

STEREO

GERMAN HI-FI MAGAZINE

ISSUE #2 2016

› **Slim — but superb**

T+A's new R-Series



› **Optical Cartridge**
The sensational
DS Audio W1

REVIEWS: RAIDHO X3 +++ OCTAVE V80SE +++

AUDIOQUEST NIGHTHAWK +++ TRANSROTOR JUPITER +++

DAC COMPARISON +++ DALI ZENSOR 1AX/PICO +++ DENON RCD-M40

EXCLUSIVE INTERVIEW: SOUNDGURU BERNIE GRUNDMAN



NIGHTHAWK

AROUND-THE-EAR SEMI-OPEN HEADPHONES



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SECONDS OUT, ROUND 2



Following the successful launch of issue #1 with tens of thousands of readers and downloads all over the world, STEREO Magazine spreads like wildfire on more and more audiophile readers on all continents.

The easy readability via online-slider and the offline reading feature by means of PDF downloads run smoothly thanks to its modern design compatible with all devices from PC to mobile phones.

Thank you also for your feedback, your praises and your suggested improvements, which we instantly put into practice as far as it was feasible.

For you again we tailored another issue containing a full array of test reviews across all equipment categories and price ranges, an interview with sound magician Bernie Grundman and a report on the CES Show in Las Vegas.

We very much wish you a diverting and inspiring time with the present issue of our magazine.

Hear you soon!

A handwritten signature in black ink that reads "Michael Lang". The signature is fluid and cursive, with a long, sweeping underline.

Michael Lang

editor@stereo-magazine.com



DS Audio DS-W1

The cartridge DS-W1 is a sensation: It tracks mechanically and transmits with light!



T+A R series

The new edition of T+A's classic hi-fi range is more than just a facelift. We have listened to both „small“ amplifier and CD player.



Octave V80 SE

Octave builds its tube amplifiers to last. The all-new V80 SE is no exception.



CES Show report

Not quite a celebratory atmosphere, but at least a positive mood prevailed during the CES Show in Las Vegas. No wonder in view of that many innovations. And here they show up!



AudioQuest Nighthawk

The new headphone set from AudioQuest makes many things differently than others - but yet successful.



Raidho X3

Once again the Danish manufacturer Raidho comes up with surprising new ideas within it's speaker range. The X3 is no exception.

Compact systems - active vs. passive

One manufacturer, two concepts: We have compared the active and the passive compact models from DALI's Zensor series with each other. Also on board: Denon's micro hi-fi system RCD-M40.



Juggling with numbers

STEREO faces up to three very different DACs from Accuphase, Exogal and NAD.



Interview Bernie Grundman

Mastering engineer Bernie Grundman shaped the sound of many top albums. He tells STEREO how he meets his own expectations in tough everyday work by yet defying many of the music business' insanities.



Transrotor Jupiter

The price starts at 2,500 euros, but can be enhanced to a four-fold. STEREO reviews the Transrotor Jupiter in both its entry level and luxury versions.

MUSICAL FIDELITY

NU-VISTA CD PLAYER

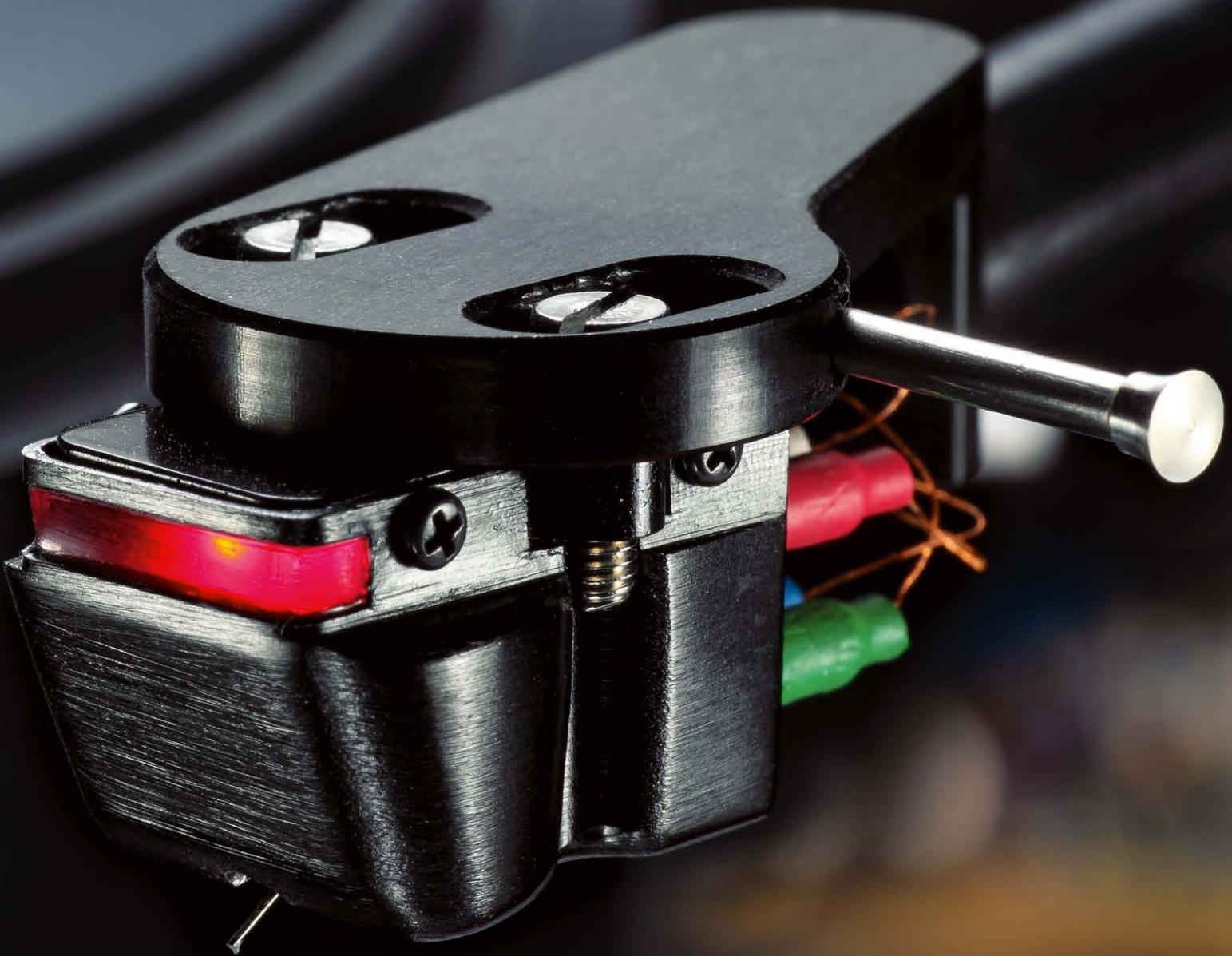


State of the art design for reference level reproduction

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

Experience it for yourself at your local Musical Fidelity dealer.

LET THERE BE LIGHT!



With the DS-W1 Night Rider from Japan, a world sensation comes to Germany—a pickup which produces its music signals photoelectrically. STEREO exclusively reviews this unique DS Audio phono cartridge, which has a solid phono pre-amp partner.



At first, only the lonely sounds of an accordion are heard, but suddenly what unfolds is a carpet of sparkling guitars, over which there's a beguiling collage of floating voices, the spreading sound of synthesizers, and various other elements - almost magically shimmering and humming. Like beads glistening in the sunlight, the strings sparkle, while the remaining parts rise and fall before the listener. Then the powerful, dynamic, resilient bass line, and the room is filled by a choir with the power of a mountain range. An extraordinary audiophile experience.

Have we ever heard 'Iduzkia' by the Basque band Oio sound so light and dazzling, so spread out and organized—in short, so perfect? The performance was, in any case, the very best thing to come from this record.

It was a worthy debut for a world sensation—a cartridge system that's all set to write a new chapter in the luxury phono category for vinyl playback. This revolutionary system, the DS-W1 by Japanese

▲ The DS-W1 phono preamp is brimming with components. In addition to the low-leakage C-core transformer, there's an armada of smoothing capacitors.

manufacturer DS Audio, consists of the cartridge and a power supply / signal unit which works entirely differently from other cartridges—namely by making music out of light waves.

Our entire team was on hand with premier fever for its arrival. The likes of which the editor has only witnessed a couple of times before in his professional career—something unprecedented. The ionic tweeter, where sound is produced by a plasma flame, created a similar stir, as did the first digital amp. And now the unique photoelectrically based DS-W1 Night Rider.

For decades, phono cartridges have generated their output voltage electromagnetically. Aside from a few piezoelectric exotica, whose energy was created by the deformation of a crystal, either

KEYWORD

MM, MC, MI: These abbreviations stand for 'moving magnet', 'moving coil', and 'moving iron'. MC cartridges require different loading values.

WHO IS DS AUDIO?

The recently established company is a subsidiary of Digital Stream Corporation, headquartered in Tokyo. For the last 25 years DSC has been among the leading manufacturers of laser optical systems in this industrial sector. Here you use a combination of Microsoft and a computer mouse to develop products. It was on the basis of competence in this area that 28 year old Tetsuaki Aoyagi, the DSC founder's son, was able to realize his dream and create a cartridge which produces sound with light. To accomplish this, he made use of technologies from within his own company. In addition he was able to use modern components such as cool LEDs, which were formerly not available. And DS Audio has plans for continuing innovation. It should be interesting!

magnets (MM) or coils (MC) have typically moved to create the electromagnetic energy. Occasionally variable reluctance cartridge designs have been implemented in which both are fixed, and an iron armature oscillates in the field (MI).

Sound from infrared light

There is now another type—the 'moving light' cartridge. This is a direct result of what the Japanese newcomer DS Audio is presenting. There is a design that breaks with everything that came before, at least in terms of commercially producible

◀ This equalizer / preamplifier is part of the set. It not only processes the signals, but also provides the phono cartridge with the necessary energy.



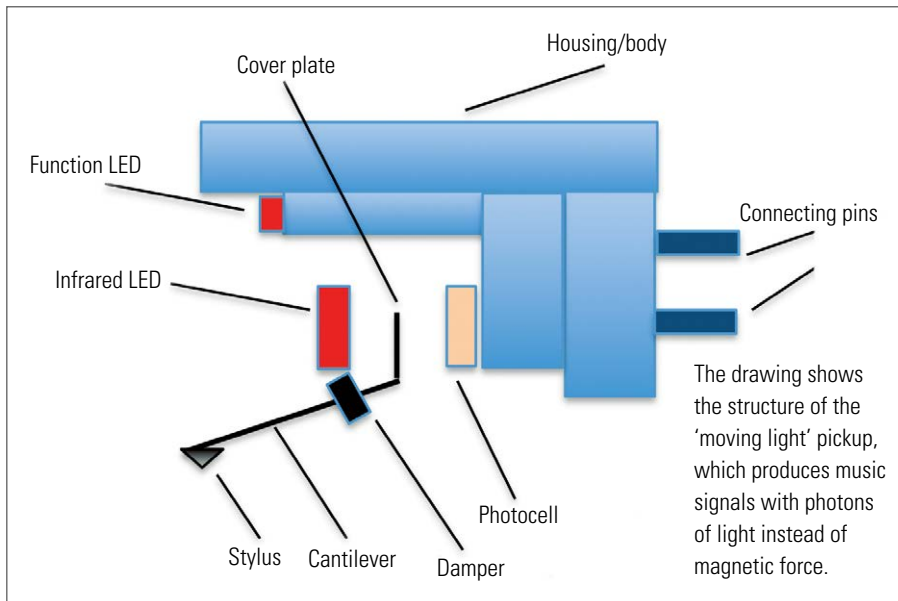
*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

products. Although DS Audio relies on an old Toshiba patent from the seventies, that design couldn't technically be implemented for continuous operation. These earlier light cartridges—as evidenced by former prototypes—were simply too hot because of their lights.

Thanks to cool LEDs this problem was resolved, and developer Tetsuaki Aoyagi could see his sensational concept come to life. While the technical challenges weren't insurmountable, DS Audio's parent company, the Digital Stream Corporation, took them seriously and confronted the delicate and ticklish challenges with an incredible amount of diligence. It was precisely this kind of professional approach that was required for the groundbreaking DS-W1 Night Rider.

Its parts are what you would expect from a very high quality cartridge system, including the accompanying phono amp. (The phono amp supplies the pickup with power and processes signals for downstream connection to a pre or integrated amp.) An aluminum body houses the lightweight 6.5 gram cartridge and its boron cantilever—which is as light as it is stable, and outfitted with a fine-cut Shibata diamond stylus.

Normally, the small boron shaft would move a miniature coil armature in a magnetic field, but in this case everything



works differently. In fact, the shaft drives and optical element that sits between an infrared LED and light-sensitive photodiodes. This small plate changes the photon stream of short wavelength infrared light, from which the diodes detect the signals of the two channels. Basically, a simple process which admittedly requires a high level of expertise. But why would you want to abandon all the proven paths for scanning vinyl? Because the light technology offers clear advantages:

- The black anodized pickup, with its

high output voltage, needs just 20 decibels of gain (roughly 40 dB MM/MI; and 60 dB. MC). This keeps distortion and noise low.

- The optical element's moving mass is significantly lower than that of conventional coil armatures, which enhances impulse response and precision, and allows the stylus to more closely follow the groove undulations.

- Unlike electromagnetic designs, the light-based pickup, with its increased tracking speed, is not louder at high

LIGHT PHOTONS VERSUS MAGNETIC FORCE — BATTLE OF THE SYSTEMS

At such an historic moment, it is a pity that not all analog freaks could sit on the sofa with us in the large STEREO listening room. On the program was nothing less than the best in phono cartridges, where the DS Audio DS-W1 let its light shine, and the Benz LP-S defended the honor of the MC group. The latter costs about €3,200*. And in combination with our reference phono preamp, the Brinkmann Edison, which costs about €9,000*, they are significantly more expensive than the Night Rider system, which is priced proudly at €8,800*.

The cartridges were on an AMG 'Viella12' turntable, aligned and mounted on two in-house tonearms (as in the photo)—the DS Audio on a 12-inch arm and the LP-S on an otherwise identical 9-incher. The phono amps in each case were connected via HMS Gran Finale Jubilee cables to Acoustic Art's



great preamp, followed by other top components. An example was selected to show what happened.

In the intro to the 1968 recording in which Claude Nobs introduces Bill Evans and his companions, the Night Rider attacked the Benz/Brinkmann pair with two of its primary qualities—conciseness and plasticity. The Montreux

impresario was presented as prosaic and clearly outlined. While the conventional phono pair was tonally similar, they were a breath narrower, and not as open. So the direction was clear. Admittedly with the LP-S/Edison combination, Eddie Gomez's bass was hardly less lively; the sound was organized with comparable excellence, but the naturalness and coherency of the 'luminous' system wasn't quite matched.

Close, but we had a winner!

frequencies. As a result, its RIAA equalization is a lot less complicated. Instead of the usual 40 dB that's required over the range of the lowest to the highest frequencies, only about 10 dB is required here. Gentle filtering is always preferable, because it is less prone to phase errors, which could compromise imaging.

- There are also no magnetization effects, which could cause time-related problems sonically, and a possible saturation of the coil due to the high amplitudes. These are not issues with the DS Audio design.

With solid arguments, and everything else mere theory, what do these things really mean in practice? First, you'll find that the pickup's operation and

its incredible wealth of detail. This magnificence wasn't limited to Oio. The cartridge was just as splendid, bursting with acoustic embellishments, with the tracks from 'Seeds Of Love', the brilliant pop album by Tears for Fears.

The title song was both sparkling and breathtaking as presented by this Japanese phono system. The DS-W1 made it possible to see the song's elements floating into each other, to see how they amassed then collapsed together. No detail was overlooked; and you never had the impression that the cartridge was overly loud or distressed by difficult passages. The DS-W1 impressively mastered every challenge with ease and dignity, and it did so with that special high-end aura that we see from only the most ambitious high-end analog gems.

the sideline? We don't areally know. Is it a serious competitor to the proven best cartridges/phono preamp combinations? Absolutely! And more than that. It is a bright light among the highlights in what is certainly not a poor vinyl scene.

Matthias Böde

COMMENT



MATTHIAS BÖDE

DS Audio has landed a direct hit. With its high tech background, this newcomer is showing the established competition how to launch a sensation. And as an ancillary effect, it is putting the analog market segment, which is already growing, into further focus. Also among those audiophiles who had already committed to the LP. Their motto—'did you see that?!' It doesn't surprise me that the Night Rider comes from Japan, once the laboratory of innovation for our hobby. Recently it was Technics that represented that comeback, and now DS Audio. Japan is back.

that of its 'EQ Unit' is absolutely problem-free. Were it not for the LED on the cartridge, which indicates its operating status, there wouldn't even be a hint of its uniqueness. Also, with regard to its excellent tracking ability and the other special qualities it possesses, Night Rider is certainly a cartridge with high-end expectations, and also one that barely warms after hours of operation. That said, what about the sound?

We got an immediate glimpse at the very beginning of our evaluation. We tried not to get too excited; but this infrared-based cartridge and its matching matched amp sounded simply phenomenal. The system won us over with its exemplary cleanliness, openness, and

Phenomenal sound

All eyes and ears were naturally on the cartridge; but its unassuming 'supply unit' deserves its share of credit for the outstanding results. Its thick-walled, stable chassis has feet shaped like spikes, and inside there's discrete cutting-edge technology. The only control is the power switch. This is sufficient, because the electronics, which were designed and optimized exclusively for this cartridge, make other options superfluous. There's nothing here for other cartridges

The fact that the amp has only unbalanced outputs is sonically not an issue. The listener has the choice between a linear signal path and one that inserts a subsonic filter, where deep bass frequencies are rolled off. This is the setting we preferred, because it resulted in a nuanced, more homogeneous midrange reproduction.

This Japanese analog phono system transformed our LPs, one after the other, into a real treat for our ears. Ella Fitzgerald, in 'My Reverie', was vividly outlined, standing in front of her band, in our listening room. She delivered her typical, lightly textured timbre and the sonorous energy in her voice. Even the record's pops were having a tough time keeping up. Night Rider has to be striking fear and terror in the hearts of competitors at the very high end.

Then there's the question—does the DS Audio DS-W1 kick all conventional high-end analog approaches to



▲ Boron cantilever with a polished Shibata diamond stylus. Here are the convincing details.

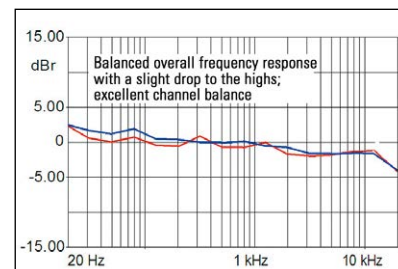
DS AUDIO DS-W1 NI. RIDER

Approx. € 8,800*
(cartridge incl. electronics)
Mounting: ½ inch; Warranty: 2 years
Contact: High-Fidelity Studio
Tel.: +81 427/47090
www.ds-audio-w.biz

Fortunately for the competition, the set is inseparable. As such, it is a force, and in a class of its own!

TECHNICAL DATA

Weight	6.5 grams
Compliance	12 µm/mN
Output voltage	500 mV (5cm/sec)
Recommended tracking force	13 to 17 millinewtons



STEREO - TEST

SOUND QUALITY 100%

PRICE/PERFORMANCE

★ ★ ★ ☆ ☆

VERY GOOD

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.



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PURE, AUTHENTIC SOUND REPRODUCTION

- delivered by the DALI RUBICON series

Producing a wonderfully wide dynamic range and imaging so real, you'll believe that you are right in the middle of the original performance.

Small but perfectly formed, the RUBICON 2 stand-mount speaker delivers defined audio detail, with a naturally rich and full sounding bass response. The RUBICON 2 is the perfect blend of compact speaker size and cabinet inner-volume creating a sound that belies the beautiful speaker's dimensions. This perfect construction places the ultra-light soft dome tweeter and 6-5-inch wood-fibre low-loss driver in the optimum environment to ensure an unforgettable listening experience.

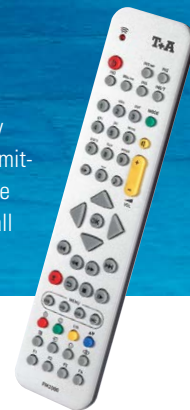


For more information on the RUBICON series: www.dali-rubicon.com

A SPECIAL EXPE»R«IENCE



The very high-quality remote control transmitter controls the entire system, even if not all network functions



After the great success of the high-end HV series, T+A not only completely refurbished its previous top-of-the-range “R” series, but also equipped it with the superb sounding HV technology. Inevitable success?

