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STEREO

THE HIFI MAGAZIN

ISSUE #23 2019



» WIRELESS SPEAKERS

**MORE
THAN JUST
ACTIVE**



**» HIGH END SACD-DRIVE &
STREAMER-DAC-PREAMP**

**T+A PDT 3100 HV
& SDV 3100 HV**

REVIEWS: AVM R. 5.3 +++ DALI OBERON 1 +++ NAD M10 +++
GAUDER DARC 60 +++ FOCAL STELLIA +++ **CLASSICS:** OPEN REEL

GLOBALIZATION



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It is remarkable how the increasing globalization is spreading – also into our segment of hi-fi and high-end music reproduction. We can easily learn about loudspeakers, devices and accessories from all over the world via the web and social media, research them and even acquire them with relative ease. Sometimes it happens via traditional distribution channels, but increasingly also via purchase directly from the manufacturers.

The other way around, German products equally achieve worldwide recognition at incredible speeds, and here, too, in addition to classic sales structures, some are delivered directly to the customer. Already, the global marketplace has reached top priority amongst manufacturers, classifying national markets as just one of many.

One may lament the fact that the traditional trade via importer and nationwide distribution using a proper dealer network is losing in relevance. However, we cannot prevent it from happening as the paradigm shift is in full swing.

Those who want to buy a product directly in the Far East, USA or anywhere else on the planet can do so. It should, however, be made very clear to everyone that unpleasant surprises are far more likely there than compared to buying from a proper retailer. Quality of workmanship, compliance with electrical standards, warranty conditions and shipping costs should be thoroughly checked before investing your hard earned money. If in doubt, it is usually better to buy via your respective national importer or your local dealer, whether here in Germany or wherever you may read these lines.

At the very least, one should study proper tests done by experienced editors who have the necessary equipment for independent and unbiased measurements as well as constant conditions for testing devices – STEREO Magazine ticks all of these boxes.

Volker Pigors

editor@stereo-magazine.com

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



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ACTIVE SPEAKERS

In the age of wireless connections and streaming the active speaker flourishes. We have tested five very different specimen of all price ranges.



T+A PDT/SDV 3100 HV

The combination of SACD-Drive and DAC-Streamer-Preamplifier from Germany touches the limits of what is possible.

GAUDER DARC 60

The „little“ brother of the DARC 100 is the perfect entry into the world of outstanding Gauder sound and technology.





NAD M10

The NAD M10 is rather small and inconspicuous looking, but actually filled to the brim with clever technology, useful features and great sound.



DALI OBERON 1

For just 400 euros per pair, the Oberon 1 is an amazing bargain. Especially as it sounds unbelievably good at this price point.



CLASSICS: OPEN REEL

While the turntable revival is still in full swing, there is yet another unexpected nostalgic trend: Open Reel is back! We had a look at two masters of old: the Philips N4522 and the Revox A 700.



AVM R 5.3

The larger of the two first turntables ever built by German manufacturer AVM is a feast for the eyes – and ears? We have tested it for you!



FOCAL STELLIA

The Stellia is one of the noblest closed back headphones on the market and features exquisite workmanship. Can its beryllium drivers push it to top-performance?



IN ADMIRATION OF MUSIC

**“The way we listen to music has been transformed.
But the reason we listen remains the same”**



At DALI, we believe that digital music should deliver convenience and choices without compromise on sound quality. That's why we've re-imagined hi-fi for the 21st century with the CALLISTO Wireless Speaker System.

Stream, beam, and control music from almost any source and enjoy the stunningly detailed, transparent reproduction DALI is celebrated for.

Headphone Amp from Lake People

The manufacturer of professional equipment from Lake Constance presents a new headphone amplifier: the G111 takes on the legacy of the G100. With its discrete power amplifiers, it can drive high and low impedance headphones as well as magnetostats. The two large jack sockets can be used to power two headphones simultaneously. Input



signals are supplied via gold-plated cinch or XLR sockets. Inside, there is a power supply unit with toroidal transformer. The volume is adjusted via an Alps potentiometer. The G111 is now available in silver or black for 500 Euro.

www.lake-people.de

TAD: Reference One the third

Technical Audio Devices Laboratories from Japan presents the new RITX, the third generation of its loudspeaker flagship. The cabinet consists of a 21 mm thick frame and



50 mm thick side walls, which are joined to form a kind of monocoque structure using high-frequency hot-pressing. The RITX is equipped with coaxially arranged tweeters and mid-range drivers with beryllium diaphragms, which together cover the wide frequency range from 250 Hz to 100 kHz. The bass is provided by a woofer with „TLCC cone“, a combination of lightweight foamed acrylamide and aramid fibres. The speakers will be available from August in the „Beryl“ and „Smaragd“ colour versions at a pair price of 135,000 euros. Individual cabinet designs are available on request.

www.technicalaudiodevices.com

HiRes porti „all inclusive“

The Chinese manufacturer Cayin is most known for its tube amplifiers, but it is now becoming more and more a specialist for HiRes portable players as well. After the N5iiS and the N8, now comes the MK2 version of the N6. It is called N6ii, costs 1500 Euro, has a 4.2 inch touch screen, an aluminum alloy case, a knurled wheel for the volume and hardware buttons for the playback control. The internal 64GB memory can be expanded with an SDXC card or USB memory. Inside there is an adapted Android 8.1 with full access to the Google Play Store, so that all apps of streaming services etc. can be installed. All audio applications bypass Android's forced resampling and play back at their native sampling rate. A special feature is the exchangeable audio print with the AKM DAC chip AK4497EQ and the analog output stage. It supplies three sockets: 3.5 mm jack line out, 3.5 mm jack for headphones and 4.4 mm Pentaconn socket for balanced headphone connection. An adapter from Pentaconn to 2.5 mm balanced is included. The digital interfaces are USB and S/PDIF - both via the USB-C port - and I2S via Mini-HDMI. The Porti can serve as a DAC for external sources. HiRes playback up to 384 kHz with PCM and 11.3 MHz with DSD is a matter of honor – even via Bluetooth. Thanks to the codecs LDAC and aptX HD music can also be transmitted wirelessly in very good quality. The N6ii is a good 2 cm thick and weighs 290 grams. Its battery should last 14 hours. Those who order the player in the Cayin online shop until September 15th 2019 will receive a 10 percent discount with the voucher code „HR-Player“.

www.cayin.com



Moon: Hardware Upgrades

The Canadian manufacturer Moon offers a hardware upgrade to the current network module „MiND 2“ for its network-compatible devices. The module is Roon ready, can decode MQA, access the streaming services Qobuz, Tidal and Deezer (also Deezer HiFi) and play PCM files up to 384 kHz and DSD files up to 11.3 MHz from the home network. The ACE, 280D, 380D, 780D, 180 MiND and MiND models can be retrofitted – regardless of whether they are already equipped with an older MiND module or not.

www.simaudio.com



New ribbon speaker from **Bohne**

The „Lifestyle“ series from Bohne Audio has been expanded: the BB-10L is now joined by the smaller, but otherwise similarly designed BB-8L two-way floor-standing speaker. As the model name suggests, it is equipped with an 8-inch woofer/midrange driver, two passive diaphragms and Bohne's patented dipole ribbon. As is usual with Bohne Audio, the tweeter and mid-bass drivers are powered by external power amplifiers, which in turn are controlled by the „MiniDSP SHD“, acting as a preamplifier and active crossover with room calibration. Bohne offers the complete system consisting of two BB-8L, the preamplifier MiniDSP SHD and the 4-channel power amplifier BA-200 for 8790 Euro. In addition to the standard colours white and black, there are other RAL colours and even solid wood versions in Oak, Macassar or Zebrano. The power amplifier is available in silver or black.

www.bohne-audio.com



T+A enters Chinese market

T+A, the high-end manufacturer based in Herford, Germany, is now focusing on the Asian market. Just recently, T+A signed a contract with a Korean sales part-



ner – now follows China. The high-end distributor Brighten HiFi AV Equipments Co., Ltd. took over the distribution of the T+A brand there as well as for Hong Kong and Macau on July 1. Brighten HiFi will be led by Robin Cai, a manager with more than 20 years experience in the audio industry and good contacts to the most experienced audio dealers in China. „We are delighted to have found a professional distributor for the Chinese market in Brighten HiFi who meets the high demands of our products“, said Siegfried Amft, Managing Director of T+A elektroakustik GmbH & Co. KG.

www.ta-hifi.de

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FULLY
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The new Canton **Smart series**: Perfected audio quality for your connected home. Explore the powerful streaming world of Canton and connect the Smart products wirelessly in any combination to create an impressive sound stage.



More information is available from your specialist Canton retailer and in our online shop at www.canton.de

CANTON
German loudspeaker tradition

Gauder updates „Berlina“ series

The new generation of „Berlina“ loudspeakers from Gauder Akustik will be called „Black Edition“ – differentiated by the black Accuton chassis. However also on the inside a lot has changed: new circuitry and new components from Mundorf in the crossover as well as bi-wiring terminals with the new Nextgen 0703 WBT as standard. With the help of the bass extension bridge, the impedance in the bass range



can be increased, so that even smaller tube amplifiers can drive the Berlinas. Gauder has nevertheless only moderately increased the prices: they start at 10,000 Euro per pair. Owners of older Berlina versions can update their loudspeakers to the latest version. The „Black Edition“ is also available with white cabinets.

www.gauderakustik.com

Roon Nucleus: now with ripping-option



The two music servers „Nucleus“ and „Nucleus+“ from Roon can now also rip CDs thanks to the latest firmware update. All you need is to connect a standard CD/DVD/Blu-Ray drive via USB. The inserted CDs are automatically read in the background and copied to the optional internal hard disk or connected USB

memory. Roon monitors this folder and automatically adds each imported album – complete with metadata from the Roon database – to the library. The „Nucleus“ with Core i3 processor and 4 GB RAM costs 1500 Euro, while the „Nucleus +“ with Core i7 and 8 GB RAM costs 2600 Euro.

www.roonlabs.com

New flagship: Dragonfly Cobalt

After Dragonfly „Black“ and „Red“, Audioquest now adds the DAC-Stick „Cobalt“ (300 Euro). The new top model is equipped with the ES9038Q2M converter chip and a particularly power-saving and even faster micro-controller than the „Red“. In addition, the supply voltage should be better protected against interference from WLAN, Bluetooth



or mobile radio. The „Cobalt“ is even 5 millimeters shorter than the „Red“. With its 2.1 Volt output voltage, it can power most headphones directly. The volume is set lossless on the digital level. Like the other two models, the DAC can handle resolutions up to 24 bit / 96 kHz and acts as an MQA renderer. The stick can be operated directly on computers with a USB-A port – an adapter for USB-A is included for smartphones or laptops with a USB-C socket. Apple devices with a Lightning port must be connected via Apple's „Lightning to USB Camera Adapter“.

www.audioquest.com

USB-C-DAC for headphones



Hama launches a tiny USB-C-DAC for smartphones, tablets or notebooks without a headphone jack. When playing music, LEDs indicate the current sampling rate (96/48/44kHz). By pressing a button you can choose between three different equalizer profiles, indicated by the flashing LED. After selecting the appropriate EQ profile, the LED returns to the current sampling rate. The integrated microphone means that every headphone can also be used for making phone calls. The adapter is suitable for headphones with 3.5 mm audio jack and costs 30 Euro. System requirement is Windows 7 or newer, Mac OS 10.8 or higher or Android 7 or higher.

www.hama.com



DIN A4 **Power Amp**

Teac expands its mini component series „505 Reference“ with a compact stereo power amplifier. It is called AP-505 and has the layout of a DIN A4 sheet. It draws its power from a toroidal transformer and the „Ncore“ Class D amplifiers from Hypex, which are also in the integrated amplifier of the same series and which, according to the data sheet, deliver 2x115 watts at 4 ohms. The AP-505 is also suitable for bi-amping and can be operated as a mono power amplifier if bridged. The metal cabinet with the aluminum alloy sides stands on three vibration-resistant feet. Two pointer instruments provide information about the current level. The signals – for example from the USB DAC/network player NT-505 – are fed in via XLR or Cinch. The power amplifier is now available for 1500 Euro in black or silver.

www.teac-audio.eu

MQA expands to China

High-resolution music streaming is now also available to customers in China: the streaming service „Xiami Music“ will offer music in MQA format in the future. Xiami – not to be confused with the smartphone manufacturer Xiaomi – belongs to the online retailer Alibaba. Subscribers



to the „SVIP“ version of Xiami Music will be able to try out the MQA format in a free trial phase. Xiami Music is the fifth largest music streaming service in China and provides a platform for independent musicians. The repertoire currently comprises 20 million songs. China's music industry already generates around 90 percent of its sales with streaming and is in 4th place with streaming revenues after the USA, Great Britain and Germany. China is also the fourth largest market for MQA-enabled devices – the best prerequisite for an MQA streaming service.

www.mqa.co.uk



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Hi-fi with the human touch

Remember when music was something you could touch? Selekt DSM makes listening to digital music a tactile and beautiful experience. It's better in every sense. And it'll make you fall in love with music all over again.

