mid/treble driver for better dispersion and imagings. All prices are still unknown.



An important novelty at the **MUSICAL FIDELITY** stand was an m5si amplifier housed in the slimline casing of the smaller m3si: although more elaborately finished, it’s built around the design of the larger M6si model with its dual-mono structure including two transformers. The claimed power is 2x170 watts (8  $\Omega$ ) and it comes at a price of almost €2000.



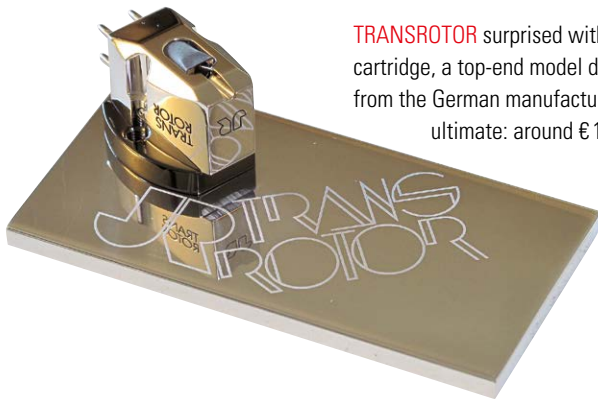
The managing director of **ELAC**, Gunter Kürten (left), and developer Rolf Janke showed their loudspeaker masterpiece: the Concentro (approx. €60.000/pair). The demonstration of Constellation electronics was one of the most impressive of the whole event, while the prototype of the new compact Andante AS-61GW speaker (below) was also on show.





The slim **RAIDHO** D4.1 is a three-way design with no fewer than seven drive units, and making use of acoustic tuning to reduce the number of electronics components required. Both the 10cm midrange drivers and the four 11.5cm woofers are diamond-coated, and the speaker has a sealed ribbon tweeter. Price per pair: around €100.000.

Great news for **KEF** LS50 fans: the compact speaker, with its „Uni-Q“ coaxial driver, is now available in an active „wireless“ version (around €2300/pr). DSP control is designed to provide even better sound, and there are extensive inputs for optimal connectivity. The LS50 Wireless is available in a range of colorways.



**TRANSROTOR** surprised with their JR Tamino moving coil cartridge, a top-end model designed to fit the mega-turntables from the German manufacturer. The price is also quite ultimate: around €12.500.



Turntables are cult objects, and the Beatles remain popular, too: this **PRO-JECT** Debut Carbon brings them both together in „The Beatles 1964 Edition“, and the company also has a limited edition of its Essential III model celebrating George Harrison



In the suite where **NAGRA**'s reference electronics were running through **WILSON AUDIO**'s new Alexx speakers, we listened together with the singer **LYN STANLEY** to her album „Interludes“, which caused quite a stir among international audiophiles. It was played on a **KRONOS** turntable using the company's vibration-busting counter-rotating platters, and Stanley was enthusiastic about the extraordinary performance of this incredible system: „I've never heard myself sounding so good!“ she said, before announcing that she'll be releasing two more LPs this year.





A prototype of the new ATE-X phono preamp was on the shelf at **AIR TIGHT**, offers individual adjustment of the equalization for the lower and upper frequency ranges. The price is still unknown.

**HIFIMAN** has set a price of €69.000 on its ultimate headphone system, the „Shangri-La“. It consists of a tube amplifier with specially made 300Bs, as well as electrostatic headphones of the highest quality. Initial listening impressions were overwhelming!



The Japanese specialist **DS AUDIO** will soon be offering a cheaper optical phono cartridge, the DS002 (right) using a Shibata diamond stylus in an aluminum cantilever. It uses a beam of light to detect the movement of the stylus, along with a specially designed phono stage/equalizer, and the total price is in the range of approx. €5.000.



In the demonstration system from the „Noble Line“ of Berlin manufacturer **MBL**, only the CD player/DAC N31 (left above, approx. €12.000) was a product seen before. Both the N11 preamplifier and the N15 mono amplifier (around €11.400/ 13.800) - here shown as a four-pack for biamping purposes - are brand new and had their debut at CES 2017.



Manuel Pinke, known by HiFi fans from trade fairs and demonstrations, has been taking care of the European distribution of **MARTIN LOGAN** for a while now. He was particularly impressed by the company's new Impression ESL 11A hybrid electrostatic speakers (from €14.000/unit).





**MUSIC HALL** builds more than turntables: its A30.3 integrated amplifier (around €1150) is completely new, and has not only four line-level inputs plus MM phono, but also three digital inputs and even Bluetooth built-in.



**CHORD ELECTRONICS** has announced the Poly, a clip-on device to convert its ultra-compact Mojo DAC/ headphone amp into a mobile player and streamer with Bluetooth, AirPlay, Wi-Fi, Roon support and high-res playback at up to PCM 768 kHz / DSD512 from an SD card. Price: around €650.



Alena Krisanda from **B & O** is proud of the company's new Beoplay M5. The neat little multiroom speaker system offers 360-degree sound dispersion, an internal woofer with 40 watt power, Wi-Fi and Bluetooth. The price is about €600.



Costa Koullisakis, co-owner of the **MOON** brand, brought the 888 „Ultimate Power Mono Amplifier“ to Las Vegas as its only novelty. But this in itself was enough, the amplifier using separate 2000 watt transformers for each half waves, and delivering power is listed as 888 „happy“ watts into eight ohm, which are apparently doubled at four, two and even one ohm. Each amp weighs about 120 kg!

**BURMESTER** marketing director Dina Hoenge celebrated the world premiere of the company's B18 speaker at CES. This 2.5-way bass reflex design is built on the chassis of the compact B10, and uses a specially-designed ring radiator to cover the high frequency range. The price should be around €8000/pair.







NAD presented the M32 digital amplifier and matching M50.2 media player (from €4500/4800). The amp delivers up to 160 watts per channel, and the player can stream and rip CDs to its 2TB hard drives.



Another CES star was „Sonja XV”: named after YG founder Yoav Geva’s wife, this is a four-piece mega speaker system, using a total of 20 drivers in a pair. It weighs 850kg, costs €360,000 - and delivers a sound full of grandeur, grace and beauty.



Richard Fryer (left) and Grandmaster „Professor” Keith Johnson celebrated SPECTRAL’s 40th anniversary at CES 2017 with the DMA-500 Anniversary mono power amplifier, which is rumored to contain Johnson’s entire know-how. Its price is still unknown.





**GOLDRING** has a new moving magnet cartridge in the pipeline, with three versions differing in the diamond cut and the material of the cantilever, the top model using boron.

**AUDIONET** has brought out its super preamplifier, named for physics Nobel prizewinner Otto Stern.

Demonstrated at CES 2017 by Audionet founder Thomas Gessler, the STERN is a dual mono design created by the legendary Hartmut Esslinger. Also available in an upright format, it costs €30.000.



# Power or Emotion?

With the **OCTAVE V110SE** integrated amplifier, you can have both!

The **OCTAVE V110SE** integrated amplifier delivers both, allowing listeners to enjoy the beauty of music with natural and complete tonal accuracy. This most refined tube amp features an innovative adjustable damping factor, allowing an optimal match to the partnered loudspeakers, regardless of type. Complementing the high-end sonic perfection is the vast amount of power on hand, with 110 watts per channel of pure tube power providing authoritative control of even the most demanding loudspeakers.



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Precision optimized for multiple tube variants





Sometimes small things delight HiFi fans, so perhaps the **AUDIOQUEST** Perch headphone stand will fill that bill: it's designed to hold a headset without any tension, thus preventing the headband mechanism from being stretched. Price: around €80.



There was a firework display of novelties from **MARK LEVINSON** stand, including the No519 media player and No523 preamplifier, at €23.000/17.800. The former has an integrated CD drive and can handle anything from streaming and Bluetooth to all PCM and DSD formats. The fully balanced Pre has a headphone and subwoofer output. Also shown was the company's No515 record player: manufactured by the US specialist VPI, it uses low-resonance sandwich frames and a high-quality tonearm. Its price is yet to be set.



The new **BRINKMANN** Nyquist streamer/DAC has a tube output stage, is equipped with USB input and can decode with the new MQA high bit format. Price: around €15.000.



**ACCUPHASE** will soon be launching its new entry-level amplifier, the E-270, for €4980 (above). In addition, there's a new SACD player on the way: the price of the SA-560 (below) is yet to be confirmed.

**DYNAUDIO** introduced its new Contour series in Las Vegas, demonstrating the large Contour 60 floorstanders with tube amps by **OCTAVE**. These perfectly matched the Danish loudspeakers with their straightforward, energetic playing style – this combination has been tested at CES for years.



# ELAC

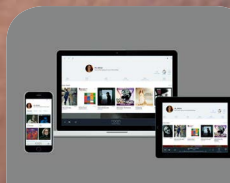
The life of sound.



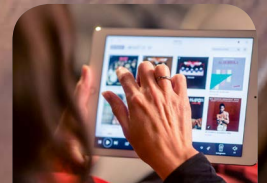
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The Discovery Music Server is easy to use by the Roon Essentials App on your tablet, smartphone or PC/MAC.



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The Discovery Music Server is designed to be the heart of a serious music system, offering playback of local and streaming music, rich multi-dimensional metadata and multi-room audio, all with an interface that anyone can master in a few minutes.

**One component, infinite sound. Discovery Music Server DS-S101-G - Multiroom with passion.**



# BACK TO FLAT

Ulrich Kathe loathed his warped records. He wanted corrective action. Within three years the engineer developed a record flattener for warped vinyl records. We tested the AFI flat.



**R**ecords should be flat – that much is simple. They're not, however: after pressing, the records usually fall on top of each other on the spindle and have to cool for a certain amount of time. However, if they are accidentally removed from the pile too soon they can warp and become distorted, annoying the listener and notes and timbres become shaky, choirs whimper and pianos howl.

In general this means a new record needs to be purchased, because the defect is irreversible – even if some vinyl junkies

aren't willing to accept this, and suggest everything from baking the dished records in the oven at 60C between two plates of glass to professional solutions. We've been unconvinced by this: surely once a record is warped the material is stretched, and can't be restored, just as a dented panel in a car is equally hard to restore completely for the same reasons.

We were therefore sceptical when Stuttgart hifi dealer Oliver Wittmann, who also sells Okki Nokki's low-cost record cleaning machines, praised his newest

purchase: the „flat.“ made by the one-man company, Audio Fidelity Improvement (AFI) in Ludwigsburg. This man is Ulrich Kathe, doctor of chemistry, and thus presumably familiar with how materials behave.

## Precisely calculated heating

Kathe had been looking for a way to flatten his dished records and asked Wittmann about relevant devices. When Wittmann responded that he had nothing to offer, the native Swabian decided to build

it himself. For the next 18 months Kathe, whose main expertise is in sensor technology for drinking and wastewater testing systems, worked on his ambitious project. It raised many questions, not least of which was how high a vinyl record can and must be heated for it to be flattened without risking damage? The engineer determined that heating to 59C – yes, not 60C! – would be on the safe side in every respect.

But there's more to it than that: the record must not be heated too quickly, as any humidity trapped in the vinyl would leak to the outside and damage the record, according to Kathe, who substantiated his findings and theses with graphs he presented to us on his laptop.

Experiments showed how important it was to heat and cool the entire surface of the record equally to prevent tensions in the material, and that this method can improve the sound as well by 'relaxing' the material, making the flat. not just a record flattener but also a sound optimizer.

40cm wide, 50 cm deep, and just 6cm tall when closed, the flat. device is controlled by a microprocessor offering three programs: „Standard“ for dished records; „Relax“ for improving the sound of flat records to free them from material tension by heating; and „Expert“. Each of these programs can be manually controlled to adjust the individual phases with regard to temperature and duration.

The many-faceted record flattener is easy to use and control, using the stylus supplied to operate the four 'buttons' on the panel, beside which a small display provides information about the status, including the amount of time left in the process. The record, which according to Kathe ought to be washed before the treatment, is placed between two layers of special felt material in the AFI device. A few prods with the stylus and the heating process begins.