T+A has only recently sold out its legendary R-series stock – to now start with a new class. Obviously inspired by the success of the HV-series, and with the certainty that quality finds its buyers, a lot of the knowledge gained with the flagships flowed into the new R-series, which is why it had more in common with the HV siblings than with their predecessors. The price was also matched to the enhanced qualities, it

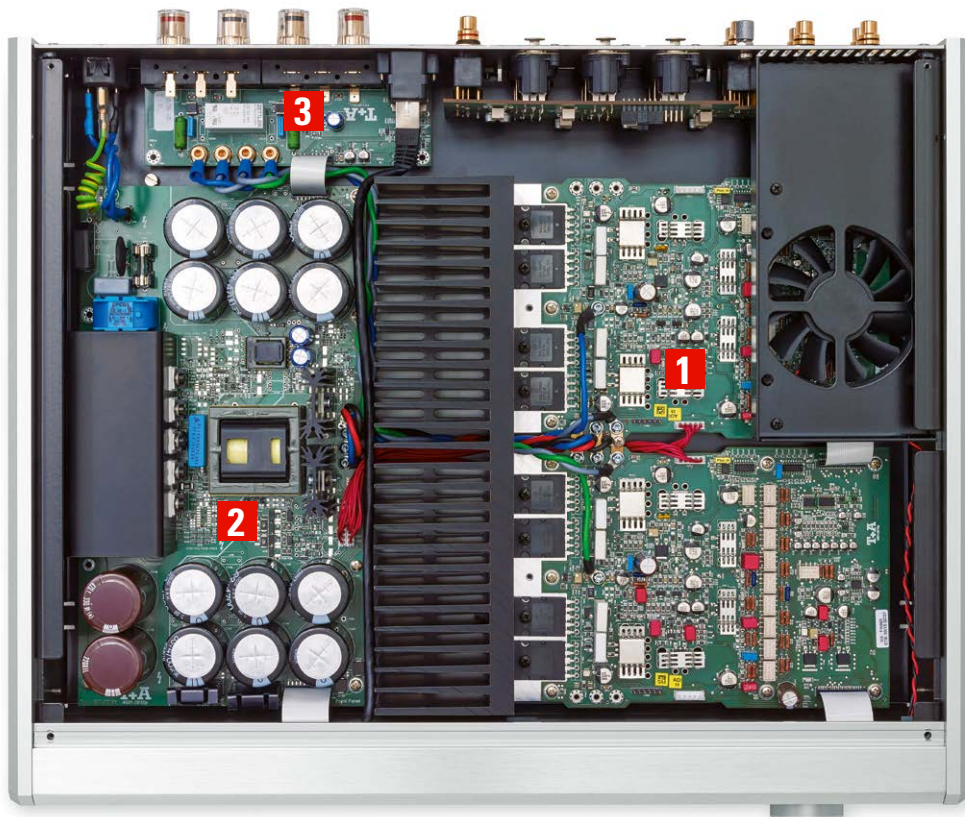
floats between, that is, well below the HV and above the E components. The R-series was for several decades undoubtedly the most important series from and for T+A, a design icon. The balancing act to continue the series, yet to signal a new beginning, succeeded with the choice of the R-series model numbers 2000 and 2500 not used until now. The housings are beautifully finished and very stable, but do have the charm of an armored cruiser of

the more expensive siblings only because of its space-saving dimensions, which is of course reasonable. The equally timeless as elegant and functional design must be described as extremely successful. It reminds one both of its predecessor and of the clean lines of the best product designers ever. As this comparison is always attempted, it is however noted here that even the most sophisticated creations, for example by a certain Dieter Rams from the now defunct company Braun in terms of Hi-Fi products, were nowhere near the “R” league. We find the decision to offer a similar and equally powerful all-round machine in the MP 2000 R multisource player, which can literally do everything from CD playback

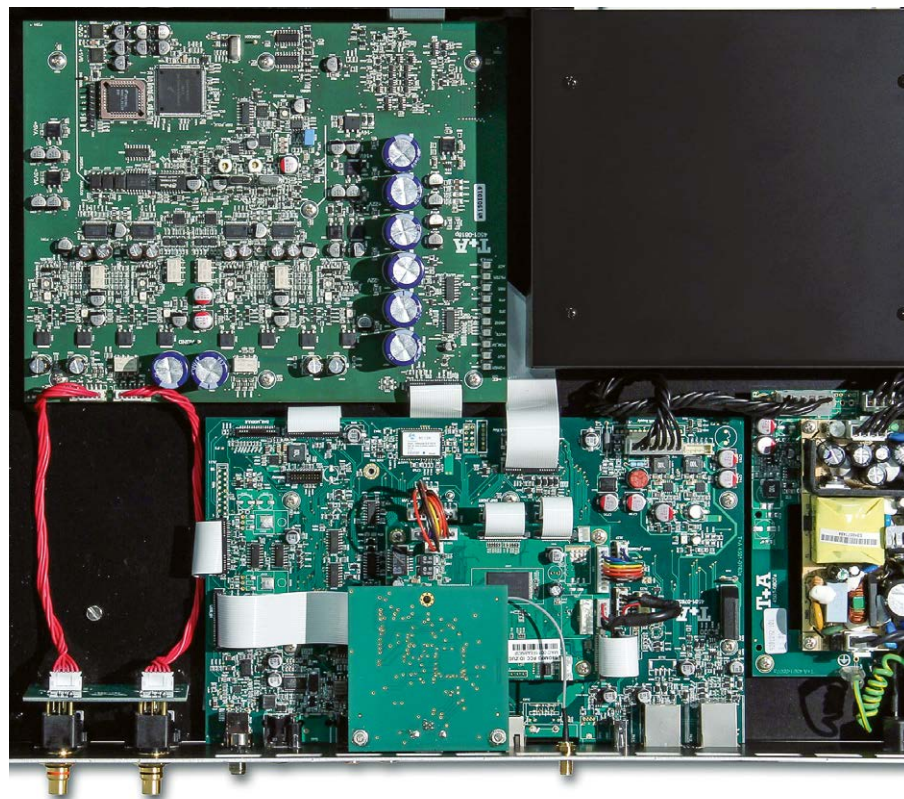
over high-performance DAC, FM and internet radio (free vTuner) through network player, without tangible compromises, at almost half the price of the MP 3000 HV a clever one.

Digital jack of all trades

T+A was once one of the first manufacturers to equip their CD player with auxiliary functions, not only with regard to the DAC that is also accessible for external sources, but also other integrated sources. The extremely stable CD drive with two stainless steel pushrods is float-mounted and resonance-damped to protect it from harmful effects. The streaming client being used is not standard solution, but a UPnP network-enabled, audiophile processor board with distinctive HD qualities for virtually all relevant formats up to 24 bits/192 kHz. In the 32-bit Sigma Delta DAC four converters per channel, which process the PCM up to 384 kilohertz and DSD 64/128/256 and even DSD 512 (meaningful to about 80 kilohertz), are used in double-differential quadruple configuration. Remote control via the supplied FM 100, even more elegantly and completely via an optional FD 100 or a corresponding app.



▲ The image of the inner workings of the T+A integrated amplifier demonstrates the complexity of its operations. To be seen here **1** are the two identically designed amplifier boards with the fans and on the left, shielded by large heat sinks, the power supply **2** and output unit **3**.



▲ In the MP 2000 R the encapsulated drive (top right) as well as the elaborate, functionally separate boards for the analog output stage (top left), the power supply unit (bottom right) and the DAC/streaming block (center) attract the attention.

Ultra-strong control center

The PA 2000 R integrated amplifier, although the “lesser” of two available models, packs a powerful punch. Whereas on paper the specifications are 100 watts at 8 ohms and 200 watts at 4 ohms as output power, we could actually measure even 130 (+30%) and almost 240 (+20%) watts – quite a noble understatement. To avoid magnetic distortion, only non-magnetic input and output terminals with hard gold-plated contacts are used, and all bushings are screwed to the aluminum rear panel to ensure high stability. Gas-tight encapsulated gold-contact relays for input selection and volume control guarantee wear-free functioning and short signal paths, which in turn eliminates noise and distortion. One of the line-level inputs can be fitted to connect a turntable available as an option with very high-quality phono amplifier modules (phono MM or MC).

The HV “secret”

As in the HV models, the preamplifier and power amplifier parts in the R-series are also structured according to the dual mono principle, while the absolutely

identical boards, separated in two channels, each comprises an input section, volume control, high-voltage amplifier and current amplifier stage. The circuit almost doing without negative feedback loop based of its quality relies on a cross-coupled cascode differential amplifier, followed by a single-ended class A large-signal stage. Among others, the amplifier stages are fitted completely discreetly with hand-selected J-FET transistors – in other words, without operational amplifiers.

Combined with the unusually stable operating characteristics based on the high supply voltages, high linearity and extreme dynamic capabilities are achieved. According to T+A, signals up to 60 volts peak voltage can be processed without distortion! Voltage and current amplifier stages are electrically isolated from each other. This way load dependencies cannot even occur through the retroactive speaker currents on the voltage amplifier. The current amplifier or output stage is equipped with MOS FET drivers and the latest generation of bipolar “thermal tracking” power transistors with integrated thermal diodes, so that the operating points can be kept constant at minimum distortion. Due to the limited space in the solid flat aluminum housings, T+A forthwith developed a controlled and high-frequency sine wave power supply unit with 100-kilohertz sine (!) equipped with appropriately lavish screening in house to nevertheless ensure a hard and sturdy power supply. It works without the usual switching frequency interference and can deliver large currents problem-free and inertia-free and uninterrupted 700 and briefly up to 1200 watts.

EXTENDE“R” OPTIONS

If the already quite lavish range of services offered by the “small” PA 2000 R integrated amplifier is not enough, the larger sibling PA 2500 R is worth looking at. The double-height housing packs the same basic circuit and instead of one, two high-performance power supplies with double screening capacity are used; in addition, another speaker and high-level connection and another balanced pair of preamplifier outputs were included. The extra space was therefore not used only as heatsink to dissipate the heat generated by the 40 percent higher output power. The PA 2500 R costs € 6,500*. The P 2000 R is also a high-quality, belt-driven turntable. He is available as a drive or with a modified Rega arm without system, optionally also with an Ortofon MM or a Clearaudio MC system. T+A recommends the optional PH G 10 phono amplifier module, which can be directly built into the chassis. The basic turntable with arm and MM system costs € 4000*..



▲ The new turntable is a further development of the G 1260 R from the previous R-series.



▲ The PA 2500 R has even more power and features.

The components used in both devices largely meet extreme military requirements and are of exquisite quality. That one also hears this tremendous effort is hardly surprising. The T+A team produces enormous clarity and projects a very spacious, open and fantastically illuminated stage between the speakers. You do not miss the smallest detail, while the features of the MP 2000 R used as sources try to mutually surpass each other. But it is not the single, perfect mosaic pieces such as high resolution or plasticity that enthrall us, it is the total offered event.

KEYWORD

HF sine-wave power supply: Unlike a switching power supply, a sine-wave power supply does not turn on and off. And unlike the conventional linear power supply, it works with 100 kilohertz instead of 50 hertz.

Especially since the amplifier mobilizes forces that can shake the listening room – particularly on a T+A transmission line from beats of the Criterion 110 S – regardless of its slender form. Whether we insert the “Audiophile Voices” with exquisite voices like Eva Cassidy into the CD drive, let it rip with “Children Of Sanchez” or stream HD from the server, T+A musically delivers a superior presentation that is not dramatically inferior to the HV siblings. No question, the new R-series from Herford is a huge cinematic experience. If given the choice, I’d probably choose the larger integrated amplifier while my wife would probably go for the slimmer model. When it comes to multiplayers we would probably agree more quickly, because with network player, CD player and DAC (at least) it combines a triumvirate of selected components in one device at a single price. On closer inspection it relativizes itself amazingly quickly. No doubt, you too will succumb to the charm of this new T+A class “R”.

Tom Frantzen

Contact: T+A Elektroakustik
Phone.: +49 5221/7676-0
www.ta-hifi.com



Balanced and unbalanced outputs, FM/DAB+/internet radio, LAN/WLAN and numerous digital connections are features that distinguish the multi-functional player.



The amplifier provides three balanced and three cinch inputs, pre outs and connections for one pair of speakers. It can (optionally) be modified with a high-level input for turntable connection.

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

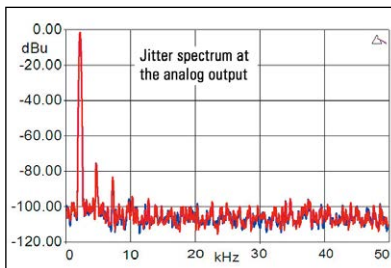
T+A MP 2000 R



About € 4,900*
Dimensions: 46 x 8 x 40 cm (WxHxD)
Warranty: 3 years

The multisource player from T+A is a top-class CD player, combined with an adequate PCM/DSD-DAC and a high-performance network player in one. Although not cheap, as an extremely well-sounding jack of all trades it ultimately does make absolute top quality affordable. Superb!

MEASUREMENT RESULTS



Signal-to-noise ratio Digital 0	110 dB
Signal-to-quantization-noise ratio (400 Hz/0 dB)	97 dB
Distortion factor (400 Hz/-60 dB)	0.11%
Converter linearity	up to -90 dB 0.1 dB
Scanning reliability	very good
Reading time	9 s
Output resistance cinch/XLR at 1 kHz	280/110 Ω
Output voltage cinch/XLR at 0dB FS	2.1 / 4.3 V
Channel deviation	0.1 dB
Jitter	2.6 ns
Deviation from the sampling frequency	-3.9 ppm
Power input	Off Standby Idling 0 <2 17 watts

LABORATORY COMMENTS: Outstanding measured values in all respects, especially in noise, distortion and jitter. The converter part is also impressive with values such as 116 dB (signal-to-noise ratio "digital zero") without any ifs and buts.



AC phasing
on test unit

FEATURES

Remote control, FM/Internet Radio and DLNA/UPnP, USB/LAN/WLAN, HD streaming and DAC up to 24/192, DSD 64/128/256/512 with true 1-bit converter, Bluetooth aptX receiver, R system bus.

STEREOD -TEST

SOUND QUALITY CD	93%
SOUND QUALITY DAC	93%
SOUND QUALITY STREAMER	93%

PRICE/PERFORMANCE



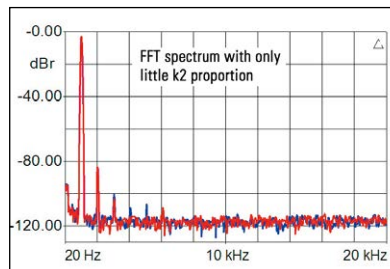
T+A PA 2000 R



about € 4900*
Dimensions: 46 x 8 x 40 cm (WxHxD)
Warranty: 3 years

For such a powerful amplifier with such an attractive slim-line look, the new T+A unleashes a magnificent, colorful and down to the finest detailed soundscape with verve and vitality. For half the price almost the ultimate sound of the HV series. Fantastic!

MEASUREMENT RESULTS



Continuous power to 8 4 Ohm	130 237 watts per channel
Pulse power to 4 ohms	- watts per channel
Distortion factor	
At 50 mW 5 watts Pmax -1 dB	0.003 0.005 0.02%
Intermodulation	
At 50 mW 5 watts Pmax -1 dB	0.002 0.004 0.04%
Signal-to-noise ratio CD at 50 mW 5 watts	85 102 dB
Channel separation at 10 kHz	64 dB
Damping factor at 4 ohms	-
Upper cut-off frequency (-3 dB, 4 Ω)	>80 kHz
Connected load values oriented to practical operation	
Crosstalk tuner/CD (10 kHz/5 kOhms)	94 dB
Volume control clocking error up to -60 dB	0.03 dB
Power input	Off Standby Idling 0 <2 54 watts

LABORATORY COMMENTS: High performance and absolutely outstanding, partly superior measured values, especially for noise, distortion and crosstalk as well as the synchronization of the volume control.



AC phasing
on test unit

FEATURES

Remote control, 3 x XLR inputs, 3 x cinch; phono optional, tone control/loudness, pre out, headphone output, dimmable display, R system bus, connection for one pair of speakers.

STEREOD -TEST

SOUND QUALITY	91%
PRICE/PERFORMANCE	
★★★★☆	
EXCELLENT	

HIGH END[®]
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STICK-THIN SPEAKER, MATCHLESS SOUND

Danish manufacturer Raidho is known for its innovative loudspeaker thinking: the super-slim X3 is no disappointment.

What is this? A floor-standing speaker as thin as a matchstick – well, almost! – for a whopping €22,000 a pair*? Has Danish company Raidho been paying attention to what’s been going on in this price category in recent months? For this kind of money 40 kilos is puny these days, with rivals sometimes at more than three times this weight – and a matching stature – from Canton and B&W, demanding respect from a purely visual perspective (not to mention from those who have to install the things!).

Now this stringy fellow comes from the north of Denmark and claims the right to a place in the fight, seemingly

this the manufacturer. And we discovered the abilities of the company’s 10cm ceramic-damped aluminum midrange drivers in our test of the X1 speakers in STEREO 1/15: here four of them frame the tweeter.

However, developer Michael Borresen has not simply installed a few more chassis into a larger housing: instead, he sees the X3 as a standard-bearer for future Raidho products. The first sign is found on the side of the box: a 20-centimeter aluminum woofer, a configuration with which Borresen has been wrestling with this configuration for years - even though it has been used in many, sometimes very expensive, loudspeaker con-

by electrostatics (among other designs),

In the X3 he has implemented this as with an eight-way concept, the drivers in a d’Appolito configuration with the ribbon tweeter having two midrange drivers above and below it. However, these are activated differently: the ‘inner’ pair of

»SINGLE-POINT AND LINE ARRAY SPEAKERS – THE CONCEPT IS CATCHING ON«

flyweight among the big bruisers and cruiserweights. After recovering from the shock of this punchy newcomer, the detective in the editor set out in search of clues and perhaps even tangible evidence to newcomer justify the price and claims of the Raidho X3.

Not that the Danish company isn’t without form: the excellent reputation the Raidho brand enjoys in global Hi-Fi circles is nothing new. The ribbon tweeter is familiar to us right away, as it also provides for pulse-exact, low-distortion playback reaching far beyond the audible range in other models from

cepts for around two decades.

In the past, he says, he didn’t find any approach of this kind so convincing that he wanted to accept it as an inspiration and source of ideas for his own creations. So why the change of heart?

Well, in recent years, Borresen has experimented constantly – between running Raidho production and visiting exhibitions around the world – with materials, chassis configurations and crossover designs. Finally he came up a crossover concept combining the advantages of a point-like emission pattern with that of a line source, as delivered



▲ Four 10-centimeter mid-range drivers from an aluminum/ceramic alloy, which operate in different frequency ranges, including the damped reflex port.

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

the ceramic/aluminum midrange drivers chassis gradually start to function from 300 hertz down, with the outer pair joining in to handle the entire frequency range from bass to just above 3000 hertz.

The effect is that, all the way down to around 180Hz, as the frequency becomes deeper, more and more driver surface area is available, before the 20-centimeter side-mounted aluminum drivers add their efforts in the deepest bass range. This smooth and spontaneous progression is how the speaker responds even to heavy, energy-sapping musical fare, without placing a great burden on the amplifier.

The variable bass reflex system known as “Flow Vent” – as used in the X3’s its smaller sibling the X1 – contributes to this, releasing a different volumes of air from the housing depending on the frequency and level, Borresen explaining that this makes the enclosure virtually resonance-free.

At the same time, he says he has succeeded in converting his development objective – to create a novel dynamic damping system for his drivers – into reality. Not only the otherwise usual

impedance peaks in the bass, but also the phase shifts so often associated with them, are removed, reducing the burden on the amplifier driving the speaker.

If those advantages weren’t enough (along of course with the slimline style of

»HIGHEND WILL NEVER BE “PLUG & PLAY”. FORTUNATELY!«

the speaker), Borresen can still point out (with an impish smile) one further effect: as he puts it, the environment in which it is playing is irrelevant to the speaker – it feels at home almost anywhere.

Time and patience

Optimistic claims from the designer concerning ease of set-up and positioning are one thing – the practicalities of optimizing the musical performance are another. It’s a familiar experience, not only in our listening rooms, but also at many dealers and presumably also in readers’ homes. And as usual, with the X3 speakers such a “plug and play” set-up lived up to (or maybe that should be “down

to”?) our expectations, and proved that it always takes time to explore the maximum potential of a product or a chain.

Like other Raidho designs, the X3 needs a very wide separation between the speakers, in this case a good three meters, and a strong “toe-in”, or angling to the listening position, the distance to which was eventually also set at just under 3m. The X3 also likes some room to breathe both to the rear and the sides: both the 0.02-gram ribbon in its half-closed chamber and the other drivers benefit from some space around the speaker.

Acoustic hologram

Despite very moderate 82.5dB/W/m efficiency, the X3 was by no means underfed with the rather moderate (on paper) output of the Naim combination used for the listening here, but rather produced an outstandingly airy presentation. A vivid ‘acoustic hologram’ was created with Doug MacLeod’s “Run With The Devil”, projected into the room in a manner you don’t hear every day. The smallest details were brought to the fore, such as the tap of MacLeod’s foot on the floor, all adding to the revelatory sound. Similarly, with



Sturdy outriggers and the air outlet of the “Flow Vent” reflex systems. ▼

◀ The 20-centimeter-long ribbed aluminum bass driver is mounted to the side of the enclosure.