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www.linn.co.uk

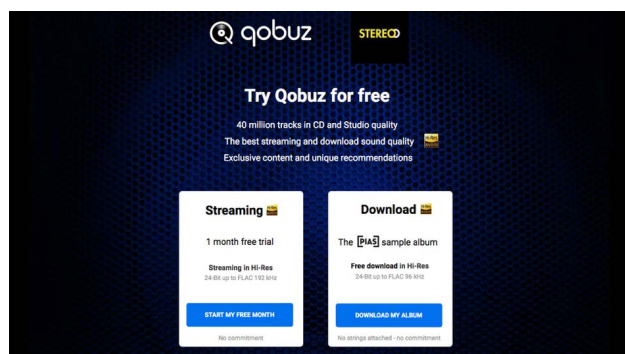




Naim: Phono-Revival

As a streaming pioneer, Naim had already largely said goodbye to the record. However, the two new integrated amplifiers now come with phono inputs again. They are called Nait XS 3 (2700 Euro) and Supernait 3 (4300 Euro), and they differ essentially in circuit and processing details. While the small model is specified at 2x100 watts at 4 ohms, the Supernait with its larger toroidal transformer provides 2x130 watts. In addition to the phono MM input, both amplifiers offer connections for 5 high level sources, which are accessible via RCA and DIN sockets. The cast aluminum enclosures contain reed relays for input selection, Class A preamps and Alps motor potentiometers for volume control.

www.naimaudio.com



Qobuz: free [PIAS] sampler

In addition to the free trial month, Qobuz also regularly offers promotions with free Hi-Res downloads. This time there is a sampler with 10 tracks of the successful indie label [PIAS] in FLAC 24-Bit, 96 kHz. Amongst others, the album features Melanie De Biasio, Eels, Isabelle Faust, Alt-J and Jowee Omicil.

<http://bit.ly/qobuzstereofree>

CD player with tubes

From Vincent comes the CD-200 CD player – the matching playing partner to the SV-200 amplifier, both in a 21 cm wide midi case. The player works with a Burr-Brown DAC chip and two 6N1 tubes in the analog output stage. Independent secondary windings in the mains transformer supply the digital and analog sections separately. An external D/A converter, can be connected via S/PDIF coax or optically. Complete with aluminum remote control the CD-200 costs around 800 euros in black or silver.

www.vincent-tac.de



Audiolab: affordable Streamer with DTS Play-Fi

Audiolab now offers the 500-Euro network player 6000N Play. The simple device without a front display is operated exclusively via iOS or Android handhelds or Windows PCs. Thanks to DTS Play-Fi technology, the device can access all common music streaming services via LAN or WLAN and of course play music from the home network via DLNA. It is also multiroom compatible. Six preset buttons on the front can be assigned to any web radio station or playlist. Audiolab uses the Sabre32 ES9018K2M as its DAC chip, and the maximum resolution of the network module is 192 kHz and 24 bits. Visually, the 6000N Play fits the 6000A integrated amplifier and the 6000CDT CD drive. It is available in black or silver.

www.audiolab.co.uk

Activated

The world of music streams – a great opportunity for active loudspeakers, where (nearly) wireless communication and network operation can use its strengths.

Tom Frantzen





The advantages of an active loudspeaker solution are manifold. The arrangement of the active or electronic crossover directly in front of the amplifiers as well as the adaptability and precise, individual tuning of amplifier and driver to each other, in addition to DSPs allowing corrections of frequency, timing and room acoustics, open up otherwise almost unthinkable possibilities for optimization. The quality of integrated amplifier electronics is also not necessarily worse than that of separate power amplifiers.

The only real counter-argument is the theoretically distortion-prone microphony of the electronics in the speaker cabinet. However, that can easily be countered by reducing vibrations, decoupling and separation. Especially in Germany, the active speaker has never been popular enough to become a bestseller. Some may attribute this to the preference of hi-fi fans to have „real“ amplifiers and power amplifiers. But with digital smart-homes, wireless connections and Streaming services for music, the active loudspeaker is celebrating a kind of renaissance, as it is excellently suited to deal with these new demands. For many it might be the key to this new world of music consumption.

In the latest generation, an array of connections, a remote control or app, Bluetooth and/or WiFi as well as, naturally, volume control are almost a matter of fact, so that the modern, „smart“ active speaker is far more than just a loudspeaker with integrated power amps. Instead it has itself become the system. However, unlike the rather small devices usually referred to as “smart speakers”, which are specially designed for multiroom or operation on the go, our test subjects are all very serious hi-fi candidates and even some proper high-end speakers meeting highest audiophile demands.

STEREO invited novelties from Canton, Phonar, Piega, Quadral and Triangle, from small to large and from 450 to 16,000 Euros, into our listening rooms. While the price tip goes clearly to the clever and extremely affordable concept of Triangle, the speakers from Phonar and Piega, and above all Canton, score with excellent sound and equipment, while the Quadral proves to be an uncompromising audiophile. ■

Vento goes Smart

Canton activated the Vento series. The Smart Vento 9 is now followed by the compact 3rd generation.

In stereo downmix, the Canton also adds the LFE channel for home cinema, leading to additional "boom".



At the Norddeutsche HiFi-Tage it fascinated us so much that it immediately secured a wildcard for this test. Especially since its big sister Smart 9 had already captivated us in another test (ST-Magazine Issue #22). Now the Germans have compressed the entire range of features from the big sister into a much smaller form. In terms of equipment and size the Vento 836 was most likely used as the passive model. For stereo operation as a digitally or analog

(Cinch/XLR) controlled active loudspeaker, it does not require a hub, not even for Bluetooth or 5.1 operation, for example directly on a Blu-ray player. If, however, you want entirely wireless operation with up to 7.1.4 (Dolby Atmos, i.e. 3D!), you can purchase a perfectly matching, proper AV preamplifier for 500 euros in form of the Canton Connect. Thanks to the remote control and large displays on the speakers, handling and configuration are rather simple. As a factory setting,

the „Master“ is configured to be on the left and the „Slave“ on the right. The loudspeakers correspond with each other and synchronize automatically.

Home Cinema Ambitions

The Smart Vento's features go far beyond those of the other test candidates, at least in terms of multi-channel use in a home cinema environment. This includes particularly useful treats such as TruSurround, Lip Sync, dynamic limitation or dialogue enhancement. In addition, the Smart Vento can be coupled with both the Smart Vento 9 and the latest addition Soundbox 3 to a multichannel setup. Since the individual speakers can also be arranged in groups, it is also possible to, for example, reach all children's rooms with a wake-up or "dinner-is-ready"-call. We really like the idea. For their multiroom options, Canton opted for the proven Google Chromecast technology. Of course the software is flexible, so that Airplay will be implemented as well in the future. The variety of features is enormously diverse – as is the sound! Extremely lively and thanks to its 350W engine incredibly powerful, the Vento plays itself into the compact top class. ■



Whether stereo, multiroom or Dolby/DTS, everything is possible with the Canton thanks to the flexible technology with optional Connect Hub.

Canton Smart Vento 3

Price: around 2300 €

(with Canton Connect 2800 €)

Dimensions: 23 x40 x30 cm (WxHxD)

Warranty: 2 years electronics,
6 years Loudspeaker

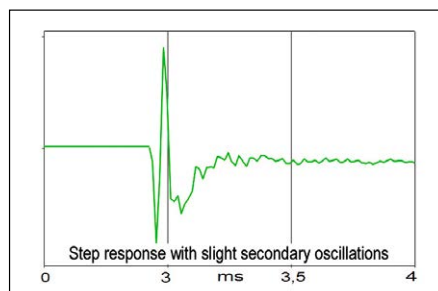
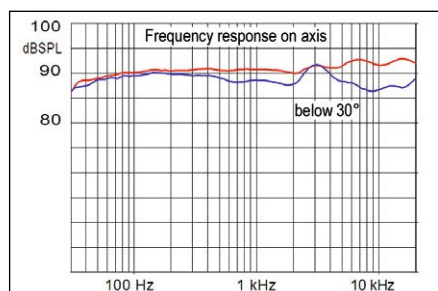
Contact: Canton

Phone: +49 6083 28730

www.canton.de

Canton's smart compact speaker is modern, network-capable and active, featuring more possibilities than you can ever imagine. These include Bluetooth, HD streaming and even multi-channel. The optional „Connect“ further enhances the system. Great sound!

Measurement results



Lower cut-off frequency (-3dB SPL) 36 Hz

Distortions at 63/3k/10k Hz 0,5/0,3/0,2 %

Lab Comment



Top! Balanced frequency response up to 36 Hz, excellent timing and extremely low distortion.

Features

Remote control, balanced/unbalanced inputs, Toslink, digital coax, USB, EQ, sleep timer, Bluetooth aptX, Dolby/DTS, DTS TruSurround (Virtualizer), wireless communication between the speakers, „true“ wireless with „Connect“ hub, Google Chromecast, supports almost any streaming service



STEREO AND HOME CINEMA

The compact Canton proves to be an individually configurable universalist. In addition to single operation, this also includes stereo as well as lavish surround functions for home cinema.

STEREO-TEST

SOUND QUALITY 70%

PRICE/PERFORMANCE



OUTSTANDING



Next, please.

Phonar's P4 Match Air is based – elaborately activated – on the passive model P4 Next.

Why start from scratch if you already have a fantastic passive loudspeaker: the Veritas? Exactly! And that's why the P4 Match Air was created as a smart activated concept based on the successful Veritas P4 Next. The series consists of a compact speaker, the M4, and four floorstanding speakers from P4 to P10.

The P4, which is tilted characteristically backwards for acoustic reasons, marks the

position of the small two-and-a-half-way bass-reflex floorstander with a height of 93 centimeters. Equipped with high-quality, selected Scandinavian drivers – the legendary 26 ring-radiator as well as two superb 130 peerless bass/midrange drivers – and an amplifier unit with 240 watts of power per channel, it weighs in at a respectable 22 kilograms. Of course, the P4 Match Air can be operated conventionally via cable alone as a great all-rounder. A superb DSP and DAC ensures extensive possibilities for connection and for adapting to the individual placement and room acoustics. Ten corresponding presets can be selected.

Phonar will, however, also supply a „PLA-TIN Hub“ (unit price 700 Euro; set price 4000 Euro), which will upgrade the P4 for wireless operation according to industry standard WISA (24 Bit/96 Kilohertz) as well as for Bluetooth aptX, Multiroom, HD-Streaming/DLNA, Chromecast, Airplay and for cooperation with Spotify (Connect), Tidal and Qobuz. Volume and source can be selected via the remote control, but more specific options have to be controlled via the respective provider's app. The hub is thus a transmitter, streamer and control unit all in one, including analogue and digital inputs, USB and even HDMI (ARC).

Everything is set up in mere minutes, whereby limited knowledge of PC technology and network administration is by no means an obstacle. The short manual for



A full nine presets allow a configuration of the Phonar according to your specific living environment, speaker placement or personal preferences.



There is a wide range of connections. Again, we think HDMI is a really great feature for living room appliances these days.

„pairing“ the remote control/hub and for setup/pairing the speakers as well as for Google Home and Wi-Fi is nevertheless helpful. Already the use of Bluetooth convinces as very simple but also great sounding, which is all the more true for HD-streaming from a server. In combination with a TV, the Phonar scores with usability thanks to HDMI (ARC) and massively enhances the sound, without changing the usual controls.

Charming musician

The great base-model seems to have paid off, as the activated P4 from northern Germany, immediately captivated us with great clarity, three-dimensionality, audiophile transparency and downright casual smoothness. Electronics and loudspeakers match each other excellently.

Although it resolves very finely, the Match Air never gets annoying. Even less perfect recordings are implemented with a touch of empathic grace, for which one is grateful in everyday life.

With a neat and controlled but never oversized bass, it can also be used in smaller rooms. But there's also no problem with partying either, which we learned quickly with electronic music from „Yello“.

The Phonar is a speaker developed with care and commitment, which has delivered a lot of pleasure and enjoyment to us, and will continue to do so for any future owner. Strong recommendation! ■

Phonar P4 Match Air

Price: around 3600 €

(optional hub 700 €, as a set with platinum hub 4000 €)

Dimensions: 31 x 96 x 31 cm (WxHxD)

Warranty: 5 years

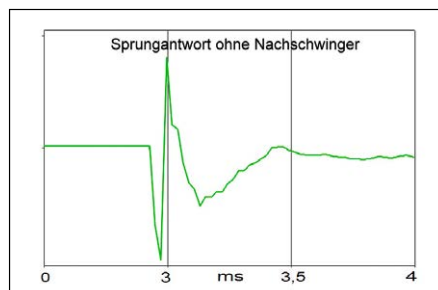
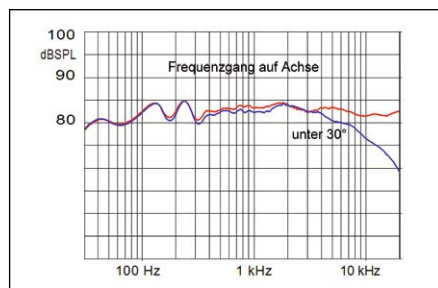
Contact: Phonar

Phone: +49 463 889240

www.phonar.de

Active floorstanding loudspeaker of the one-meter-class with an exceptionally musically smooth sound and a thought-through smart concept (with separate wireless hub). It is based on the successful Veritas P4 Next, which can also be upgraded to Match Air (!). The optional hub enables proper wireless operation.

Measurement results



Untere Grenzfrequenz (-3dB SPL) 42 Hz
Klirrfaktor bei 63/3k/10k Hz 1,0/0,3/0,5 %

Lab Comment

Mains phase at tested device

Balanced frequency response, good distortion behavior, excellent step response. The speakers should be angled towards the listening position.

Features

Balanced/unbalanced inputs, USB, 10 presets (frequency response adjustment). With Hub: Remote control, analog/digital inputs, USB, HDMI (ARC), Bluetooth, DLNA, Airplay, WLAN/WISA, Chromecast, Spotify Connect.

STEREO-TEST

SOUND QUALITY 81%

PRICE/PERFORMANCE



OUTSTANDING

The mature Phonar may not try to be Everybody's Darling – but it is nonetheless.



REMOTE CONTROL

The Hub's remote control is easy to use and makes operation much easier.



Full Metal Jacket

Piega's favorite material aluminum has both acoustical and optical advantages.