Now you have to be patient, as the standard program takes five and a half hours - and the Relax mode is not much faster.

**AUDIO FIDELITY IMPROVEMENT AFI FLAT.**  
around 2850 Euro

**Contact:** HiFi-Studio Wittmann  
Tel.: +49.711.696774  
www.wittmann-hifi.de



▲ Close the lid - flatten the record The beautifully crafted AFI flat. is not just practical, it looks great too.



▲ The flat. is operated by means of hall sensors and a magnetic stylus, while another magnet fixes the stylus to the device, so it is always ready for use.

However, the effect is impressive. The flat. evened out warped and dished records, making them absolutely flat. My colleagues and I brought a number of very warped 'victims', and after the treatment, they showed hardly any signs of their previous state.

A vinyl remastering of Mahler's Second Symphony, recorded by Decca in the Sofiensaal in Vienna in 1975, while not really bad, was visibly warped – after a turn in the flat., the previous fluctuations in the tonality of the choir in the final movement, caused by the ups and downs of the pick-up, were gone. It was as though the sound quality had been smoothed out.

### **Saved a favorite record**

One of my favorite records is Steve Kuhn's „Motility“, a unique secondhand bargain signed by the musicians. Unfortunately, a dent on the outer rim produces a narrow, high and quietly crackling distortion and makes the first minute practically impossible to hear. The AFI could not do much to rectify the disturbance, however, it pushed away the peak displacement, significantly reducing the ups and downs of the cartridge. The next time I looked, I saw that a cutting flaw was responsible - in the form of a flat groove that ran through the outer rim. However, the AFI reduced the negative effects to such a



|                      |                        |
|----------------------|------------------------|
| Programm<br>Standard | Aufheizen 1<br>30.6 °C |
| Programm<br>Relax    | Aufheizen 2<br>41.1 °C |
| Programm<br>Expert   | Heizung aus<br>41.1 °C |

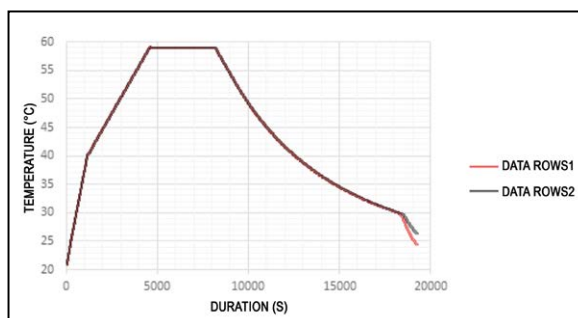
◀ Whereas the „standard“ and „relax“ programs operate according to a predefined time and temperature curve, „experts“ can select the duration of the heating program in short steps, between 15 minutes and six hours, and target temperatures between 40 and 60 degrees. Irrespective of the mode the flat's display continuously provides information about the status as well as the current temperature of the record. The user is always informed about the „progress“.

degree that I was at last able to enjoy playing the beginning of „The Rainforest“ - side 1, track 1.

In the course of the weeks that the AFI record flattener enhanced our daily editorial work, there was seldom a day it was not put to use. Word had gotten round that the appeal of the well-designed device lies not only in flattening, but in the way it could also make beloved vinyl treasures sound better. How? Well, the Relax program is said to dissolve tension by converting the polycarbonate molecules, which are present in jumbled knots after cutting, into a more ordered, a crystalline state.

To test the effect of this program we washed two copies of the STEREO listening test LPII with the same machine, checked them for identical sound and

The record is heated in two steps to a temperature of 59° C. It stays at this level for a specific amount of time until the controlled cooling begins. Total duration of a treatment: over five hours. ►

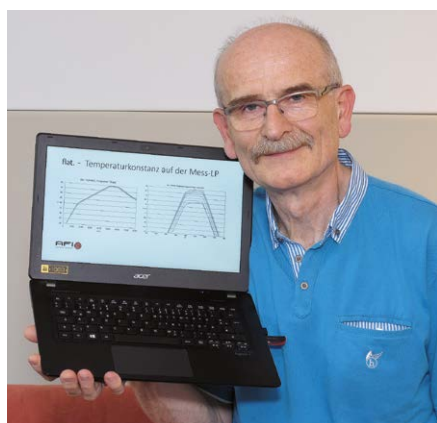


them „tempered“ one copy in the AFI. It worked: Antonio Forcione's guitar acquired more body and richer colors in „Visions“ while Sabina Sciubba's voice regained its velvety timbre, slightly glazed on the untreated record, and the soulful track radiated more emotion. In the Blues Company bass-strong „If I Could“, lead singer Toscho's voice acquired a sonorous touch in the flat. „relaxed“ record, and the

backing vocals clearly contrasted with the musicians.

Okay, so these weren't huge differences – but for listeners who know their records and only expect and want the best for them, they were both definitely evident and very worthwhile. Praise, then, for Dr. Ulrich Kathe for going to such great lengths to smooth the way for flatter records.  
**Matthias Böde**

## „I PROCEEDED SCIENTIFICALLY.“



Ulrich Kathe developed the technology behind the record flattener with know-how, research, experimenting - and with the help of his friends.

**STEREO: We are amazed that someone who is not a HiFi expert was able to build the „flat.“**

Kathe: In my work in the field of water analysis, developments are the order of the day. Of course I had to familiarize myself with the subject, but my knowledge of material sciences helped me clarify whether theory could be put into practice. I purchased warped records at garage sales, dished others myself, and even fitted one with 17 thermal sensors to find out how best to heat a record evenly and cool it off again. I really took a scientific approach to the subject.

**Why are so many of our records warped?**

It can be the result of bad storage conditions, but many records are often distorted when new, presumably when they're not given enough time to cool during the production process. Warm records can distort. The entire manufacturing process seems flawed because the records are not cooled over their entire surface, but from the inside out.

This creates tension in the material, which the flat. „Relax“ program audibly counters.

**Much more than just understanding is needed for a product such as yours. How did the AFI flat. become reality?**

At the concept stage, I was able to acquire the interest of some hifi-savvy friends with technical backgrounds, and got a lot of valuable help this way. The attractive housing was created by a friend who is a designer, and I needed a highly professional industrial partner to manufacture the flat., to ensure the faultless function – and the flawless finish.

**When you look at the result, was it worthwhile?**

Absolutely! When I see how precisely my turntable is built and what effort has gone into adjusting it, I'm glad I no longer need have its performance ruined by dished records.

# 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**®



# RECORD MAKERS

The tasks of phono amplifiers are varied and challenging.

They must equalize tiny signals, amplify them and at the same time protect them against hum, noise and other influences. HiFi analog explains what matters, presents devices from all price ranges and tests two newcomers.

The quality of a phono preamplifier can make or break your vinyl playback – and some amplifiers still have a built-in phono stage for the direct connection of record players, in a few cases switchable to suit MM or MC pick-ups. But if your amp doesn't have one, or you simply want even better sound from your

records, you'll need an external „equalizer/pre-amplifier“, aka a phono preamp or phono stage. These devices plug between the output from your record player and a standard line-level input on your integrated amp or preamplifier and, as well as amplifying the very low-level signals from a phono cartridge, they ensure it 'sees'

the right load to deliver its correct performance, and also apply re-equalization to counter that imposed on the audio signal prior to it being put on the record.

Phono amplifiers are available in every price and quality range. However, which one is right for you? And what do you need to know? Maybe we can help...

## MUSICAL FIDELITY V90-LPS

for about €200, [www.musicalfidelity.com](http://www.musicalfidelity.com)

This flat box, available in black or silver, offers separate inputs for MM and MC cartridges as well as a changeover switch at the rear, but further adjustments aren't provided. However, that does not matter because the V90-LPS matches most of the inexpensive pick-ups and delivers an amazingly mature and structured sound at an excellent price. It's the phono stage for an ambitious start!

| STEREO-TEST       |       |
|-------------------|-------|
| SOUND QUALITY     | 82%   |
| PRICE/PERFORMANCE | ★★★★★ |
| OUTSTANDING       |       |



## AESTHETIX RHEA

about €5500, [www.aesthetix.net](http://www.aesthetix.net)

One of the best-sounding and most practical phono stages comes from the United States. Aesthetix' tube based Rhea has inputs for as many as three cartridges, adjustable for amplification, impedance and capacitance – even 'on the fly' with the remote control. A real novelty is the integrated demagnetizer, which can freshen the sound of an MC cartridge by removing built-up magnetism in its coils. However, the real kicker is the exquisite sound.

| STEREO-TEST       |       |
|-------------------|-------|
| SOUND QUALITY     | 86%   |
| PRICE/PERFORMANCE | ★★★★★ |
| EXCELLENT         |       |



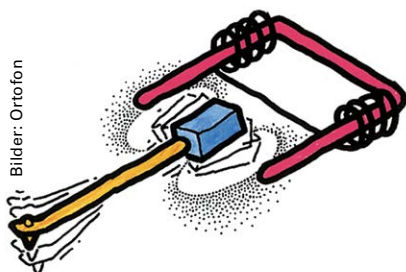
## OPEN FOR MOVING COIL AND MOVING MAGNET PICK-UP CARTRIDGE

There are the two basic principles of pick-up heads. Moving Magnet (MM) designs are usually less expensive, and turn the physical

movement of the stylus in the record groove into an electrical signal using a generator comprising magnets fixed to the stylus cantilever moving

between minute coils of wire. As the name suggest, Moving Coil (MC) cartridges operate in the exact opposite way, with coils moving relative to fixed magnets. MM cartridges are mainly found in the newcomer field; they are the exception among high-priced items. Good MCs start at €250 and the sky is the limit.

Each type needs different amplifying factors and connected load, with MC cartridges generally producing lower output voltages than MM models, so it's important to ensure the phono amplifier you choose is suited to the cartridge you have, or offers adjustments to suit a variety of outputs and loading requirements.



Moving Magnet principle



Moving Coil principle

## ACOUSTIC SOLID PHONO AMP

from € 790, [www.acoustic-solid.com](http://www.acoustic-solid.com)

Acoustic Solid - better known for sophisticated record players - offers a traditional „Phono Amp“. It has a few input and output sockets, a ground terminal as well as connection for an external power adapter. Everything else operates via several DIP-switch blocks. This allows the selection of MC impedances ranging from 50 to 680 ohm or MM capacitance between 100 and 600 picofarad as well as amplifications between 32 and 64. The impressive sound tops it all off.



## CYRUS PHONO SIGNATURE

about € 1800, [www.cyrusaudio.com](http://www.cyrusaudio.com)

The Cyrus has four different inputs to allow several different cartridges to be used. Whether MM or MC, each input stores the individual settings, which can be made on the device or with the remote control. This slim phono preamp is a joy to listen to - the sound is exquisite, transparent and uniform.



## BRINKMANN EDISON

about € 9000, [www.brinkmann-audio.de](http://www.brinkmann-audio.de)

Our absolute reference among phono preamps has a superb sound, and can simultaneously connect as many as three cartridges, settings for which are easily adjusted. A balanced connection is available, and switchable input transformers help reduce ripple pickup. The bottom line is that this is an outstanding device!



## AMPLIFICATION BEFORE THE AMPLIFIER

Since cartridges deliver much less output voltage than a CD player (for instance), the signal from them they need to be increased before being handled by an amplifier's line input: the relationship is between 1:400 (MM) and 1:4000 (MC). The traditional MM amplification is 38dB, which is not much for some modern MMs with a relatively low voltage – generally values between 40 and 46dB are better matches. This is particularly true for the popular HighOutput-MCs that are generally „quieter“ than an average MM, so it's useful to have a phono amp providing amplifying factors up to 50dB. Since the output voltage of MC cartridges are subject to greater fluctuation, increases between 58 and 70 dB are often intended for particularly „quiet“ units that reach 0,25 millivolt at 1 kilohertz and a speed of 5cm/sec. Standard values are between 0,4 and 0,7 mV. If the amplification is too low, noise will increase and the sound will sometimes appear limp and wan. On the other hand, if the amplification is too high, it will create distortions and an intrusive, cramped sound. What matters are balanced proportions.