TEST-COMPONENTS

TURNTABLE: Well Tempered Lab Amadeus 2
CD PLAYER: T+A MP 3000 HV
PICK-UP: Decca London Reference
PHONO PREAMPLIFIERS: Brinkmann Edison
PREAMPLIFIER: Naim NAC N 272; Accustic Arts Tube Pre 2 MK II
POWER AMPLIFIERS: Naim NAP 250;
PS Audio BHK 250

Martha Argerich playing Prokofiev, the sense of the fingers flitting over the keys with pace and fervor was enough to leave this listener almost giddy!

The X3 fully serves the music and subjects itself to it, rather than trying to impress the listener with the “hi-fi-ness” of what it achieves. The ease and immediacy with which even subtle sounds were still detectable two rooms away down from the open listening room door once again supported the assertion that a fine-sounding system can be recognized throughout the house. True, at that distance the frequency response as such may seem diminished, and multiple reflections may have placed themselves in the way of the sound, but what is important is the feeling of a live experience in close proximity. This is what the Raidho conveys quite spectacularly.

Long-term experience

Because we have been able to experience the X3 in the most diverse system configurations over the past few months, listen to it in very different moods, and in the meantime also had various equally priced top speakers in the listening room, it was possible to make a very comprehensive assessment of the speaker and its properties. The X3 is a truly understated speaker: it’s fully able to impress any type of listener, can handle any musical genre, will perform at any listening volume, and is not fazed by anything. True, compared to its closest competitor it doesn’t reach quite as deep in the bass, and shifts a touch less air, but it always remains true to the music.

The questions of tonal depth and the trade-off between a large soundscape and sharp focus are made irrelevant here: the X3 offers all these in abundance, and thus makes itself acoustically all but invisible, as befits its slimline style.

Michael Lang

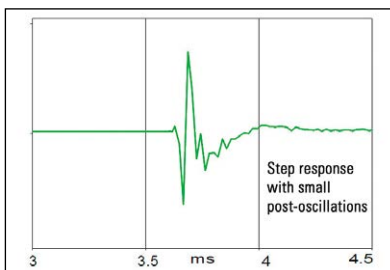
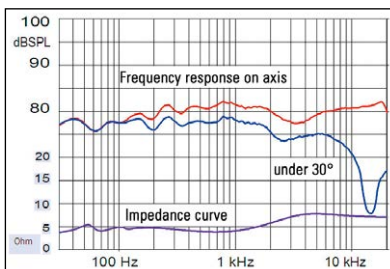
*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

RAIDHO X3

€22,000* per pair
 Glossy walnut, black, white
 Dimensions: 14 x 130 x 40 cm (WxHxD)
 Warranty: 5 years
 Phone: +45 98/247677
 www.raidho.dk

Facing the pressure from the heavyweights and top dogs in the € 20,000 price category, the petite Raidho X3 yet manages secure its place in the top league of today’s speakers. An exclusive, visually distinctive lifetime investment.

MEASUREMENT RESULTS



Nominal impedance	4 Ω
Minimum impedance	4 Ω at 78 hertz
Maximum impedance	8 Ω at 4800 hertz
Sound pressure level (2.83 V/1 m)	82.5 dB SPL
Performance for 94 dB (1m)	21 W
Lower cut-off frequency (-3 dB)	33 hertz
Distortion factor at 63 / 3k / 10k Hz	1.0 0.3 0.3 %

LABORATORY COMMENTS

The frequency response measured on axis is largely linear, so a strong “toe-in” to the listening position and a separation of about three meters are required for a homogenous soundscape. The bass extends down further than one would expect from so compact a speaker, while the impedance response is very even, and so not critical for amplifiers, and the efficiency moderate. The step response shows very slight baseline overshoot.

STEREO-TEST

SOUND QUALITY	96%
PRICE/PERFORMANCE	★★★★☆
VERY GOOD	



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KEF

OBSESSED WITH HIGH RESOLUTION

HOW SUCCESSFUL DO YOU WANT YOUR RECORD TO BE?

Mastering engineer Bernie Grundman has influenced the sound of many top albums. This and his passion for the best sound make him an institution. He told STEREO how he achieves his ambitions in his hard day-to-day work and, at the same time, stands up to some of the madness of the music business.

From the outside, the building looks like a secret service center: green/gray with protruding protection shields. We are in Hollywood, Los Angeles, on the way to our appointment with one of the “big three”, i.e. the big three of the mastering scene – Bernie Grundman. Find a parking space? We don’t need to, as we are heading to the parking garage beneath the nearly 7,000 m2 complex which “Bernie Grundman Mastering” moved to in 1998 and completely converted inside. The gate opens quietly. An illuminated sign directs us to the way up – leading us to the spacious entrance, which Grundman’s wife Claire Chene has tastefully decorated with her pictures.

However, we are more interested in the numerous trophies of top sellers and

legendary albums on the wall, which were mastered or at least overseen by the Chief Mastering Engineer of A&M Records, who in 1984 opted for independence and – since 1997 – even operates a branch in Tokyo.

A sacred industry shrine

The company has a total of 30 employees; it is not a sound studio that records music, but it masters or remasters existing mixes – whether just produced or ancient, whether on analog tape or in the form of a digital file, whether submitted by music corporations or hobby bands – i.e. turns them into a form that is suitable for publication.

This may sound banal, but it is highly complex. They work on the sound as well

as the material. You can obtain a lacquer matrix for the production of vinyl records or a digital file adapted to your requirements and suitable for download from a portal. From the corridors there are many doors to different studios with the familiar consoles and other sound studio equipment. In one of the smaller studios an album is being edited right now, i.e. it is being given track numbers and other meta-data. This is also part of the job.

We use the wait until the Master arrives – the coffee, which the team is quite proud of, is really super – to look around and, as we do so, we discover the half-darkened room with the two Neumann cutting machines. Our eyes light up. We are in one of the sacred shrines of the music cosmos. This is where disks were cut for which listeners all over the world deeply revere Grundman. This includes innumerable reissues of older highlights, as well as the 45 rpm version of Diana Krall’s “Live in Paris” album, which has so often sent us into ecstasy in the STEREO listening room. It is said that guests from Japan have fallen to their knees here in reverence.

And then Bernie Grundman arrives! Lively, awake and highly concentrated, he checks out the situation, listens to the latest news and gives us a friendly handshake before asking us into his work studio for the interview. The soundproof door shuts and we are alone with the mastering genius to ask all that we and the hi-fi fans have always wanted to know. But, what was it again...?



▲ The generous headquarters building of „Bernie Grundman Mastering“ is located in the center of Hollywood – you might say a „birth assistance center“ for music



This wall displays just some of the awards for albums that became mega-sellers and for which Grundman did the mastering

STEREO: Um, Mr. Grundman...

Grundman: I'm Bernie!

So, what exactly do you do as a mastering engineer?

In a nutshell? Correspond with the musicians. Making their musical emotional perspective audible, thereby giving the listener a greater experience. For that, you absolutely must know what you're doing when you manipulate sound.

Sounds very theoretical. What does that look like in practice?

One step at a time! Theory and thinking are the start of every mastering. That is also the first thing I say to the participants of the seminars I hold: imagine that you're sitting at your console, you're listening to the music to be mastered as a rough mix from the tape or PC, or from anywhere else. How do you know what to do? In which

direction will you go with your work? Will you just make it loud, because many people think that mastering makes everything loud? You have at your disposal an almost endless number of buttons for filters, limiters, multi-tape equalizers, reverberation and so on. Which will you use, and how much of them? What is necessary and what can you be accountable for? You might support the aggressive side of the sound image while the customer prefers it more mellow, more romantic. For this reason, my first task is to fulfil the dream and idea of the musicians. That means that I have to take an interest in their wishes because there are many directions you can take with the sound of a mix, all of which could have their justification. For this reason, I like it best when I have the musicians with me at the console.

And what about the listener and the type of music?

They are extremely important! Am I to attract only superficial attention, or am I addressing a public that immerses itself in the music? With pop especially, that is not always the case. People are interested in quite different things. There is the hype around stars, the shows, flashlights and explosions. That is entertainment, and there's nothing wrong with it, but it has nothing to do with music. I sit and listen to music and let myself be captured by it. Others may not do that. For them, it is just something tinkling along in the background while they are doing whatever. Or they are listening to music because their friends are keen on it and they want to be in the know and be accepted. You have to take that into account. The same applies to the music style. Polka or hip-hop only pushes the button when the sound appeals to listeners in a certain way, gives them energy, stimulates them to move to the music (rocks back and forth in his chair).

And Bernie Grundman ignites the fuse!

Well, yes, mastering is the reflective part of the music industry, because it is the last opportunity to “tweak” the recording before it is published. For this reason, a mastering engineer must develop a seventh sense to find out what the music could be, what potential is in it. You ask yourself: What do the best rock, jazz, orchestra, singer/songwriter or even polka records sound like? Then you try to emulate these, and if you succeed you will soon be known as a specialist.

Do you have to know everything equally well?

Pretty much! You have to accept all types of music that come in without prejudice. When I was a teenager I was a big snob. For me there was only bebop and classical. Today I say “live and let live”. At a party you obviously play dance music. There is no other style that can deliver what it does, therefore it has its place in the world. If you look down on it you will never make a good dance record. In short – you have to have a clear idea of what makes this or that music sound great. For that you need intuition and, above all, plenty of experience.

So that means that you’re heavily dependent on the material that comes in? How does that work?

It depends. We receive all qualities for mastering – from major players to garage bands with a small studio. Unfortunately, it must be said that many people have no idea what they are doing. They may well know how to operate their machines and are probably fascinated by the

options offered by modern recording and mastering systems. But many don’t take into account the losses. Because convenience has its price. You think: Great, I can do all I want, I can use this or that plug-in because it is in the computer. That is complete nonsense! It is exactly the other way

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„YOU NEED THE 7TH SENSE TO FIND WHAT IS IN THE MUSIC“

around! You can do nothing with the computer, except perhaps edit, without losing quality.

But all that works on a digital basis. Should that not be largely without losses?

That would be nice! Digital technology is great for archiving. But everything that has to do with sound levels, even just one tenth of a decibel, affects the quality. In summary, equalizers, compressors, reverberation options and all the other gadgets lead to an unmusical, “mechanical” sound. Such mixes regularly frustrate me, because they don’t give me many options for doing something – their inner structure is simply unusable. Some of the new mastering engineers have their heads so deep in the computer that they don’t even use their sound monitors any more. They are delighted and say “look how I can influence this and that”, and don’t even notice that they have strangled the life out of the performance. In the end that produces scratchy, slimy and frayed sound garbage. Simply horrible!

Is it that bad?

For me, yes! It just is not enough to cascade any old plug-ins. That’s why everything sounds the same, because it runs through the same programs which leave their fingerprints in the sound, like a filter in photographs. That’s like an epidemic, the germs of which are everywhere. However, if you’re aware of the losses that always occur irrespective of what you do and work with that in mind, you can achieve high-quality results. Ultimately, the decision is made by the ear.

Generally speaking we have the impression that the large music corporations used to produce more appealing recordings while today, that is more the specialty of audiophile labels which, at the same time, have established a parallel music genre.

There is some truth in that! We have been looking after the recordings and mixes of all types and sizes of supplier, and have made similar observations. When the question “Will my record attract enough attention” was raised, the train headed the wrong way. That’s when the decibel war started, which is being carried to the extreme and which I and many colleagues find extremely worrying. Because it is at the expense of musicality. It is simply not satisfying to work towards such cheap effects.

Do you, in such cases, feel like a chef in a canteen kitchen who pours the same sauce over all the dishes?

That can happen. It is part of the work, because unfortunately we often also have to take into



THE VINYL CUT

Two Neumann cutting machines are waiting for masters. The cutting head of one of them is controlled by vacuum tube electronics, the other one by a powerful transistor amp. There is special equipment for mono cuts. Worried about running out of material if service is required? No way. As a safeguard against malfunction, limiters protect the sensitive coils in the cutting heads against overload. As in all rooms, you can listen to the music via the Tannoy monitors. But you need to be quiet in order to avoid any impact on the cutting system.

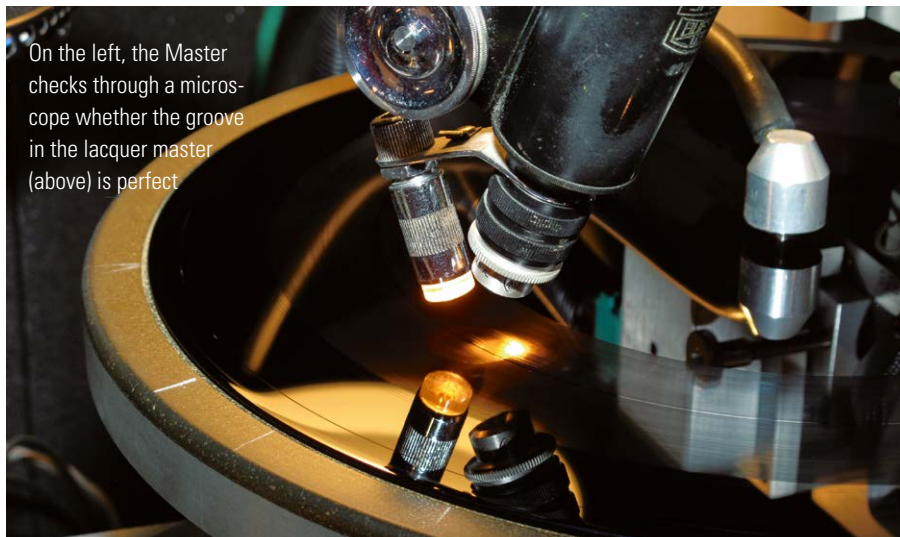
account commercial aspects. Depending on the client and the style of music, we sometimes have to do things we don't like at all. Then we do them in such a way that it sounds as if we hadn't done it, and try to retain a bit of what the music could be without all the manipulation that is necessary to satisfy the record companies or promoters or simply those people who want to have everything loud. I avoid too much processing so I don't go beyond what is wanted. It is and must be our job to be competitive and loud, and still offer a high degree of quality.

Do the musicians not protest when their piece is going to be dynamically "flattened"?

Good point! I will now tell you what, unfortunately, happens much too often: many musicians have indeed idealistic ideas for their piece, and see themselves as artists with a message. Let's assume that they worked cleanly up to the point when they sit with me in the studio. Now we listen to their mix and I say: "Boys, I like your recording because of the natural sound and balance dynamics". Then I ask: "How competitive and successful do you want your record to be? How much can it be manipulated and levelled so that it becomes louder and more noticeable"? Then they almost always say: "No, not that, we don't want to damage our music." I myself consider the sound level as secondary so long as it is not too low. So then we only do a little bit, because when we are dealing with pop and the level is too low, people think that something is not right. Okay, so we produce a test disk and the next morning the band calls, desperate: "Why is the record not as loud as any others by the competition?" That happens all the time. Now they worry that it is not enough to simply turn up the volume like in the studio, so that you get physically excited and think that it is the music doing it. It is meant to give the impression that it can deliver this also at lower levels. In the end, the job is reworked and the lofty idealism is sacrificed to marketing, because everybody wants to see their album displayed on my mega-seller wall.

Sad, and then you probably have to deliver the whole thing to iTunes & Co. in MP3 format with a low data rate. Is that true?

Correct, and for that you throw away 75 percent of the information because usually pop is produced at a 24-bit audio word length and a 44.1 or 48 kilohertz sampling frequency. This means that, with the common MP3 resolutions, about 25 percent remains for the music. Then the



On the left, the Master checks through a microscope whether the groove in the lacquer master (above) is perfect

download suppliers come to us and ask: "How can we improve the sound results within these limitations?" From the CD, if it was produced properly, we got great sound. Now we work with "MFit", a specialized program, and were able to squeeze a little more out of the MP3 sound, but to recapture the missing 75 percent is something even we can't do.

But now there's the "counter-revolution" in the form of high-bit. Does that need new mastering?

Yes, definitely. Generally, the same applies to HD recordings and mixes as to smaller formats. Even normal CD quality benefits from HD portals. It can't really become better when it is bumped

did really well. The recording was based on 24 bit/192 kilohertz. We have therefore redone the entire mastering for HD and have handed over complete files in the same format. But now and then there are street noises and other odd bits that are meant to give you the sense of being in Brazil, as well as added intros which originally had a lower resolution. Okay, the album starts with such an up-sampled intro and only then goes over to the native 24/192. And immediately we received complaints that this was not really genuine 24/192 and so on. I deliberately went through the recordings again: only two percent was not in the original 24/192 and it is generally difficult to hear the difference, but the bleaters only took their cue from the intro.

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**„THE MUSICIANS
 MAKE COMPROMISES
 FOR SUCCESS“**

up to 96 kilohertz or whatever, which you see on the analyzer, because the frequencies drop correspondingly early. But often the music is no longer available in full resolution anyway, only in MP3 format, unless you buy the CD. By now, the situation on the ground is this: either you have iTunes or HD downloads. Instead of enjoying this, there are some people who watch very carefully. D'you want to hear a crazy story?

That's what we're here for!

So there is this excellent artist, Melody Gardot. Her last Brazil-inspired album, which our highly respected colleague Al Schmitt worked on,

We in any case, are hoping that high-bit technology will lead to a more acute awareness of sound in the future.

Maybe, at the moment it is still pretty elitist and expensive, but there are already economical webpages that offer HD downloads. But the particularly clean result full of detail

that is usually associated with high-bit technology does not always have to be an advantage.

What do you mean by that?

We have carried out extensive tests and found out that listeners favor a homogeneous, forceful sound. It does not necessarily have to be the cleanest, most detail-rich version. The right balance is an important point. The first Melody Gardot album was really well produced. However, she decided that Al Schmitt should remaster it. I have both versions; the first one is even cleaner and more natural, but the one by Schmitt is more

romantic, more beguiling and has something mystical about it. If you work too intellectually, you can easily trip yourself up. People think too quickly in terms of technology, and thereby lose sight of the emotional aspect.

Does high-bit mean good business because many older analog recordings require new mastering?

Absolutely! Unfortunately many labels aren't prepared to cover the cost, because you really have to remaster everything. We are currently preparing a good part of the renowned Blue Note jazz catalog for the archive of Capitol Records. They come to us because of our technology and equipment. They want the definitive copy of these legendary albums. They get 24/96 and 24/192 files from the old master tapes, which of course can also be downloaded. Certainly with respect to the stage, they are produced in a similar way to the LPs once made by the famous Rudy Van Gelder. Capitol has a complete collection of the original disks, which is why we have record players here. If you compare the masters – Van Gelder has produced many two-channel direct re-recordings – with the records, it shows that many are surprisingly close to the masters while others have significant differences to these owing to the mixing of channels and reductions in level. We want to make the best of the tapes and at the same time preserve the original aura, because Blue Note thinks that this accounts for the magic of the old disks. They aren't always true to the original because it has to be said that Rudy was not

always a genius, but he worked with outstanding musicians. Sometimes there are quite drastic distortions which we can't do much against, but on the whole very good sound and of course fascinating performances.

The remastering sector, whether for vinyl, CD/SACD or downloads, has picked up quite strongly. Are remasters really better than the originals?

„THE MASTERING CAN ALSO BE TOO PERFECT AND TOO CLEAN“

Often, yes! But only if you work on it. For example, we have renewed the playback electronics in our tape machines – all done by ourselves, by the way. We use self-constructed equipment so that we can be better than others. I'm still old school – we go deeper. Although we too use commercial equipment, we sometimes completely re-work them, fit more potent power supply units or better line amps. Capitol wanted to know what we could make from the Blue Note tapes and has compared our work with that of its internal mastering department. Finally, our team got the go-ahead, but the effort was enormous: we built a whole system, including the computer which we thoroughly optimized from the power supply to the wiring, only for the Blue Note project. In my opinion, there is no other PC in the world that records so cleanly. To achieve that, a simple equalizer was designed, because the old jazz

recordings did not require complex interventions. It is fitted to a separate console. This here (points to his large desk) has 36 frequency bands which allows me to change every detail. But, as I said before, we tried to interfere as little as possible. The chain was constructed such that only the components that were actually required were in the line of the signal. From the output of the tape machine, it went via these directly to the computer. "Less is more!" For this reason we did

significantly better than what the people at Capitol managed. We are hi-fi freaks after all! Our priority is quality, which unfortunately today is no longer a given.

We hear that you operate not one but two different electronic mastering systems.

Correct, one in vacuum tube and one in transistor technology. The latter we used primarily for hip-hop productions and music which should also be really loud from the record, which requires high power input during cutting.

Is the equipment really so crucial to the end result?

For sure! For this reason we examine new devices very thoroughly; somebody recently sent me an equalizer and I simply plugged it in instead of my tried-and-tested machine and did not set it to any function but only selected the connection option. If the thing then doesn't produce results, why equalize at all? Then you're falling short of the quality of the original anyway, and would have to do other things to get near its standard. And then the best you can hope for is that it sounds similar. Forget it!



◀▲ Remastering old tapes of any quality and provenance for records, CDs or downloads is Grundman's day-to-day business. Above is the specially built PC for digital files.

Does the remastering of old albums involve heavy compression?

Even if you don't believe it – hardly any! And I really don't see any reason for it.

So the customer does not expect a recording from, let's say 1965, to sound like one from 2014?