The craftsmanship and sound quality of the Swiss loudspeakers from Piega are absolutely legendary. Now the manufacturer presents active speakers, which can be controlled wirelessly using an optional hub – of course in the characteristic aluminum dress: the Premium Wireless 501. All sources are connected to the hub in analog or digital form, and then sent on wirelessly. Both the hub and the loudspeakers, which are available in silver, black and white aluminum, can use their USB socket to install firmware or make individual adjustments. Three different groups and three Wi-Fi frequencies allow multiroom configuration. Bluetooth is the signal with priority. So if the owner comes home with his smartphone and the system notices the music, he can immediately take over the controls – wired sources are automatically disengaged. There is, further, an automatic loudness as well as protection against extreme volumes.

Puzzling to us was the volume control directly on the hub itself. Via Bluetooth (aptX) the level is, of course, controlled via the source device. Apparently the Piega

Piega 501 (Premium Wireless)

Price: around 4500 €

(Surcharge Connect-Hub 500 Euro)

Dimensions: 24 x 104 x 24 cm (WxHxD)

Warranty: 6 years

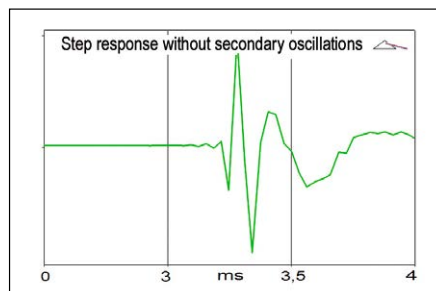
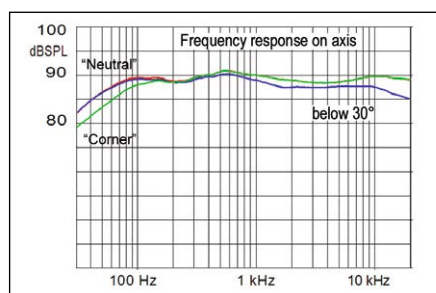
Contact: Piega SA

Phone: +41 44 725 90 42

www.piega.ch

Piega's 501 is the marginally smaller of two new, smart active floorstanding speakers. As usual for the Swiss it sounds excellent and is dressed in aluminum. In combination with the „Connect“ hub it also offers wireless Wi-Fi operation.

Measurement results



Lower cut-off frequency (-3dB SPL) 41 Hz

Distortions at 63/3k/10k Hz 0,8/0,3/0,1 %

Lab Comment



Very balanced frequency response, also not on axis; good bass qualities.

Medium step response, very low distortion.

Features

Analog input, wall-/corner/freestanding adjustment, USB socket for software updates; optional hub (Connect) with analog/digital inputs, subwoofer output, Bluetooth (aptX), Wi-Fi, volume control on the hub, no remote control/app, no included network options (streaming only via connected devices).

STEREO-TEST	
SOUND QUALITY	81%
PRICE/PERFORMANCE	
★★★★☆	
EXCELLENT	



PLACEMENT OPTIONS

The presets for "free-standing", "wall" and "corner" placement are very useful. The USB socket allows software options.

The Swiss gem sounds great – and looks stunning in its aluminum dress!



Using the „Hub“, the Piega can be controlled either analog or digital via cable as well as „wirelessly“. It can also be combined with a subwoofer.

Connect wants to be fed only by devices with level control. We would still have appreciated a remote.

Great, on the other hand, is the simple assignment of the speaker as mono, right or left channel as well as the adaptation to corner, wall or free placement via toggle levers. When a signal arrives, an automatism awakens the entire wireless system and equally sends it back into standby mode after ten minutes of inactivity; there is therefore no on/off switch. A comfortable idea, as we think.

Audiophile experience

The Premium Wireless 501 is extremely balanced in sound, charismatic in its vocal range and with very fine resolution and plasticity, not least due to the proven ribbon tweeter. However, the two 120 bass mid-range drivers in congenial coordination with the amplifier electronics also make a great impression in the bass range. The Swiss is further a strong competitor for the beauty award. Fantastic! ■



The Alpha Male

Quadral fits 71 kilograms of “Titan”-technology and 700-watts of power into a living room-friendly cabinet.

The Aurum Alpha is by no means the first active box of the renowned manufacturer. However apart from rather small PC-sound systems and comparable devices it is the re-entry into the world of active high-end – and a great one as well! In view of the removable rear panels of the passive Aurum series’ top models, we had already expected some sort of active upgrade – but it turned out to be quite different.

The size of the active flagship was understandably based on the Aurum Vulkan,

which is anything but a small speaker. The drivers, however, with two lateral 265mm bass drivers as well as a large quSENSE „ribbon“ with two low (110 Hz) separated 180mm mid-range drivers in a low-radiation d’Apollito arrangement was actually inherited from the even larger Titan series. The big brothers larger volume can be easily compensated for in an active loudspeaker by means of the DSP electronics, long-stroke drivers and lots of power, with the closed cabinet even providing a bit more control thanks to the stiffness of its air-cushion.

The HD streaming service Tidal as well as Google Play Music and Airable Internet radio are supported by default. A microphone and a USB sound card are included in the delivery in order to be able to make the necessary measurements for the DIRAC Live Room-calibration. The result is excellent, in our opinion often even considerably better than the integrated calibration systems of many A/V receivers. You can also manually correct the automatically generated results or switch off DIRAC entirely if you want to.

The procedure is exactly what we would call uncomplicated, but with the help of a computer-savvy helping hand it is quickly done. In addition to balanced and unbalanced analog inputs, Toslink and Ethernet, the Quadral Aurum offers a highlight that you won’t find in any of the other test subjects: a USB input for external storage devices. Using it you can easily supply an entire party with music, even as a technical greenhorn.

Outstanding

In the acoustically optimized STEREO listening room, the Aurum Alpha proved to be an audio-ophile masterpiece even without the practically unnecessary DIRAC optimization. The engineering team around Sascha

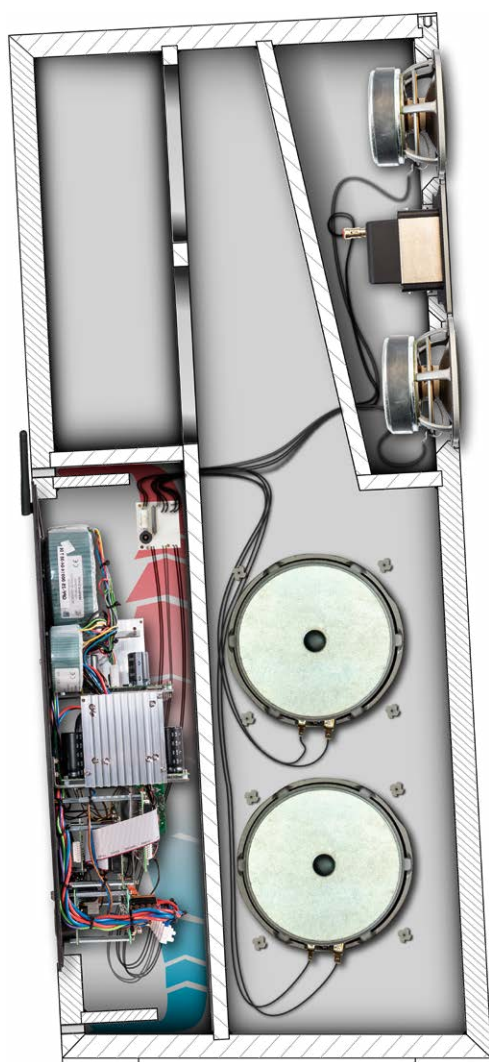
The amplifier in the Aurum Alpha has plenty of power. A total of 700 watts per channel are available, Class D in the bass/midrange and Class AB in the high frequencies.



Reckert can only be congratulated on this loudspeaker. It can compete even with the very best, which is also due to some important detail solutions. For example, only the bass and mid-range sections are fed by Class D amplification, while the tweeter is handled by a Class AB stage. After all, the frequency response should reach up to 50 kilohertz. Imagine the legendary Quadral AURUM Titan, but playing even more vividly and precisely thanks to its closed body and individually tuned amplifier electronics – without taking up the entire living room.

The image is opulent, perfectly illuminated and garnished with dynamics in every tiny detail. With music like „The Wall” the Alpha can, however, deliver equally brute

a performance of outstanding dynamics, literally pulling the auditorium out of its seats. This also applies to a stereo living room home cinema – preferably using a beam, as the picture should after all match the huge sound. A subwoofer is not necessarily required as the Alpha reaches below 30 Hertz and sports enough power. Believe us, you won't miss the Sub, but you might get to know your neighbors better. Last but not least, the AURUM app, which is already required for input selection, works extremely well. An outstanding loudspeaker! ■



That's what it looks like inside the Alpha: the active-/DSP-electronics are located at the bottom rear, the bass drivers are positioned on the side of the cabinet.

Quadral Aurum Alpha

Price: around 16000 €

Dimensions: 29 x121 x50 cm (WxHxD)

Warranty: 4 years

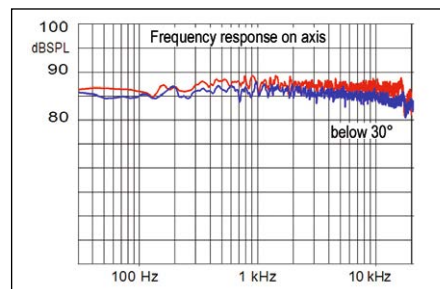
Contact: Quadral

Phone: +49 511 79040

www.quadral.com

Superior active loudspeaker with spectacular dynamics and control, very musical and extremely stable. The DIRAC room calibration allows a bespoke adaptation to the room and/or personal preferences. Great app.

Measurement results



Lower cut-off frequency (-3dB SPL) 33 Hz

Distortions at 63/3k/10k Hz 0,4/0,1/0,1 %

Power consumption Stby./idle (at) /6,4 W

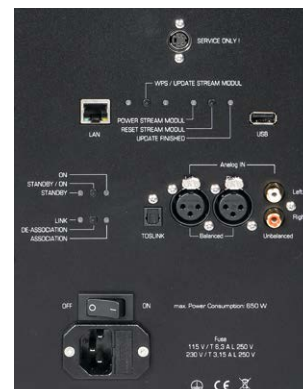
Lab Comment



Excellent, very balanced frequency response, extremely low distortion, good draught (depending on calibration).

Features

700-watt amplifier, Wi-Fi, USB-A, UPnP/NAS, optical digital input



CONNECTION FRIENDLY

The Aurum Alpha can be controlled in many ways. The Aurum app is necessary for the input selection. There is a master with all connections and a slave, which has its own amplifier.



DYNAMIC DUO

The woofer drivers with aluminum-titanium-magnesium diaphragms provide powerful pressure.

STEREO - TEST	
SOUND QUALITY	100%
PRICE/PERFORMANCE	
★★★★☆	
EXCELLENT	

Amazing what these compact French speakers are capable of in terms of sound. So much better than most of the typical "smart speakers"



Liberté, Égalité, Activité

From Triangle in France comes a sympathetically affordable and very thought-through approach.

The compact Sensa is vaguely based on the smallest Elara of the house, at least the tweeter configuration and size are similar. The technical approach is impressively simple and good, because only one of the two speakers contains the entire active electronics, the second is purely passive and therefore only needs a loudspeaker cable to be controlled by its activated sister. The Sensa SN03A even has a phono input in addition to Bluetooth. In this test field, phono

is a serious unique selling point. It also means that a turntable with an MM system is all you need for an entire Hi-Fi system. Of course, it can also be operated via Cinch as a conventional active speaker and the source can, but does not have to, be a turntable. Other sources (Aux) are possible via mini jack or Toslink (digital). For source selection and volume control, you can choose between the supplied remote control or the respective buttons as well as the rotating knob on the

back of the active speaker, which unfortunately doesn't have a stop. Here it does matter whether you position it to the right or left. Triangle assumes that the active part of the team, marked with a front LED, will be playing on the left.

Pragmatic, practical, great

The French have deliberately avoided network functions that go beyond the useful Bluetooth, as this was the only way to realize the almost unbelievably low price of 450 Euro. Matching stands cost around 160 euros.

For the money you get a set of active- and passive speaker including remote control and integrated phono MM preamplifier as well as Bluetooth. That's quite a lot, especially since the Triangle sounds extremely pleasant, musically appealing and much bigger than it looks. A real bargain and almost ideal for a hi-fi entry into the active world – well above the often terrible PC cubes or speakers-to-go. Price tip! ■



With the cheapest active solution in the test field, only one loudspeaker is electronically (and wirelessly via BT) active and also powers the other.

Triangle Sensa SN 03A

Price: around 450 €

Dimensions: 17 x28 x25 cm (WxHxD)

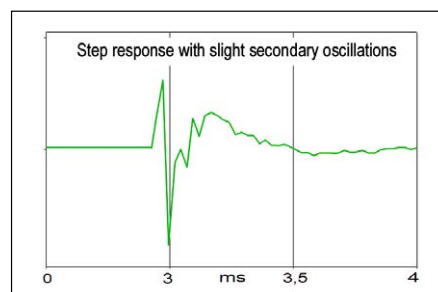
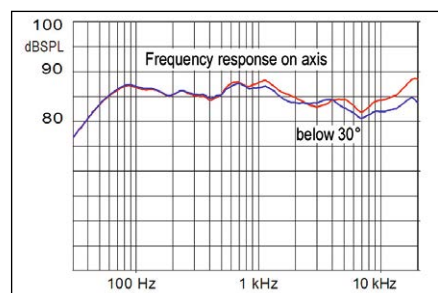
Warranty: 2 years

Contact: Triangle

www.triangle-fr.com

Attractive and incredibly affordable compact active speaker set with lively, agile sound from 2 x 50 watt amplifiers. Bluetooth and phono (!!!) on board. An excellent and clearly superior alternative to the countless mini "smart speakers", which are often not even cheaper. Price tip!