## LEHMANN BL. CUBE ST.

about € 350, [www.lehmannaudio.de](http://www.lehmannaudio.de)

The simple Black Cube Statement by Norbert Lehmann is an evergreen. Hardly any improvements can be made to the small box with the input and outputs facing one another. Three impedances and four amplifier options can be selected via DIP switches, and the Black Cube Statement continues to live up to its reputation as one of the good, reasonably-priced phono stages.





# THE SAME, BUT...

...very different: two brand new phono preamps, from ifi and

Musical Fidelity, may be in the same price range but the clienteles

they address differ greatly.

**H**ow would you like your phono stage? As a simple plug and play device or as a playing field? New offers are available for both groups in the competitive €500 league. This is exactly how much you have to spend for the LX•LPS created by Musical Fidelity in England. Apart from RCA inputs for MM or MC cartridges, with a selector switch on the front panel, and of course output sockets, it has just it has one pair of sockets for two enclosed plug-in adapters, which reduce the MC input impedance to 100 ohm, or bias MM cartridges with an additional 47 picofarad capacitance.

The iPhono2, made by British supplier ifi in its own manufacturing facilities in China, is quite different. The front side of the slim device also offers separate RCA inputs for MM/MC and opposite, outputs for the amplifier, but what makes it so special are numerous setting options realized via the DIP-switch blocks underneath: these so-called „mouse pianos“ are what make the tiny device a true all-rounder.

Whereas the LX•LPS only corrects for the 'standard' RIAA equalization curve, the ifi has added to the specification of its forerunner matching curves for

old records that were cut according to characteristic Columbia or Decca lines (see box page 11). This admittedly seldom-needed feature is infrequent even in top devices, but the fact the ifi has it makes this a recommendation for collectors of older vinyl treasures.

Instead of the two MC impedance settings offered by Musical Fidelity, the ifi presents its user with numerous MC impedances, of which 100Ω, 330Ω as well as 1 kohm are great to use, while the additional 33Ω is only suitable for MCs with an extremely low internal resistance. Further values can be achieved by means of interconnections of the DIP switch, with a folded card providing illustrations of sample cases for quick orientation.

The amplifying factors of the LX•LPS are clear: MM signals are boosted by 42 decibels, MCs by 60dB - which works in most cases. By contrast, ifi's 36dB basic MM amplification is somewhat feeble because the level with averagely „loud“ MMs remains meager, and this is particularly evident when one of the usually „quiet“ high output MCs is connected. Standard MCs also run on it at 60 dB.

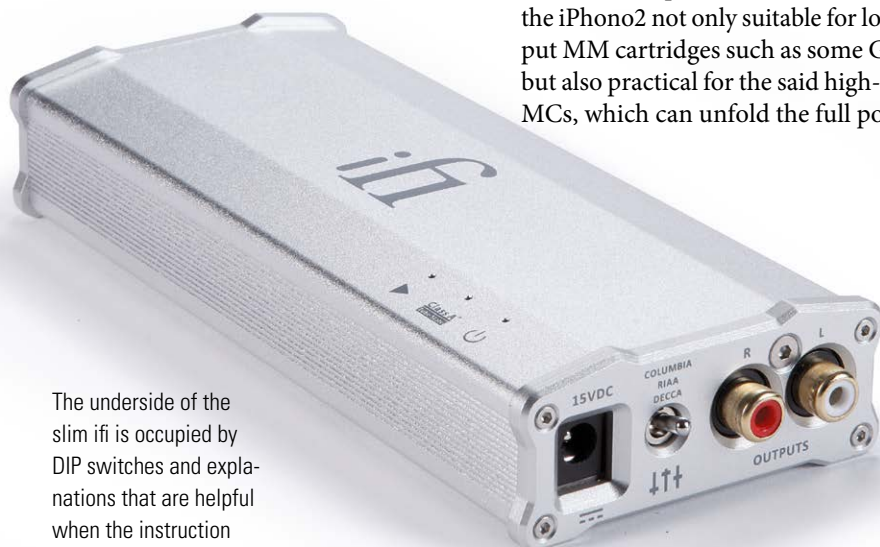
However, the amplification can be increased to 12dB in both cases, ensuring that the MM path has 48dB and making the iPhono2 not only suitable for low-output MM cartridges such as some Grados, but also practical for the said high-output MCs, which can unfold the full potential

of their sound. Particularly quiet MCs can be pushed to more suitable 72dB this way.

Both phono stages are powered by external plug transformers, the LX•LPS via a micro USB input, and as usual we took pains to determine the correct phase for the transformer's mains plug – absolutely necessary because when preamps are „false-phased“, they sustain a loss in space, flair and refinement, sounding flatter, less supple and more coarsely structured. In addition, the differences in levels on the amplifier were exactly balanced for the listening test, to achieve perfect comparisons.

This care is not simply STEREO-like, it was also absolutely necessary because – despite the fact that ifi and Musical Fidelity have different concepts – their sound patterns are coherent, with good balance, a wide and spacious image and amazing resolution: even the subtlest murmur of cymbals was presented without any veiling.

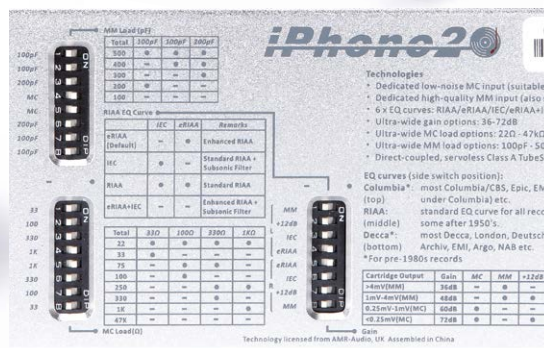
There's no doubt these phono stages have outgrown the substantially lower-cost entrance league, having not a tinge of restrictions, nor the pleasant compact



The underside of the slim ifi is occupied by DIP switches and explanations that are helpful when the instruction booklet is not at hand.



Our iPhono2 sounded best when the phase was fitted to the loading plug as marked.





LX•LPS mains adapter connection is via USB cable. Its preference phase is at the red dot.



Two pairs of adapter jacks for resistance (green) and capacitance provide a minimum of flexibility for connecting different cartridges. One generally can do without them.

and superficial, yet somewhat coarse, unpolished diction that is regularly presented for a third of the price. Instead, both of these phono preamps surf serenely through complex passages such as Diana Krall's lively „Deed I Do“, without missing any of the breakneck details of the live track. They both put a full, well-structured bass under James Taylor's profound „Her Town Too“ without thickening the singer's voice or covering the backing vocals. Whatever the situation, the transparency is maintained, and the differences between them minimal.

At most, the ifi contrasted with a slightly pointed presence and its low-frequency range had somewhat more edge when its subsonic filter - yes, it is included - was activated. This keeps low-frequency disturbances away from the unit, but it can easily weigh on the homogeneity. No matter, because the negative effect is minor and the Musical Fidelity does not have

one at all. Tip: only use at higher levels and /or very warped records.

Even together with turntables and components from our top references there were no significant differences in character or class, so that both the minimalist LX•LPS and the comprehensively-equipped iPhono2 (lacking only an On/Off switch) are excellent partners for sophisticated turntables.

Matthias Böde

## MUSICAL FIDELITY LX•LPS

Price: about € 500 (silver or black)  
Dimensions: 23x5x18 cm (WxHxD)  
Guarantee: 2 years  
Contact: Musical Fidelity  
www.musicalfidelity.com

A no-frills phono stage with all the necessary features for those who simply want a good listening experience. LX•LPS offers them an accomplished sound quality.

### MEASUREMENTS

|  |               |
|--|---------------|
| Distortion at 5mV/1kHz/1 kΩ (cinch)                                | 0,02%         |
| Intermodulation at 0,8 mV/8 kHz/60 Hz                              | 0,02 %        |
| <b>Signal to noise ratio</b>                                       |               |
| Phono MM at 5 mV/1 kHz/47 kΩ                                       | 85 dB         |
| Phono MC at 0,5 mV/1 kHz/100 Ω                                     | 68 dB         |
| Channel separation at 1 kHz  | 74 dB         |
| Overload margin MM/MC  | 60/6 mV       |
| <b>Connected load</b><br>practice-oriented variable (adapter jack) |               |
| Output resistance at 1 kHz cinch                                   | 460 Ω         |
| <b>Power input</b><br>Off   Standby   Idle                         |               |
|  | - /<2/<2 watt |

### LAB COMMENT

The LX•LPS presented its best foot forward in the lab: its low distortions are flanked by high interference distances. The channel separation is also superb. Extremely low power input.

### FEATURES

Separate MM/MC inputs, Standby/On switch, one pair of adapter plugs each for impedance and capacitance, plug transformer

## STEREO-TEST

|                   |     |
|-------------------|-----|
| SOUND QUALITY     | 85% |
| PRICE/PERFORMANCE |     |
| ★★★★☆             |     |
| EXCELLENT         |     |

## IFI IPHONO2

Price: about € 570  
Dimensions: 6,7x3x18 cm (WxHxD)  
Guarantee: 2 years  
Contact: ifi Audio  
www.ifi-audio.com

No other phono stage in this price range enables vinyl hobbyists to play such an active part. And it offers top sound for the money. It has earned the fifth star for the outstanding equipment package.

### MEASUREMENTS

|  |              |
|--|--------------|
| Distortion at 5mV/1kHz/1 kΩ (cinch)                              | 0,09%        |
| Intermodulation at 0,8 mV/8 kHz/60 Hz                            | 0,05 %       |
| <b>Signal to noise ratio</b>                                     |              |
| Phono MM at 5 mV/1 kHz/47 kΩ                                     | 71 dB        |
| Phono MC at 0,5 mV/1 kHz/100 Ω                                   | 63 dB        |
| Channel separation at 1 kHz                                      | 61 dB        |
| Overload margin MM/MC  | 106/6 mV     |
| <b>Connected load</b><br>practice-oriented variable (DIP switch) |              |
| Output resistance at 1 kHz cinch                                 | 113 ohm      |
| <b>Power input</b><br>Off   Standby   Idle                       |              |
|  | - /- /4 watt |

### LAB COMMENT

The ifi is inconspicuous. The low distortion levels are accompanied by proper signal to noise ratio as well as positively low output resistance. Low power input.

### FEATURES

Separate MM and MC inputs, impedances and capacitance can be selected; three different equalizer curves, amplification factor is switchable, plug transformer, no power switch

## STEREO-TEST

|                   |     |
|-------------------|-----|
| SOUND QUALITY     | 85% |
| PRICE/PERFORMANCE |     |
| ★★★★★             |     |
| OUTSTANDING       |     |



## SUBSONIC FILTER – BLESSING OR CURSE?

Due to the way audio is equalized for storage on records, and then re-equalized in playback, low-frequency signals are emphasized in record-playing systems – so any disturbances during the cutting of the master disc, or occurring as a result jolts, impact noise or adversely attuned pickup arm/cartridge combination, will be very obvious. This noise can manifest itself at higher levels by visible flutter in the subwoofers, which causes unnecessary pressure on the amplifier and can lead to flaws in the reproduced sound.

The remedy is the so-called subsonic filter, which greatly dampens frequencies below 20 Hertz: some phono stages offer it, others dispense with this worthwhile service, and for good reason: we have seldom come across a „low-frequency filter“ without a negative effect on the homogeneity and naturalness of the midrange

Although the frequency ranges are far apart, the influence of the filter is also often felt in the higher regions. Therefore try out whether you are perhaps replacing one evil with another, and think instead of tackling the low-frequency noise at its cause, through turntable/arm/cartridge set-up.

