HV


SOURCE
SELECT
PA 3100 HV
IN 2:
PDP 3000
43
A B
[W]
0,1
1
10
100
300
1000
-10
0
10
20
25
30
[dB]
POWER OUTPUT
T+A

T+A

The HV-Series

Within just two years the HV-series has developed into a line of high-end electronics which has gained some of the finest reviews and assessments worldwide. In that short time it has made T+A the leading high-end manufacturer in Germany. The HV-series first appeared in 2013, and was based on our thirty years of experience in the development and construction of first-class transistor amplifiers and valve devices. The new series incorporates a revolutionary concept combining the sonic and technical advantages of both technologies, at the same time avoiding the inherent disadvantages of present-day valves. The HV = High Voltage technology is employed in the amplifier stages of all the machines in this series, and is the secret behind their outstanding performance and sound quality. The source devices of the same series are just as uncompromising and superb as the amplifiers. They represent absolutely the highest level in the processing and reproduction of all digital sources.

The HV-series is the true embodiment of the original meaning of the term ‘high-end’: innovative technologies, uncompromising construction and absolutely peak performance.
For the HV-series we developed a whole raft of unique and superior technologies which are available exclusively to T+A: amplifier stages work at very high voltages, and are therefore inherently more linear in character than conventional circuits; the players feature separate high-performance converters for PCM and DSD, digital and analogue signal processing are kept consistently separate from each other, and specific subassemblies are galvanically isolated. All devices are fully channel-separate and designed on the double-mono principle. They are of entirely discrete construction, without operational amplifiers (op-amps). Amplifier output is more than 500 Watt per channel. The mechanical construction of all cases is extremely sophisticated, based on an internal framework of 10 mm thick machined aluminium plates. All case components are manufactured from pure aluminium, some of them machined from the solid. Absolutely no ferro-magnetic components are used.

Actually we're scientists ...

... because T+A stands for Theory and Application in the field of audio technology. That means that we conceive, refine and manufacture Hi-Fi components of the very highest quality, with the aim of developing consummate High-End products for our customers all over the world. Since 1978 our enterprise has been based at Herford in Eastern Westphalia, and this is the focal point of all our thoughts and actions. When considering our products we set ourselves no limits, and spare neither cost nor effort in order to achieve perfection in sound. The results speak for themselves in our products: extremely long product cycles, extended lifespans and a wide range of retro-fit options make a T+A system a sound investment for the future.

P 3000 HV
Preamplifier

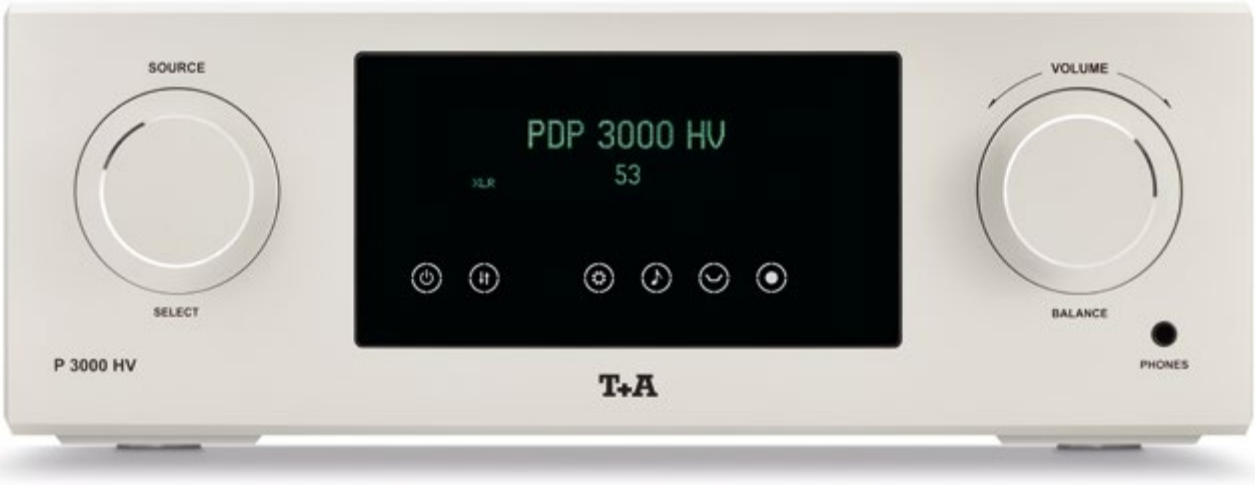
Frequency responce
0,5 Hz - 300 kHz
S / N ratio
108 / 112 dB
Inputs
4 x balanced (XLR) 7 x high level (RCA)
Features
High End Headphones amplifier Analogue signal processor module
Mains connection
separate power supplies for analogue and digital sections