No, luckily such requests or stipulations relating to older items are hardly ever put to us. And if it happens, I tell the people: "Hey, this is not your damned advertising record!" Honestly, it is part of the respect towards musicians and colleagues of that time, that you don't degrade their work to material that is available just anywhere. And that is generally accepted.

Back to the subject: is there generally much to do to the old masters?

It depends. When I look at the Blue Note stuff, I have to say that people didn't use to take much trouble over the mastering – a little equalizing, a filter against low-frequency interference and one in the treble range – because playback equipment or cutting systems reacted allergically to excessively high levels, and that was it. In addition, in those days they didn't yet have our potent cutting amplifiers. If they were over-amplified, they cut bad grooves. Again they used an appropriate filter. We don't do this sort of thing anymore, partly because the cartridges have become much better and can pick up stronger deflections more cleanly than the ones from those days. For this reason, we can nowadays leave this information in the groove.

But you need intact tapes for an optimum result don't you? How do you ensure that you always get the best material?

Mmmm... yes. Unfortunately we aren't always given the best tapes. Sometimes they have simply disappeared, even at the majors. The fire at Atlantic Records some time ago destroyed a lot of material. Sometimes we get 1:1 copies, which admittedly aren't as good at times as they could be. The Blue Note tapes too were not all originals.

How long do tapes last?

These from the early 50s are certainly perfect. Do you remember the first German stereo recordings from 1939? The old metal-coated paper tapes have been transferred to CD and they sound really good. No, tape lasts – and vinyl of course even more so. Have a look here; these are the tapes of Sonny Rollins' "A Night At The Village Vanguard", a famous album. We also cut vinyl for Capitol. This particular project was to be cut as a compilation from the former two sequences,



▲ For editing albums, a small set-up is sufficient in which the monitors are only used for recognizing the titles, for example at transitions

which we have in the computer. But they also wanted all the transitions with the applause and the guy who announces the pieces. That's why I had to go back to the original tapes (points to a pile of seemingly carelessly scattered cardboard sleeves: "7.5 ips in mono! They sound damned good"). We called that the "No Name Tape" because it did not achieve the highest standard but is still good. What is perishable is definitely the digital files. Because their content is very susceptible; a lot of information on very little space. Small data losses can lead to a total loss, while tape continues playing even if there was a short drop-out. I have 60 year-old tapes – some of the tried-and-tested Scotch 111 type – that run perfectly.

What about the sound esthetics of re-issues? Are the tapes remastered as

close to the original as possible or adapted to the modern world of sound?

Okay, many of the reissues we produce are listened to by people who grew up with this music. And they want to hear it in the way that they were used to from their old record. For this reason we don't change the sound too much. Owing to the better equipment, we obtain better quality anyway compared to the known base line. But the result should radiate the same feeling.

What would happen in the case of "Hotel California" by The Eagles, where once the wrong positioning of the sound monitors led to weak treble and an overall subdued sound?

We would not even change such obvious defects too much. Don't you think that by now they are part of the overall creation? The Eagles'



NEW PERSPECTIVES

I have been collecting records for almost 50 years. For many of the re-issues, such as those re-mastered by Bernie Grundman, I own the US originals with their particularly pronounced cuts. What I notice when I compare them? That in the olden days the mastering and cutting was done for different playback equipment. Today the re-issues are played on high-end record players via high-resolution amps and loudspeakers, of which people in the past could only dream. Great that there is this new perspective for the old stuff."

HERMANN HOFFMANN, Audio Int'l

sound engineer I work with sometimes raps my knuckles when I want to iron out the old mistakes and argues: "It would sound great to add a little air here and there, to add some glitter". "No", he usually says, "we want it fat like that, and bass-heavy." Okay! We have remastered most items from the U2 catalogue. For a long time the U2 philosophy was that they wanted their sound really poor. "Grungy sound!" We really tried hard to get the best from the tapes, and the bloggers found it great because they suddenly heard things that previously were simply just drowned out. But I don't know what U2 themselves thought of it (slaps his thighs with delight).

Does it make sense to re-cut from digital files to vinyl? The analog purists turn their noses up at it.

No, what you download no longer sounds like what we have delivered owing to the intermediate storage and the path through the network, plus many other influences owing to interfaces, cables and many other things. When we make a record, we have the original high-bit file from which we mostly cut the lacquer disk without any interference. And that can be really damned close to the file, whereas with a download there are likely to be losses owing to the bottlenecks and intermediate steps mentioned above. But in any case, what people appreciate about the vinyl sound is generated by the process of producing and playing the record.

And then it doesn't matter whether the master was an analog item or digital at a higher level. Furthermore, the disk may not be as detailed as the master disk but still sound agreeable and emotional.

That seems to be popular. The pressing workshops can hardly cope.

That's right, we cut a lot of vinyl, also contemporary stuff, for example the last Beck album which was created from a file. Gradually there is no longer so much old high-quality stuff. In addition many disks are pressed in small runs of less than 3,000 and are therefore collector's items just for that reason. I made the Jimi Hendrix albums. They were produced in a run of 3,000. For higher runs you really need special stuff, such as the current Beatles box, with 50,000 copies worldwide. Or Miles Davis's "Kind of Blue", of which Classic Records alone have apparently sold 60,000 copies – which I even believe.

How does Bernie Grundman appreciate the record as a music medium?



▲ Grundman doesn't mince his words; he comes out with some snappy lines and is always up for a good laugh

I know vinyl very well, after all I grew up with it. A genuine love, although it sometimes causes headaches. Vinyl can sound spectacular, but also lousy: poor pressing, bad vinyl, background noise,

Don't remind me! Sonny Rollins' "Newk's Time" was a special challenge. Nobody could make a re-issue because there was no good tape. I received a tape copy and the order for high-bit files.

„VINYL AND TAPES ARE DURABLE, BUT DIGITAL FILES ARE SUSCEPTIBLE

But the left-hand channel kept muffling and coming back, then disappearing again – the tape was useless! Over the years there were three CD versions which I had. That meant that I had three different masterings, but none of them sounded like the tape I had. So therefore I went through the tape in small steps which took me about 20

hours, and re-mixed the CD until it sounded like the tape. Then I produced tape sections of the good passages and used them in such a way that the listener doesn't notice the transitions. At the end, we now have a tape of which about 70 percent is original. And the result really sounds good. Of course, I did that primarily because Sonny Rollins is my favorite tenor saxophonist (laughs).

I am back at home and I think of the days I spent on the West Coast and, by-the-by, put on a Windham Hill sampler from 1986. Many artists of the New Age label were from the West Coast. I had forgotten a few of the names and I look into the booklet. What do I see with my jet-lagged, tired eyes, under the credits: "Mastering by Bernie Grundman, Hollywood CA".

Matthias Böde

all this gets on your nerves. And we notice that the quality, to put it mildly, is not getting better. You can send the master disk to five pressing workshops and all five records you get back sound different. Then you try to find out which record comes closest to the master. Now, you come from Germany and you have there some of the best pressing factories worldwide. Pallas for example produces outstanding work. From there we have received some of the best pressings ever. Very close to the masters.

We are pleased to hear that and it corresponds with our experience with the STEREO LPs that Pallas has pressed. But it's not always that easy. Were there ever any really thorny cases?

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ALL ABOARD!

These two different system concepts at around € 600* with components by DALI and Denon provide an easy, and fine-sounding – entry into the world of Hi-Fi.

It has never been so easy to get a fully-fledged audiophile sound at home for relatively little money. Whether the focus is on analog, digital or both, the story's the same; the supply of affordable Hi-Fi systems is so extensive, and of such high quality, that the ambitious music lover can get great sound without breaking the bank. But wide options bring their own questions: is it worth

investing hard-earned savings in a modern Hi-Fi system able to handle streamed music, in an age when anyone can have access to a vast virtual music library via smartphones and tablet, anytime and anywhere? After all, even a halfway modern computer with a digital audio interface can provide this music via a corresponding digital cable in lossless CD quality (or better).

Or should the aspiring high-ender choose a classic Hi-Fi system with passive speakers and a separate amplifier and player? This traditional approach would ultimately have the enormous advantage that it would be possible to replace and upgrade individual components over time – part of the whole “sport” of the Hi-Fi game.

Whether classic or modern, these days compact dimensions are more or less a prerequisite, whether because the typical one-bedroom dorm room usually can only accommodate small speakers (along with a bed and a desk!), or due to a requirement that the system fits into the room without dominating the

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

visual appearance of the installation site. Whichever is the case, however, the new system should be beautiful, not a beast – ultimately, nobody wants to be ashamed when visitors come.

Virtually active all-rounder

Danish loudspeaker specialist DALI's Zensor 1 AX speakers are definite eye-candy: the walnut-look vinyl wrap covering the cabinets (they're also available in black or white) is attractive, and in harmony with the high-gloss black painted front baffle, and the finish is impressive, especially as a pair of these little speakers only costs € 600*.

The active 1 AX is based on the smallest model of the successful Zensor passive series and, together with its larger sister, Zensor 5 AX (launched simultaneously at € 1000*), it establishes a new product category for the 30+-year-old Danish brand, aimed mainly at a younger clientele looking for an uncomplicated solution. However, the 1 AX is powered, rather than fully active: the "brain", i.e. the amplifiers, the crossovers, the digital volume control and the inputs are all located in the left speaker, while the right speaker is a conventional passive Zensor 1, receiving its signal via the

speaker cables directly from its active twin.

The Danish speaker has both digital and analogue inputs, the latter via a 3.5mm mini-jack, and suitable for the line-out or headphone output from analogue players. The music is then digitized with a sampling frequency of 88 kHz for the digital volume control and amplification. For digital sources, an optical TOSLink input and Apt-X-enabled Bluetooth module (Apt-X sounds better than normal Bluetooth) are provided, the Bluetooth connection with a smartphone, for example, being very quick and easy.

Input selection is via a dedicated button on the back of the amplifying speaker or using the supplied remote control, with a multicolor LED on the front to show the currently selected input: yellow is for the optical input, green for the analog and blue fittingly for Bluetooth. The LED light can still be seen well even through the front grille.

When you take the grille off (it's fastened with plastic pins), you meet two old acquaintances: the same tweeter and mid/bass woofer speakers used in all the other Zensor models. The woofer uses a DALI-typical red-colored 13.3 cm cone made of a paper-wood fiber: this

is designed for increased rigidity, while the random arrangement of the different-sized wood fibers suppresses resonances on the membrane surface. A large surround, a long voice coil, a massive basket and two proper ferrite magnets indicate unequivocally that the woofer is optimized for dynamic, power and level.

A reflex tube venting to the rear tunes and enhances the bass, but if there's still not enough "low stuff" for you, a separate active subwoofer can be connected via dedicated RCA output on the back of the active speaker.

The tweeter uses a standard format soft dome, with a mounting plate designed to linearize its dispersion behavior at higher frequencies, thus promoting a more detailed picture. An oversized magnet ring and a particularly lightweight coil give the tweeter resilience and agility at low distortion (see also measurement laboratory), while DALI's design means the tweeter only starts working at a relatively high 2.9 kHz, which experience has shown results in slightly greater maximum volume.

True to this design, in the hearing test the DALI played loud and sounded completely effortless at high volumes. At more

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

Denon's RCD-M40 combines the properties of a very good CD player with those of an integrated amplifier. € 400* is the price the Japanese want – arigato, a good deal. ▼



practical levels the richly detailed and balanced sound is impressive, especially when listening in the near-field range: the treble is delightfully detailed, and conveyed the finest nuances, such as reverb and sound effects, perfectly. Julia Stones singing “Winter on the Weekend” (The Memory Machine) was bursting with sonic color and was clearly accentuated in every position.

These little Danish speakers handled even complex bass renderings (for example, Marcus Miller’s “Power”, on the album M2) effortlessly, resonated with confidence at an appropriate distance from the rear wall, and still sounded extremely precise and agile even at party levels.

Small, passive and simply ingenious

Similarly, Dali’s brand new Pico passive speaker benefits from some boundary reinforcement, not least because the bass tuning of this, the smallest compact speaker in the Zensor series, is optimized for operation directly on a wall.

First presented at the High End 2015 show in Munich, the Pico priced at an incredibly inexpensive €240* for a pair: again vinyl-wrapped (in black, white or walnut), its housing and the matt front baffle looks quite plain, but the speaker is perfectly finished and very presentable. That the only 23 cm high mini box hides a top-quality Zensor chassis is nothing but a small sensation. The same 25 mm tweeter used in the 1 AX is also present here, along with an 11.4 cm woofer with a paper-wood-fiber cone.

A crossover directly mounted on the cable terminal cleanly separates the signal between tweeter and woofer at two kilohertz: built from just seven components,



◀ The Denon has analog and digital connections for external players. You can also connect a subwoofer.

it follows Dali’s thinking that a spartanly built crossover can better convey impulse fidelity and dynamics.

After just one weekend of break-in, the Zensor Pico impressed with a phenomenal broad-spectrum sound, effortlessly delivering music. Driven by an immensely powerful Symphonic Line RG 10 amplifier, the Pico projected in the listening space a soundstage absolutely authentic in width, height and depth with “Mountain” from the grandiose soundtrack of the equally brilliant film “Interstellar”. With the bass kicking directly against a wall (or even better in a corner), the low end is both quite forceful and lively, and the Picos turned out to be completely attitude-free, extremely good-natured – and, even better, enjoyable with a much more modest amplifier, such as the Denon RCDM40.

Compact amp and CD player

Not surprisingly, then, the Denon proved an obvious partner for the little Zensor Pico speakers. Along with

the amplification, and priced at a pocket-friendly € 400* the midi-sized RCD-M40 also provides an excellent built-in CD drive, an easy to read display and even a fine-sounding 3.5mm headphone output. There’s a line input for analog players, two Toslink ports for digital sources, an FM antenna connection and a front USB port complete its list of features. The USB port will play not just data-reduced MP3 files but even high-bit files in FLAC format from a memory stick or a small hard disk, while Apple users may be pleased to know that the amp also accepts digital music from iDevices such as iPhone or iPod via USB.

Fans of the classic compact disc will get their money’s worth here; the built-in CD drive sounding tidy, dynamic and extremely colorful – so much so that the tester was even happy to its slightly longer read time between inserting a disc and playback starting. The digital player followed on its heels – here the amp sounded multifaceted and expressive, while the user-friendly display made it easy to navigate through the folders.

As mentioned above, the Denon also has sufficient power – more than enough, in fact, to drive smaller speakers such as the Zensor Pico. Combined with the DALIs, it presented a well-balanced, clearly-structured and dynamic sound, making this Japanese-Danish system well suited as an entry into the hi-fi hobby.

Alexandros Mitropoulos



◀ The entire “brain” of the Zensor 1 AX is in the active speaker. The passive counterpart receives its signals via cable.

Contact: DALI Loudspeakers
 Phone: +45 9672 1155
 www.dali-speakers.com

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

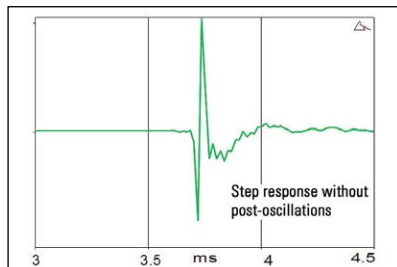
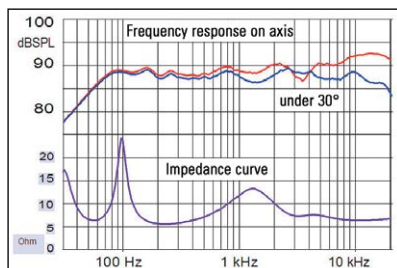
DALI ZENSOR 1 AX



About € 600* for the pair
 Warranty: 2 years
 Dimensions: 16.2 x 27.4 x 24 cm (WxHxD)

The Zensor 1 AX impressed from the first minute! It plays completely effortlessly and is suitable for long, stress-free listening sessions.

MEASUREMENT RESULTS



Level at 200mV Input	89.5 dB SPL
Lower cut-off frequency (-3 dB)	55 Hz
Distortion factor at 63 / 3k / 10k Hz	1 / 0.3 / 0.1%
Power consumption (idle)	<2 Watt

LABORATORY COMMENTS

The DALI Zensor 1 AX has a balanced, wide-band frequency response, its bass only starting to decay from 80 Hz downwards. The midrange has exemplary linearity, and while a marginal increase in high frequency is noticeable on-axis, this disappears completely when measured laterally. There's negligible distortion, concentrated on low frequencies.

FEATURES

Connections: 3.5 mm jack, digital optical, Apt-X Bluetooth
Features: Cover, remote control, power cable, connection cables

STEREO-TEST

SOUND QUALITY 50%

PRICE/PERFORMANCE

★★★★☆

EXCELLENT

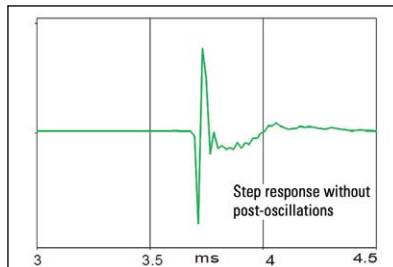
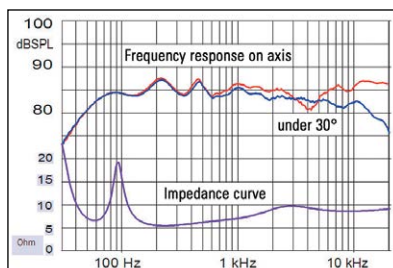
DALI ZENSOR PICO



About € 240* for the pair
 Warranty: 5 years
 Dimensions: 14.1 x 23 x 19.6 cm (WxHxD)

The Pico is the real surprise of this test. Despite its compact dimensions and the low price, it sounds great. However, installation close to walls and a decent amplifier are required. Then it is a price-performance winner!

MEASUREMENT RESULTS



Nominal Impedance	4 Ω
Minimum impedance	5 Ω at 230 Hertz
Maximum impedance	18 Ω at 92 Hertz
Sound pressure level (2.83 V/1 m)	86.5 dB SPL
Performance for 94 dB (1 m)	9.5 W
Lower cut-off frequency (-3 dB)	64 Hertz
Distortion factor at 63 / 3k / 10k Hz	1.0 0.3 0.1%

LABORATORY COMMENTS

The Zensor Pico is designed for installation close to a wall, as is clear from the bass response: when properly installed, the slight waviness in the upper bass should not be noticeable. The axially measured narrowband decay at 4 kHz could be a phase cancellation, because it disappears when measured laterally, and in general, the Pico thrives when fed high-quality recordings.

STEREO-TEST

SOUND QUALITY 69%

PRICE/PERFORMANCE

★★★★★

OUTSTANDING

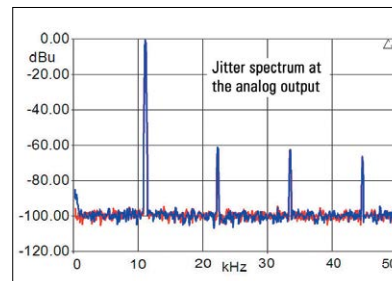
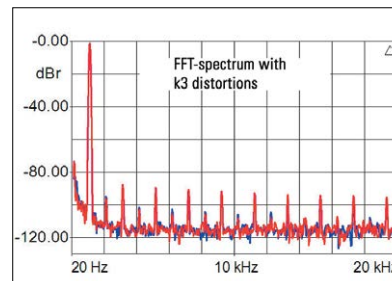
DENON RCD-M40



About € 400*
 Dimensions: 21 x 12 x 32 cm (WxHxD)
 Warranty: 2 years
 Contact: D&M
 Phone: +492157/12080
 www.denon.com

The CD drive sounds neat, the performance of the amps is sufficient for compact speakers, and the design is timeless.

MEASUREMENT RESULTS



Continuous power to 8 4 Ohm	2 x 22.5 – watts
Pulse power to 8 ohms	2 x 28.3 watts
Distortion factor at 5 watts	0.004%
Intermodulation at 5 watts	0.008%
Damping factor at 8 ohms	90
Distortion factor at 400 Hz,	-60 dB 1.0%
Signal-to-noise ratio from CD at 5 watts, digital 0	86.8 dB
Upper cut-off frequency	> 80 kHz
CD reading time	9 s
Total power consumption: Network standby off on	<2 14 W

FEATURES

Display, remote control, headphone output, CD player, antenna input, two optical digital inputs, analog cinch input, front USB input

STEREO-TEST

SOUND QUALITY 51%

PRICE/PERFORMANCE

★★★★★

OUTSTANDING

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.



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THE TROUBLE- MAKER



audioquest

The cable specialists from Audioquest are not particularly popular with their competitors, but they keep on expanding their range. Following the “Dragonfly” USB-DAC/headphone amp, the “NightHawk” headphones are now also finally ready for production. STEREO exclusively tested the first production model.

There’s not exactly a shortage of headphones on the market: there’s money still to be made here, partly through convincing quality, and more often by targeting youth groups in particular. So where does a manufacturer with more than 30 years’ experience in the cable sector find a niche in this sector? Hasn’t all the knowledge, know-how and technical ingredients been used up in the huge range of models already available?