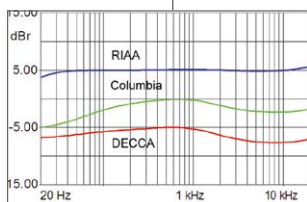
## PRO-JECT PHONO BOX RS

about 840 Euro, [www.project-audio.com](http://www.project-audio.com)

The compact Pro-Ject is a true allrounder. It offers standard and balanced inputs and outputs, and on request an infinitely variable input impedance as well as three amplifier factors (including 50dB for high output MCs), equalization for RIAA or Decca standards, and other practical features. The sound is forceful, sturdy and well-resolved.



| STEREO-TEST       |     |
|-------------------|-----|
| SOUND QUALITY     | 87% |
| PRICE/PERFORMANCE |     |
| ★★★★★             |     |
| OUTSTANDING       |     |



## AVM EVOLUTION 1.2

about €700, [www.avm-audio.com](http://www.avm-audio.com)

Just 15 centimeters wide, the Evolution 1.2 by AVM is unpretentious and appealing. And there is not a lot to it: respectively one pair of RCA contacts for MM and MC cartridges, in addition to a changeover switch, as well as two load sockets to accept plug-in adapters jacks. Three values (100 ohm/1kohm for MC, 100 picofarad for MM) are included, with other types are available on request, and the AVM highlights the sound qualities of excellent cartridges.

| STEREO-TEST       |     |
|-------------------|-----|
| SOUND QUALITY     | 85% |
| PRICE/PERFORMANCE |     |
| ★★★★☆             |     |
| EXCELLENT         |     |



## OCTAVE PHONOMODUL

from €4800, [www.octave.de](http://www.octave.de)

The German tube specialist Octave follows a special concept for the design of these modular components. The Phonomodul can hold up to three input and output cards, offering a large selection of simple MM to single-ended or balanced MC modules, or versions with transformers. The basic price mentioned above includes an MC-card and an unregulated output – but things can easily become more costly if you want more.

| STEREO-TEST             |     |
|-------------------------|-----|
| SOUND QUALITY PRE-AMP   | 88% |
| SOUND QUALITY PHONO-AMP | 97% |
| PRICE/PERFORMANCE       |     |
| ★★★★★                   |     |
| EXCELLENT               |     |



## RESTEK EMAS

from €4700, [www.restek.de](http://www.restek.de)

It has been nearly fifteen years since its last STEREO test but the Restek Emas is still around. Its seven(!) phono inputs make it unique: it's perfect for owners of several three-armed turntables, and a range of amplifier, impedance and capacitance settings can be selected for every input, and immediately stored. The highlight is that the fresh, dynamic sound of the Emas can directly drive power amps or active speakers.



| STEREO-TEST       |     |
|-------------------|-----|
| SOUND QUALITY     | 89% |
| PRICE/PERFORMANCE |     |
| ★★★★☆             |     |
| VERY GOOD         |     |

## OLDER RECORDS CAN THROW A CURVE-BALL

If you don't own any records produced before 1960, you won't need to worry about equalization, which is used to counter the physical limitations of the vinyl medium by adjusting the signal balance in mastering, then applying correction in the playback chain. All modern records conform to an equalization curve set by the Record Industry Association of America: this RIAA curve (see image) has been binding since 1956, and all phono preamps re-equalize for (or if you like, decode) this curve. Before this standard was set, labels tended to use their own equalization curves, the most widespread being those set by Columbia Records and Decca, and these differed, sometimes clearly from the eventual RIAA standard. Columbia used less bass cutback or high-frequency rise (-5 dB at 63 Hz/-4 dB at 15 kHz), which is why RIAA re-equalization underexposes these areas, resulting in a pale, dull playback. The loss of high frequency is particularly audible in old Deccas. The graph below illustrates the differences. Collectors of old original records will therefore need a phono stage with the matching alternative curves, for example, the ifi iPhono 2 (see test).

## RCA OR BALANCED?

Along with microphones, MC cartridges are the only real balanced sources of high fidelity, i.e. operating without electrical reference to ground. In the past few years, there has therefore been a trend to balanced connections via XLR or special sockets, in which the supply and return conductors of each channel are „hot“ (instead of one side being

„grounded“ as in standard RCA connections). Balanced working for these ultra-low-level signals has advantages beyond the removal of potential ground loops and the inherent interference-rejection of balanced connections, especially as the summation of the phase-shifted signals raises the useful level. In practice, the tonal quality is often superior: acoustic patterns sound more vibrant, resolved and elaborate. This is a reason why one finds balanced connection alternatives in middle price range phono pre-amplifiers. The detailed photo on the right is of our sole top reference, the Brinkmann Edison: in addition to RCA or XLR sockets for the connection options, there is also a sensitive resistance adjustment for MCs.

But a reminder: balanced connections only work with Moving Coil cartridges, and in general the phono cable will have to be changed or adapted – something best left to an expert, but very much worthwhile!



## NAGRA BPS

about €2035, [www.nagraaudio.com](http://www.nagraaudio.com)

The sound of this flat, 11cm-wide aluminum box cannot be harmed by mains disturbances – the Nagra BPS runs 100 hours on a nine-volt battery. In the standard MC version the high-grade transformer provides the first level of amplification, while semiconductors handle the rest. Do be deceived by the anonymous looks; its superb sound quality is so large and spacious out that the BPS plays at the top of the league.



## VINCENT PHO-700



about £500, [www.vincent-tac.de](http://www.vincent-tac.de)

A highlight of the PHO-700 is the illuminated output tube, dimmable at three levels, and visible through the bull's eye on the front panel, offering a distinct analogue feeling. The external power adapter is fitted in a solid metal case. The Vincent is switchable for MM and MC cartridges, and while all the input loads are preset, they're generally suitable. Crisp, forceful and colorful sound.



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# LET'S GET PHYSICAL!





For almost a quarter of a century Audionet has stood for high-end high tech. With a move to Berlin, and the combination of “Planck” and “Watt,” the company is now moving onto a new stage!

**B**ochum, in the Ruhr area, was once my hometown – as it was for high-end manufacturer Audionet, which arose from a research project at Bochum University. Recently moved to the capital, the company now has an abundance of new products, with design in part conceived by Hartmut Esslinger, responsible for the industrial design of several Apple products – including early tablet and phone concepts.

But there’s more to the Audionet makeover than looks, even with Esslinger’s input: what’s visible and tangible is that the workmanship has reached a new level, too. There’s no more simple – and frankly cheap-looking – silk-screening on the front panels; in its place is high-quality engraving, partnered with a display still easy to read at a distance of 4 meters, case-work apparently so robust that it might survive a fall from the third floor without damage, and a finish both distinctive and high-end: light bronze. As a result, it seemed even before the first note that this reunion with the Audionet brand, after a long

absence, would be at least as enjoyable as my memories of the spent with the company’s past products. Not least because the designers have paid close attention to the ‘feel’ of the new models: instead of small pushbuttons for volume control there’s now a proper volume knob, lushly clicking from one level to the next to impart the same feeling of precision and care you get when touching a perfectly weighted piano key – wonderful. The fascination of the high end, even before the first sound, is the impression that unlimited resources were drawn on everywhere, and that the red pencil was temporarily on vacation: and where the Watt attracts attention with its volume knob, the Planck player counters with a smoothly gliding, massive and Teflon-mounted drawer that conceals a CD mechanism on which the disc is secured with a magnet.

What would we still have on our wish list? Well, a simple light ring around the function buttons, so that you could tell which button you’re aiming for even in poor lighting, would be good, and even better if it could be switched off when required. But otherwise everything here is about user-appeal, even if one old Audionet tradition has been set aside: there’s now no notification on the display that the power plug is correctly oriented position in the outlet. Instead there’s now a phase identification on the power socket on the back – we can live with that.

Let’s take a look at the inner workings: even more has happened within than has been done than externally – these are ‘ground up’ designs.

◀ One look at the loving attention to detail on the drive shows that the bean-counters’ red pencil took a break here.

The remote sits comfortably in the hand and reflects quality workmanship; even the menu navigation has some room for improvement. ▶



## Memories

I remember Audionet's first CD player, the "Art," very well: it came on the market at a time when Sony was scooping up every award and sales record with the XA 50 at 2500DM, and even today still plays CDs neatly and reliably. But despite its excellent sound, at the time the Audionet had to eat humble pie, the company behind it being almost unknown.

The Planck, like the entire new Audionet series taking its name from a famous physicist, is described by the company as its 'final

statement re. the classical compact disc.' It has been conceived as a pure CD transport, but fitted with a DAC stage, meaning it's been built solidly and on the massive scale. The 25 kilo fighting weight derives from the lavish use of aluminum in the construction and the small matter of a slate plate set into the base, both of which are designed to optimize resonance properties.

## Broadband and Fast

Separate transformers feed discrete power supplies for the transport, digital and

analog sections, in accordance with the current state of the art, while an extremely wide-band and fast output stage using class A technology should give the sound a leg up, as should the use of temperature-stable resistors in the current-voltage convertor, an elaborate clock generator for negligibly small jitter values, and mica capacitors produced especially for Audionet. The quiet and decently quick reading of the Philips CD-PRO 2LF drive, a choice of standard RCA phono or balanced XLR analogue outputs, and four digital connections are additional plus points.

The Planck also allows unused digital inputs to be deactivated for the purest possible sound, has galvanic isolation for its USB input section to keep computer noise away from its audio circuitry, and the attention to detail here extends to and the premium Furutech connector sockets and an audiophile rhodium fuse.

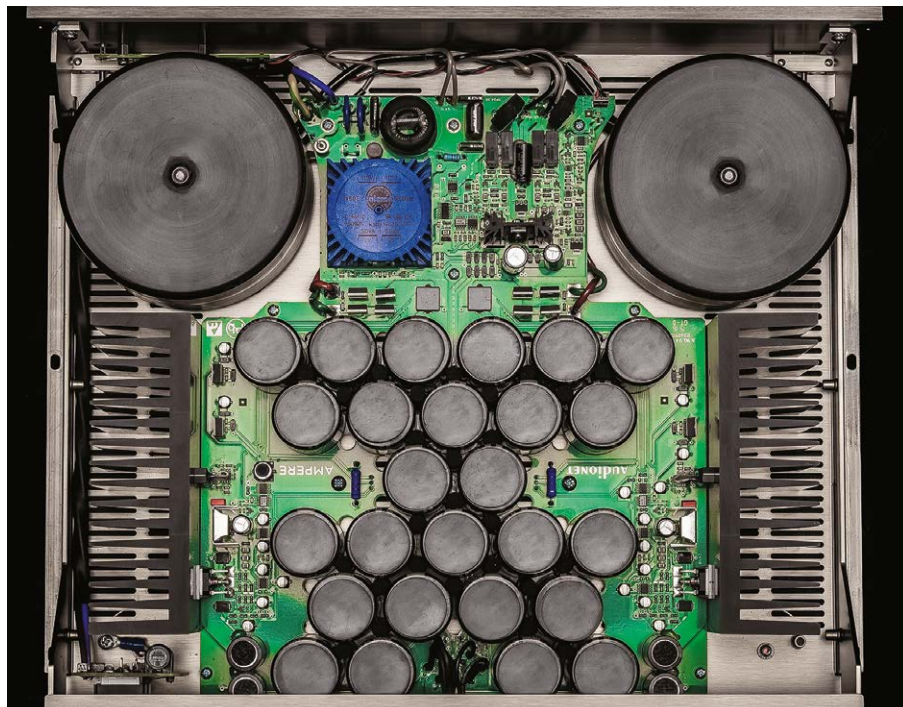
## Only an External Resemblance

Its looks suggest an obvious relationship between the Watt integrated amplifier and the legendary "Sam," but on the inside those similarities end very quickly. In fact, just a survey of the rear panel suggests what we're dealing with here, revealing a strictly dual-mono structure, a separate grounding cable, optional customizable phono module for MM/MC systems, and a high-quality headphone connection – all leaving little doubt about the impeccable internal construction.

Even many expensive integrated amplifiers use a single transformer for both channels, but Audionet have played things safe with separate supplies for each channel, with a massive 200,000 µFarad reservoir capacity. The circuit layout is not only optimized for the shortest signal paths, but also magnetically and electrically, and the output stage is direct coupled, with not capacitors, using a servo design – in fact both input and output stages are of entirely new designs, laid out for



▲ Dual-mono structure is clear from the rear panels of both units, on the amplifier a MM/MC phono input is optional.



▲ Two high-capacity, enclosed transformers, each good for 700VA, and a legit dual-mono construction – a look at the interior makes us happy.