The P 3000 HV is the audiophile High-End preamplifier of the series, and represents the universal control centre for a High-End Stereo system consisting of HV separates. It is equipped with unique, newly developed technologies and innovative circuit designs. Its measured results, specification and sound quality represent the limit of what is physically feasible. The components and materials employed are uniformly of top quality, without any hint of compromise, and the workmanship of the case sets standards which are unmatched even by much more expensive equipment. The P 3000 HV's uncompromising design is of symmetrical double-mono construction. Both balanced and unbalanced sockets are available as outputs. There are four balanced inputs, input No. 4 can be operated in surround (pass-through) mode in order to use the power amplifier for the front channels of a surround decoder. The analogue and digital mains power supplies are completely separate from each other, and even feature separate mains sockets.HV-Link (HV data bus), LAN socket, trigger input, RC-in for E-2000 and an ground terminal are also present.

We have developed an analogue signal processor module which not only offers tone and loudness functions operating separately for each channel, but also features three channel separated narrow-band parametric equalizers which are capable of effectively damping room resonances in the range from 20 Hz to 500 Hz. The net result is that superb sound quality can be obtained even in difficult rooms.

The P 3000 HV is equipped with a high quality headphone amplifier with dual current capability and is supplied complete with the F 3001 infrared remote control unit.

Upon request the P 3000 HV can be fitted with High-End phono preamplifiers, which possess different circuit topologies for MM or MC pick-up systems.