Bill Low – the founder, owner and mastermind at Audioquest – gave young development engineer Skylar Gray free reign, including time and budget, to examine and analyze the strengths and weaknesses of current concepts. His mission? To then develop a set of headphones setting the sound bar higher and enhancing long-term wearing comfort.

After that, the business-minded colleagues in the company had the thankless task of crunching the numbers to a point that would allow many people to buy the NightHawk – as the new model was named.

Liquid wood and 3D printing

The basic point of departure was that the best technical headphone is pointless if it cannot be worn comfortably on or over the ears for long periods. From an ergonomic perspective, this had to deal with the shape, the padding, the headband, adjustability and weight, and a few days spent with the NightHawk steady summer temperatures of 26 Celsius provided the perfect conditions for



◀ The wafer-thin, but stable membrane from bacterial waste, the rubber surround (similar to a loudspeaker chassis) and the magnet drive, into which the voice coil is immersed, are clearly visible here

us to assess the effect of pressure on the ears, heat accumulation, haptics and of course the sound.

The self-adjusting headband ensures the weight of about 350 grams is uniformly distributed making the headphone pleasant to wear. The asymmetrically shaped ear pads of synthetic leather fit both small and large ears, whereas the “shockmount-coupled” suspension system of the semi-open headphones

– taking its cue from studio microphone suspension systems – also plays its small part in the effective suppression of resonances.

In a lengthy process, Skylar Gray worked to develop a grill for the back of the earpiece, aiming for powerful sound-scattering properties to allow the sound to escape with reduced resonance – which should make a significant contribution to the purity of the sound. He

„MISSION IMPOSSIBLE“



SKYLAR GRAY
Developer and designer of the NightHawk headphones

Skylar, where did you hide before you signed up at Audioquest?

I worked for various audio companies as a designer and developer, and what appealed to me about Audioquest was the opportunity to do research and develop with complete freedom. The NightHawk turned out exactly as I wanted it.

Were there headphones that inspired you?

One was the Sony MDR R10, which impressed me with its sound characteristics, and then also the AKG K-series with its outstanding comfort. I wanted NightHawk to merge these two qualities, and at an attractive price.

How did you get to the idea of “liquid wood”?

I constantly discover new materials that I like to try out. I follow the subject of material science in the international press very closely and there is quite some movement in that sector. Liquid wood came to my attention because it is renewable and it has excellent

properties for our purposes. And yes, of course the “mission impossible” aspect to produce something like this appealed to me.

What was the biggest challenge on the path from idea to finished product?

Since we developed almost everything new, there have been numerous interactions. The coordination and, ultimately, the fine-tuning of manufacturing processes were already a tough ask; in the end everything took much longer than planned. Fortunately, Bill Low (head of Audioquest) never lost faith in the project and patience with me in the more than two years.

Obviously, you’ve got a penchant for obscure materials and innovative techniques. Can we expect more in this direction?

I keep a particularly close eye on nanomaterials and novel plastics, and for sure we are only at the beginning of development in 3D printing technology. I’m also watching discussions around a company that deals with 3D carbon technology...

Now, at the end of the project, you can surely put your feet up for a while?

Honestly: I am still trying to learn the trick of how to go on holiday. No, seriously, we’ll develop a family of headphones little by little – from entry level up to models even better than the NightHawk. But even when we get there, we can still reach for the distant stars. And as I said: I have a patient boss.

finally succeeded by using a 3D printer to create “Selective Laser Sintering”: this type of production, which was unthinkable with traditional methods, will also play an important role in future headphones of the NightHawk family.

But let’s first take a closer look at NightHawk’s pioneering role and observe how the sloping padding on the one hand dissipates pressure but also angles the earpieces so that a more stable and better focused spatial impression is created – a classic headphone vulnerability, which manufacturers have tried to eliminate for years. Two years of experimentation and more than 100 versions of the ear cups later, the goal may now have been reached.

In choosing the material for the enclosure, the company also went the extra mile to find a sustainable, environmentally friendly way to fine tune the sound: liquefied lignin, a wood component liquefied in an elaborate process to allow it to be molded or machined, is designed to provide a particularly rigid as well as low-resonance and vibration-damped enclosure

Bacterial waste instead of film

Many headphones use ultra-thin Mylar film as membrane material: available in consistent quality, it can be tailored to the specific sound and price level that are desired – and makes Dupont, which holds the patent, very happy. As well as in headphones, the material is also used in many electrostatic loudspeakers.

However, Mylar isn’t the only game in town, and at Audioquest the preference is for a “biocellulose diaphragm” – in plain language a membrane made of pressed bacterial waste – chosen for its even piston vibration behavior in combination with the rubber surround. The ratio of stiffness to mass is similar to titanium, but does not need additional damping.

The outrageously expensive Sony MDR-R10 headphones used this membrane material, and Skylar Gray remembered that he really liked these headphones at the time. So the diaphragm material was pressed it into use, along with other improvements to the voice coil, ventilation and focused magnetic



▲ Angled connector with high-quality cables and marked left/right connections. We would have preferred color coding.

drive. They’re all designed to meet one aim: the highest precision in the conversion of the supplied electrical signals into enhanced musicality.

Patented drive

That most beautiful car dramatically loses its appeal when it lacks horsepower has long been a motor industry axiom in the United States – see also “there ain’t no substitute for cubic inches”! So a lot of brainpower was invested to coax both powerful and low-distortion performance from the NightHawk membrane – at least within the limits of financial viability! The result is a patented magnetic drive with 1.2 Tesla power, providing the best basis for a rich, low-distortion listening experience, especially in the bass range.

Warmth and dynamics

We enjoyed the absolutely unproblematic electrical load of the NightHawk via our Malvalve Amp3 reference headphone amplifier, the headphones meeting our newly awakened sense of expectation with a balance tending slightly to warmth, making them especially well-suited to piano recordings such as Lionel Monnet’s performance of Chopin’s Nocturne or voices of all kinds.

We meandered from the striking and sonorous male voices of Alan Taylor or Richard Bargael to the tempestuous rock

guitar storms of Joanne Shaw Taylor, and although we found some “grunge” lacking in the performance in the last, there was no shortage of kick, resolution or dynamics. Jocelyn B. Smith’s cover of Leo Sayer’s tearjerker “When I Need You” was even more convincing: the passion and emotion in her voice, delivered with a rarely heard wealth of detail and accompanied by minutely detailed reverb, not only had charm, but also real quality.

Audioquest’s claim of a spatial sound was also convincingly accomplished; in addition to the usual left/right pattern, there were many facets in between, and at times the sound even seemed to move in front of and behind the ear.

Long-term effects

Initially there is nothing truly noticeable about the Audioquest in the first half hour of listening, until you realise that the seemingly mild treble and the unobtrusive, taut bass range are the result of utmost freedom from distortion – irritations and annoyances and are missing across the frequency range. There is no lack of weight, not to mention fine control, with a rich bass line such as in John Campbell’s “Down In The Hole”.

These headphones seem to reproduce everything with a sound as easy and comfortable as their fit on the head, whether used with a high-class headphone amplifier or a simpler device such as Audioquest’s own DragonFly “USB stick” model.

Technologically and acoustically, the NightHawk is a daring masterpiece.

Michael Lang

KEYWORD
Selective laser sintering:
 Polyamide powder built up in layers, and formed into a stable, three-dimensional shape by heating with laser.

AUDIOQUEST NIGHTHAWK

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Semi-open, 350 grams: the hugely successful market launch of Audioquest in the world of headphones; interchangeable 2.5 m cable, adapter to 6.3 mm jack; left/right markings embossed on the headphones

STEREO-TEST

SOUND QUALITY 89%

PRICE/PERFORMANCE

★ ★ ★ ★ ★

OUTSTANDING

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

SCANSONIC HD

The MB-6 is the Scansonic flagship speaker

Tall, slim and elegantly curved it follows the core of traditions in Danish loudspeaker design.



Design | - the Philosophy

Having worked with Raidho speakers for more than 12 years, I found myself faced with a completely new challenge when I was asked to design a new range of high-performance speakers for the Scansonic brand.

Michael Børresen



THE PROFESSIONAL

So tube amplifiers sound soft, have a loose bass, can only be used with selected speakers and spend most of their time in the workshop? Think again...

What was I thinking? Why should I want to heat up the room by connecting an amplifier with a whole armada of boiling tubes in my listening room, when outside it was already as more than 30C? Note to self: next time, plan reviews more careful around the calendar and the weather forecast! But then, such fears often cause resistance among those considering tube-based audio components – well, along with the fear of such products being designed mainly for visual appeal, rather than consistent performance.

Too often we have heard from sensitive souls that tube audio is lacking when it comes to reliability, the tubes themselves are costly to replace and tricky to match, and that the poor supply of spare parts means extended repair times. And if all that wasn't enough, buying a tube amplifier immediately places strict limitations on the choice of suitable speakers.

What sensible person would choose such an amplifier? Well, Karlsbad-based Octave has the answer: by rethinking the whole concept, it says it has developed something very unlike the common perception of such products – if you will, the sensible person's tube amplifier.

Think different

Talk to Andreas Hofmann – owner, head, heart and soul of Octave – and the thinking soon becomes clear: but then Baden-born Hoffman is an autonomous developer and manufacturer of his own products, to an extent very rare in this industry.

Let's start with the transformers: manufactured in-house, using high temperature resistant enameled copper wire and low-loss cores, they're designed for long-term consistency, and magnetically shielded with special metal sheets, made in Europe and difficult to produce. Forming the link

between the amplifier and the speakers in the negative feedback loop, they are crucial to the sound, which is why Octave winds and finishes them by hand: the company has been manufacturing its own transformers since 1968, so has unique experience in this field.

To those surprised there are no separate taps for 4, 6 or 8 Ohm speakers, Hofmann's response is that these are bad for the phase and frequency response, thus affecting spatial imaging and tonality. Using optimized winding technology, the efficiency of Octave's transformers is much higher than usual, and the single tap merely decreases the power of the V80 at low impedances, which in practice has proved not to be critical. The design also gives the transformers very wide bandwidth, the frequency response extending to about 60 kilohertz.

To ensure longevity and resist user-abuse, the Octave V80SE is equipped with extensive protection circuits, to handle against overvoltage, overcurrent short circuits and even lightning. The transformers are thus more or less indestructible, even in the case of no-load operation. Extensive tube-friendly power management is

also included, as well as a circuit to ensure the tubes are never driven to their limit, extending their service life.

The oval power tubes used here have caused some sensation among fans of “glow in the dark audio” in recent years, with other manufacturers also installing these KT 150 marvels into existing amplifier circuits. It works, and though it adds little to the sound, it can be offered to the customer at a neat surcharge. Hofmann goes further, however: he has stepped up to the plate and completely adapted the old V80 design to the new possibilities – with resounding success, as we were soon to discover in the listening room.

After a short but impressive warm-up, lap the lab was the first stop for the Octave amplifier, with good (but by no means outstanding) results obtained. In particular, the crosstalk attenuation at ten kilohertz – rather unexpectedly – and the damping factor – as expected – were unlikely to knock an old fox like laboratory manager Uli Apel off his testbench stool. He did however note that, with the Octave driving the large Canton Reference 1K loudspeaker, there was almost no sign of limited bandwidth or uncontrolled bass. Such are the signs of a good tube amp – common prejudices notwithstanding.

But impatience was growing, so soon the V80 was back in the listening room, and after only a short listen we began to wonder which was challenging which – the speaker or the amp? Finally, the winner was the speaker, thanks to its almost unlimited dynamic ability, although the two formed an ideally matched team.

The Octave did everything you could expect from a really good amp for just under €10,000*, its MC phono section more than up to the task of revealing differences in quality and character between different drive/arm/system combinations. For example, the Pro-Ject Perspex with Ortofon MC30 brought a positive charge to the atmosphere – never seeming to age, it simply does a really good job at an affordable price.

With CD, too, the Octave revealed all the subtleties of blues singer Doug MacLeod’s performances, while Marla Glen’s thick bassline on “Cost Of Freedom” benefited from the vice-like grip of perfectly the amp. Force, foundation, precision and swing: this is what the editor listens for in an amp, and the kind of voices often made somewhat sugary by

most tube amps, came through the Octave and Canon speakers gracefully, detailed, nuanced and simply credible. Even better, the character hardly changed even at high levels until shortly before the performance limit – a sure sign that someone has done his homework here.

About beans and goosebumps

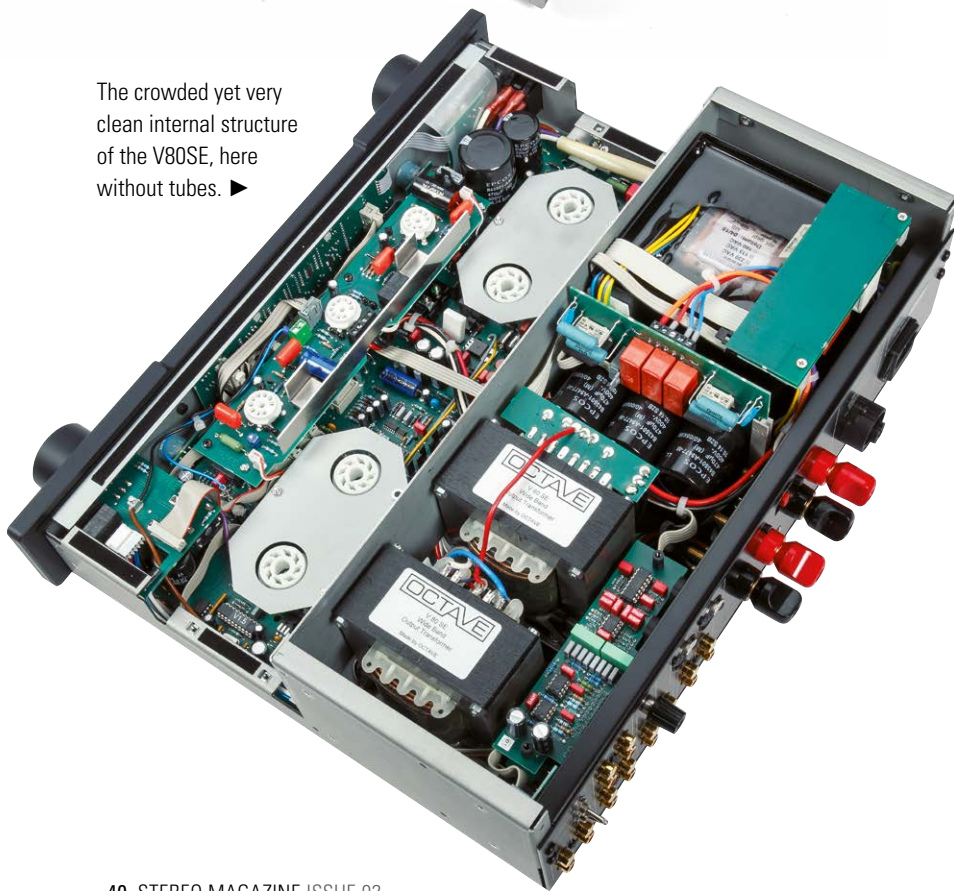
I am not sure about the acoustic bean counters – when a system excites me, I soon get goosebumps all over my body.

Here both came together: a flood of detail, the finest transient and decay responses, the joy of playing, everything was there. Yes, a muscular transistor amp may still deliver even more at very high levels, but otherwise – pack it in and take it home.

But wait, we still have one more thing. Wasn’t there another box in the Octave shipment, something rather small? Yes, it’s the company’s SBB – short for “Super Black Box” (though it is also available in silver) – and it’s available as an option at



◀ The lower the ohms of the speakers the more the Super Black Box with twelve quality capacitors, each with 6000 uF, helps. The lead is 90 cm long.



The crowded yet very clean internal structure of the V80SE, here without tubes. ▶

significantly more than €2000*. What is it all about? We'll get to that, but isn't this an add-on too far? After all, the Octave amp performs so well that it matched the top rivals in its market-sector, so how can this extra box help? In the lab, connecting it brings only a marginal improvement to the V80's measurements – a few watts more power into a four ohm load – while at eight ohms nothing happens. Ok, back to the listening room, and try the V80/SSB combination with the Canton again speakers.

First, we listened again without the SSB "afterburner" – great, everything's perfect, what more is there to say? And then...

VooDoo box? Never!

Well, good though the V80 is when used alone, here's the thing: with nine out of ten speakers, you won't be able to resist adding this little black box to it.

Why? Well, the quality of the electrolytic capacitors in an amplifier may be crucial to the sound, according to Andreas Hofmann: the types used by him are about twenty times as expensive as good standard merchandise. The SBB extends this thinking, upgrading the power supply by increasing the capacitance tenfold, with the intention of boosting the amplifier's ability to drive demanding speaker loads, all the way down to two ohms.

So, now it was our turn to sample some of this audio voodoo, and immediately we learned things about musical coherence



▲ Top switch selects headphones output, speakers or both; lower one saves power when the amp is on but not in use.



▲ Solid speaker terminals surround the unusually-located headphone connection.

– not that we'd noticed it was lacking in the initial listening. With the "unaided" V80, the new Canton was clearly the best speaker that ever came out of the Taunus region of Germany; now it revealed additional qualities. The soundstage imaging became more spacious, and at the same time more stable as the finest details at the heart of the music came to light.

Even better, the bass now showed no sign of fade, however long, fast and hard it was played – not even when we tried to provoke the wrath of the neighborhood or colleagues in other offices. Banished were any thoughts we'd been having of adding a power amp to the V80 in extreme situations, as the Super Black Box demonstrated that it is anything but black magic.

The performance was so much better that the Octave, with SSB "in harness", could now easily be counted among the very best amplifiers. Considering the depth of engineering and quality here, not to mention the sound, the price is absolutely fair.

Michael Lang



◀ Big egg: The selected KT 150 power tubes are given optimized working conditions in the V80SE, so can develop their qualities to the full.

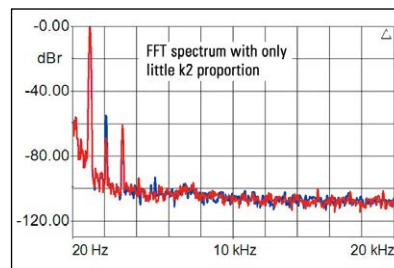
OCTAVE V80SE (SBB)



From €9,250*, Phono-MC €590*, SBB €2,500*
 Dimensions: 46.5x16x46 cm (WxHxD)
 Warranty: 3 years (at registration)
 Contact: Octave Hi-Fi, Phone: +49 7248/3278
 www.octave.de/en

Even the standard version provides many happy hours, with SBB a real bonus. Good MC option.

MEASUREMENT RESULTS



Continuous power	to 8 4 Ohm 68 35/46 watts per channel
Pulse power	to 4 ohms circuit breakers Watts per channel
Distortion factor	
At 50 mW 5 watts Pmax -1dB	0.03 0.2 0.9%
Intermodulation	
At 50 mW 5 watts Pmax -1dB	0.01 0.3 0.6%
Signal-to-noise ratio CD	at 50 mW 5 watts 71 87 dB
Signal-to-noise ratio	
Phono MC 0.5 mV, 10 ohms	72 dB
Channel separation	at 10 kHz 37 dB
Damping factor	at 4 ohms 2
Upper cut-off frequency	(-3 dB, 4 Ω) 60 kHz
Connected load values	oriented to practical operation
Crosstalk	Tuner/CD (10 kHz / 5 kOhms) 86 dB
Volume control	clocking error up to -60 dB 0.3 dB
Power input	
Off Standby Idling	0 2/ 193 watts

LABORATORY COMMENTS: Good measurement data in all relevant points. Rather atypical for a tube amplifier is the very low distortion, at least in the normal power range.



FEATURES

Four line-level inputs, one of which is XLR, remote control, tape output, headphone output, pre-out, MC phono option, bias setting, power supply unit option, ecomode switches, German user manual

STEREO - TEST

SOUND QUALITY CD	96%
SOUND QUALITY SACD	100%

PRICE/PERFORMANCE



*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

“When Art

meets Sound

and Technology”

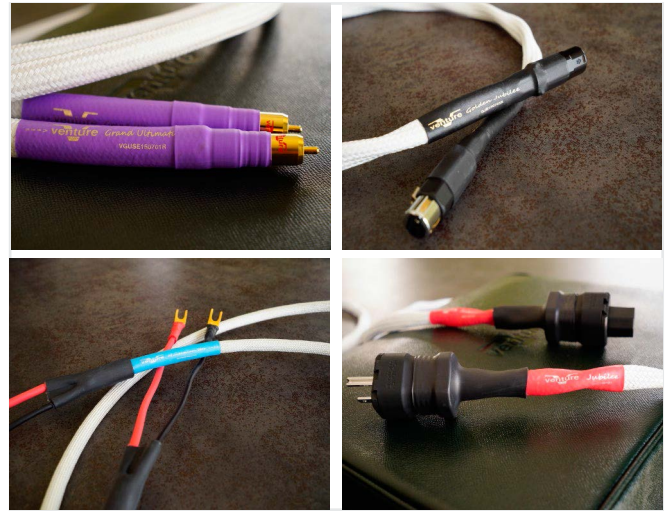
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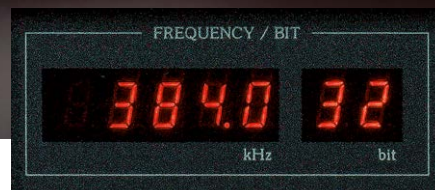
SOFT CONTROL, HARD THINKING

Digital/analog converters are where computers meet Hi-Fi – but in addition to the quality of the software, traditional hardware virtues also count at Accuphase, Exogal and NAD.