▲ The separate grounding cable is included with every Watt and gives the sound a helping hand.





▲ Smooth gliding, ultra-solid drawer with milled out, recessed grip and magnet

wideband working extremely broadband. Instead of a potentiometer, the volume is controlled electronically, and like the Planck player, the Watt amp features extensive resonance-optimization.

## No Mercy

In the listening room the Berliners showed no mercy to either the connected loud speakers or with the various competitors we ranged against them. For example, they took Dynaudio's Contour 60 (test on pg. 26) into their clutches and brought out the best in what are actually quite easy-going speakers. The Danish newcomers sparked with joy when playing with the Audionet combination, and in the bass showed powerful pressure alongside a generous spatial presentation, color and vitality, conveying authenticity and a real sense of live music with Peter Schneider & the Stimulators' version of "St. James Infirmary."

And so a Sunday afternoon in the listening room flew by: as we listened to the entirety of familiar, often heard titles and whole albums, reveling in the new aspects of their structure being exposed, we knew the offering was of exceptional quality. And that's the way it went for us on our foray through the genres: Arthur Rubinstein's legendary interpretation of various Beethoven sonatas on Living Stereo thrilled us just as much as Beth Hart or Garbarek/Gismonti and Haden.

The conclusion is simple: Audionet equipment has never looked better – nor sounded better!

*Michael Lang*

**Contact:** Audionet  
Phone.: +49 30/23324210  
www.audionet.de

## AUDIONET PLANCK

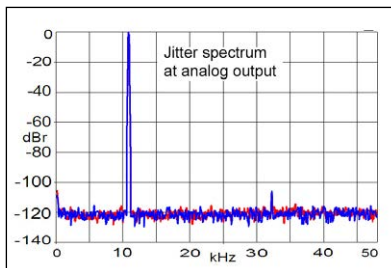


€ 12,500

Measurements: 43 x 13 x 41 cm (WxHxD)  
Guarantee: 3 years

The Planck plays CDs to exceptional standards, sounding light, fluid and musical, but also clean and forceful. And it converts digital data in a world-class manner. One for the island!

### MEASUREMENT RESULTS



|  |             |
|--|-------------|
| Signal-to-noise ratio digital 0                  | 111 dB      |
| Quantization signal to noise ratio (400 Hz/0 dB) | 92 dB       |
| Distortion factor (400 Hz/-60 dB)                | 0.1 %       |
| Converter linearity up to -90 dB                 | 0.1 dB      |
| Reading accuracy                                 | very good   |
| Reading time                                     | 9 sec       |
| Output resistance cinch/ XLR at 1 kHz            | 32/64 Ω     |
| Output voltage cinch/XLR at 0 dB FS              | 3.5/ 7 V    |
| Channel offset                                   | 0.1 dB      |
| Jitter   | 1.8 nsec    |
| Deviation from sampling frequency                | -72 ppm     |
| Power consumption<br>Off   Standby   Idle        | 0   22 watt |

### LABORATORY COMMENTS

Measurement results are a reason to celebrate. The player is especially convincing when it comes to noise, distortion, converter linearity, and jitter. The reading time is also in the green range.

### FEATURES



Remote control, XLR and RCA connections, 3 digital inputs up to 192/24 (1 x TOSlink, 1 x RCA, 1 x USB-B), 4 defeatable digital outputs (1 x XLR, 1 x TOSlink, 2 x RCA), display, German language instructions, Link connection, port for external power supply

### STEREOD-TEST

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

## AUDIONET WATT

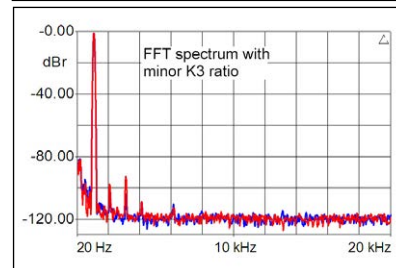


ca. € 12,500

Measurements: 43 x 15 x 49 cm (WxHxD)  
Guarantee: 3 years (when registered)

What a find! This may be the best amplifier Audionet has ever built, and is certainly the musical one to roll off the company's production line. For that reason the 12,500 Euro price-tag is comparatively reasonable.

### MEASUREMENT RESULTS



|   |                        |
|---|------------------------|
| Continuous output into 8   4 Ω                      | 165   281 watt p. ch.  |
| Pulse power into 4 Ω                                | 359 watt per channel   |
| Distortion factor<br>at 50 MW   5 watt   pmax -1 dB | 0.02   0.004   0.005 % |
| Intermodulation<br>at 50 MW   5 watt   pmax -1 dB   | 0.001   0.0003   0.4 % |
| Signal-to-noise ratio CD at 50 MW   5 Watt          | 69   83 dB             |
| Signal-to-noise ratio phono MM/MC                   | 75 / 67 dB             |
| Channel separation at 10 kHz                        | 78 dB                  |
| Damping factor at 4 Ω                               | 180                    |
| Upper frequency limit (-3 dB, 4 Ω)                  | >80 kHz                |
| Connection values                                   | practical              |
| Crosstalk tuner/CD (10 kHz/5 kΩ)                    | 83 dB                  |
| Synchronization fault volume control to -60 dB      | 0.16 dB                |
| Power consumption<br>Off   Standby   Idle           | 0   -   69 watt        |

### LABORATORY COMMENTS

Excellent measurement results in all relevant points. Especially at mid and high power output extremely low distortion.

### FEATURES

Four high level inputs, one of which is in XLR, optional Phono MM/MC, adjustable via menu, remote control, headphone output, mains phase labeled, menu control, separate grounding cable, bypass function for home theater

### STEREOD-TEST

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

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## Magico S3, the second

After the MkII versions S1 and S5, Magico is now bringing out a second-generation version of its S3, equipped with all the newly-developed elements seen in the other MKII models, including the particularly distortion-free 23cm woofer. The tweeter has a diamond-coated beryllium dome and the 15cm midrange driver has a cone made of carbon fiber with a layer of „XG nanographene“. The cabinet is machined from a single aluminium block, giving a wall thickness of almost 1cm wall thickness, and Magico uses Mundorf components for the crossover network. With four-ohm impedance, the speaker weighs 77kg, stands 1.22 m tall, and is available in two versions: „M-Cast“ is \$28,000 a pair, while the high gloss lacquered „M-Coat“ variant is \$32,000/pr. [www.magico.net](http://www.magico.net)



## Marantz Modernising Flagships

First seen at High End 2016, and in the shops about now, the new flagship Marantz components are the SA-10 SACD/CD player/DAC (€7000), the successor of the SA-7, and the 8000 PM-10 integrated amplifier (€8000), which replaces the SC-7/MA-9 pre/power amplifier combo. New to the player are the digital inputs, which can also be used by PC via USB to access the high-quality converter of the player. All digital signals are internally upconverted to 11.2MHz 'quad-DSD' format and then sent to the



analogue outputs via an extremely high-quality low-pass filter - a DAC in the conventional sense is no longer necessary. Two filter settings enable individual sound adjustment. SA-10 uses a new disc drive of in-house design, which is exclusively reserved for this top model, while the PM-10

is a pure analogue amplifier with bridged and balanced design and separate power supplies for preamplifiers, power amplifiers and microprocessors. Class D amplifiers provide 2x400 watts at 4 ohms. Besides the phono MM/MC and Cinch line inputs, PM-10 offers two pairs of XLR inputs, as well as a power amplifier direct input. The copper-plated cabinets are built by Marantz themselves. [www.marantz.com](http://www.marantz.com)

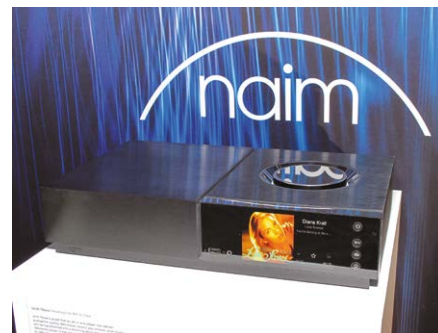
## T+A Power Amplifier in Retro Look

T+A is expanding its HV series with the PA 3100 HV integrated amplifier, based on the PA 3000HV but with some new features including the two VU meters, which display the output power in watts at 4 ohms. A new concept for the voltage supply was also developed allowing the external power supply PS 3000 HV to be connected, thus increasing the stability and entire voltage supply: internal power supply takes care of the high-voltage amplifier-external PS 3000 HV stages. The preamplifier section has also been improved. T+A quotes the PA 3100 HV output power as 300 watts per channel into 8 ohms, rising to 500 watts into 4 ohms, and the amp is available in silver or titanium at €15.900. [www.ta-hifi.com](http://www.ta-hifi.com)



## Naim Reinventing „Uniti“

Naim's first network system, the original NaimUniti, was launched in 2009, since when the Uniti models have accumulated features including multi-room playback and access to Spotify Connect and Tidal. Naim has now re-developed the Uniti technology from scratch and given it a completely new streaming platform, with features including Google Cast for Audio, AirPlay,



Bluetooth with aptX HD, and over-the-air updates. Three new streamer amplifiers will be launched: Uniti Atom (€2200), Uniti Star (€4000) and Uniti Nova (€5000). They all come with analogue inputs, a USB-A port for external hard drives, Wi-Fi and a digitally-controlled analogue volume control, while Uniti Star is even equipped with a CD drive and rip function, files being stored via USB. The two more expensive models also include a DAB/FM tuner. Uniti Core (€2350) is the fourth model in the range: a music server with a CD drive, rip function and a hard drive slot, it can manage up to 100,000 tracks and provide twelve streams with a maximum resolution of 32 bits/384 kHz over a network. Thanks to an S/PDIF output, the Core can also be used as a transport/player.

[www.music-line.biz](http://www.music-line.biz)



## Record Player without Turntable: **Atmo Sfera**

The Italian manufacturer Audio Deva has developed a record player without a turntable. The vinyl disc is simply placed on a flattened aluminium dome with the label up and is fixed with a record holder. The underlying concept is that heavy record-players stimulate into vibrations due to unlevel plates, which in turn are transferred to the record and tone arm, and also require a powerful motor that generates further undesirable vibrations. Atmo Sfera is available in two versions: „lifestyle“ with an aluminium tonearm and a securely mounted and carefully balanced pickup Ortofon OM 5 cartridge, and the „High End“ version has a carbon-fiber tonearm a precision steel bearing and adjustable balance weight. Without a cartridge, it costs € 3590, with various Ortofon MC systems priced between € 3790 and € 5190. As of now, Atmo Sfera is sold in Germany and Austria by Authentic Sound, which is also the official distributor for the loudspeakers and tube amplifiers of the Italian manufacturer Audiofilia.

[www.audiodeva.com](http://www.audiodeva.com)

## **NAD** Modernises Classics

Canadian manufacturer NAD's „classic line“ is entering a new era, with digital inputs, Bluetooth, streaming, switching power supplies and Class D power amplifiers. Three new amplifiers are now available: the C 338 (2x50 watts, €700), C 368 (2x80 watts, € 1000) and C 388 (2x150 watts, € 1750). All three are fitted with phono input, optical and coaxial S/PDIF inputs, and a bidirectional Bluetooth module (with aptX) capable of receiving music from smart phones, as well as sending music to Bluetooth headphones. In addition, the super slim C 338 acts as a UPnP network player with integrated WLAN, playing music from a home network, accessing Internet radio and Spotify, and making Google Cast connections. It can be controlled from the Smartphone via a control app. The two larger models don't have networking as standard, but can be equipped with an optional MDC module to integrate them with Bluesound's „BluOS“ multi-room streaming system. To match the new amplifiers, there's also a C 568 CD player: replacing the C 565BEE, it uses a Wolfson D/A converter and is powered by a classic ring core transformer.