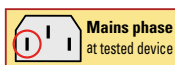
Measurement results



Lower cut-off frequency (-3dB SPL) 53 Hz

Distortions at 63/3k/10k Hz 1,0/0,3/0,2 %

Lab Comment



Mains phase at tested device

Good, balanced frequency response and bass down to about 50 Hertz. Very good step response, good distortion values.

Features

Remote control with tone control, Bluetooth, high level and turntable input, included three meter speaker cable. No network capabilities.



ADJUSTMENT

The remote control is simple and very good. It even controls the tone adjustment (bass / treble).

STEREO-TEST

SOUND QUALITY 54%

PRICE/PERFORMANCE



OUTSTANDING

HIFI EXCLUSIVE TURNTABLE



Blue hour

The German manufacturer AVM has now added two turntables to its product range. They have been developed entirely by AVM themselves. We are testing the larger R5.3, which is an enlightenment in every respect.

Matthias Böde

If you wanna be noticed, you gotta stand out! AVM from southern Germany has taken this simple insight very seriously for their two brand new and first ever turntables. With their acrylic plates shining in bright blue, they are not easily overlooked! Don't worry: if you prefer a more discreet design, the lights, which spread an almost magical aura around the turntable, can either be dimmed, or switched off entirely.

There are two models on offer: the R2.3 for around 3390 Euro without pickup and the here tested R5.3, which has a price of 5490 Euro without pickup. Both have been developed in-house, as it was out of the question for the manufacturer from Malsch to simply have models tailored into the existing equipment line by a supplier. The production itself, however, is carried out by the specialist EAT.

The immaculately crafted R5.3, weighing around 17 kilograms, presents itself in the cool, bright silver aluminum design typical for AVM. The sober, straightforward

composite cabinet consists of 60 millimeter thick HDF covered with metal plates, with the properties of the materials supposedly perfectly complementing each other. On stimulation from the finger bone, the frame indeed proves to be acoustically largely „dead“.

Another special design feature is found in the drive. Instead of directly looping the drive belt around the metal disc that carries the five-kilo platter, a pulley opposite the motor picks up its pull, so that the sub-platter is driven evenly from two sides and without tilting moment on the steel axle, which in turn stands on an extremely low-friction Teflon mirror. This „Elipso Centric Belt Drive“ is designed to promote smooth running and rhythmic timing.

The gimbal-mounted ten-inch tonearm is adjustable in height and made of polished aluminum. Its counterweight is fixed with a knurled screw, so it can neither wiggle nor shift. With an effective mass of 15 grams it has an average weight, especially since the headshell, which would otherwise have to be added, is already included here, along with the sliding system mount. We received the R5.3 with pre-assembled Ortofon-MC Cadenza Black (around 2300 Euro), which we only had fond memories

A ring of blue LEDs surrounds the cut-out with the „Elipso Centric Belt Drive“, which drives the sub-platter evenly from all sides.

Pull-free belt drive thanks to a load-reducing pulley

KEYWORD

HDF

In contrast to „medium density fiberboard“ (MDF), the highly compressed fiberboard has a higher specific weight and is therefore more stable and less susceptible to resonances. In the R5.3 it is additionally covered with aluminum plates.

TEST DEVICES

Record player:

Transrotor Rondino nero/SME 5009/
Transrotor Figaro,
Clearaudio Ovation/
Talismann

Phono preamplifier:

Brinkmann Edison

Pickups:

Ortofon Cadenza Black

Pre/power amplifier:

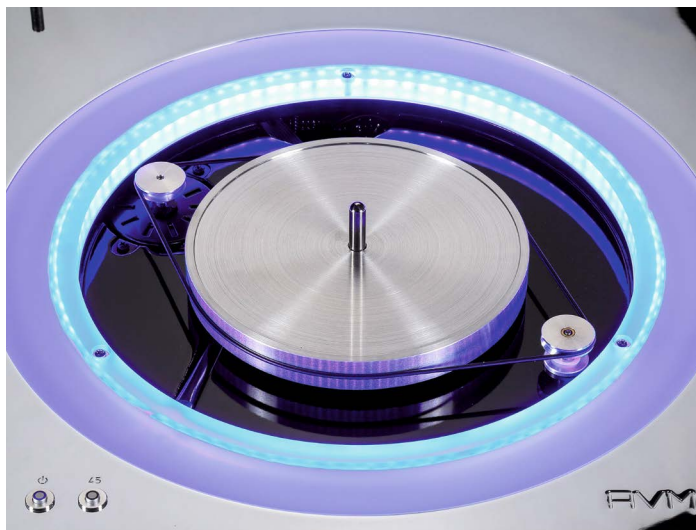
Acoustic Arts Tube Preamp II MK2/Amplii-MK2

Loudspeaker:

DALI Epicon 6,
Dynaudio Contour C60

Phono cable:

HMS Gran Finale Jubilee, Silent Wire NF5 Phono





PERFECTION DOWN TO THE LAST DETAIL

The R5.3 comes with a dust cover. It is not made of polystyrene, as is often the case, but of acrylic glass. Small metal pieces with rubber studs are screwed into its front support points.

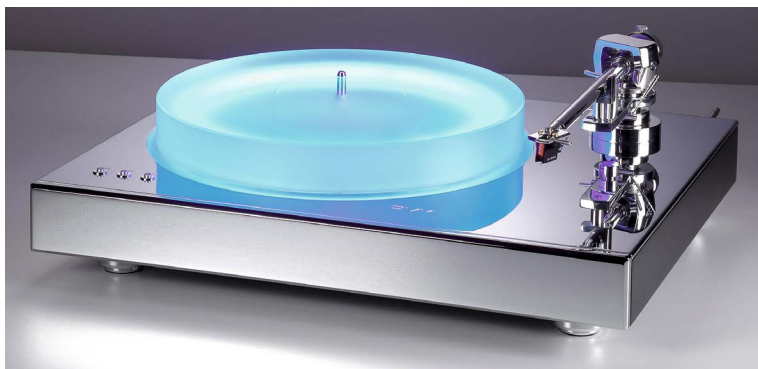
We haven't seen anything like this in a long time.

of since we tested it in 2010. It also fits perfectly in terms of price as well as quality.

For our listening test we switched off the beguiling light, to avoid being "lulled" into the charm of the „blue hour“. Mounted on four height-adjustable damper feet and supplied from an external plug-in power supply, the AVM then had to show what it was capable of – without any distractions. No Problem for the R5.3 as it follows the proven AVM ideals. Its performance was extremely precise, direct and clean. Even lowest frequencies were depicted as well-proportioned but yet sinewy and tight, whereby the Cadenza Black supported the rendition with its subtle way of exactly organizing all sound elements.

We were impressed about how lively and "pure" the turntable sounded. Even in the hustle and bustle of Diana Krall's rapid opener of the „Live in Paris“ album, its diction always had a delicate, superior note. The AVM unfolded the sound three-dimensionally and well structured – but without any "dissecting" attitude – luxuriously in front of the listener; just like a wine connoisseur would serve a perfectly tempered and stored bottle: self-confidently, but without any arrogance. Well, what do you say now?

The R5.3 sounded sovereign, mature and, yes, extremely developed with every kind of music. It is astonishing that AVM, who – as electronics professionals – have of course also designed the elaborate „Look Forward“ motor control themselves, have managed this. However, it also took five years until the finished record player was ready. It is guaranteed to trigger an alarm in the high-end sector – even without the blue lights. ■



On request AVM can also supply the R5.3 in a flawless chrome finish with black or silver flanks.
Surcharge: around 2000 Euro

AVM R 5.3

Price: around 5490 € (not incl. cartridge)

Dimensions: 47 x15 x38 cm (WxHxD)

Warranty: 3 years

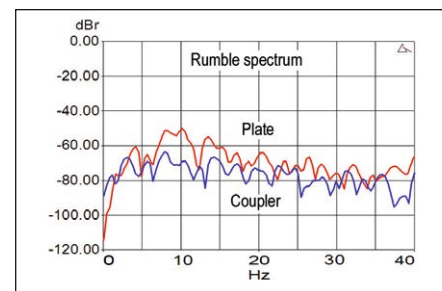
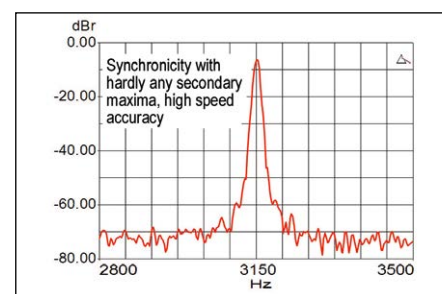
Contact: AVM

Phone: +49 7246 309910

www.avm.audio

With their record player debut from own development, AVM immediately sets an example – and not just because of the spectacular blue lighting. The R 5.3 is as elaborate as it is clever and stands out with smart solutions. The result is a decidedly developed, mature and in every respect high-end sound image. Congratulations!

Measurement results



Lab Comment

The R5.3 doesn't have any speed fine-tuning, but kept both speeds very precisely and showed only minimal fluctuations in synchronicity. The very low rumble, both with the record and with the measurement coupler, is negligible and showcases the quality of the bearing.

Features

External power supply unit, acrylic dust cover, dimmable and switchable plate lighting, speed selection via short-stroke keys, speed selection via short-stroke keys

STEREO -TEST

SOUND QUALITY 93%

PRICE/PERFORMANCE



EXCELLENT

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Best Buy

Even hardcore audiophiles sometimes fall in love with extremely favorable offers. DALI's Oberon 1 is an almost unethical bargain for just around 400 euros.

Tom Frantzen

The little DALI plays crisply, reminds us of her bigger siblings and knows little competition

The Danish loudspeaker specialist DALI is currently launching one interesting new product after the other.

A strategic focus is the „Oberon“ series, which is aimed at the discerning beginner and intermediate. We have tested the series' smallest model „1“.

This is an attractive compact loudspeaker with a 130mm bass/midrange driver, a 29mm tweeter dome and a rear port. The speaker is, therefore, ideal for a small to medium sized room, a teenager's room, a dining area, guest room, better garden house or weekend home. The Oberon series is intended to inherit and improve upon the „Zensor“ series. For the price-conscious beginner, there is already the

even more affordable „Spektor“ series. So, to be accurate, after seven extremely successful years, „Zensor“ has actually been replaced twice.

Wherever you want to properly listen to music and don't want to compromise too much, the Oberon has the edge. Here, DALI has really taken care of the tonal qualities. The Danes are actually time and again surprising their fans with loudspeakers that are hardly considered possible. So a little more budget is good for even further amazement.

On the one hand we have a fabric dome that is already capable of extraordinary dynamic performance due to its size and lightness, on the other hand the DALI-typical

cone diaphragm of the bass-midrange driver is made of paper and – now – somewhat more subtle wood fibers. The distortion-reducing SMC concept, adapted from the larger loudspeaker series, for the magnetic drive that is „baked“ from the corresponding powder mass, is now expected to also score points in the 400 Euro class – yes even to cause a small sensation.

The added value compared to Zensor is provided by technical progress, but also by the exclusive design, which is anything but cheap.

How is it even possible to offer such loudspeakers for 200 Euro each? Well, DALI makes no secret of the fact that the Oberon line is manufactured in the Far East. However not, as many of its competitors do, as contract production by third-party manufacturers, but by DALI personnel with DALI quality management and ingredients developed in-house – meaning above all the drivers –, all manufactured in their own factory in China.

Sure, the 13cm driver naturally has some difficulties to reach into the deep bass ranges. However that lies in the nature of things and is physically similar to its competitors. For bass freaks we therefore rather recommend the Oberon 3, which is slightly enlarged, but still pleasantly compact and which sports a 16cm driver.

Soundwise, the smallest Oberon is an agile and crispy fresh, even somewhat cheeky and characterful speaker, whose joy of playing infects the listener. It brings the necessary energy and is a lot of fun, reminding us of the enormous class of her bigger siblings, while also having that touch of gentleness that makes even bad recordings bearable. A great bargain! ■



A single-wire terminal is not only to be expected, but also reasonable in this price class.

DALI Oberon 1

Price: around 400 €

Dimensions: 16 x 28 x 21 cm (WxHxD)

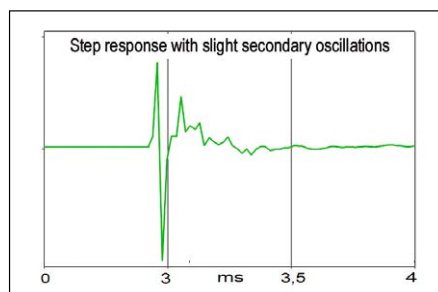
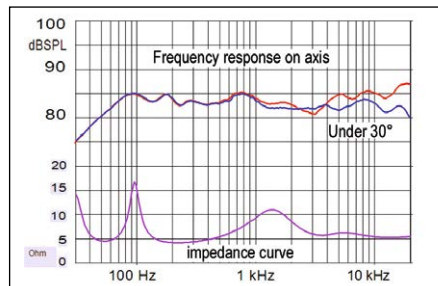
Warranty: 5 years

Contact: DALI

www.dali-speakers.com

For a price of around 400 euros per pair, the DALI Oberon 1 delivers unbelievable qualities that are strongly reminiscent of their big siblings and represent a huge bargain. This lively gem even looks good! Absolute top of its class!

Measurement results



DC resistance	4 Ohm
Minimum impedance	4.2 Ohm at 220 Hz
Maximum impedance	17 Ohm at 95 Hz
Sound pressure level (2.83 V/m)	85 dB SPL
Power for 94 dB SPL	25 W
Lower cut-off frequency (-3dB SPL)	53 Hz
Distortions at 63/3k/10k Hz	1/0.3/0.1%

Lab Comment

The frequency response is quite balanced, which promises neutrality. The speaker goes down to almost 50 Hertz and doesn't have to be angled. The efficiency is between average and good with almost 85 dB. Distortions and step response are good. The impedance is good-natured, but not linearized for tube/class D.