The Multi-Talent

The brand-new Accuphase DC-37 can handle all data formats – even DSD signals from its sibling players.



To date, celebrated Japanese manufacturer Accuphase has bucked the streamer trend, preferring to concentrate on music provided from a computer via USB – or “Macs and DACs audio”, as some describe it. So, beside the usual digital inputs – two optical and two coax – on the rear of the painstakingly built DC-37, you’ll also find a USB interface for data formats up to 32 bit digital word length at 384 kilohertz sample rate, or “double-rate DSD” with a 5.6 megahertz bandwidth respectively. That should probably be sufficient.

On top there’s also a proprietary “HS-Link” through which Accuphase’s own SACD players can transmit the normally disabled DSD data stream, although regrettably we’re missing a balanced AES/EBU socket.

A highly readable display to show what kind of file is being played, and when fed with a regular diet, e.g. from a CD player, this may not seem important. However, during our tests this information proved to be incredibly helpful.

We were playing from the iTunes library on our MacBook Air via the popular Audirvana Plus player utility, which greatly enhances the sound quality by taking over the computer and dedicating it its task while music is playing, for example disabling Apple’s annoying “Sound Manager”. At €59* the price for this tool is very reasonable – especially if €8500* has just crossed the dealer’s counter in return for the Accuphase DC-37!

Good though it may be, like similar tools Audirvana Plus offers multiple setting options and quite some pitfalls,

▲ You can push the Accuphase up to 384 kilohertz sampling rate and 32 bit resolution, while „1-bit format” DSD is accepted at up to 5.6MHz.

sometimes reducing the sample rate from 192 to 96 kHz without an obvious reason, so that display on the DC-37 proved extremely welcome as a means of keeping and eye on exactly what digital fodder we were feeding the DAC.

Can it upgrade a DP-550?

The front panel of the Accuphase keeps things very simple: apart from the on/off button there’s no more than selector switches for the six digital inputs, plus up/down pushbuttons to adjust the analogue output level. As it turned out the DC-37 had exactly the same level as the company’s DP-550 SACD player, which we were using to check the HS-Link – and also whether high-end lovers who already own this €10,000*+ player would find improvements when augmenting it with this external D/A converter.

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.



▲ To the left are the DC-37’s six digital inputs, including two coaxial and two fiber optic connections. The analog output connectors are on the right, via RCA and XLR sockets.

Short answer: yes, they will!

Using Accuphase's high-end C-3800 pre-amp with its remote-switchable inputs and a HMS Gran Finale Jubilee AF twin cable set, we were able to make convenient direct comparisons with perfect volume level matching right from the listening spot. And the family similarity between both player and DAC, which were even powered through identical mains cables, became obvious in the form of exemplary openness and definition of even the most subtle tonal or dynamic facets.

However, the DC-37 had a trump card to play, in the form of greater insight into the nuances of the music, and greater suppleness in the upper registers, therefore seeming more natural with voices or strings by the removal of that notorious grain – a refinement for which, as we all know, the die-hard listener has to dig deep into his pocket.

This was by no means a self-evident conclusion, since the DC-37 uses the same "MDS++" converter system as the DP-550 – well, almost – and very similar analog output stages. Accuphase has refined this "Multiple Delta Sigma" array, which reduces distortions and noise by cascading several converter ICs, over many years – but while the DP-550 uses six 32-bit chips from ESS Technology per channel, the DC-37 has eight, and thus claims even greater precision. Our laboratory reveals top-notch values.

When aiming for the ultimate performance, you mustn't cut corners anywhere, and accordingly the Accuphase has fully independent power supplies for the digital and analog sections, and uses only selected components throughout.

In daily use, however, the reliable handling and operation are at least just as essential. And apart from the fact that



▲ This little multi-talent organizes the USB port of Accuphase for the most diverse formats.

SACD VIA HS-LINK AND LAN CABLE

As most hi-fi fans know, SACD players can output CD-quality audio in digital form, but not DSD – it's all to do with historical worries about software piracy. However, the proprietary Accuphase "HS-Link" connection between its disc players such as the DP-550 (top) and the DC-37 allows an exception from the strict rule, by forming a secure connection between the two, preferably linked by a CAT-7 LAN cable of the highest possible quality.

This is exactly what we did, and found the connection worked instantly and ran with absolute stability – not always a given when dealing with music files and interfaces. The HS-Link also transmits CD data, so that no extra digital cable between player and DAC is required, and whichever format you choose to play simply appears in the DC-37's display.



And above all the connection makes sense because via it the DC-37 it sounds even better.

minor problems in the communication between computers – be it a PC or a Mac – may arise anytime, the Accuphase got along instantly with our notebook and Audirvana Plus. Those slightly bumpy phases inbetween, when the Apple suddenly delivered reduced formats or fell totally silent, may also be due to the fact that we kept reconfiguring it for our comparison DACs.

In any case, the DC-37 stayed receptive all the way, while Audioquest's Diamond USB interconnect ensured optimum data transport – just as in other digital connections, the cable grade is also a crucial factor with USB for optimal sound quality.

We fed the Accuphase with music formats starting from 320 kbit MP3 all

the way up to native PCM high-bit files in 24/192, as can be found on the STEREO Hörtest Editions, while with "double DSD" files transferred via "DoP" we went even further uphill. In the so-called "DSD over PCM" mode the single-bit data stream of the DSD format is sort of transmitted in a PCM envelope, and in this mode the display sometimes jumped to 32 bit showing sample rates beyond 300 kHz.

No surprise: everything great!

In the past the only digital sources were CD or DAT with the key figures 16/44.1 or 16/48 respectively; today many listeners have their music archived in the most diverse formats on their computers or NAS hard disks, to which the D/A

The analog and digital section each has its own power supply with transformer and filter capacitors. ▶





▲ High-precision operational amplifiers filter the signal currents for cinch and XLR completely separately.

converter has to adjust automatically. The Accuphase acts as a discreet butler, at the most clicking softly with format changeovers, along with a change of display.

We won't even try to pretend as if we were surprised at the DC-37's superb performance – we weren't expecting otherwise. The champagne gold machine unfurled exquisite sound images from each format and with each musical style, dappling the opalescent sound hues and delicately fading reverb tails of "Play of the Waves" from Claude Debussy's "La Mer" like an impressionist painting. Floating



▲ Among other things, we operated the DC-37 in a complete Accuphase chain including the Super-Pre C-3800 (M.).

almost weightlessly, yet at the same time accurately laid out and contoured, the lucid orchestral piece was projected into the listening room.

How sensitively the D/A converter works also became obvious in the way it delineated the various resolutions contained on our first Hörtest Edition. In the minor formats below the ultimate 24/192 the musicians were closer together, with less air around them and less tonal shade; move up to higher resolutions and the problems were neatly resolved.

Shortly afterwards CC Coletti's "Rock And Roll" of Edition Vol. III, featuring tracks from top label Chesky Records, made it very clear that the DAC – for all its champagne style and flawlessly lacquered wood side-pieces – can also party hard.

One could itemize dozens of examples of the DC-37's class, but instead we'd like to mention another two striking attributes: it lies on the line followed by Accuphase for quite some time of blending an explicit resolution capacity with a never cozy, yet all the more authentic tonality. We greatly appreciate this trend.

Also top with CD format

When crosschecking with German high-class converters from Acoustic Arts or MBL, the advantage was merely the sovereign style in which the Japanese renders complex structures or copes with loud voices – other contenders similar in price and ambition can do that just as well. No, the CD-37's major strength is in its very sharply contoured separation of sonic events, creating an impressive spaciousness. This is well audible on Carolin No's crystal-clear "Still Waters Run Deep" from the new Hörtest CD Vol. VIII, or James Taylor's elderly "Here We Are" (this time in the 2.8 Megahertz DSD64 format).

However, in order to experience the clear benefits of the DC-37, you need neither no high-bit PCM nor double-rate DSD – rather it will allow the discerning listener to rediscover an entire CD collection. At the same time it fits seamlessly into the premium league of Accuphase's product range, both soundwise and technically, and can even act as an upgrade for some of the company's players. When combined with one of those popular home network bridge solutions, the multitalented DC-37 could even turn into a streamer.

Matthias Böde

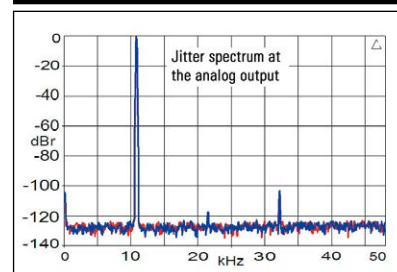
ACCUPHASE DC-37



About € 8,500*
 Dimensions: 47 x 12 x 44 cm (WxHxD)
 Warranty: 3 years
 Phone: +81 45 901 2771
 Contact: www.accuphase.com

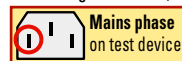
The uncompromising, complex technology concept of the DC-37 has its equivalent in a superb soundscape. A future-proof D/A converter for the highest demands in exquisite quality.

MEASUREMENT RESULTS



Step and impulse response function		OK
Symmetrically		
Signal-to-noise ratio Digital Zero		121 dB
Signal-to-quantization-noise ratio (24 bits)		120 dB
Signal-to-quantization-noise ratio (16 bits)		96.7 dB
Distortion factor		
-60dBFS -9dBFS/400Hz		0.07 0.0004 %
Converter linearity up to -90 dB		<0.1 dB
Output resistance (Cinch/XLR)		47/50 Ohm
Output voltage 0 dB (XLR)		2.5 V
Power input		
Off Standby Idling 0 - 9 W		

LABORATORY COMMENTS: "This is not a Hi-Fi, but a measuring instrument," was the enthusiastic reaction of the laboratory staff from Accuphase-DAC. Apart from the unrecognized emphasis of older CDs, this one captivated with peak values, exploring the theoretical advantages of high-bit technology in its signal-to-noise ratios. Excellent are also the low output impedance and extremely low distortion values.



FEATURES

Digital inputs: 2x coaxial, 2 x optical, USB (B) and HS link for appropriately equipped Accuphase drives and players
Analog outputs: one each balanced (XLR) and unbalanced (RCA), **Accessories:** Power cable, LAN cable, User manual

STEREO-TEST

SOUND QUALITY	100%
PRICE/PERFORMANCE	
★★★★☆	
EXCELLENT	

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

PROGRAMMED POWER

About a year ago newcomer Exogal made a brilliant start with its debut converter, the Comet. New software and an optional power supply are designed to make it even better.



Unfortunately, still as puny as the original: the remote control, meanwhile replaced by a more convenient model.

In the digital age, first-class sound has a whole lot to do with mathematics, as was been proven by Wadia more than 20 years ago: if the Americans didn't totally unshackle the established Hi-Fi world with by writing in-house algorithms for sound enhancement, they certainly gave it good shake.

Those influential heroes of yesteryear – Jan Larsen, Larry Jacoby, Jeff Haagens-tad and lead developer Jim Kinne – have now been trying for two years to create some more waves, following the same 'in house' technical approach, but with pricing clearly directed at a larger clientele. That's in spite of doing things 'the expensive way', with complete production in the United States.

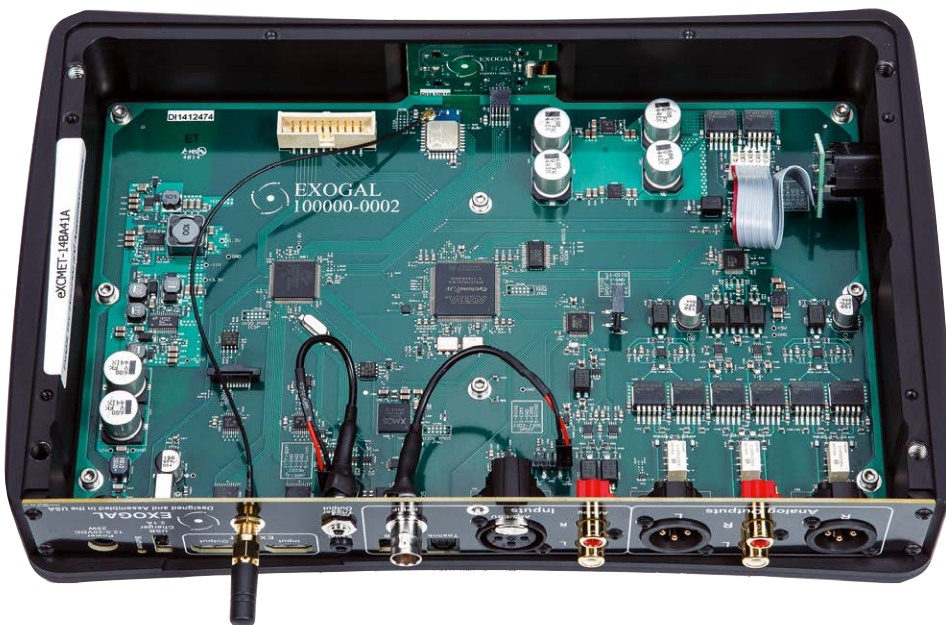
What they delivered, in their original Exogal Comet D/A converter, was a sound competitive far beyond its price range, and a product capable of satisfying the measurement laboratory while still producing consistently excellent results.

At first glance, nothing has changed since then, neither inside nor out, but the software has been updated: that's an advantage of the largely open concept, and should also contribute to above-average

value retention, as the devices can at least partly benefit from new ideas in the development department.

Three years on, the Exogal team also offers a factory update in order to upgrade the converter to the last series status

– setting an excellent example. However, though we'd like more changes, both the puny remote control and the non-skid-resistant feet linger on, the display is also still waiting for an upgrade, and the controls cannot yet be really called intuitive.



▲ Symmetrical design, high-quality output level and a lot of programming work – Exogal Comet Plus

On the plus side, the very accurate volume control operates without loss of resolution, the extensive connectivity options include a top-quality headphone amplifier, and the double output socket pairs in cinch and XLR remain. These can even be operated in parallel, allowing the use of Exogal as a spartan, yet flexible, preamp.

Amplifier-like PSU

The improvements aren't all hidden: Exogal has replaced the previous AC adapter with a separate 'black box' supply with a capacitor bank totaling 85,000 µFarad – more than in most amplifiers. The aim was to increase the spatial imaging, to make the bass sound a little darker and more unshakable and to further minimize interference from other devices.

The idea was to merge a sound as natural as possible with slightly more realism than the Comet could manage with the old supply, while retaining the format flexibility – the Comet Plus still handles everything in terms of data up to DSD.

Absolutely of course

We used the "Plus" both as an amplifier for high-quality headphones and as a preamplifier, with equal success – and not only taking the price into account.

Nevertheless, our main interest was what the software update delivered and what can further be gained with the new power supply.

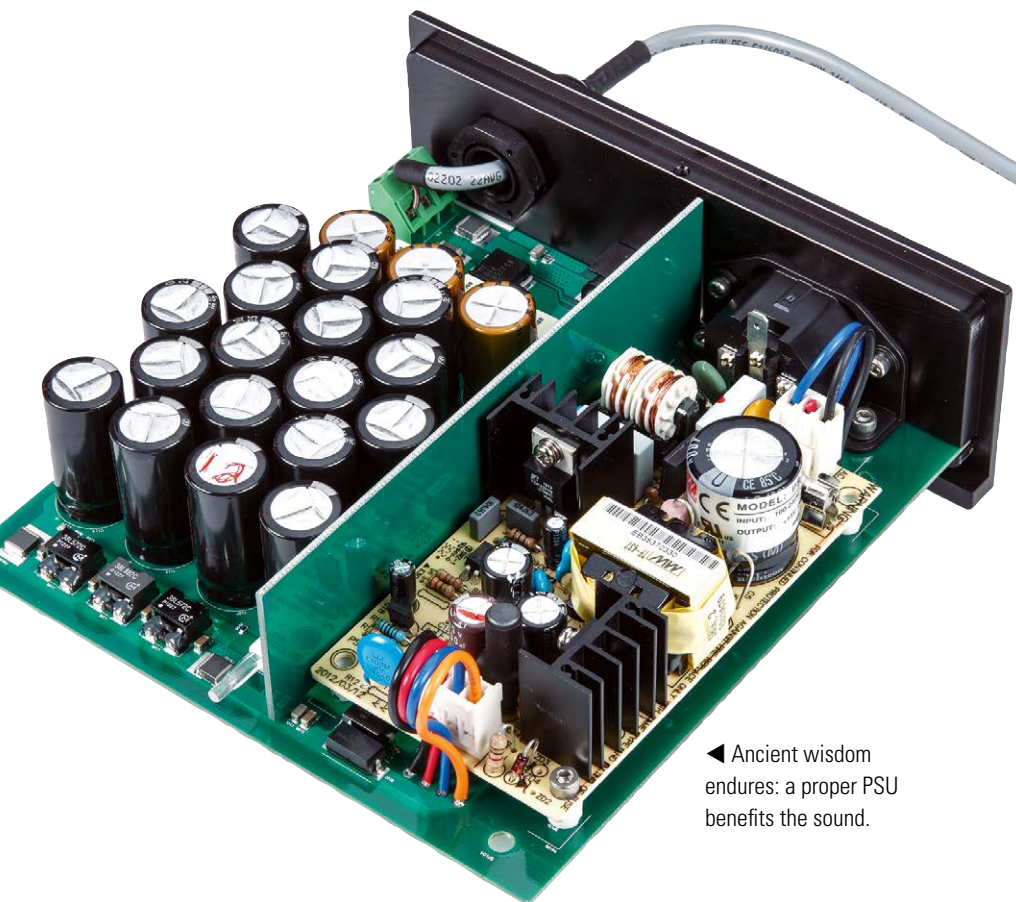
The point is this: those who expect a great spectacle, with tonal changes and a gain in the frequency extension, will be disappointed – the original Comet is already too good for that.

Instead, what is happening here is clearly directed at the "sentient" listener: the gears of the music seem to better interlock in the sound of a band or an orchestra, Red Norvo's "Saturday Night" becoming a gripping, blending performance, not unlike in Garbarek, Gismonti and Haden. The soundstage image is clearly wider with the auxiliary power supply, and a touch deeper, but everything is also outlined more sharply.

In addition, the increased ease of the sound represents a major advance, audible in any choir or strongly modulated voice. Across the frequency range, there's not much room for improvement.

So it's a case of a bit more sound courtesy of the new algorithms, with the rest coming from the power supply. The result: pure sonic joy!

Michael Lang



◀ Ancient wisdom endures: a proper PSU benefits the sound.

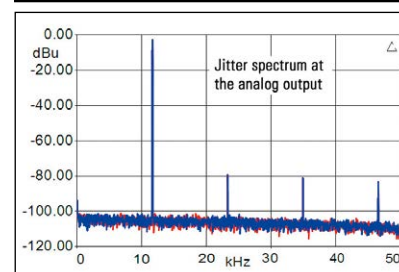
EXOGAL COMET PLUS



About € 3,000*
 Dimensions: 30 x 6 x 24 cm (WxHxD)
 Warranty: 2 years
 Contact: Exogal
 Phone: +1 651/9640698
 www.exogal.com

The second suit fits like a glove. What the older gentlemen in the United States have created at a moderate price fits the time in terms of price and sound and is well worth recommending.

MEASUREMENT RESULTS



Maximum frequency deviation	less than	0.1 dB
Step and impulse response function	Symmetrically	OK
Signal-to-noise ratio	Digital Zero	103 dB
Signal-to-quantization-noise ratio (24 bits)		103 dB
Signal-to-quantization-noise ratio (16 bits)		97 dB
Distortion factor -60dBFS -9dBFS/400 Hz	0.5 0.004 %	
Converter linearity	up to -90 dB	0.1 dB
Output resistance (Cinch/XLR)		9/20 Ohm
Output voltage 0 dB (Cinch/XLR)		2.7 V
Power input		
Off Standby Idling		0 4.5 9 W

LABORATORY COMMENTS: The measurement laboratory reveals effortless performance under pressure.

Mains phase on test device The quality of the components is high; the output level can hardly be improved on.

FEATURES

Inputs: coaxial, optical, BNC, AES/EBU, USB; adjustable headphone output; pre-amplifier function with analog input, BNC connector; DSD-capable; display, controllable via Android and iPhone; updatable, external power supply

Outputs: 1 x balanced (XLR) and cinch, can be operated in parallel

Accessories: Power cable, remote control, User manual

STEREO - TEST

SOUND QUALITY **93%**

PRICE/PERFORMANCE



EXCELLENT

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

A SUPERB PURIST

There is not much to the new digital NAD C 510 preamplifier. But what the manufacturer has packed into the converter makes it even more convincing.



Other NAD components can also be operated with the sophisticated system transmitter. ▶

The NAD C 510, as is made clear from its place in the company's numbering system, is a preamplifier, not a D/A converter. However, this dark gray box is far from being an imposter in our test group, being fully digital and accordingly uncompromising when it comes to connectivity. Six ports, including USB and asynchronous AES/EBU, accept signals of up to 24 bits and 192 kHz, though you'll look in vain for any analog inputs on this preamp.