[www.nadelectronics.com](http://www.nadelectronics.com)



## **Piega** Renews Coax Series

Swiss company Piega's Coax speakers have been on the market since the turn of the millennium – and now the latest versions have been launched. The series consists of a compact loudspeaker, the Coax 311 (€ 3000/piece), and two floorstanding models, the Coax 511 (€ 5500) and Coax 711 (€ 9000), each standing a good meter tall. All models have a housing made of extruded aluminium, and concentrically-arranged middle and treble ribbon drivers – hence the „Coax“ name. Even stronger neodymium magnets increase efficiency and even the layout of the flat coils on the rear of the ribbon membranes has been modernised. Piega has also overhauled the woofers, with passive radiators further supporting bass reproduction in the floorstanding speakers.

[www.piega.ch](http://www.piega.ch)





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# OUR GOLDEN BOY

The new Accuphase E-370 tops the performance of its predecessor and costs even less. If there were a hi-fi gold medal - this would deserve it.

**T**ake something excellent and make it even more so – that’s the maxim of celebrated Japanese brand Accuphase. Yes, there have been revolutions along the way, such as 2002’s conversion from the most popular conventional volume potentiometer to the „AAVA“ level control with interconnectable fixed resistors, but in general the Yokohama company prefers to rely on the ongoing evolution of its products.

That the E-360, which was launched in 2012, is now followed by the E-370 has its method – as does the fact that the new

model hardly differs from its predecessor, at least visually. It’s very Japanese, with everything in its place, nicely in line, and creating no great waves. Except...

There’s something different about this launch – excitement! Three dealers, whom I contacted for other reasons, inquired whether we’d already received a review sample of the new Accuphase product – apparently it was awesome and incomparable with the now obsolete E-360 version, not to mention less expensive. German distributor Accuphase-Vertrieb P.I.A. HiFi lowered the price from 6750 euro for the E-360 to 6150 euro for its successor, leading Thomas Dressel of PREMIUM PARTNER High End Schlegelmilch in the Frankish city of Haßfurt to „complain“ that he could hardly sell the original version of the E-260 at 5000 euro. Seems the price difference of 1150 euro to the E-370 was simply too little, and the new amp in a totally different class...

## Same as ever? Yes, but...

Spurred on by this, we wanted to see and hear what was behind this flurry of gossip and excitement: in over 35 years of dealings with HiFi, I have followed the development of Accuphase, founded by ex-Kenwood manager Jiro Kasuga in 1972, and have tested countless components while following the ongoing improvements. In all that time I often found myself wondering, “Where’s all this going?” and now I know the answer: it’s all been leading to the E-370.

At first glance the new model is nothing special: it’s just the latest one and, without the model designation on the narrow cover that gently slides downwards at a touch hiding the incredibly flexible switchgear, we may not have noticed the difference. Need further clues? Well, a small switch to the right of the flaps sets the two apart, as does the orange of the switchable digital level display between the striking level

### KEYWORD

**Push-pull output stage:** The power transistors do not work against earthing, but two inverted “hot pole” transistors power the speakers.



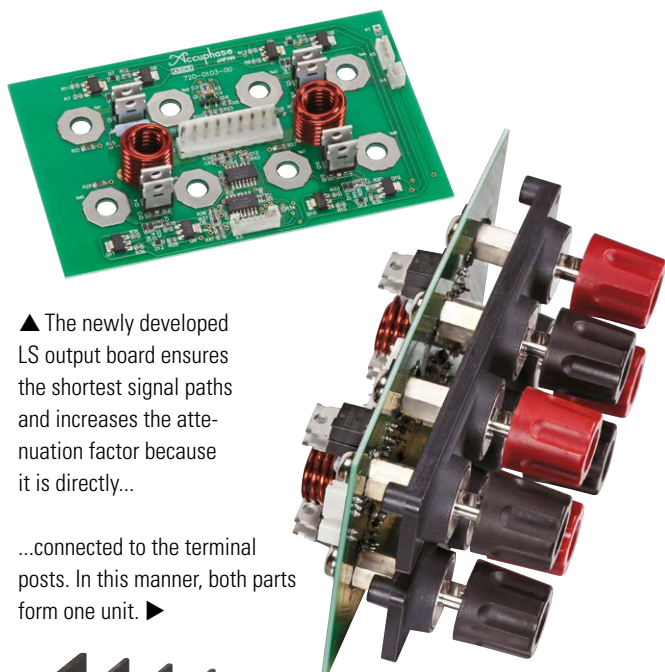
# EINSTEIN

## HANDCRAFTED AUDIO COMPONENTS SINCE 1988

meters is now more orange, instead of the old red. But that's about it!

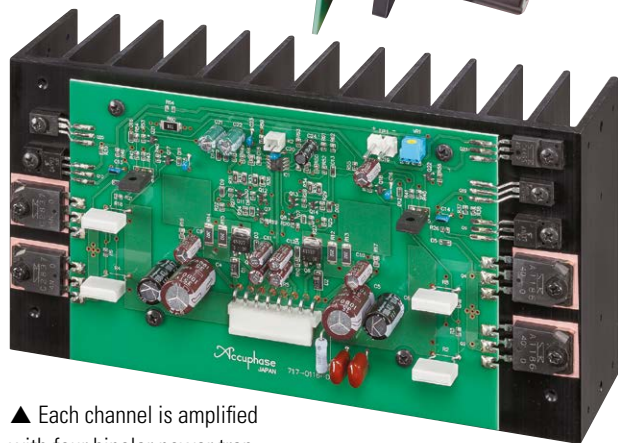
However, behind the beautifully made and finely-brushed front panel there are more innovations to be discovered, for example in the conversion of relays to FET switches in the loudspeaker output as a result of successive changes in the amps. As expected from Accuphase, the E-370 allows two pairs of speakers to be used individually or collectively, the contactless switches providing an even better connection of the solid pole terminals to the channel-separated power electronics with increased long-term stability. This separation of speaker switching and connections is new for the E370.

Otherwise, the new amplifier offers precisely the same Accuphase amps as known for decades: in the centre of the



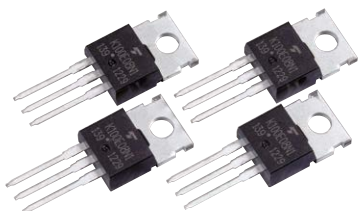
▲ The newly developed LS output board ensures the shortest signal paths and increases the attenuation factor because it is directly...

...connected to the terminal posts. In this manner, both parts form one unit. ►



▲ Each channel is amplified with four bipolar power transistors in parallel push-pull arrangement.

A FET switch at the loudspeaker outputs should constantly ensure the best possible contact. ►



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▲ The rear panel shows the extensive connection possibilities.

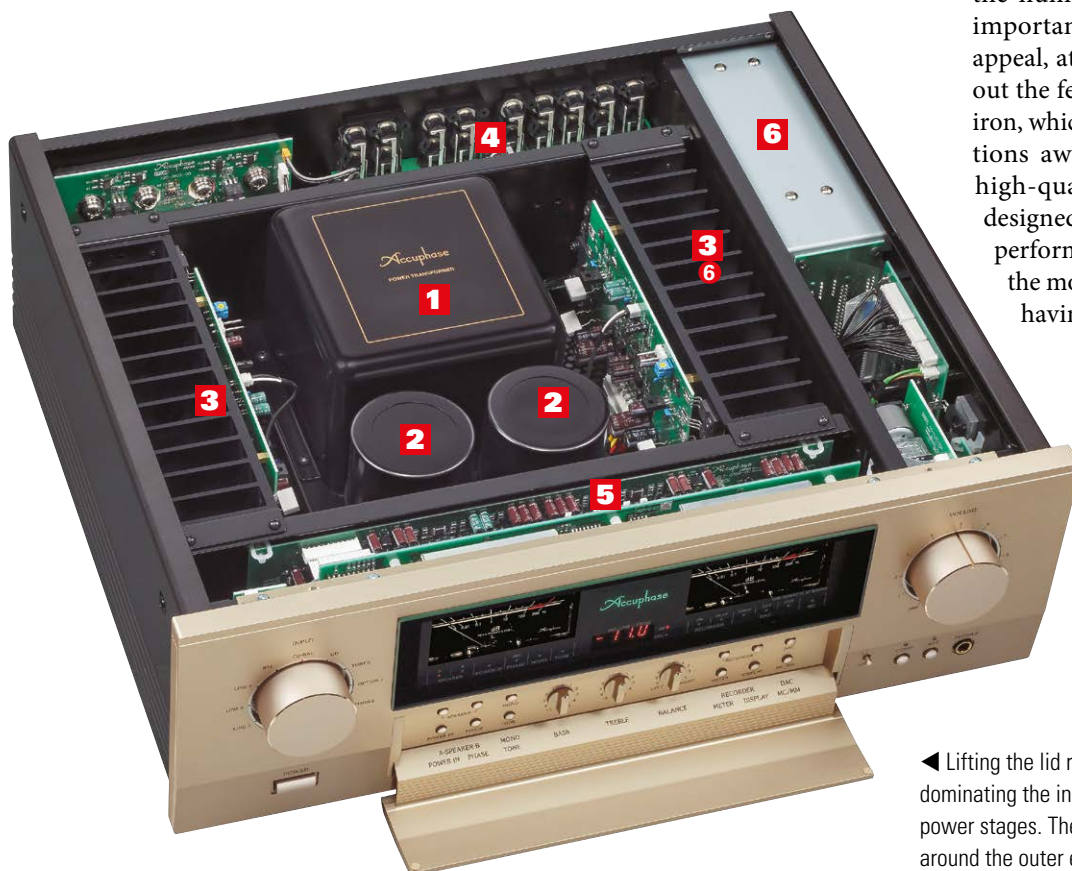
case the potent power supply consists of an encapsulated transformer **1** and main capacitors **2** framed by power amplifiers and heat sinks **3**. The inputs are switched **4** at the rear, the control plus AAVA electronics **5** is located behind the front panel. Of course, the E-307 also has the partitioned bay **6** for recommended phono MM MC or high bit capable D/A converter or high-level module (AD-30,

DAC-40, Line-10 for 1000, 1185, 160 euro respectively). Two of them fit in order to expand the amp for direct disc player connection and/or to the digital section.

Looking directly at the differences to the out-phased E-360, the use of even smoother action should be highlighted – Accuphase components have always been impressive in this respect – for the innovative, precise „Vari-Gain“ volume

control. In addition, the developers wanted to double the attenuation factor required for bass control, and it fits into the picture that the transformer capacity was made greater and the power supply capacity increased from 22,000 to 30,000 microfarad, while the balanced the push-pull output stages were designed more consistently.

In order to not get completely lost in the numerous details, which are also important to achieve a perfect visual appeal, at this point we shall only point out the feet made of „high-carbon“ cast iron, which should effectively keep vibrations away from the device, and the high-quality headphone connection designed for low impedance and high performance: that should satisfy even the most fussy sound lovers and saves having to buy an external solution.



◀ Lifting the lid reveals a generous power supply, dominating the inner workings along with the two power stages. The remaining electronics are distributed around the outer edge.





▲ In the listening room the E-370 (below) competed with its predecessor, the E-360 (above). The DP-550 SACD player sits between the two amplifiers.

## Culmination in Sound Room

The Accuphase was supposed to go to the laboratory for measurement before we listened – but impatience got the better of us, and so we connected it to the just assembled Bowers & Wilkins 803 D3 speakers, which had just taken their place in our listening in room.

The Accuphase DP-550 SACD player had already warmed-up. The handy left-hand knob on the E-370 selected the correct input, and there it was: a cultivated, Accuphase-sounding tone touched with ultra-fine detail, the music moving with a timing that never appears to be excited or hectic, and a pronounced sensitivity to any shades of tone.

It was obvious the E-370 was a first-class amplifier, as well as an authentic Accuphase. But how good is it really and, in particular, how much better than its predecessor? In order to assess this, we set the two up side by side, and switched

between them: we'd already carried out such an endeavour several times before, and the new always knocked out the former champion, but this time it was different – though only in the huge amount of clear water the E-370 put between itself and its predecessor.

One could easily get the impression of having skipped not one, but three or four generations: the industry colleagues had obviously not been exaggerating.