WHAT WE'VE HEARD

Joe Jackson:
Nigh and Day



Probably the most important album of the creative singer/songwriter includes hits like „Steppin' Out“ as well as outstanding titles like „Slow Song“.

STEREO -TEST

SOUND QUALITY 78%

PRICE/PERFORMANCE

★★★★★
OUTSTANDING

ADVANCE TO THE SUMMIT

T+A took a giant step forward with its „HV“ series.

Now the SDV3100HV streaming DAC along with the SACD drive PDT3100HV want to catch up to the absolute best. Our exclusive test shows: they have what it takes!

Matthias Böde



Imagine if you had a free choice on the wheel of fortune. Over and over again.

As often as you want! That's how it feels when you press the mighty volume control on T+A's brand new SDV3100HV Streamer-DAC-preamplifier, whereupon it jumps into source selection mode and scrolls through the numerous options in the turquoise illuminated display kind of like you would on a smartphone.

The list seems nearly endless: it starts with "UPnP/DLNA" for your home network, continuing with the pre-installed links to streaming services Qobuz, Deezer and Tidal – no Spotify, because you can't expect anyone to be content with MP3 here. "USB Media" follows thereafter for sticks and hard drives, to which T+A offers two ports, one of which is conveniently accessible from the front. "Roon Ready" then indicates that the ingenious music management software can also be used.

Almost endless possibilities

Every streamer offers access to the "Internet radio" with its myriad of programs, which is the next stop while scrolling. The popular "podcasts" are also included. Since we had connected the SACD drive via T+A's proprietary "IPA Link", which also transmits the SACD data stream, in our case "PDT3100HV" followed. Subsequently "FM Radio" as well as "DAB Radio" pop up. Yes it's true: You don't have to miss either the traditional FM radio or its modern successor.

Still following? Then you might be interested in "USB DAC IN", i.e. the possibility to connect computers directly with the all-rounder from Herford, Germany. Not enough yet? If you press the powerful rotary knob after choosing "Bluetooth", you can play music from your smartphone in no time at all. During our tests, the SDV3100HV, which is powered by two power cables, immediately connected and communicated with the source devices.

The drive made of solid material glides silently on rails, only the quiet, sexy technoid buzzing of the engine can be heard.

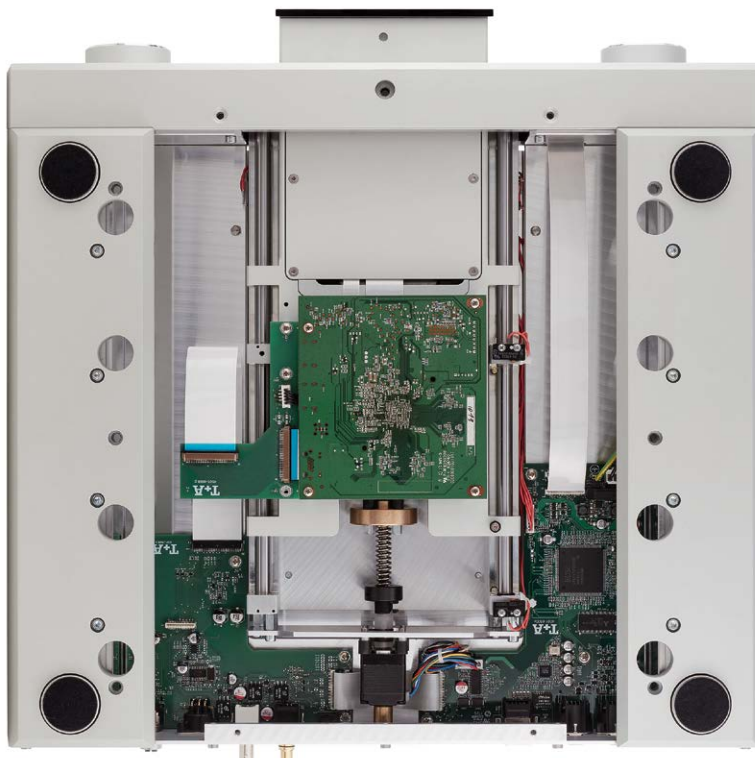
After that – we are still far from finished – the phalanx of seven digital inputs follow individually: two optical, two coaxial and two BNC versions plus a balanced "AES/EBU" socket. There's even a double pack of HDMI inputs for audio from Blu-ray players and other AV components. In between there are – very importantly – the two analog inputs, for example for a phono preamplifier or other analog sources, one of which is designed according to Cinch and the other to XLR standards.

Last but not least there is "Network Audio" for closed networks that music lovers create with ultra-fast computers and gigahertz routers in order, for example, to feed the SDV3100HV with extremely high-resolution data streams. We've done this to explore the capabilities of the ultimate 26-kilo media center (see box). Not only does it have an extremely versatile array of connections, but it also touches the limits of what is technically possible.

For example, separate converter paths are provided for PCM and DSD signals. Looking through the HV-characteristic "porthole" in the solid exterior, four Burr-Brown double

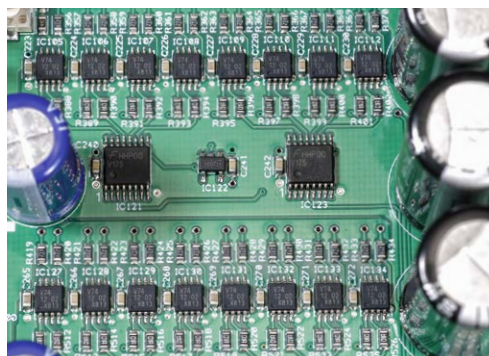
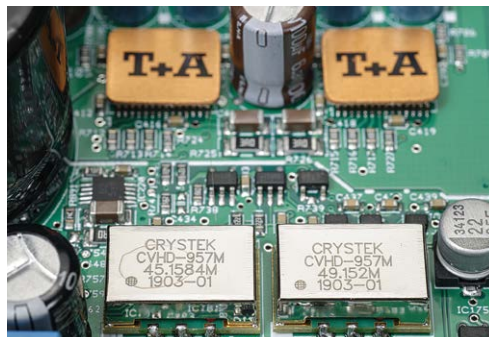
DID YOU KNOW...

... that the SDV/SD3100HV project, with which T+A broke new ground and which entailed considerable risks because it was not clear whether the goals could be achieved at all, was supported by the German Federal Ministry of Economics and Energy? With the title: „Super High Definition Audio DAC with bit-perfect data transmission and resolutions of DSD1024 and PCM768“.



KEYWORD**Femto-Clock**

HiRes demands ultra-precise work cycles. The femto clocks work with an accuracy of 18 femtoseconds. Sounds like a lot, but a femtosecond is just the ten-to-the-power-of-minus-fifteenth part (0.000000000000001) of a second.



Above: for PCM data, two Burr-Brown double DAC chips per channel are inserted under the copper plates printed with the T+A logo. The two femto-clocks are located in the silver boxes in front of them for high-precision clockworks. **Below:** DSD currents are converted into voltage values by 32 switches in 16 chips per channel.



»Internally, I call our SDV3100HV 'UltraHiRes' because it's actually the next level of digital music playback.«

Lothar Wiemann,
Development Manager
T+A

DAC chips, each channel-separated in pairs and internally cross-connected in the sense of the best possible signal-to-noise ratio, can be seen. By means of copper plates they are stably kept at an identical temperature level.

Double Femto-Clocks

The "BBs" process PCM in 34 bit/ 768 kilohertz, to which any PCM files are upsampled by clever calculation of intermediate values. This is handled by a previous DSP, from the simple 16-bit/44.1 kHz CD standard to any high-bit formats such as 24/192, which is also often encountered "in the wild".

Ultra-precise femto-clocks in the immediate vicinity of the Burr-Brown DACs ensure decidedly precise and therefore low-jitter processes. They as well are used in double arrangement, each being specialized on specific sampling rates in order to avoid floating-point errors. While one just handles rates of 44.1 kilohertz and its multiples (88.2, 176.4 kHz, etc.), the other takes over the job accordingly at frequencies from 48 kilohertz

(96, 192 kHz, etc.). Here, too, the following applies: what an effort!

If, on the other hand, the T+A is fed with DSD streams, whether from the new HV drive or via LAN cable from network or USB, the original format remains unaffected and runs through an array of 32 discrete switches per channel, which are located as inverted plus/minus pairs in 16 small chips and convert the signals into voltage levels. The SDV3100HV takes DSD up to a bandwidth of almost 50 megahertz, the so-called DSD1024. Nobody else does such a complex upsampling (PCM) in combination with purist D/A conversion (DSD). This also shows that the price of 24,900 Euro for the SDV3100HV is not only based on the excessive use of material.

This statement does also apply to the 29 kilogram CD/SACD drive PDT3100HV for 14,900 euros, which equally sets standards. Already just the quiet, gently sloping buzz when the drawer milled from solid aluminum is extended and retracted conveys an impression of the precision on offer here. Just as the informative calligraphic text display.

As briefly mentioned at the beginning, if you operate the drive in conjunction with the SDV3100HV, you can use the special connection "IPA Link", instead of the normal digital outputs of the SDV3100HV, which are of course also available, and transfer SACD data this way. This makes the PDT3100HV nearly a must-have addition to T+A's SDV media-professional, for all those who still want to use their extensive disc collection and listen to it in the very best quality.

In order not to be dependent on possibly unreliable suppliers who might stop the production at some point – many HiFi fans know the situation all too well – the Germans build their own drive guided on a linear bearing. This even includes signal processing software. Only the optics are bought in. This should defuse any spare parts issues and prevent future frustration.

Advantages through "IPA Link"

We compared the PDT3100HV primarily to the integrated drive in T+A's "smaller" MP3100HV media player, which was identical in construction but mechanically much less solidly packaged and also suitable for CDs and SACDs. We had connected both

devices to the SDV3100HV using first-class digital cables. In fact, the soloist PDT was able to positively set itself apart because it sounded even more relaxed, calm and orderly. We had equipped both drives with the new STEREO hearing test CD IX, let them run time-synchronously and switched with the new remote control F3100 between digital inputs – T+As popular FD100 remote does unfortunately not work with the SDV, but there is a new app.

The distance was not huge, but still clearly audible and is mainly due to the "massively" increased mechanics. So the orchestra that Eduard Strauss performed in his "Bahn frei Polka" appeared even more spacious and, in its three-dimensionality, more clearly outlined and more precisely staggered. The MP was somewhat left behind when we heard the PDT via IPA Link instead of the symmetrical AES/EBU input. The "Isocronous Precision Audiolink" consists of a total of eight lines, which transmit four signals in symmetrical circuitry, i.e. in phase and inverted, with extremely low loss. Now the sound images gained an additional lightness and naturalness that the MP could no longer resist. Not to mention the SACD capability, which is lost in the normal way.

Consequently, the new Super-Drive from Herford takes over the reference throne of the CD drives and thus also qualifies for other D/A converters of the high-end league as a first-choice partner, whereby the selection is of course limited to the classic CD. Happy hi-fi contemporaries, who can purchase the combination of PDT and SDV3100HV, can additionally also enjoy their perfectly transmitted SACDs.

The SDV is "absolute" top

But what is in it for the discerning listener in general and in absolute terms? Well, in any case, the sound quality of the MP3100HV is even higher than that of the superb MP3100HV, not only in terms of the possibilities for processing PCM or DSD HiRes files. The PDT/SDV duo from Herford also redefines their "HV" standard for source devices in terms of sound.

The range of connections and digital interfaces leaves nothing to be desired. Plus: analog inputs and outputs in cinch and XLR.

The CD playback regarding its effortlessness and finesse reaches a class that we couldn't reach with other conventional DACs – even if they were of the ultimate high quality, attached to the PDT3100HV – let alone complete players.

The T+A duo, for example, took our breath away with Rafael Fraga's "Terra Presa", which presented this title that is at once delicately nuanced in color and exemplarily rich in detail, yet completely homogeneous, as exactly the masterpiece of fragile beauty and balanced proportions that it is.

And, of course, this also applied to the SACD performance. The delicately speckled "Secret O' Life" by James Taylor, which we inserted as a puristic single layer SACD disc of the highest quality, touched us with its genuine intimacy. T+A gave free rein to emotions without tainting them with any effects. The music captivated through immediacy, was simply "there" in all its facets and thus worked through itself.

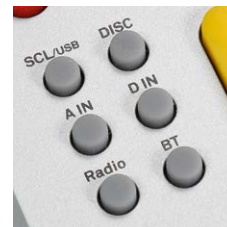
If the SDV was supplied with CD data from the PDT or high bit files from the network & Co in the common way using a coaxial or symmetrical digital line, a just as extremely detailed and finely resolved sound image was produced, which distinguishes the player. All instruments and voices are clearly outlined and accurately depicted, without even a rudimentary lack of sparkling musicality.

The SDV3100HV is therefore also part of the crème de la crème even with common



REMOTE CONTROL

For the new „HVs“ there's the remote control F3100. Its six direct dialing keys (below), which control the last analogue or digital input called up or „connect“ the handset immediately to the disc drive, are super practical.



TEST DEVICES

D/A converter:

Brinkmann Nyquist

Media player:

T+A MP3100HV

Streamer:

Lumin X1

Pre/Power amplifier:

Accoustic Arts Tube

Preampl-MK2/

Ampl-MK3

Loudspeaker:

B&W 800D3, Dynaudio

Contour 20, Gauder

Acoustics DARC 60

Cables:

HMS Suprema

(NF/Digital, mains),

In-Akustik LS-2404

(LS)

data transmission standards and can stand up to any challenger, who is usually much less well equipped. In combination with T+A's drive and IPA Link, it marks the top in terms of performance with CD's and especially SACD's.