So is this a thoroughbred D/A converter? To be honest, it is becoming increasingly difficult to distinguish D/A converters from preamplifiers: as already established with the Accuphase and Exogal, such devices increasingly have the ability to control their output voltage, enabling them to be connected directly to a power amplifier, or even active loudspeakers.

In this world, NAD is doing everything in its power to ensure highest possible precision in its level control: the 510 uses 35-bit architecture, meaning that the volume control can operate across its full range without loss of sound quality through bit reduction. In fact, the

company points out, "even 24-bit files are not truncated until well below the threshold of audibility."

The NAD's true qualities as a preamplifier are noticeable in the details, which only become apparent when you have used the device for a few days as a preamplifier. For example, the volume can be adjusted smoothly via a controller on the front panel, whereas many DACs require laborious repeated presses on up/down buttons, while the current output level is easily read on the display, even from several yards away.

Alongside the level readout, the selected input, sampling rate and the incoming signal are displayed – it could hardly be

any clearer. Finally, the large remote control also has an easily accessible mute button in addition to the input selection and volume controls.

With features such as these, the C 510 feels supremely suited to use with a power amplifier – like the powerful C 275 BEE – or active speakers such as the sensationally dynamic Genelec 8351, and proves itself to be a brilliant, unfussy and superbly easy-to-use digital preamplifier.

Much of that is down to simplicity: NAD has deliberately avoided



▲ A far too rare sight on Hi-Fi DACs: NAD's C 510 even converts HDMI audio signals (frame).

superfluities such as tone controls, switchable filters, upsamplers and the like, while other typical preamplifier features such as tape monitor, record-outs, etc. are also nowhere to be found. Yes, such facilities can be a matter of taste, and some might say they couldn't live with a preamp lacking tone controls, for example: however, we like the way the NAD is so wonderfully simple and intuitive. What's more, the sound is so musical, clear and dynamic that such sonic adjustments really aren't required.

Of course, the 510 also does an excellent job as a line-level DAC to be used with a conventional preamplifier or integrated amp, although things are made slightly tricky by the fact that the level control cannot be switched off. When using it in this way, you should regularly check whether it is at exactly zero decibels – fortunately the NAD remembers the last level setting when it is switched off – and never higher, because the preamplifier produces measurement and audible clippings at positive dB values. At zero dB and below, its test results, especially the signal-to-noise ratio and distortion figures, are excellent.

Those superb values (see concluding column) aren't that surprising: technically, the C 510 is based on proven variables. As with other components of the C class, here NAD also makes use of components developed for its flagship "Masters" family, and one could go so far as to describe this preamp/DAC as a C 390DD (about €2,600*) without that model's

integrated Class D amplifiers – and the C 390DD is itself a direct offshoot of the outstanding M 2.

Another notable feature of the C 510 is its two HDMI inputs, all too rare a find on DACs even in the era of Playstation and Co. If that provision awakens the movie buff in you, rein??? in your excitement: the C 510 only accepts two-channel PCM signals via HDMI. However, almost all HDMI sources can be set to downconvert to stereo PCM: our PS 4, Denon's BDT3313UD and even the Apple TV worked on the first attempt. An HDMI output is also provided, and this loops video through to the TV in impeccable quality.

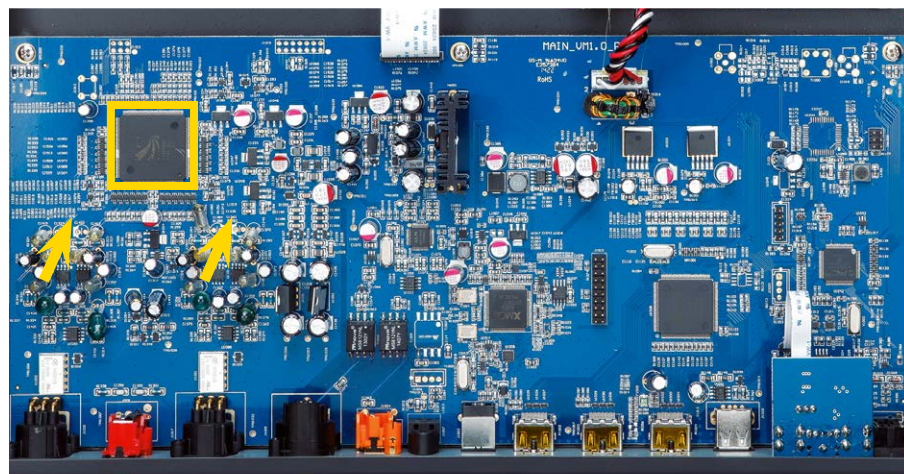
The typical NAD joy of music filled our listening room: try as you might, this DAC inevitably forces you to keep the beat with feet and head. Need we say more? The treble is pleasantly crisp and transparent, the bass has volume and is solid, dry and fast – in comparison, Pro-ject's outstanding Pre-Box Digital sounds downright tired. The NAD is especially adept at capturing a live atmosphere, such as on Nils Lofgren's "Keith Don't Go", in a confident and appealing manner. With its stimulating character, the C 510 even comes dangerously close to the ASUS Essence III, although the latter still brings a touch more presence to the midband in direct comparison.

Nevertheless, for us there is only one conclusion: NAD's digital preamplifier is an almost perfect Hi-Fi seducer.

Carsten Barnbeck

KEYWORD

Bit reduction:
For low-resolution digital data (at 16 bits) at low listening levels only a few bits are used for signal imaging, which can result in audible losses.



▲ The image shows the complete signal processing of the C 510. The actual D/A converters are housed on the left side (arrows). Arrows missing The digital level is controlled in the prominent signal processor above it (frame).

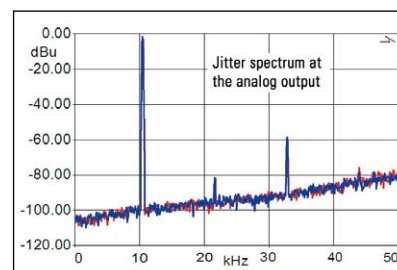
NAD C 510



About € 1,300*
Dimensions: 43.5 x 10 x 31 cm (WxHxD)
Warranty: 2 years, contact: NAD
Phone: +1 905/8316555
Contact: www.nadelectronics.com

Six high-bit inputs, level control and a lot of joy – all that is needed to produce a fully convincing digital preamplifier.

MEASUREMENT RESULTS



Maximum frequency deviation	less than <0.1 dB
Step and impulse response function	
Symmetrically	OK
Signal-to-noise ratio Digital Zero	114.1 dB
Signal-to-quantization-noise ratio (24 bits)	114.1 dB
Signal-to-quantization-noise ratio (16 bits)	88.2 dB
Distortion factor	
-60dBFS -9dBFS / 400 Hz	0.05 0.0008 %
Converter linearity up to -90 dB	<0.1 dB
Output resistance (Cinch/XLR)	140/187 Ohm
Output voltage 0 dB (XLR)	4.2 V
Power input	
Off Standby Idling 0 <2 13 W	

LABORATORY COMMENTS: As is quite typical for NAD, the C 510 excels with excellent measured values: in particular, the frequency response and distortion could hardly be better, and its appetite for power is manageable. One can, however, force the DAC to poorer measured values: you must adjusting the level into the "positive" dB range significantly distorts the input signal. The simple consequence is that "0 dB" is the highest usable volume value.



FEATURES

Inputs: coaxial, optical, AES/EBU, USB and 2 x HDMI (only PCM stereo)
Outputs: 1 x balanced (XLR) and unbalanced cinch, HDMI monitor output
Accessories: User manual, power cable, remote control

STEREO - TEST

SOUND QUALITY **85%**

PRICE/PERFORMANCE

★★★★☆
EXCELLENT

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.



Gryphon Mephisto

Dual Mono Class A Reference Power Amplifier

THE
GRYPHON



www.gryphon-audio.com · email: sales@gryphon-audio.dk



US distributor invited

ELACs new entry-level series

They are called „Debut“ and are available as from € 160* per piece: the new entry-level speakers from ELAC. The range comprises the compact bookshelf speaker B5 (€ 160*), the slightly bigger B6 (€ 200*), the floorstanding speaker F5 (€ 380*) and the center speaker C5 (€ 250*). There are also three active subwoofers priced from € 330* to € 800*. As icing on the cake ELAC offers the coaxial Dolby Atmos speakers A4, which are to be simply placed on the main speakers. All woofers work with cones made of aramide fiber-reinforced material, the tweeters feature soft domes and special waveguides. Also revamped by ELAC - especially visually - comes the 240 line of products.



www.elac.com

Sennheiser re-invents the Orpheus

On the upwardly open price scale for headphones, Sennheiser sets a new record: € 50,000* is the cost for the new „Orpheus“, a set of tube amplifier and electrostatic headphones. Sennheiser manufactures the amplifier housing from Carrara marble, and the control dials from solid brass, chrome-plate finished. By pressing the volume control, first the controls on the front slowly protrude out of the amplifier housing, then an octet of tubes rises up and starts glowing gently. Finally, a glass cover raises automatically, allowing the headphones to be taken out. The tubes are encased in quartz glass against microphonic effects. With a voltage of about 5 volts only, the music signal is transmitted to the headphones via a special cable and amplified only then to the high voltage required for electrostatic transducers. The electrodes are made of gold-sputtered ceramic and the diaphragms are vapour-plated with platinum. For the headphones Sennheiser has chosen a classic shape with oval, leather-covered ear pads. Orpheus' amplifier can be operated via analogue XLR or RCA and digital optical or coaxial inputs. Via USB it also handles high-res PCM or DSD files provided by computers. The D/A converter section consists of no less than four parallel ESS Sabre ES9018. The new Orpheus is manufactured at Sennheiser's headquarters in Hannover and coming to retail stores by mid 2016.



www.sennheiser-reshapingexcellence.com

McIntosh: new preamps

New preamplifiers were announced by McIntosh: two of them transistor powered and one equipped with tubes. The two transistor models C47 AC and C52 AC provide lots of XLR and RCA inputs, and even a D/A converter with optical and coaxial S/PDIF inputs, as well as a USB port for computers. It accepts PCM signals up to 384 kHz/32 bit and DSD up to 11.2 MHz. The impedance of the phono inputs (MM and MC) can be adjusted. As icing on the cake the C52 offers an 8-band equalizer and the famous illuminated blue VU meters. Strictly puristic, however, comes the tube model C1100: It works purely analogue without any tone controls. The impedance of the headphones output can be adjusted from 16 to 600 ohms.

www.mcintoshlabs.com



Dynaudio expands the Xeo family



The new small active speaker from Dynaudio shows up in a width of mere 17 cm: The Xeo 2 (€ 1,300* per pair) follows the master/slave principle and can be operated either in analogue or digital-optical mode, via Bluetooth (with aptX or AAC codec) or wirelessly from Dynaudio's transmitter units „Hub“ or „Connect“. It is available in semi-gloss Black or White and can be also mounted to the wall. Also new at Dynaudio are two models of the Excite series: The floorstanding speaker Excite X44 (€ 4,200*/pair), as the new top model of this series, and the compact speaker X18 (€ 1,400*/pair) are both available in the finish options Rosewood, Walnut, Satin Black and Satin White.

www.dynaudio.com

Micromega M One on its way

Initially the M One was introduced way back at the High End in 2015, but during the CES 2016 information about it got more specific: The Micromega M One, a true all-rounder retailing for € 3,500*, is finally said to be released in spring. The slim case made of solid aluminum houses an integrated amplifier, a network player, a hi-res DAC for USB and S/PDIF sources, LAN and WLAN, Bluetooth with aptX, Airplay, analogue inputs for phono MM/MC and line-level RCA and XLR, and a DSP with automatic room correction. In short: It carries pretty much all modern functions, interfaces and protocols. For the individual touch finishes in different colors and variants with leather or carbon applications are available.

www.micromega.com



*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

Music server with USB output

The Korean brand Aurender comes with four different music servers/network players onto the market. They store music on the internal hard drives, but use an SSD as a cache for playback. A D/A converter is not installed, but the signal is provided to external DACs via USB 2 instead. Digital processing comprises PCM files up to 384 kHz/32 bit and DSD up to 5.6 MHz, as well as AAC and others. The LAN port offers access to the home network. Playback is controlled by means of the Aurender app. Depending on the size of the internal storage memory (2 to 12 TB), the type of the installed outputs and the complexity of the power supply, the prices range from € 3,300 to € 18,900*.

www.aurender.com



Aurender X 100

New dream amplifiers from Gryphon



Gryphon Antileon Evo

At the beginning of 2016 Gryphon replaced the power amplifier Antileon Signature. After 15 years it is followed by the all-new developed Antileon Evo. In the stereo version it retails for € 35,000* and in the double-mono version for € 70,000* the pair. The stereo version boasts 150 W at 8 Ohm in pure Class A operation mode, while the monos offer 175 watts each under the same measurement conditions. The electronic components rank among the best and most expensive available on the market, and the circuit topology presents itself at its best as well.

www.gryphon-audio.dk

DALI: Center for Rubicon

The Danish speaker specialist DALI complements their Rubicon series with a center speaker. It is dubbed „Vokal“ and equipped with the same drivers as the floorstanding Rubicon 6: two 17 cm bass/midrange units, a 29 mm fabric dome tweeter and a ribbon super tweeter. The 58 cm wide speaker can also be used vertically as a regular speaker in d'Appolito configuration when required. As from mid-January it enters the stores for € 1,700* in the finish versions high-gloss Black or White and semi-gloss Walnut or Rosso.



www.dali-speakers.com

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

Optimized or Compromised?

Experience both! With the brand new OCTAVE **HP 700**



With the unsurpassed flexibility and completely high end performance of the OCTAVE **HP 700**, one doesn't have to sacrifice personalized customization to enjoy perfect sound quality.

Octave designed the **HP 700** preamplifier for music lovers with the highest standards who's requirements also include optimal connectivity. The **HP 700's** eight available input modules are more than a luxury; for the most discerning listeners they are a necessity.

Crystal clear reproduction with incredible detail and complete accuracy make the **HP 700** the natural choice for those seeking audible perfection. The OCTAVE **HP 700** – designed precisely for you.



Featuring the highest grade, heavy duty components



Available audiophile tone control option



Perfectly optimized optional input modules

OCTAVE

Record brush made from bog oak

Exotic materials make noble equipment somewhat even more exclusive. Transrotor and Levin Design now come up with a record brush using a body made from centuries-old bog oak. The wood is



water resistant, and so Levin Design also offers a record brush for wet cleaning purposes. It is equipped with horsehair, while the dry variant cleans the grooves with Chinese goat hair. The market launch is planned for 2016 - the price is approximately €130*.

www.transrotor.de/en.html

Limited to 30 pairs: Audio Physic Cardeas 30

The speaker specialist from Brilon celebrates its 30th anniversary with a loudspeaker of superlatives: The Cardeas 30 will be built in a limited edition of only 30 pairs, each pair retailing for €35,000*. The high and midrange frequency ranges of the Cardeas are equipped with „Hyper Holographic Cone“ drivers to reduce micro-vibrations. The lows are handled by two 25 cm chassis that sit opposite to each other in the side walls. The crossover features „Clarity Cap“ capacitors, while the speaker connects via WBT Nextgen binding posts and sensitive floors are protected by the proprietary „VCF V Magnetic“ feet. The Cardeas 30 comes with an aluminum front baffle and real wood veneer cabinets, available in Ebony or Rosewood finishes.



www.audiophysic.de

Media center tags vinyl records

The British manufacturer Entotem brings up a media center that digitalizes vinyl records by retrieving tags and covers automatically via the internet, embedding them directly in the files. It's called „Plato“ and uses the „MusicID“ technology from Gracenote. The phono input accepts MM and MC systems, and features switchable capacities, input impedances and gain levels. Additionally on board: three line inputs, an analogue pre-out, coaxial and optical S/PDIF in- and outputs, USB ports for memory sticks, and LAN and HDMI connectors. Analogue audio signals are digitalized with up to 192 kHz/24 bit and stored on the internal 3 TB hard drive. Digital audio/video files in all current formats can be archived on the hard disk and be played from there. Even music and video streaming services can be accessed by the device. Operation is done via the touch screen on the front or via a smartphone app. Pricing: €4,800* resp. €6,000* with built-in 2 x 50 watt amplifier.



www.entotem.com

Beyerdynamic: T5p, second run

Over-ear headphones, optimized for mobile use, but at the price of a high-class studio model: That's the new T5p from Beyerdynamic, retailing for €990*. The circumaural, acoustically closed type was optimized for its second generation in detail, and equipped with an additional damping against high-frequency resonances, stronger baffle fabrics made of high-tech compound material and an improved baffle geometry. At the very heart of the T5p operate 32 ohm transducers with Tesla technology. The ear cups are filled with memory foam and covered with leatherette. The textile-braided cable is interchangeable, 1.40 m long and equipped with a 3.5 mm jack. A 6.35 mm jack adapter and a hard case are included in the scope of delivery. Optional accessories include two 3.0 m long audiophile cables, one of them in a balanced version with a 4-pin XLR connector. The T5p, which is completely manufactured at Beyerdynamic's Heilbronn headquarters, is granted with a five-year warranty.



www.beyerdynamic.com

Octave: 420 watts out of a tube



Octave expands its reference line around their mono amplifiers Jubilee Mono SE. With a total of eight tubes, the Jubilee provides impressive 420 watts - which places enormous demands on the output transformers. The bias points of the tubes can be adjusted by eight 10-turn potentiometers. A special power management limits the inrush current, so that the household fuses are avoided to respond. Upon request, the amplifier switches to standby mode after being ten minutes on idle, so that only the input stages are supplied with voltage. Special highlights are the aluminum parts cut from solid blocks and the stone slab forming the front of the Jubilee Mono SEs. And, there is a cost for all this: €75,000* per pair.

www.octave.de/en

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

Deezer invests 100 million euros in streaming

Since Apple entered the business, competition among music-streaming services is getting harder. Anyone who wants to survive within this industry, is forced to acquire as many customers as possible, and that does cost money. So Deezer now has got an infusion of capital in the amount of a tidy 100 million euros. This, not only to bring new subscribers on board, but also to introduce new product features and open up new markets. The fresh money comes from the largest Deezer shareholder Access Industries, which also owns Warner Music, and from the French telecom group Orange, that also holds significant shares in Deezer. Deezer claims to offer the world's largest streaming catalogue containing 40 million titles, including radio broadcasts, audio books, podcasts and live transmissions of soccer matches.

Catalogue sizes of global music streaming services



www.deezer.com

„Moving iron“ from Grado

The New York based manufacturer Grado is not only famous for their headphones, but also plays an important role in the cartridge industry. Now coming are two new cartridge series with wooden bodies, which follow Grados concept of „Moving Iron“. Both coils and magnets are fixedly mounted, while the stylus moves an iron rod that immerses into the magnetic field by changing it through its movement according to the music. The new series are available as „Reference 2“ in a high-output and a „Statement 2“ in a low-output version. Both of them are recommended to be terminated with 47 kOhms. Each of the two versions is available in four variants with different cantilever and stylus types. Prices range from € 430 to 1,600*.



www.gradolabs.com

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

Apple Music now included in the Sonos system

Until now, the possibilities of reproducing the music streaming service Apple Music on high-fidelity speakers were limited. So recently Sonos has integrated Apple Music in their multiroom system - initially as a beta version. Many Apple Music features can now be controlled via the Sonos app on iPhone, iPad, iPod touch, Mac, PC or Android smartphones. Playback can be effected in a single or in all rooms. The final version is intended to follow shortly.

www.sonos.com



REFERENZ SELECTION

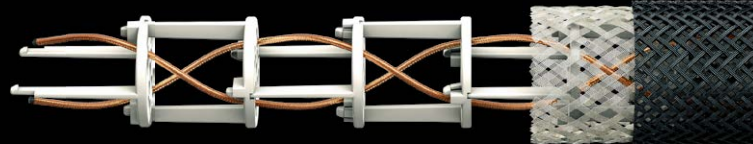
APPROXIMATES THE IDEAL OF PERFECT CABLES AS CLOSELY AS NEVER BEFORE.



REFERENZ LS-2404



REFERENZ NF-2404: AIR HELIX CONSTRUCTION



“Without a doubt, in-akustiks LS-2404 is one of the best speaker cables that STEREO has ever tested...”

stereo 01/2015

“The authentically innovative structure of in-akustiks new interconnect Referenz NF-2404 has propelled it right to the top of the class.”

“Listening to this air cable will take your breath away!”

stereo 09/2015

When it comes to high-end applications, air is still the best insulator currently available as it achieves low capacities and low losses. To meet this, in-akustik has designed a special clip. Inside the cable, many of those clips are arranged to form a special helical support holding two symmetrically arranged conductors freely in the air while maintaining the exact distance to the shield.

inakustik

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WWW.IN-AKUSTIK.DE

HAPPY NEW **HIFI** YEAR!