Comparing E-360 and E-370, with the same HMS „Gran Finale Jubilee“ speaker cable and a similar power cable, at the same volume the song „More Than You Know“ from the new, fantastic-sounding Lyn Stanley album „Interludes“ sounded considerably more expansive, more spatial and clearly more three-dimensional via the new amplifier. Miss Stanley's voice sounded more natural and the subtle, highly authentic mixture of song and instrumental accompaniment was more multi-faceted.

Then things really took off with Monty Alexander's highly dynamic „Moanin“ from our sound test CDVI. The new Accuphase got its explosive kick-drums accurate to the point, irrespective of the level, with a 'go for it' balance and an uninhibited relaxed sound, although the output meter needle frighteningly flew to the „0 dB“ indicator. No question about it: the E-370 has power and knows how to use it – precisely as well as consistently.

## E-370 Setting Standards

The E-360 was forced to give in. Although it did captivate with snap and discipline, its bass was less well-ordered and the overall sound a long way from the naturalness, delicacy and confidence of its successor. The E-370, however, not only sets standards in the Accuphase program, but also in its price class. It will be difficult to find a better amplifier for the same price.

*Matthias Böde*



▲ Less frequently used, but useful, functions are hidden behind the flap.

## ACCUPHASE E-370

approx. € 6150

Dimensions: 46.5x17x45 cm (WxHxD)

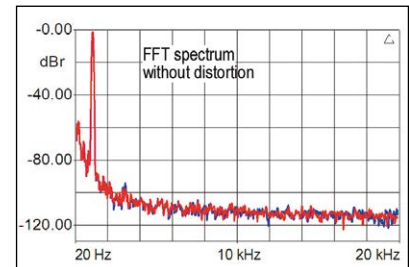
Warranty: 3 years (on registration)

Contact: P.I.A. HiFi, Tel.: +49 6150 50025

[www.accuphase.com](http://www.accuphase.com)

If the new Accuphase would cost 600 euro more than its predecessor, this would be perfectly OK as far as sound quality is concerned. But the „Golden Boy“ costs this amount less and even better, making it a superb bargain.

## MEASUREMENT RESULTS



**Continuous power** at 8 | 4 Ω 107 | 170 W per channel  
**Pulse power** at 4 Ω 220 W per channel

**Distortion factor**  
At 50 mW | 5 W Pmax -1 dB 0.005 | 0.002 | 0.004%

**Intermodulation**  
At 50 mW | 5 W Pmax -1 dB 0.002 | 0.001 | 0.1%

**Signal-to-noise ratio** CD at 50 mW 5 W 83 | 92 dB

**Channel separation** at 10 kHz 59 dB

**Attenuation factor** at 4 Ω 125

**Upper limit frequency** (-3 dB, 4 Ω) > 80 kHz

**Connection values** practice-orientated

**Crosstalk Tuner/CD** (10 kHz/5 kOhm) 95 dB

**Synchronization fault volume**  
control up to -60 dB 0.03 dB

**Power consumption**  
Off | Standby | Idle 0 | <2 | 40 W

## LABORATORY COMMENT

Excellent measurement data in all relevant points. High pulse power and signal-to-noise ratio with extremely low distortion. Effective channel separation

## FEATURES

Eight high-level inputs, two in XLR, remote control, balance and sound control, loudness, tape output, phase reversal, headphone output, separable pre and output stage, level meter, phono, DAC and high level modules are optional.



AC phasing on test unit

## STEREO-TEST

**SOUND QUALITY** 96%

**PRICE/PERFORMANCE**

★★★★★  
**OUTSTANDING**



*Burmester*

---

## Phase 3 Retrostyle

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





# GOOD THINGS TAKE TIME

After more than 13 years, Dynaudio has renewed its „Contour“ series. Here STEREO exclusively tests the range-topping Contour 60.



In addition to the Contour 60 (M.), there is also the smaller floor-standing box 30, as well as the compact model 20 (from €4500/7000/pair), which came out in a stimulating „White Oak“ plus the centre speaker 25C for €3250.

While it will be immediately clear to connoisseurs that this substantial floorstanding speaker, at almost nearly 136cm tall, is really a Dynaudio, to others it may not be so obvious. You see, the reinvention of the Contour 60 – the top model in this renewed line-up – took an eternity, even by the standards of the hi-fi sector, in which comparatively long model cycles are far from unknown. Compared to their predecessors, boldly styled with a protruding steel plate and visuals that polarized at best, and at worst led to rejection, these new Contours were designed by the Danish specialist to play things „safe“: they have a dignified elegance, with no corners or edges for the viewer to „bump“ into.

## Dignified Instead of Striking

Where metal grilles once stood out to striking effect, there's now a 14mm-thick aluminum profile housing the four drive units, and providing stable support for the speaker's three-way design. Where once there was a thick MDF plinth, Contour 60 now stands on graceful aluminum struts, cheekily peeping out from under the curved cabinet. The spikes are embedded into the feet and can be unscrewed with an Allen key: this is done once the 54kg speakers are perfectly placed – until that point, small rubber rings protect the floor from damage while the fine adjustments are made. Eight flat locking nuts are provided for the spikes once the speakers are perfectly level: using these gives the sound of the Contour audibly more contours.

The efforts of careful installation and wiring are apparent as the Contour 60 snaps into focus and starts to show its

class when we precisely align the position of both loudspeakers. The new model replaced the previous S5.4 model, which had served us as an invincible working tool since its own exclusive test, and which we „kept“ at the end of its long service period for a comparison with its successor (see box).

And with the Contour 60 finally in place, it doesn't take long



for us to start appreciating its attributes. The fabric dome tweeter is easily identified as an „Esotar2“, equipped with aerodynamic, milled-out neodymium magnets, stabilizing coating and an inner damping chamber, the work of the Skanderborg company's master driver-designers. According to the manufacturer, the latest Contour series uses no parts from the previous range, and even the midrange driver and woofers are all newly developed. Well, there was plenty of time, after all!

Exciting stories are going around – like how the technicians used software-based simulations based on the „finite element analysis“ to

◀ Dynaudio founder Wilfried Ehrenholz with some models from the long „Contour“ tradition



reinforce Dynaudio's classic MSP woofer cone from 0.5mm to one millimeter thick; how they finally folded the centre asymmetrically instead of uniformly; and how the rubber bead at the rim is no longer semi-circular, but elliptical – in order to suppress tumbling motions even more effectively and to keep the movement of the cone piston over a wide range of excursions. This is also the purpose of the light, but ultra-rigid, coil former in the speaker's "motor": it's made from titanium instead of Kapton, the results acquired „virtually“ acquired results having been verified in long listening sessions.

The broad gap between 220 Hz and 4.5 kHz is filled-in perfectly by the midrange driver. Unlike other 15cm drivers made by the Danes, which were designed to cover some of the bass in „XEO“ or „Excite“, this one has been “uncompromisingly tailored to its scope and practically wrapped around the “Esotar2”, according to product manager Roland



▲ Only the best ingredients are used for the Dynaudio's pride of tweeters: the famous Esotar2.

## „CONTOUR“ REDEFINED IN COMPARISON

Everyone was curious about one thing: how would the new Contour 60 compare to its direct predecessor, the proven Contour S5.4 (r.)? The latter had recently cost €8400 and had been built unchanged until the end of production in 2014 – there was no „LE“ version like the smaller S3.4.

Compare old and new, and while it cannot be asserted that Contour 60, in comparison to S5.4, brings the sound „from the head to the feet“, it does show an evolutionary step, which is quite significant because of the length it took to arrive at the new stage.

Therefore, the Contour 60 sounds like a much more refined S5.4. In the bass range, the latter appears comparatively more comfortable, far

less snappy, sinewy and abrupt. In the higher ranges, the S5.4 does not reach the rapid speed and extreme dispersion of its successor, but there are more details hidden in the direct comparison: the old model can sound somewhat rounder and lovelier than the mercilessly dry, yet at the same time considerably more relaxed and concentrated, Contour 60.

Nevertheless the kinship was unmistakable, the tonal balance almost identical in the important areas. The S5.4 is still a great loudspeaker, but the 60 series redefines „contours“!



Hoffmann. For the first time, this driver uses a rigid fiberglass coil former to carry the light aluminum wire in its “motor”.

Unlike most cabinet builders, the Danes still design and produce their own boxes at the company's headquarters. Anyone who had feared that acquisition by new Chinese owner GoerTek would dilute



▲ The solid metal foot stabilizers have integrated stabilizing spikes.

Dynaudio's ambition and high standards will be reassured by the Contour 60, for as simple as this cabinet appears on the exterior, it has a whole lot going on inside!

Apparently there were heated discussions – even the cool Danes get heated sometimes! – on the best strategy for stiffening the cabinet: increased wall thickness or internal bracing. The compromise reached? Both: so the Contour 60 now uses a range of MDF thicknesses for the main “carcass” – 38mm for the rear wall, 26mm for the baffle and 16mm for the side panels –plus slotted internal panels to diffuse the sound, dampening „Basotect“ on all walls, special wadding in the entire volume plus an acoustic fleece in the midrange chamber to guarantee the ideal balance of sound absorption and resistance.

### Striking High-end Flair

We particularly liked the WBT „Nextgen“ terminals used in the single-wire connection panel: anyone who ever experienced a direct comparison of how positively these opposing sockets affect the spatial representation, serenity and homogeneity will realize their inclusion is a few extra euros well spent. But before we get lost in the effect of these terminals, or the finesse of the impedance-linearized crossover networks they feed, equipped as they are with first-class Mundorf components, perhaps we should listen to a few bars.

It is important to give the Dynaudio sufficient playing time before serious listening is attempted: only then do the



▲ The two rear reflex tubes can be closed in several stages by means of intermeshing foam stoppers, allowing the desired bass adjustment.

◀ In terms of sound, the WBT Nextgen sockets in the connection panel can hardly be praised sufficiently.



„contours“ of its already excellent drivers really flow into one another more conclusively. The Contour 60 is still a real Dynaudio – linear, acoustically transparent and authentic – yet despite its size and the two woofers, ported by rear-venting reflex tubes, this is not a loudspeaker to push the listener into the chair.

Instead, the complete effect is to provide more purity and agility in the lower frequencies, allowing the plump electric bass in Jennifer Warnes' „Rock You Gently“ all its substance without excessive fattening: it drives the track rather than slowing it. Details like voices fading away in the background, as well as the many short flares of intricacies in the brilliant pop production, are presented by Dynaudio on a silver tray; it's rare to have the impression of being able to hear everything, yet delivered so effortlessly.

Contour 60 gives a prime example of its art with the so-often heard „Saturday Night“ by the Red Norvo Quintet. They are „immortalized“ in the STEREO sound test CDVI, as well at 45rpm on

the new „Best of“ LP, a fantastic live recording, crystal-clear, as three-dimensional as it is solid – the effects is almost like small explosions „bursting“ around the vibraphone strokes of the bandleader. You can even imagine hearing new details in the well-known piece – partly due to the constant background audience, partly from the band itself. Even I had never noticed the soft „pling“ in the right channel at 2:47.

And that was not the only time that I was astonished: voices appear with typical timbre, the Contour 60 refusing any inclination to whitewashing and delivering a sonorous chest tone, if this is available. Although the midrange driver and tweeter operate above the ear height of a seated listener, the height and size images are absolutely realistic, and the soundstage shows first-class organization, with that real 'point at the performer' effect.

Yes, this driver arrangement is a break from the previous Contour series, but it's also opening a new chapter in the Contour history, which started 30 years ago. With their models – some unforgettable like the Kompakbox 1.3, which led a whole generation of sophisticated hi-fi – Dynaudio has always demonstrated what can be achieved at just about affordable prices, and this is still the case with the Contour 60: it's an excellent, powerful all-rounder with a striking high-end flair.

Dynaudio recently created a furor with the futuristic active and wireless solutions of the „Focus XD“ or „Xeo“ series, so it's a good thing that this manufacturer also sets a standard in classical loudspeaker design that will last for many years. That it took some time in this case – well? Good things just need their time.