The fact that the T+A, which by the way is also available as SD3100HV for 23,400 Euro as a pure source device without preamplifier branch and volume control, offers two analogue inputs makes it all the more interesting as the central unit of any system. Especially as the output is at a high level here too, which we had no doubt about after the outstanding sound of other sources via the T+A.

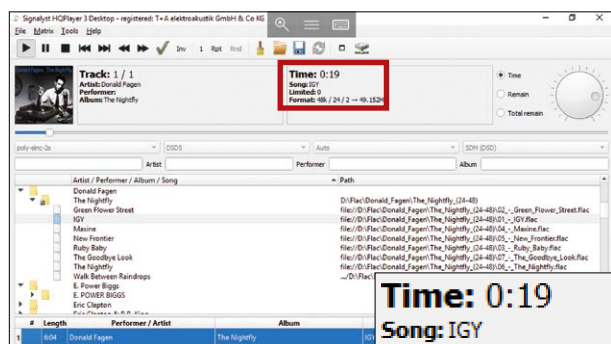
Of course, the SDV had to be measured against other top preamplifiers. These were real challenges, but ultimately no problem for T+A. Here, too, we experienced head-to-head races, during which the SDV3100HV often offered a more orderly, organized sound – once again in combination with its fragrant, lively grace as well as its nimble, finely nuanced presence, which is hard to ever get enough of.

Welcome to the top of the world!

Wherever you take a look at the SDV3100HV, especially its multimedia capabilities, you will find competence and clever solutions. Again and again the opulent comfort package amazes, which even includes two headphone outputs as separate stages in potent "HV" technology – one of which was designed symmetrically – as well as a comprehensive menu from balance control to a selection of four digital filters to adjustable display brightness. The sound radiates a captivating aura of perfection even with supposedly less ambitious Bluetooth transmission and FM radio – which we have of course tried out as well.

In addition to its high-class transistor and hybrid power amplifiers, T+A now also offers a comprehensively modern media preamplifier and SACD drive that is world-class in every inch! Now I can finally return to the T+A's high end wheel of fortune to discover even more of the HV's fascinating cosmos with just a few turns. ■

„TO INFINITY – AND BEYOND“



Time: 0:19
Song: IGY
Limited: 0
Format: 48k / 24 / 2 → 49.152M

Time: 0:05
Song: IGY
Limited: 0
Format: 48k / 24 / 2 → 768k

In light of the digital capabilities of the SDV3100HV, Buzz Lightyear's slogan from the Disney animated movie „Toy Story“ came to our minds. Indeed, T+A's Streaming DAC not only easily pushes the boundaries of our well-known listening universe, it can even significantly expand them. The only question is: how and where to get high-resolution music files? Well, for example, with the help of the „HQPlayer“ of the Finnish inventor Jussi Laako (www.sygnalyst.com), which is very popular with many audiophile digital-enthusiasts and allows extreme upsampling for PCM and DSD signals as well as their conversion into the respectively other format. We used the diverse and complex software for Windows, Linux or MacOS, which insiders consider the most competent and most convincing algorithms in the field, on a high-performance PC with six

cores plus a powerful CUDA graphics card in a closed network with gigahertz router, as it requires extreme computing power. The SDV3100HV's „Network Audio“ function is designed for such applications. But can it really be used to such an extent as the manufacturer promises? And is that even sensible?

As a test file we used the song „IGY“ from Donald Fagen's top album „The Nightfly“ in PCM format with 24 Bit/48 Kilohertz. The track already sounded clean, detailed and balanced as usual. Now we increased the sampling rates in PCM format up to a dizzying 768 kHz, 16 times the original frequency. And in fact, with every step the resolution increased, less digital artifacts seemed to be in play, which was connected with the kind of algorithms used for up-sampling, as well as with the digital filtering.

The real surprise happened, however, when we had the HQPlayer convert the PCM title into DSD1024 with 49.15 megahertz bandwidth. Suddenly „IGY“ showed a floating lightness and unadulterated naturalness, which was clearly above the best PCM results and almost took our breath away. We made further checks, for example with the 24 bit/192 kHz PCM file of the beguiling choir piece „Var nära mig“. Again, the maximum DSD resolution, at which the bitstream is extremely close to an analog waveform, was always advantageous because it was more musical and more authentic. The performance of the DSD512 already lost some of its value. The SDV3100HV had thus passed one of its most important tests and proved its future viability and outstanding sound quality – for everything that is and will be.



The proprietary „IPA Link“ guarantees the highest sound quality and also transmits SACD data, which would not be possible otherwise.

T+A PDT 3100 HV

Price: around 14900 €

Dimensions: 46 x 18 x 45 cm (WxHxD)

Warranty: 3 years

A CD/SACD-drive made of incredibly solid material, captivating with precision and calmness, which are expressed in an impressively tidy, clear and three-dimensional sound image with extreme resolution, but completely effortless lightness and sovereignty. In conjunction with the SDV 3100 HV, the reproduction benefits from the proprietary „IPA Link“ connection, which also transmits SACD data.

Measurement Results

Jitter	8.2 ns
Deviation from the fs	+20.7 ppm
Amplitude of the data stream	513 mV
Disturbances of the information track	0.9 mm
Surface defects	0.9 mm
Power consumption Stby./Idle (at)	<2 W/11.2 W

Lab Comment



The drive shows only a small grid or a very small deviation in tempo. Data

errors due to interference in the information track or on the surface of the discs are handled reliably and without dropouts.

Features

IPA link to SDV/SD 3100 HV, one digital output each in BNC, coaxial, optical and balanced AES/EBU version, CD puck, control cable, remote control

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

T+A SDV 3100 HV

Price: around 24900 €

Dimensions: 46 x 17 x 46 cm (WxHxD)

Warranty: 3 years

A jack-of-all-trades who can do everything – and everything at the highest level. In addition, this ultramodern media center is as elaborate as it is finely crafted, and is easy to use, right up to the ultimate data rates. More is impossible!

Measurement results

Signal-to-noise ratio referred to 24 bits	114 dB
Signal-to-noise ratio referred to 16 bit	98 dB
Signal-to-noise ratio digital zero	116 dB
Distortion factor at -9dBFS	0.004 %
Distortion factor at -60dBFS	1.4
Converter linearity at -90dBFS	0.1 dB
Maximum output voltage (1% THD)	20.8 V
Amplification factor from high level input	12 dB
Distortions at 0.03/0.3/1 V	0.008 %/0.001 %/0.0008 %
Intermod. at 0.03/0.3/1 V	0.002 %/0.0007 %/0.0004 %
Signal-to-noise ratio at 0.3/ 0.03	V 99 dB(A)/80 dB(A)
Headphone jack	47/>10 Ohm/Volt
Output resistance RCA/XLR	48 Ohm/100 Ohm
Upper cut-off frequency	>80 kHz
Volume control, synchronization error at -60 dB	0.1 dB
Stereo channel separation at 10kHz	97 dB
Power consumption standby	4 W
Power consumption idling	45 W

Lab Comment



First-class to outstanding data, among which the extremely high channel

separation as well as the explicitly low intermodulations stand out. Therefore, in this case we do not show the FFT diagram, which anyway just shows: no distortions whatsoever here! In addition, the device has a high maximum output voltage, which qualifies it as a fully-fledged preamplifier. Conclusion: The SDV3100HV is a technical delicacy!

Features

Everything, please! Tidal, Deezer and Qobuz, VHF and DAB, Roon-ready, all types of digital inputs including USB for sticks and PC/Mac as well as HDMI, network capability, numerous menu items, remote control

STEREO-TEST	
SOUND QUALITY STREAMER	100%
SOUND QUALITY DAC	100%
PRICE/PERFORMANCE	
★★★★☆	
VERY GOOD	

WHAT WE'VE HEARD

Scotty Wright:
Saint Mic



The UHQCD offers cover versions of famous songs in loving arrangements and outstanding sound quality.

Anne Bisson Trio:
Four Seasons in Jazz



The sinful direct cut double LP of this grandiose recording has long been sold out, but Anne Bisson also comes across impressively on CD.

CONTACT

T+A Elektroakustik
Tel.: +49 5221 76760,
www.ta-hifi.de

PIEGA
S W I T Z E R L A N D



PREMIUM WIRELESS BY PIEGA



PIEGA builds top quality and hand-made loudspeakers to enjoy a perfect musical experience – and has been doing so for over 30 years. Our loudspeakers stand for Swiss perfection and high quality, combined with a stylish elegant design. Experience our brand new premium wireless series - and expect more.

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A NEW CHAPTER

The brand new NAD M10 is small and inconspicuous. However, it is anything but a toy and instead full of clever ideas and technology.

Michael Lang

Imagine you've just spent three grand and now you get a cube weighing just about five kilos in return. Rarely has one seen the supporters of the „Kilo per Euro“ faction more confused with an amplifier. The fans of the „Watt per Euro“ department, on the other hand, can be quite satisfied, while fans of the „Watt per Kilo“ idea are probably quite impressed. After all, the NAD M10 is capable of easily pushing around 200 watts of unrestrained power into the connected speakers without even raising the device's temperature. That is thanks to the latest

generation Hypex NCore-Class-D amplification, which should enable the M10 to drive and control pretty much any loudspeaker out there – which we of course tried intensively.

More important than Watts

In order to help the truth to its justice, one has to admit that the development was primarily neither about saving weight nor about gaining power. In fact, the M10 has a whole bunch of other qualities to offer in its beautiful and high-quality case besides its classic amplifier virtues.

TEST DEVICES

CD player:

Rega Apollo CDP;
T+A MP 2000R;
Audiolab 8300 CDQ

Integrated amplifier:

Audionet SAM;
Exposure 3010

Loudspeaker:

Raidho XT-1;PMC
5-22; Thivan Labs
EROS9

Cable:

Audioquest; Lua,
HMS; Cardas

It is apparent that its creators must have worked quite intensively with computers, as a 1-GHz ARM-Cortex-A9-processor is on board for doing the maths. In many areas the operation of this device requires a departure of old habits. That becomes obvious already when trying to switch on the M10. There is no button to be pushed, instead simply approaching the device is enough to switch the display from showing the currently played track to the „control panel“ function; for further functions, a light touch of the high-resolution touch screen is enough, whose „gorilla glass“ is also used in high-quality smartphones. Then, you can browse through various menus to inform yourself about the well-being and the settings of the NAD or to do such profane things as selecting a source.

Farewell familiar

You can choose between analog and digital sources, with streaming options also being on board. The DAC comes from the renowned supplier Sabre and processes data up to 32 Bit/ 384 kHz. This long list of details makes one thing perfectly clear: the term “integrated amplifier” does not really do the M10 justice. It seems to be more appropriately described as an “all-in-one system”.

Music services from Spotify to Qobuz – a total of currently 15 – are supported, as is the reception of Internet Radio via tune-in. The streaming functions are carried out by the integrated BluOS module from specialist

Bluesound, which also ensures the remote controllability of the M10 via app. Further, almost any preexisting remote control with volume control can be easily taught to control the M10. As if that wasn't enough, even multiroom options are already integrated, enabling music enjoyment in every room with the matching speakers. As a special highlight, all this is possible in HighRes!

We assume that by this point it is almost obvious, that an HD Bluetooth connection is of course also possible. The NAD's versatility, however, doesn't stop there: compatibility with the smart home systems from Crestron, Control4 or Lutron are also featured, with everything being controlled by the BluOs app. The device from Canada even comprehends voice commands – with the addition of the so-called „Voice Skill function“ in the Alexa app, music collections and streaming services can be commanded via voice control. Although we, admittedly, remain somewhat cautious about this topic, it is definitely a very interesting option for many people out there.

And still the beautiful little M10's abundance of abilities is not exhausted. NAD has also decided to cooperate with DIRAC, a company that offers software, allowing the loudspeakers to be matched to a room and the frequency response to be smoothened, especially in the bass range. For this purpose only the software needs to be downloaded – the necessary microphone is already included in the scope of delivery. All of



DIRAC

The DIRAC system uses this measuring microphone, preferably screwed to a tripod, to determine the frequency response and calculate a target curve.



LAN/USB connector, analog and digital inputs, pre- and subwoofer outputs, bridge mode switch, solid speaker terminals and the convenient HDMI ARC input on the back.

the licensing procedures and the technical fine-tuning took longer than expected and hoped for, which is why the market launch had to be delayed a little.

Complex – not Complicated

The measuring procedure is incredibly simple, despite all its complexity – if you want to try out and get to know all the possible variations and applications. Absolutely no in-depth technical training or understanding is required to adjust the sound of the loudspeakers to the room and placement, within certain limits, even to your personal taste. The entire process has been largely automated and/or as logically and straightforward structured as possible. We would, however, again advise absolute beginners or those who are not interested in the technology not to look for the cheapest price at the expense of a qualified instruction and installation by a specialist dealer.

If you want to try it for yourself, you should take your time and screw the supplied measuring microphone onto a camera tripod. Set the desired measuring procedure in the menu (see screenshot below) and then assign the calculation to the program at five measuring locations (on ear level at the listening position, left and right at the same level and left and right behind the listening position). This works very quickly and reliably. However, you should not fall into the trap of believing that the combination of amplifier and loudspeaker, or the placement, no longer play a role. You can't trick physics entirely – but you can find a viable compromise.

What is exciting about using DIRAC – an A/B comparison is easily possible – besides the changes in tonality, is that, depending on the recording, the music sometimes takes on a completely new character, similar to a remaster. The spatial image and character of an old Stones classic such as „I Got The Blues“, for example, changed entirely after the measurement – the stage became wider, the sound was pulled forward, and Jagger's voice suddenly seemed to have been recorded in a different room.