In the wings are the new turntables from **THORENS**. With their coil-spring suspended subchassis and other features they orient themselves on their classic paragons. The medium model in the range is the TD905, retailing for about €4,500*.



Under the **MOFI** brand name Mobile Fidelity Sound Lab, acclaimed for their numerous vinyl reissues, turns up with two purist turntables, one for about €1,000* (above) and one for just under €2,000*.

Not quite a celebratory atmosphere, but at least a positive mood prevailed during the CES Show in Las Vegas. No wonder in view of that many innovations. And here they show up!

The market is being difficult, so was the almost unanimous opinion of the exhibiting hi-fi and high-end companies at this year's Consumer Electronics Show in Las Vegas. They knew that they could draw the public's attention from curvy-screened TV sets or trendy gadgets like tablet-PCs or drones

with spectacular novelties only. Therefore it helped a lot that Technics revived its legendary turntable model SL-1200 on a higher level (see below). A crowd-pulling news that promptly went through the general press. So STEREO puts a special eye also on all other CES innovations in favour of the good sound.



The debut of the new **TECHNICS** turntable amounted to a sensation. Available as from summer onwards, the SL-1200 GAE looks very much like its legendary predecessors, but from direct drive (left) through control unit to chassis all was newly developed. The first edition of this high-class turntable is limited to 1,200 pieces and presents itself with a four-layer chassis as well as a low-resonance magnesium-tubed tonearm, amongst other features. Later editions will not be limited anymore. Pricing was rumored to settle around a lush 4,000 dollars.

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.



AUDIOQUEST showed the improved USB DAC/headphone amp Dragonfly Red and the Beetle DAC for USB, Toslink and Bluetooth connections (around € 200* each).



BURMESTER'S full system Phase 3 (no price yet) received its final touches. The speakers now feature JET tweeters, while the all-in-one receiver 161 also makes part of the system, proudly presented by managing director Dina Hoenge.



New or not? Oh yeah! Bruno Bouchard, President of **VERITY AUDIO**, showed his Sarastro in the „IIS“ version with the effectively dampening „S-platform“. What you cannot see: Moreover there are a number of alterations to the crossover. Price per pair: from € 47,990*.



MBL'S owner Christian Hermeling came all the way to Las Vegas to prove that his 101 speakers do not necessarily require the reference components from Berlin to perform well. Therefore he showcased the CD/DAC N31, the integrated amp N51 as well as the power amp N21 from the „Noble Line“ (at around € 12,000/13,800/12,900*). And the demonstration left nothing to be desired: The bi-amping set let the omnidirectional transducers play energetically-punchy as well as subtly-fragrant culminating in a powerful, but still relaxed grip on impulses.

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.



EAT'S managing director Jozefina Lichtenegger conceived the C-Major to stir up the analogue scene. Tonarm tube and subchassis are made from carbon. The arm features a combination of one-point and cardan bearings. Price with Ortofon MC Quintet Blue: around € 1,990*.



HIFIMAN gave birth to the little brother of its premium headphone model HE-1000, the Edition X. Conceived as a magnetostat as well, it offers a higher sensitivity for an easier operation in particular with mobile devices. Price: around € 1,800*.



Excellent sound at **MAGICO'S** where boss Alon Wolf presented his new small floorstanding speaker. The S1MkII (the pair at around € 24,000*) is a two-way system with top-class drivers, such as a tweeter with beryllium diaphragm, clad in a thick panelled aluminum cabinet. Operated by Convergent's tube monos, the revised S1 easily filled the large listening room with music in an extremely potent and articulated manner. Superb!

NAGRA'S Classic Amp, reviewed on page 50 in the current issue of STEREO, is being soon released as an integrated amplifier called Classic Int (bottom). It offers the same amplification section as the power amp, additionally accompanied by four line-level inputs. Price: around € 17,750. Immediately available is the high-bit-capable HD DAC (top) for around € 13,500*, which comes with all current digital inputs including USB.



High-quality materials and workmanship as well as comprehensive variability - this is what **ELAC** focusses on with their „Discovery“ range of small components. This comprises a music server working as a network streamer (left), that is able to operate speakers wirelessly in different rooms. Owners of speaker models from Elac's 400 line can integrate them via a plug-in unit into the system. A „Wireless Integrated Amplifier“ (right) for passive solutions also makes part of the system.

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.



AVIK from Denmark showed the pre-/power amp combo C-300/P-300 (around € 30,000/40,000*). Excellent finish and large technical expenditure were said to justify the high pricing. Thus, the pre amp sticks out with a DAC with separate converters for PCM and DSD signals as well as an MM/MC phono section.

DAVID WILSON and his son Daryl presented their new Alexx speaker, intended to replace the Maxx, but actually having more in common with the bigger Alexandria. The mid-range is split between two drivers, which, like the tweeter, can be individually adjusted to the listening position for best phase linearity. The freshly developed woofers in conjunction with the optimized cabinet shall allow for maximum precision. But, there is a cost for all this: the pair is estimated to range around € 120,000*.



ELAC'S boss Gunter Kürten kept his smiles all along the way: not only that he complemented his team with Andrew Jones, one of the globally recognized top developers, who not only presented his first creations to an enthusiastic public, but also heralded a new era for the North German company with the „Discovery“ range of products: streaming and multiroom products with novel features at very attractive prices in the three-digit Euro range let the company shine in a new quality of light.



In addition to the new preamplifier No 526 (around € 16,800*) and the mono amplifiers No 536 (the pair around € 34,800*) the Americans from Harman's **MARK LEVINSON** division also showed up at the Hard Rock Hotel with the brand-new audio player No 519, capable of playing CDs and streaming as well as serving as a converter for PCM and DSD signals, but whose drive unit unfortunately is not being able to read SACDs. The targeted price is said to range under € 19,800*.

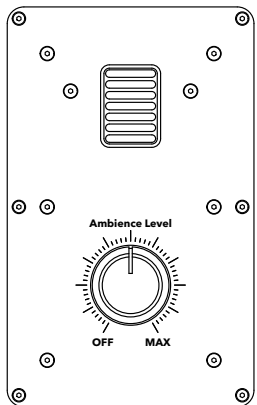
Among the most innovative products appearing on the CES ranks the **MOON ACE**, an integrated amplifier having a D/A converter and a high bitstreamer on board. The name stands for „A Complete Experience“. And that is not too much of a promise: This amp carries an MM phono input, supports the streaming service Tidal, offers Bluetooth connectivity and much more. Price: not fixed yet.



*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

Burmester

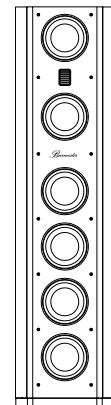
Ambience Loudspeaker



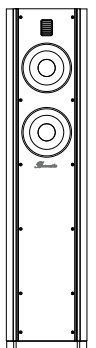
Adjustable Backfiring
Ambience Tweeter

»The idea for the Ambience Loudspeakers was born during the cooperation with our automotive partners. The 3D sound from the Mercedes-Benz S-Class was so popular that we decided to transfer the concept to the home audio field. The speaker's design with a continuously adjustable ambience tweeter at the back provides a sound spectrum from precise high end sound up to a lively sound with greater expanse and depth which can only be achieved otherwise with omnidirectional or dipole loudspeakers.«

Dieter Burmester



BA71



BA31

TO JUPITER AND BEYOND!

A slogan of the Sixties space-race (or Toy Story!) or the sign of an adventurous vinyl record player? Certainly the latter: Transrotor's Jupiter offers almost galactic possibilities.

When is a turntable not a turntable? When it's two turntables – you see, the two models below actually originate from the same base, and both bear the name Transrotor Jupiter. It's a familiar path for the analog specialist from Bergisch Gladbach in Germany, allowing it to drive its development and expansion program forward by offering a turntable both as a basic version, and also as a full-house version. It also allows the buyer to start with the entry-level

version, then upgrade to the ultimate stage by stage, rather as one might tune a racing bicycle or sports car over time.

That's how STEREO tested the Jupiter – or rather the Jupiters – and while it must be said that even in its entry-level version this turntable already captures the imagination, when one moves up to the top model one is in on a whole different planet. The basic Jupiter is already an impressive record player, being built on a circular base plate of black acrylic,

and with a sound to match that style; the top version offers a rarely heard suppleness aided by timing that runs as liquid-smoothly as oil.

But wait: before we start exploring the outer limits, let's clarify what's offered by the rather more down to earth model. Its gravitational center is a whopping nine-kilogram metal platter with damping plastic inserts, protrudes prominently to the left of the chassis. For optimum coupling it is supported via the opulent bearing block on a solid aluminum base with a ceramic ball, which in turn sits on a flat aluminum disc. The other two supports are formed by threaded rods adjustable from above, their rounded bottom ends resting in cupped holders, allowing easy horizontal alignment of the Jupiter, so it spins perfectly level.

Apart from the smart mounting with point-shaped-coupled mass, the parts and the construction here is well known from other Transrotors – but then why reinvent what already works so well? So the design engineers here again put their faith in the

At € 2,500, the basic Jupiter model already features sophisticated design and impeccable finish. From here, everything is possible, but nothing really necessary. Only the pickup cartridge might be improved. ▼



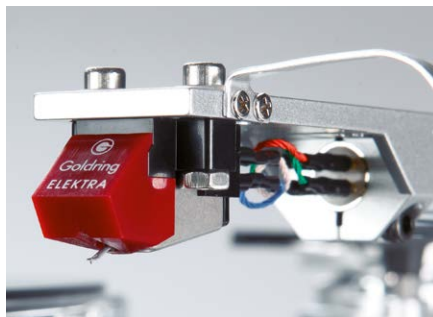
The basic package includes Goldring's Elektra MM cartridge (left); full-house requires Transrotor's high-end MC Figaro. ▶

proven synchronous motor, embedded in an aluminum profile, which is placed either as a small satellite driving the bearing plate from there, or – in the case of an external control unit – in a hollow below the platter connected by short belt.

Another old friend – and a worthwhile one – is the precise and neatly made S tone arm by Jelco from Japan, operating in Germany as S-800. In addition to its play-free bearings and the immaculate finish, we especially like the fact that the headshell can be replaced in a jiffy, allowing swift switching from one pickup cartridge to another. Tracking force and anti-skating is also adjustable in no time at all, thanks to precise scales on the counterbalance weight and a side wheel.

Expandable base unit

At almost €2,500*, the Transrotor Jupiter comes complete with the Goldring



Elektra MM pickup cartridge, but otherwise without additional features. However, that's no problem: it's got everything you need, and even the inexpensive Goldring benefits from the precise tracking of the high-quality arm and the stability of the motor unit in its basic version.

The bass pulses of „If I Could“ by the Blues Company from the new STEREO listening test LP II were simply fantastic: dry and gruff, they had both force and contoured shape, while lead singer Toscho's sonorous voice was intact, even though the small Jupiter's tonal balance doesn't deliver the most lavish timbres. Nevertheless, with

Wolfgang Bernreuther's moving „For Ole“ from the same disc the Jupiter captured the elegiac and thoughtful but not sad mood, with the casual atmosphere coming to the fore in the precision aligned and perfectly organized soundscape of Lyn Stanley's „A Summer Place „.

The debut Jupiter is without question not just the full-fledged turntable you'd expect for €2,500*, but more. With the Ortofon MC Quintet Blue (around €400*), it gained in bass weight, delivered better differentiation of tonal color range, especially in the crucial mid-band, and so appeared overall even more

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

The full-house Jupiter is the high-end turntable par excellence, which fulfils one's heart's desire and simultaneously underlines Transrotor's expertise. ▼



DAC 8 DSD High-End D/A converter

Super HD for all formats



The new DAC 8 DSD is equipped with unique T+A converters, and actually features separate converters for DSD and PCM. The True 1-bit Converter processes DSD files up to DSD 512, while the Quadruple Converter (8 x 32-bit) handles PCM files up to 384 kSps. It could be described as the perfect unit for use with digital sources in a classic High-End system which is not capable of processing digital sources directly, or not at sufficiently high quality.

But it is even more capable than this: with its superb pre-amplifier and sophisticated volume control it can also drive very high-quality output stages or active speakers, enabling it to take its place as the High-End command centre of a complete system. The DAC 8 DSD now also features an outstanding headphone amplifier capable of handling high currents, designed for use with High-End headphones.

The DAC 8 DSD offers comprehensive connection facilities:

Symmetrical and asymmetrical outputs, 1 digital output, 7 digital inputs, 1 high-res computer USB input (Device Mode), SYS IN socket for connecting source devices, CTRL socket for external control and updates.



T+A



◀ Three aluminum pucks are embedded in the sub-platter. These are to calm stray vibrations – and they look great.



▲ The Jupiter is a 25 mm thick disk made of black acrylic.

pleasing – never lazy but always playing “to the point”.

So, given this basic performance, can a full-featured Jupiter take you out of this world? After having both units side by side, with the luxury of making instant comparisons, we’d say the answer is an emphatic ‘yes’: it was as if someone had pushed buttons marked „peace“, „self-evident“ or „charisma“. and, in particular, „instinct”.

The change is immediate when you retrofit the Jupiter with the “sub-platter”, its feet – whether made of ceramic or metal – standing in small polymer dampers. The €880* platter (all accessory prices apply when purchased with the turntable, increasing by ten percent when bought later) gives the playback a more relaxed character, while adding the can-shaped „Konstant Eins“ motor controller increases vibrancy. Selling for around €300*, the controller has a rotating “lid” with which you set and change the speed., and with these two improvements, the Jupiter’s timing becomes more acute: instead of marching stiffly and unswervingly, the Transrotor now follows the predetermined rhythm like a light-footed dancer.

These effects are hardly surprising, knowing how improvements such as a

reinforced “backbone” and a precise supply can improve many other turntables, including Transrotor’s. Nevertheless, it is always fun again to trace the tonal influences of the accessories, and it is handy that you can retrofit all the parts piece by piece to what is already a very good turntable even in “basic” form.

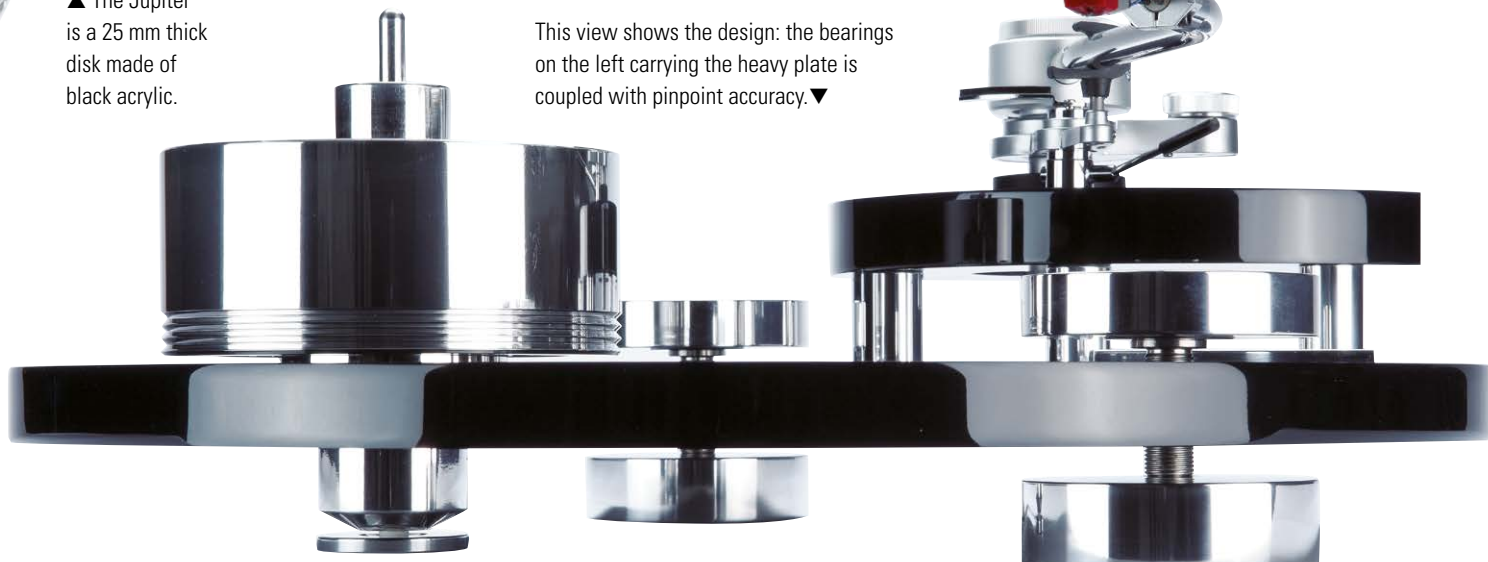
For example, at some point we’re sure you’ll be ready to appreciate the fine dynamic subtleties and the smooth flow that the decoupling TMD-bearing (around €680*) brings. In the „Transrotor Magnetic Drive“ the bottom bearing plate driven by the belt pushes the top plate carrying the platter by magnetic force whose „cushion“ absorbs tiny irregularities. We’d promote the sub-platter and the motor controller to all those who aspire to an even better Jupiter, but the TMD-bearing is the icing on the cake for those who want to go even higher.

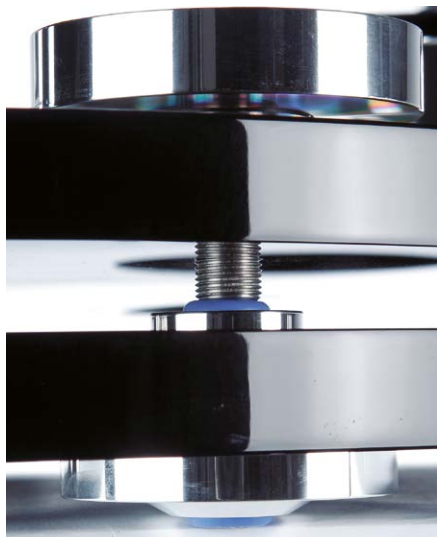
Jupiter – the outer limits

But you don’t have to stop there: you can continue on your journey. You add the correspondingly designed „solid“ arm base for €500*, which is good for twelve-inch arms – for this purpose we chose a long SME 5012 with a magnesium tube and pure silver cabling, which, reduced, costs €3,565*, and fitted it with Transrotor’s fantastic „Figaro“ MC cartridge, available as part of this package at €2,000* instead of €2,500*.

So equipped, the Jupiter moved ever closer to the centre of the reference universe, delivering exceptional musicality

This view shows the design: the bearings on the left carrying the heavy plate is coupled with pinpoint accuracy. ▼





▲When using the sub-platter, feet are mounted in blue polymer dampers.

and what you could only describe as “butter-soft precision”. „For Ole“ was presented in the tiniest details and with uninhibited flow – fascinating!

If that’s not enough, the fully-equipped Jupiter even takes on its big brother Rondino nero – although that model delivers nuances in a manner more stoic and unmoved, it wasn’t a patch on the in-house challenger, which achieved a more emotional response. It’s truly “out of this world”. *Matthias Böde*

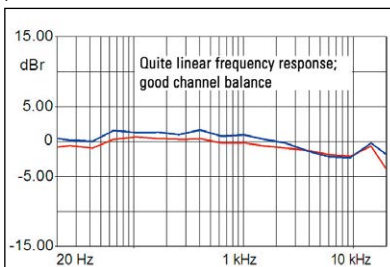
Contact: Råke Hi-Fi
SalesPhone: +49 2202/31046
www.transrotor.de/en.html

TRANSR. JUPITER – BASIC



About € 2,500* (incl. Tonearm Transrotor/Jelco S-800 and Goldring Elektra MM cartridge)
Required space: about 42 x 16 x 39 cm (WxHxD), Warranty: 2 years

The basic version of the Jupiter already comes with premium components and a soundscape that is as stable as it is vibrant. The supplied Goldring-MM has a slight presence sink (see chart), whereby it gains nuances in sonority. A powerful entry-level product!



FEATURES

One fixed and two height-adjustable feet with washers with rubber ring, changing from 33.33 to 45 by manually shifting the belt, platter weight.

STEREO-TEST

SOUND QUALITY **77%**

PRICE/PERFORMANCE



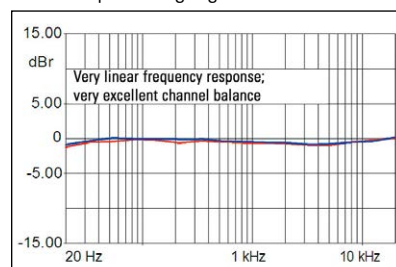
EXCELLENT

TRANSR. JUPITER – EXTENDED



About € 9,925* (incl. Tonearm SME 5012 and MC cartridge Transrotor Figaro)
Required space: about 49 x 20 x 39 cm (WxHxD), Warranty: 2 years

The „large“ Jupiter consistently builds on the premium-class base and extends it to its mechanical and electrical capabilities. The top arm and the splendid MC cartridge, which impresses with top values (see chart), make it an uncompromising high-end turntable.



FEATURES

Dampened sub-platter, motor controller unit with speed switch and fine control, TMD bearing, elaborate tone arm base, platter weight.

STEREO-TEST

SOUND QUALITY **98%**

PRICE/PERFORMANCE



VERY GOOD

*All prices listed are German retail prices incl. VAT valid at the time of evaluation.

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