Matthias Böde

## TEST-COMPONENTS

RECORD PLAYER: Transrotor Max nero

PHONO Amp: Brinkmann Edison

CD PLAYER/STREAMER:

T + A MP3000HV

PRE- AND POWER AMPLIFIERS:

Accustic Arts Tube Preamp II-MK2, AmpII-MK3

FULL AMPLIFIER: Accuphase E-370, Symphonic Line RG9 MkIV Ref.

LOUDSPEAKERS: B & W 802 D3, DALI Epicon 6, Dynaudio C. S5.4

LS CABLE: HMS Gran Finale, In-Akustik LS1603



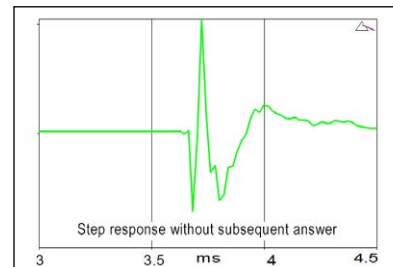
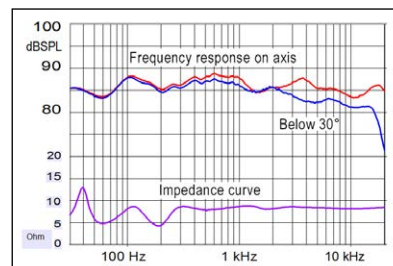
◀ The twin 18cm bass drivers used in the Contour 60 are of a brand-new design.

## DYNAUDIO CONTOUR 60

Pair from € 9000 (six finishes, with lacquer available at a € 900 surcharge)  
Dimensions: 29.5x135.5x46 cm (WxHxD)  
Warranty: 8 years (on registration)  
Contact: Dynaudio Germany  
Tel: +49 4108 41800  
www.dynaudio.com

No other Contour model so amply demonstrates the Dynaudio maxim that „Danes don't lie“: the new 60 shows a high level of know-how blended with brand-new developments to create a superlative loudspeaker for purists.

### MEASUREMENT RESULTS



|                                   |                  |
|-----------------------------------|------------------|
| Nominal impedance                 | 4 W              |
| Minimum impedance                 | 4.5 W at 190 Hz  |
| Maximum impedance                 | 13 W at 40 Hz    |
| Sound pressure level (2.83 V/1 m) | 89 dB SPL        |
| Power for 94dB (1m)               | 7 W              |
| Lower limit frequency (-3 dB)     | 30 Hz            |
| Distortion factor at 63/3k/10kHz  | 0.3   0.1   0.1% |

### LABORATORY COMMENT

There is a slightly wavy, but linear axis frequency response (red) with an amplitude moving around the +/- two-decibel mark. Below an angle of 30 degrees, the tones above two kilohertz are increasingly declining, which is why the Contour 60 should be angled to the listening position. It has a pleasingly high efficiency, as well as a smooth, uncritical impedance response, without any significant breaks or peaks. Any amplifier can do that. Other strengths are the low lower limit frequency as well as an impeccable step response.

### STEREO-TEST

SOUND QUALITY 92%

PRICE/PERFORMANCE

★★★★★  
EXCELLENT



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# MUSICAL FIDELITY

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# TAKE TWO!

The RELT/9i, flagship of the company's "Theater Reference" production series, shows just how good a compact subwoofer can be, even for music – and things get even better when you use two!

A subwoofer is an active loudspeaker, usually cube-shaped, devoted solely to the bass range. So far, so good and, in the common perception, it's a prerequisite for convincing home theater, where it looks after the '.1' channel in those 5.1- or 7.1-channel systems (or more!). But does its ability to 'bring on the thunder' mean that's all it can do?

Certainly not: you see, it's a fact that the human brain associates deep frequencies with large spaces, not least of all because large, deep-reaching loudspeakers usually sound

more space-filling than small ones. So with a subwoofer a system – yes, even one purely dedicated to music – just sounds deeper, larger and more substantial. Interestingly the effect can often set in before the music starts – you simply perceive the space.

Active subwoofers often offer several options for incorporating them into the sound reproduction chain. So the bass cube can usually be connected via a pre-amp-level cable, which requires that you possess separate pre/power amplifier components, or that one or two special subwoofer or pre-amplifier outputs are present on an integrated amplifier. (It's worth noting here that a "Rec Out" or "Processor" output isn't suitable, as these are fixed level outputs, and always operate at the same level independent of the volume control; what you need are outputs whose levels change in tandem with the main volume setting.)





Special home theater subwoofers can be recognized by the fact that they usually have a single-channel design, designed to be fed by a single consolidated LFE output – that ‘.1’ again. However, many subwoofers can, like speakers, also be connected with speaker wires to the amplifier: due to their high-resistance design, this can easily happen parallel to the existing speakers.

REL mostly recommends this solution, which is also the only one that allows the full-fledged stereo connection of a T/9i – even back in the mists of the company’s history, founder Richard Lord would say that this was the only way to ensure the subwoofer was entirely in phase with the ‘main speakers’ it was underpinning.

That’s how the T/9i is configured: as well as single RCA phono (‘low-level’) inputs either through the built-in crossover or direct, for use with home theater components with their own crossover filtering and LFE output, the subwoofer is equipped with a Neutrik speakON connector for ‘high level’ connection straight from stereo speaker outputs, and is hooked up in a three pole manner on the amplifier side, which means with a joint negative pole for both channels. The manual suggests you

connect the cables on the end of the speakON connector to the amplifier’s left channel positive and negative terminals, and the right positive.

REL is considered a pioneer of subwoofer technology: I personally can remember a sub from this manufacturer nearly as large as a desk, but with the current REL Theater Reference T/9i, we are dealing with a surprisingly compact and therefore living room friendly specimen, which was evidently conceived primarily for home theaters, the “Theater Reference” series name giving it away. An especially long-throw 20cm bass driver with a white FibreAlloy composite membrane in a steel chassis fires forward, while a downward-firing black 25cm passive membrane of identical construction delivers the bass reflex support, but with no danger of port noise. A class AB amplifier with a 300W output sits within the high-gloss black housing, the speaker also being available in white.

For an additional 230 Euro, a wireless connection solution named “Arrow” is available: claiming practically no additional delay, its signal transmitter and



▲ The black, slightly larger passive woofer fires downward to create bass reinforcement and tuning

receiver replaces the wired connection between amplifier and subwoofer. A clever accessory!

### Beating the boundaries

Every boundary surface – floor, wall or ceiling – in close proximity to a subwoofer increases the sound pressure by around 3 dB, which makes life easier for the internal bass amplifier. However, you still have to experiment intensively with the positioning, as this boundary reinforcement can all too easily lead to droning effects more suited to home theater use with its exploding buildings and circling helicopters, than for audiophile requirements, which are more concerned with instruments presented in the finest possible detail.

And here we come to a little criticism in this context: the included power cord is much too short for any of the more unconventional positioning variants, but at least the T/9i uses a conventional IEC mains input, so sourcing a longer power lead shouldn’t be too much of a problem.

Although it weighs barely 19kg and has manageable dimensions, the REL goes powerfully to work, reaching deep down to well below 30 Hz. It delivers support for the space, an essential goal for most audiophiles, just as well as it creates a sonorous, tightly defined and deep black foundation for the music. Low-pitched organ registers in Bach’s Toccata provide breathtaking excitement with a T/9i, and with two in harness – of which more in a moment –, in addition to making the room thunder less, the result is an enormously confident rendering free of effects. The increase in solidity and three-dimensionality also comes to light with live concerts like Nils Lofgren’s “Acoustic Live” or Scorpions Unplugged (in Athens) – even when no low bass is involved at all!



## THE PERFECT SETTING

REL's Theater Reference was, as the name suggests, originally intended for home theater use, which explains the provision of a low-level RCA input for connection to the LFE output of an A/V receiver **1**, which could also be used with the a preamplifier or integrated amplifier having an integrated crossover network and dedicated subwoofer output. Alternatively, for preamps or amplifiers offering an unfiltered preout connection, there's a separate 'low-level' input **2**, signal from which passes through the REL's internal crossover filtering – as does the 'high level' speakON input **3**, which connects to an amplifier's loudspeaker terminals. For a single subwoofer set-up we'd use the high-level input, but if using two units we'd prefer the low level RCA input, with each subwoofer connected to its own stereo channel.

As far as positioning in the room is concerned, it's vital to strike the right balance between sufficient and excessive boundary reinforcement of the bass: to get an idea of the best position, play some music through the sub with your main speakers turned off or disconnected, and with the subwoofer located at your preferred seating

position. Walk around the room, including into the corners and against the walls, and where you hear the best balance between bass power and definition is likely to be good starting point for positioning the subwoofer. Yes, really!

For control set-up, begin with the gain set to medium level **4**, and then check at which phase setting (0/180°) **5** the bass functions most effectively in its desired position, in interaction with the 'main' speakers. For this and all other settings, a second person is helpful, meaning one for the adjustments and another in the listening position. If the lower frequency limit of the loudspeakers is known, cautiously approach this with the crossover control on the subwoofer **6** and set the level just where the subwoofer is no longer conspicuous. Go through this exercise again in different possible installation locations, and choose the one where the integration seems most conclusive. In the coming days you will certainly readjust and optimize,

as most often the first setting is too loud. In the case of a second subwoofer added later, repeat the procedure. The crossover / cutoff frequency will probably remain unchanged, but the level of each subwoofer can be reduced. Unfortunately the REL's level also changes if you vary the crossover frequency (see diagram).



That is incidentally something that most people don't consider in connection with subwoofers. This understated sub also provides clarity, tranquility and suppleness – that strange effect of better bass seemingly improving the sound throughout the entire frequency range.

### Take Two

I mentioned the use of two T9/i subwoofers, and what makes the addition of a second sub interesting is that unavoidable modes contingent upon the dimensions of the space, in other words the resonances, are less excited with this configuration. Use two subwoofers in different positions and you can run both at lower level than were one to be trying to fill the space with a single sub, one reason why two subwoofers are better than one, even two mid-sized ones rather than one large one.



◀ "Arrow" makes the REL (signal) wireless for an additional charge. It works superbly!

The drivers usually respond more quickly and, with less cone movement, can create the same sound pressure as one doing all the work alone, usually meaning distinctly less distortion and audible effortlessness. You actually "hear better with the second one", and right at the top of its range, with the No 25 and "Gibraltar" models, REL would even suggest a stack of several subwoofers to create a sub-bass "line array" – the company catalogue includes G1 Stacking Rails for just this purpose!

REL says that its mission in life is that "We make subwoofers. That's it. Nothing else. No distractions. Nothing to steal our focus," and in the T9/i you can certainly see an absolute specialist is at work. In this price category the British company is operating in the top bracket, and that's literally doubly true when you use two T9/is, which play better and allow more favorable integration than a single larger design for the same or slightly higher price.

Yet this REL it isn't "only" about more bass, but about better, more controlled and faster bass. It's about more space, more music, more enjoyment. And two RELs work so congenially with a room that they should be considered veritable problem solvers. Bass, better, best...

Tom Frantzen

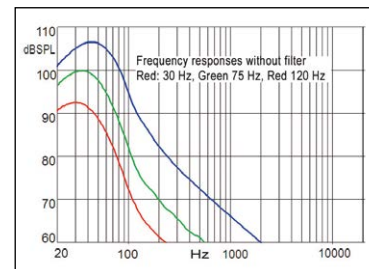
### REL T9/i

About € 1,250  
(Arrow wireless add-on € 230)  
Measurements: 33x39x41 cm (WxHxD)  
Warranty: 3 years,  
Contact: REL Acoustics  
Tel.: +44 (0) 1656 768777, www.rel.net

REL's compact subwoofer, the flagship of its "Theater Reference" series, plays precisely and forcefully, reaches down to almost 25 Hertz (-3 dB), and is perfectly suited to supplementing compact, or small- to medium-sized floorstanding, speakers. The solution becomes truly superior with two subs – and of course you can always start with one and then add another later. Superb!



### MESSERGEBNISSE



### STEREO-TEST

|                   |           |
|-------------------|-----------|
| SOUND QUALITY     | 73%       |
| PRICE/PERFORMANCE |           |
| ★★★★☆             | EXCELLENT |



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