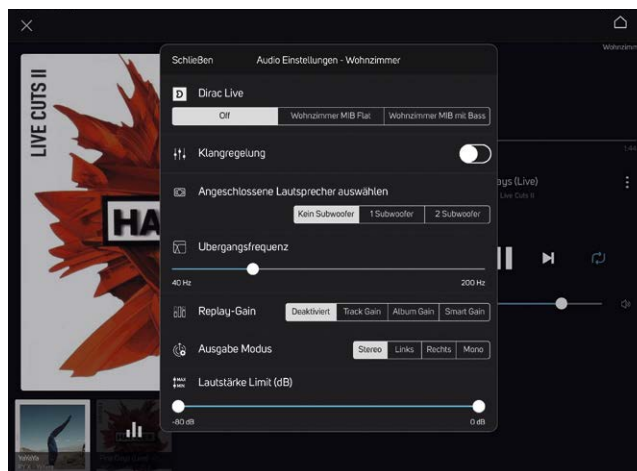
Usually a profit

With many other recordings, however, there was no doubt as to the usefulness of the



High density on the inside. Thanks to SMD design, it stays neat.

clearly positive effects of the measurements. We were given the impression that the quality of the recordings had increased significantly in terms of the precision of imaging and timing. Not surprisingly, the DIRAC system not only optimizes the frequency response, but also the phase response. With mediocre or bad recordings, especially with original mono recordings artificially trimmed to stereo, unfortunately only changes



The screenshot shows the settings for the DIRAC system.

The M10 marks the beginning of a new era – not just for NAD.



CONNECTION

This adapter enables connecting the microphone to a laptop

can be achieved, but no real improvements. The bottom line, however, is that it is a feature that will in many cases help to make the sound much more natural and realistic. However, neither DIRAC nor any other software can change room acoustic flaws, such as, for example, high reverberation. Only mechanical measures such as absorbers and diffusers, as we have presented them to you in the recent past in our room acoustics article, can make an improvement in that regard.

And we still haven't reached the end of this exhaustive list of qualities and possibilities: despite all its modernity, the developers have not forgotten to also care for the wishes and expectations that lovers of classic hi-fi have. Hence, there are separate outputs for subwoofers, a pre-amplifier output, a traditional tone control that can be switched off and even a display on the amplifier that can be switched to a level indicator or volume control.

Attempting the impossible

Our first listening session initially took place without the DIRAC system and using our pair of PMC 5-22. The music came via Tidal – in master quality if possible. With Norah Jones' „Court And Spark“ we quickly felt that the fundamental harmony between amp and speaker was given, which was not quite as much the case for example with the Raidho XT-1. It got exciting when we connected the massive Vietnamese two-way horn speaker Thivan Eros9. In our small listening room, the 38cm bass driver was clearly too much of a riot under normal circumstances. However, after the „treatment“ with DIRAC, the result was absolutely worth listening to. On top of that, the Asian was also taught tonal manners in this way, without losing its joy of playing and dynamic qualities in hard rock music or rough blues.

It's true, the NAD hides its many capabilities well, but its abundance of features as well as its musical roots in the typical NAD tradition bely the elegant but inconspicuous appearance. Certainly the M10 will occupy a place of honor in the dense field of integrated amplifiers for a long time coming! ■

NAD M10

Price: around 3000 €

Dimensions: 22 x10 x25 cm (WxHxD)

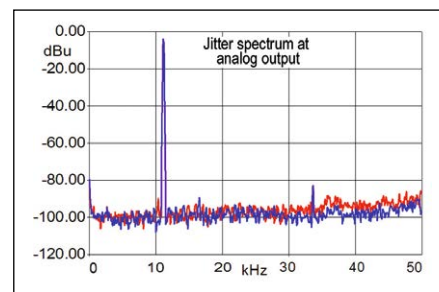
Warranty: 2 years, 5 years after registration

Contact: NAD

www.nadelectronics.com

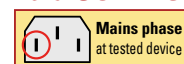
A clever, innovative and very musical product. Integrated amplifier, DAC and room correction harmoniously combined under one roof. Excellent workmanship and ease of use complete the picture.

Measurement results



Continuous power (8 Ohm / 4 Ohm)	156 W/312 W
Pulse power 4 Ohm (1kHz)	360 W
THD 50mW/5W/1dB Pmax	0.02 %/0.003 %/0.005 %
Interm. 50mW/5W/1dB Pmax	0.07 %/0.05 %/0.2 %
Signal-to-noise ratio at 50mW/ 5W	70.4 dB/90.2 dB
Attenuation at 4 Ohm (63Hz/1kHz/14kHz)	77/85/110
Upper cut-off frequency (-3dB/40hm)	23 kHz
Crosstalk Line 1 > Line 2	87.7 dB
Volume synchronization error at -60dB	0.1 dB
Power consumption Stby/Idle (at)	6 W/24 W/224 Volt

Lab Comment



Very high power at four and eight ohms, low distortion, high channel separation. Average attenuation factor, upper cut-off frequency only 23 kHz.

Features

Class-D integrated amplifier; 2 x Cinch-In, Pre-Out, Subwoofer-Out; Trigger; Dig.-In Opt., Coax and HDMI; LS connector for banana and bare cable; Touchscreen; Room correction DIRAC; Bluetooth; Streaming services, e.g. Qobuz, Tidal, etc., tune-in Internet radio and much more.

STEREO -TEST

SOUND QUALITY 82%

PRICE/PERFORMANCE



Outstanding

DRAGONFLYS RULE!



Beautiful

The €99.95 DragonFly Black

"With the DragonFly, AudioQuest has created a simple and affordable path into the high end for a new generation of listeners, as well as the perfect product for an audiophile's personal-audio system."

—Robert Harley, The Absolute Sound



More Beautiful

The €199.95 DragonFly Red

"DragonFly Red and Black are the finest examples of everyman hi-fi ever to grace these pages. Their value quotients explode the dial."

—John Darko, Darko.Audio

Most Beautiful

The €299.95 DragonFly Cobalt

DragonFly Cobalt takes everything people enjoy most about DragonFlies, the beautifully dynamic and seductive sound, and puts it in better focus while also taking away fuzz and fog one doesn't even realize is there until it's gone.

The Cobalt has the same drives-anything 2.1 volt output as the Red, along with its bit-perfect digital volume control, exceptional MQA-rendering ability and seamless compatibility with Apple and Android devices.

Important ingredients which explain some of Cobalt's precedent setting performance:

- ESS ES9038Q2M DAC chip with a minimum-phase slow roll-off filter for more natural sound.
- Microchip PIC32MX274 microprocessor reduces current draw and increases processing speed by 33% over DragonFlies Black and Red.
- Improved power-supply filtering, specifically designed to reduce WiFi, Bluetooth, and cellular noise.
- Includes a form-fitting DragonTail USB-C to USB-A adaptor. All DragonTails use AQ's Carbon-level USB cable.



DragonFly DAC + Preamp + Headphone Amp

From MP3 to MQA and Hi-Res, DragonFlies preserve the body, warmth, and natural color in all your music. Experience more beauty at home and everywhere you listen.

audioquest



Big Reels, Big Pleasure

Is reel to reel just the next retro hype or do they have a current *raison d'être*? STEREO took a close look at two heroes of old.

Michael Lang

For quite some time now, turntables have returned to the public sphere, with sales figures for new as well as used equipment remaining at an astonishingly high level. Now, what seems to be yet another anachronism has been reappearing from cellars and closets everywhere. The dinosaur amongst retro hifi is experiencing a renaissance. Reel to reel is back!

We have chosen two exquisite representatives of the European reel-royalty: the Philips N 4522 from the Netherlands and the somewhat older and in many respects serving as a model Revox A 700 from Switzerland.

Both machines stand out from the wide range of products on offer at the time for several reasons: the extremely complex drive with left and right tape calming rollers suitable for 26 cm reel sizes, the built-in mixing console and, last but not least, the three tape speeds of 9.5, 19 and 38 centimeters per second. Although there were competitors with three speeds, such as the ASC 6002/6004, the Tandberg 10 X or the Technics 1500 and 1700 series, these were

the exceptions in the semi-professional sector. In contrast, the low-cost devices targeted at home appliance, usually only accommodated coils up to 18 cm in diameter and also offered 4.75 cm/s speed. Since the highest possible sound quality, long durability and the possibility of cutting ribbons were required, we took the two-track versions.

The usefulness of three speeds can be discussed since, for various technical reasons, optimum adjustment is only possible for two speeds at a time. The slowest speed was never used seriously anyway. At best it was sometimes used for voice recordings.

We were particularly interested in how the two machines, which are, in fact, quite similar in appearance would differ when used. In the late 70s Philips had a reputation for building inexpensive, good sounding plastic-devices for the home. It was, therefore, all the more astonishing that the Dutch made this very solid machine with equipment that made sense for the semi-professional sector and a very sturdy construction. Presumably for image reasons and because they could afford it financially, they used their four-track 4520 and two-track 4522 to launch an attack on the Swiss studio equipment supplier Revox which presented a derivative of the studio machine B 67 with the A 700. The Revox's heritage from a studio-environment can be recognized by a few small details: the drive keys are illuminated, so that you can hit the right button even in dim recording-studios. Further, even inexperienced users can thread the tape straight away

on the Revox, while the Philips can wrinkle the tape due to the hard edge of the head shield. The tape also easily slides underneath the sensor lever. What you should absolutely avoid, as colleague Ulrich Wienforth already stated in the Philips test in 07/1980, is to just loosely tie the tape around the spool and then fast forward. The 4522 "rewards" this trick with too much tension on the tape, which causes the it to tear. Other negatively noticed features: a very slow end switch and tiny control buttons, which, to top it all off, also have knobs directly underneath them, e.g. for the bias. Everything other was perfect: the tape counter calibrated in minutes and seconds with a zero stop device, the microphone inputs, the headphone output with separate volume control, the possibility to adjust the bias and the tape sensitivity, the automatic monitor switch, the built-in mixing console and the VU meter that can be switched to peak value display, and, last but not least, the switchable equalization from IEC to NAB at 38 speed.

The internal design is also convincing, starting with the directly driven DC capstan motors. The clamping mechanism for the coil lock is made entirely of metal. All switches and regulators still make a good and smooth-running impression after almost four decades. Woelke's soundheads are long-life specimens and can hardly be broken. If necessary, you can have them overhauled.

Only in terms of its plastic exterior does the Philips lose to the Revox with its metal cabinet and wooden side panels.



NO PLASTIC

On the Philips, the locks for the coils are made entirely of metal.



The Philips NAB adapter (left) has an integrated spacer, which makes handling a bit more cumbersome.

Models & Prices:

Philips N 4520/4522:

Four- or Two-track version

Construction period: 1978-1983

Original price: approx. 2500/2650 DM

Revox A 700:

as Two- and four-track Version available

Construction period: 1973-1980

Original price: approx. 3600 DM

WHAT WE'VE HEARD

**Jazz Masters:
Vol. 6, STS Records**



Twelve titles in exquisite sound quality convince also from a musical perspective.

Hörtest-Edition III: Tape-Version



Ten Jazz jewels of the Chesky label in two-track/19 cm/sec. plus two bonus tracks copied from the original HighRes files. A dream!



Sliders give a mixer feeling; a complete preamplifier is integrated.

What advantages does the competitor from Switzerland, which was presented as early as 1974, have on offer you ask? Well, the to this day trouble-free supply with spare parts is certainly a big plus. Our A 700, for example, needed quite a bit of care before it could be used again: various capacitors had to be replaced – a typical Revox issue. The broken VU meter was rather tricky: this is quite unique with the A 700, because both gauges are in the same enclosure and indicate in opposite directions. So unfortunately it can not be replaced by any

standard replacement part. At Revox the brand new unit costs a good 200 euros. Not cheap, but this way the device remains fully operational.

There are also sound heads, pressure rollers, belts, brake tapes and just about every other part to be found either new from Revox and some specialists or on the second-hand market. Even a wired remote control and an external speed control are occasionally available in the „bay“ at moderate prices. Rather rarely one discovers a separate unit for slide control. Another very positive aspect is that many components are service-friendly and mounted on pluggable circuit boards, so repairs can be made quickly. Comprehensive adjustment possibilities for the adaptation to any kind of tapes by means of trimming potentiometers also show the descent from the studio professionals. The fact that the A 700 was developed a few years before the 4522 is most obvious from the counter: calibrated in minutes and seconds, it is purely mechanical, while the Philips is digitally illuminated. If you want to modernize the Revox, there are conversion kits available.

Revox was the first manufacturer to try quartz-controlled drives – and was successful. As our colleagues at the time stated, all measured values were at the limits of what was possible. While the Philips supports the vertical installation, which is very common in the private sector, with increased stability by



The Nextel coating of the tape plates has somewhat suffered; the clamping mechanism is plastic-coated.

means of rustic outriggers, the Revox clearly prefers the lying position. What makes the Revox quite unique is its complete preamplifier including phono MM input. As far as we know, another unique feature for a two-track unit is here the possibility of connecting four microphones at once and mixing them with each other – or any other connected source. This is already kind of on the level of a small recording studio, especially since transformers were used for balanced operation – despite jacks. The double headphone outputs also allow a second person to follow the sound up close. It's nice to have the option of rewinding briefly and immediately switching to „Play“ mode when the button is released. A typical Revox feature is the non-locking pause button. You don't have to like it, but you can get used to it.

The running noise of both devices is very low, even transformer hum or other mechanical noise is kept within very narrow limits.

People who have never had anything to do with a reel to reel machine will first have to get used to the time-consuming procedure of inserting the tape. And as if that wasn't enough, those who want to make recordings have to intensively research the subject of „choosing the right tape material“, the appropriate setting of the device, the desired tape speed as well as the output.

