

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.

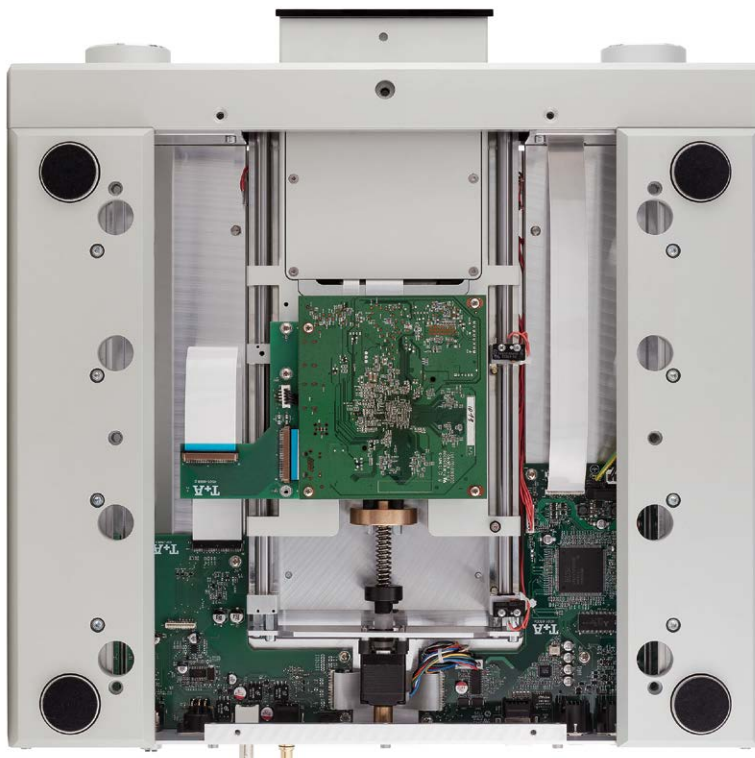
After that – we are still far from finished – the phalanx of seven digital inputs follow individually: two optical, two coaxial and two BNC versions plus a balanced "AES/EBU" socket. There's even a double pack of HDMI inputs for audio from Blu-ray players and other AV components. In between there are – 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...

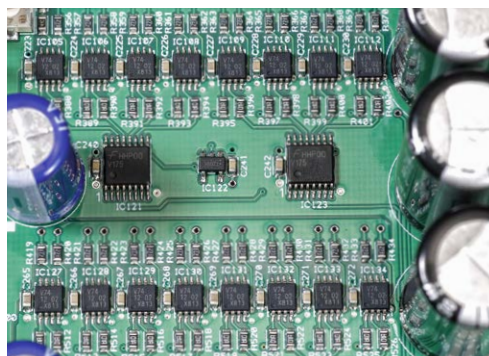
... that the SDV/SD3100HV project, with which T+A broke new ground and which entailed considerable risks because it was not clear whether the goals could be achieved at all, was supported by the German Federal Ministry of Economics and Energy? With the title: „Super High Definition Audio DAC with bit-perfect 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:
Accustic Arts Tube
PreampII-MK2/
AmpII-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.

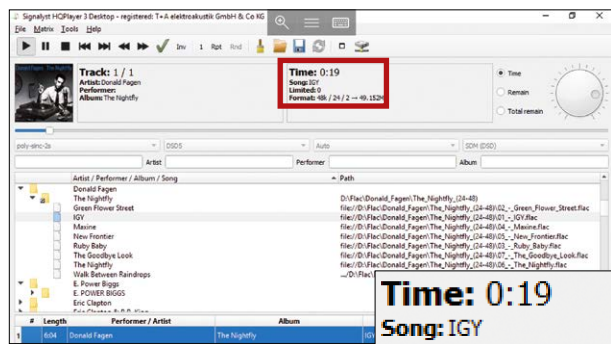
Of course, the SDV had to be measured against other top preamplifiers. These were real challenges, but ultimately no problem for T+A. Here, too, we experienced head-to-head races, during which the SDV3100HV often offered a more orderly, organized sound – once again in combination with its fragrant, lively 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.signalyst.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 upsampling, 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 x18 x45 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

Mains phase at tested device 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 x17 x46 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

Mains phase at tested device 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, Room-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.

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