Yes, it takes time, and admittedly it is rather expensive, but for everyone that has a passion for fine but robust mechanics in combination with a lot of electronics it is certainly worth a try. The mere awareness

of having mastered a technique in which the majority of contemporaries are helpless and shrug their shoulders should be enough satisfaction for the “open reel enthusiast”.

For the music-“gourmet”, however, the real incentive to make friends with this complicated and, admittedly, quite maintenance-prone technique only becomes apparent once one has had the pleasure of listening to a master tape or at least an early copy of one. Full dynamics, no crackling, instead powerful reproduction of all frequencies, without any microphone effects, no problems with treble, no recurring doubts as to whether all parameters decisive for the sound are perfectly adjusted. This is a fine thing in the sense of natural and neutral sound, but it will disappoint all those who lack something if they can't regularly change adjustments. What is perfectly adjusted on a reel to reel remains unchanged for years. Only the cleaning and demagnetization of all parts coming into contact with the tape requires regular maintenance.

Do we have a favorite?

Yes and no. Even though the Philips does sound a bit more open after perfect calibration, both for self-made and external recordings, and although some equipment details are very practically designed on the Dutch machine, the Revox convinces with its well thought-out design and trouble-free spare parts situation. And of course it is clear to us that the optics can also make or brake a deal... ■

Useful links:

<http://bit.ly/magnetofonphilips>
www.sts-digitalshop.nl
<http://bit.ly/tonbandfreunde>
<http://bit.ly/fofoarchivrevoxa700>
<http://bit.ly/revoxshop>
<http://bit.ly/np-elektronik-gruppe>



Rec/Current-control for adjusting the sensitivity to avoid level jumps between the pre/back-tape. The monitor controls can be used to adjust the output voltage.



Gauder bridges the gap

In the world of hi-fi, innovations usually emerge with baby steps. However, with their DARC series, Gauder has launched a leap forward in innovation.

Michael Lang

Since the test of the DARC 100 about a year ago (test in STEREO Magazine 16), the sound of this exceptional loudspeaker has not gone out of my head. Its musical maturity and the unobtrusive yet all the more convincing reproduction of music were simply impossible to forget.

No longer out of reach

Due to its smaller brother 60, the entry ticket to the world of DARC technology is now considerably cheaper. By the way, the abbreviation stands for "Dynamic Aluminum Rib Construction" and is meant to hint at the special cabinet construction. In addition to the wealth of other design measures, this technology gives all models in the series excellent dynamic capabilities despite their comparatively compact dimensions. Many of the refined technical details found in the DARC 60 we already admired in the 100. The cabinet has the same width and depth, but was shrunk by 21 centimeters in height. One woofer as well as seven kilograms of weight have been left behind. From a technical perspective, the 60 is a 2 1/2 way speaker, in which one woofer works inside a sealed cabinet, while its bigger sibling works on a bass reflex port underneath it. Both bass drivers have an aluminum diaphragm that combines high stiffness with low weight. The tweeter comes from Accuton's ceramics department.

For a surcharge of 8000 Euro per pair, the ceramic version can be switched for a diamond tweeter at any time.

One of Gauder's most important features is the strict selection of all drivers to an accuracy of 0.5 dB, which sets them positively apart from the majority, as selection costs time as well as money.

Also the other ingredients of the entirely handmade in Swabia, Germany speakers are impressive: NextGen banana sockets from WBT, Mundorf coils and capacitors for the mid/high range and Clearwater silver cables for the internal wiring, as well as the symmetrical crossover technology with 60 dB slope, which Gauder regards as essential for the relaxed and homogeneous reproduction. The possibility of adjusting bass and treble in three stages by means of plug-in contacts as well as, concealed on the underside, another option called "Bass Extension", are also great features. Latter extends the low bass range but also demands a significantly higher current delivery from the amplifier. We decided against the low bass extension in favor of a crisper, faster, more dynamic sound image and a better transparency down to the mid frequency range. If you want to improve the sound of the DARC 60, you should rather consider the "Double Vision" edition, which is now available and offers even better crossover components and terminals.

**Downsizing
in price
with almost
the same
technology**

TEST DEVICES

Turntable:

Transrotor Rondino;
Music Hall MMF9.3;
Pro-Ject ATR
Celebration 40
Super Pack 1

Phono preamplifier:

Pro-Ject Tube
Box DS2

Integrated amplifier:

Audia Flight FLS 10;
Audionet SAM

Loudspeaker:

DALI Epicon 6

Cable:

Audioquest; INAK



Noble WBT sockets and terminals for bass and treble adjustment.

Spectacularly inconspicuous

Looking at the DARC for a while, you'll notice that you've probably never before been so unobtrusively overwhelmed with musically significant details. The loudspeaker plays incredibly gently, distortion-free, neutral and three-dimensionally in all frequency ranges that it is an utter pleasure to catch yourself again and again turning the volume control a little further to the right. Notwithstanding the fact that already at moderate levels it created a full and pleasant sound image in the room. With Roger Waters' "Radio KAOS", for example, the DARC seemed to have entirely disappeared acoustically. Only the seemingly out of nowhere coming sound waves remain. When Martha Argerich, just 27 years old in 1968, played Chopin's Piano Concerto No. 1 under the reign of Claudio Abbado, the initial transverse flutes, clarinets and oboes were graceful, while the tension and drama inherent to this piece were immensely convincing with the Gauder. Argerich was enabled to unleash her art – this unique mix of technical competence and sheer exuberant feeling – without any constraints. A pleasure!

A leap to Kraftwerk from Düsseldorf, Germany: in the classic "Autobahn" the low synth tones merge into a perfect unity with the melody. They carry and support it, with nothing ever being hidden or smeared. This ability to always make the right decision in service of the music is an outstanding quality of this loudspeaker and makes the price appear absolutely appropriate. ■



INFO

The cabinet of the DARC series is constructed layer by layer from these aluminum arcs.

Gauder Akustik DARC 60

Price: from 20000 € (Surcharge diamond tweeter: 8000 €; various cabinet designs available; large base plate plus 4000 €; Double Vision version plus 4000 €)

Dimensions: 26x107x42 cm (WxHxD)

Warranty: 10 years

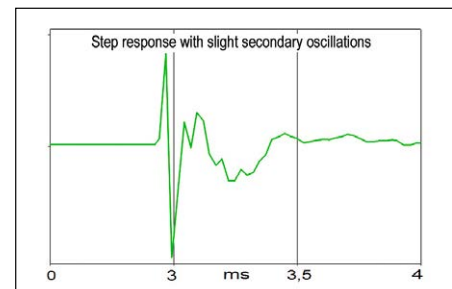
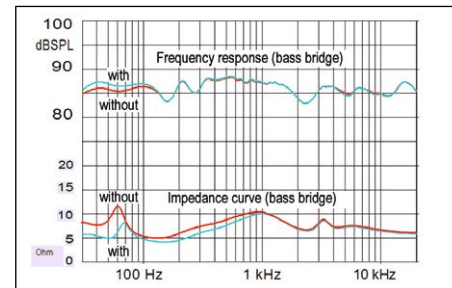
Contact: Gauder Akustik

Phone: +49 7159 920161

www.gauderakustik.com

The entry into the world of DARC technology is a perfect hit – in terms of sound as well as workmanship. The DARC 60's 2.5-way bass reflex system invites you into the music just as magically as its bigger brother DARC 100, but at a far more moderate price.

Measurement results



DC resistance	8 Ohm
Minimum impedance	5 Ohm at 140 Hz
Maximum impedance	12 Ohm at 63 Hz
Sound pressure level (2,83 V/m)	87 dB SPL
Power for 94 dB SPL	5,4 W
Lower cut-off frequency (-3 dB SPL)	29 Hz
Distortion factor at 63/3k/10k Hz	0,3/ 0,1/ 0,1 %

Lab Comment

Frequency response somewhat unsteady, but largely balanced. Very even dispersion, angulation hardly necessary. Extremely low distortion, still good step response; efficiency and impedance uncritical.

STEREO-TEST

SOUND QUALITY 97%

PRICE/PERFORMANCE



EXCELLENT

Brinkmann Audio Taurus

Ultimate Direct Drive



Photo © MichaelRasche.com 2019

Ever since the Brinkmann Oasis launched the Direct Drive Renaissance a decade ago, analog aficionados have asked us for a Direct Drive turntable that rivalled the performance of our state-of-the-art Balance.

The new Taurus definitively addresses that demand. Built on a massive 40mm thick chassis inspired by Balance, Taurus delivers deeper, more visceral bass combined with the dynamic agility and forward drive which characterize all Brinkmann direct drive turntables. Taurus offers wireless speed selection and can accommodate either one or two tonearms without modification.

Taurus is unquestionably the finest Direct Drive turntable Brinkmann has ever built.

BRINKMANN

"The World's Finest Turntables ... and more!"

brinkmann-audio.com

Closed Society

Focal wants to take the lead – also with closed headphones.

Will the exquisitely crafted „Stellia“ succeed?

Michael Lang

**The joy
already
starts while
unpacking**

KEYWORD

Diffuser

Acoustic-mechanical device for the uniform distribution of sound components

With the introduction of the „Utopia“ headphones, the loudspeaker manufacturer Focal succeeded in a rare feat: to right away conquer the top position a segment that was still very new to the French company.

Now, the brand-new „Stellia“ also wants to stir up the established scene. It belongs to the category of closed back headphones, as they are often used in recording studios, and should take pole position in this category, like its utopian brother did for the segment of open back headphones. Why would you even need closed back headphones for use outside recording studios, you may ask? Well, many people don't have a retreat to indulge their hobby of music. Then, it is an advantage to have as little as possible of the sound penetrate to the outside world in order to leave roommates undisturbed. Vice versa the world with its many distracting noises cannot interfere with the music as much when using a closed back specimen. The French have come up with some ideas to make the inherent disadvantages of the closed concept a thing of the past.

Luxury wherever you look

The Stellia asserts its claim to be a member of the luxury class as soon as it is unpacked. Whether it's the accessory box or the transport case made of imitation leather – the vocabulary that most readily comes to mind



has to be “noble”. The workmanship is even more opulent. The French describe their color choice with the words „cognac and mocha finish“ – as a man who has been proven to know only very few colors, one would probably speak of powerful, warm brown tones. Stainless steel for the temple, perforated leather upholstery with memory foam and high-quality plug connections for the cable complete the very positive first impressions.

The geometry of the cushions, as well as the air volume, is designed precisely for the purpose of the patented, M-shaped beryllium dome. Behind the drivers is a porous acoustic foam that absorbs excess high frequency energy and uses its **diffuser** properties to break standing waves in order to achieve a natural and open canal pattern. Heat build-up and the often unsatisfactory and booming bass reproduction with closed headphones are, now, also a thing of the past, one assures. Another shortcoming of closed back types usually was their dynamic abilities. Here, the use of a carrier less voice coil made of copper is supposed to have a beneficial

effect. In combination with high efficiency and low impedance, all these advantages should also come into their own when used with mobile devices. To ensure production at a constantly high level, the Focal specialists have developed an intelligent robot, resulting in a pair equivalence of +/- 0.5 dB.

Dynamic fireworks

Important for the desired result are also the high-quality cables – for stationary use there is a three meter long model, which is equipped with a symmetrical plug, for mobile devices there is a half as long version with a small jack in the accessories.

After a fitting break-in period, the noble Frenchman was able to fascinate the audience with its sound. The attention for detail, the ability to reproduce even the finest sounds of the saxophone in several perfectly balanced nuances in the „Pink Panther Theme“ has to be experienced. Compared to many other high-quality headphones, it is as if more notes were played at the same time, as the Stellia clearly chisels out details. However, it doesn't leave it at musical nitpicking, but convinces just as much if not more with dynamic challenges as „Keith Don't Go“ – a song that we have, in fact, heard far too often at this point. It is nevertheless extraordinary how emphatically Mr. Lofgren sings and maltreats his guitar on this not quite audiophile recording. Although it might be a challenge, you have to be careful not to tap the cables with the beat, as this unfortunately creates disturbing background noises

Focal Stellia

Price: around 3000 €

Warranty: 2 years

Contact: Focal

www.focal.com

An extraordinary closed back headphone with outstanding workmanship and exquisite features. The beryllium diaphragm is just one detail leading to the outstanding performance of this luxury headphone.

Lab Comment

impedance 35 Ohm, efficiency 106 dB;

weight: 440 gram

Features

Closed back, dynamic headphone; exchangeable cable; unfortunately sensitive to microphony; padded earpiece, soft leather pads with memory foam; high wearing comfort

STEREO - TEST	
SOUND QUALITY	95%
PRICE/PERFORMANCE	
★★★★☆	
EXCELLENT	

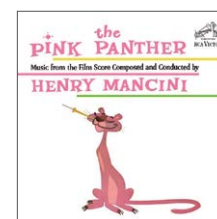
– something Focal should revisit in the future. On the other hand there's absolutely nothing to complain about with the usually most difficult discipline for closed headphones: bass reproduction. Lightning fast and clean, with realistic mediation of swinging fur, a drum in „The Fokie“ by the Chieftains is depicted – great. Even complex sounds of all kinds do not seem to be any obstacle, are, instead, presented in a clean and detailed manner and make time with the Stellia an exclusive experience. ■



Synthetic leather case and noble box for cables and instructions. The Stellia is elegant!

WHAT WE'VE HEARD

Henry Mancini:
Pink Panther



One of THE film music classics. Should be a part of every collection.



Chieftains:
The Long Black Veil
The Chieftains, supported by high-class guest musicians, in top form.



Das ändert alles!

D/A CONVERTER 1611 F

OPTIONAL WITH MBL ROON MODULE



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