A 3000 HV
Power Amplifier

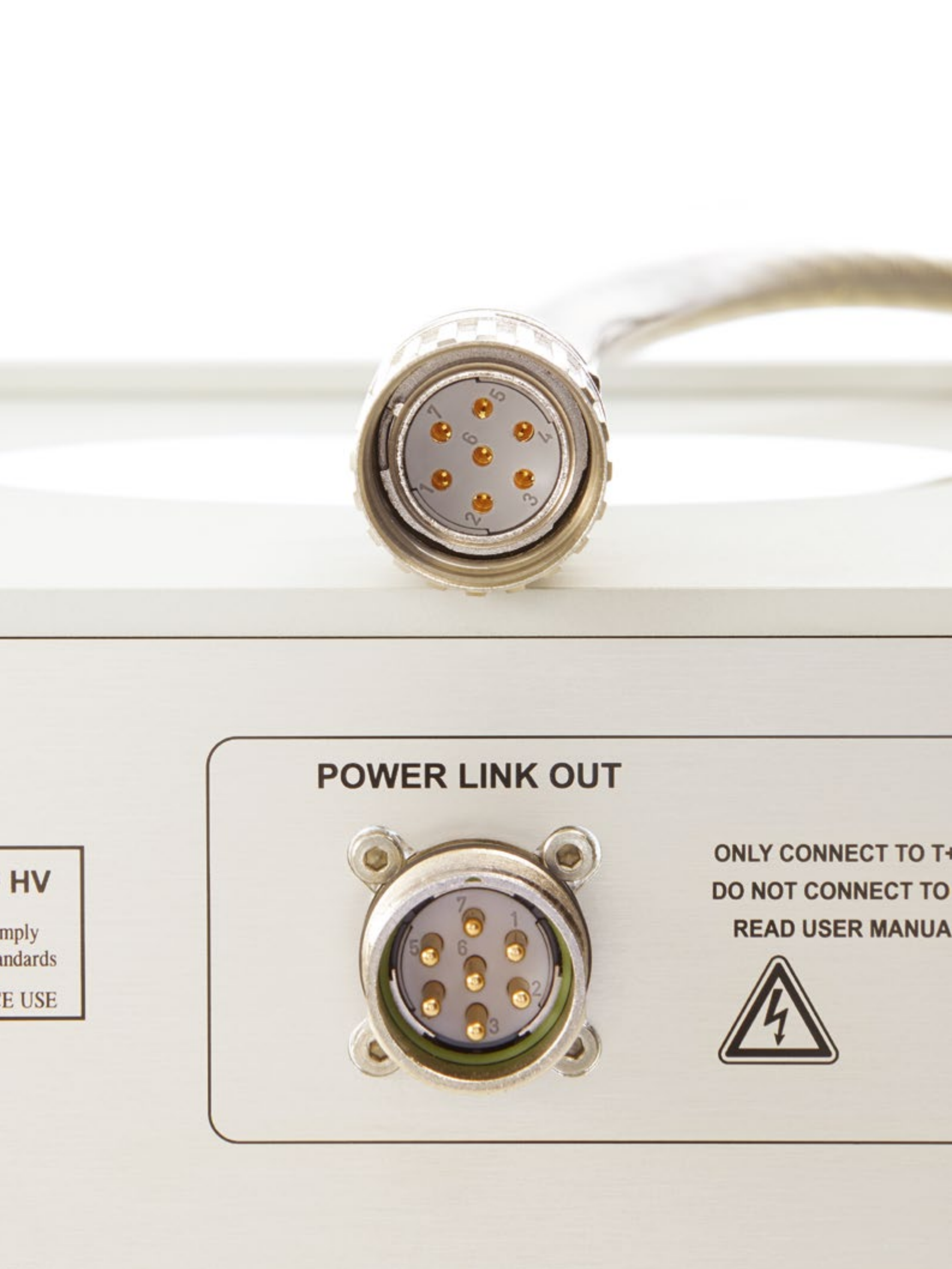
The A 3000 HV is the ideal power amplifier and complement to the P 3000 HV preamplifier. It is designed as a stereo power amplifier, but can also be configured to work in mono mode, in which guise it is capable of delivering twice the current and in which it doubles the pure Class-A mode. Thanks to HV technology, this powerhouse offers superb sound characteristics as well as incredible power and performance: a standard which is unsurpassed even by much more expensive amplifiers. The principle of splitting a High-End system into separate pre-amplifier and power amplifier gave our development team the opportunity to implement the finest possible circuit designs and technologies without having to take into account space considerations and case restrictions. This applies both to the electronic components and the mechanical design of the case, since – if the aim is to attain the best possible sound – a preamplifier's requirements are fundamentally different from those of an power amplifier: preamplifiers process relatively small signals, and the crucial aspect of their design is the avoidance of induced and other interference; power amplifier, on the other hand, have to cope with relatively large signals, and the stability of the power supply, its current delivery capacity and performance independent of load are much more important.

Nominal output
Into 4 Ohms 2 x 500 Watts Into 8 Ohms 2 x 300 Watts
Principle
Mono / Stereo mode switchable
Frequency responce
0,5 Hz – 180 kHz
S / N ratio
> 115 dB
Slew rate
60V / µs
Mains supply
1500 Watts

PS 3000 HV
Power Supply

Principle
supplementary mains unit for A 3000 HV and PA 3100 HV
Mains supply
1800 Watts
Reservoir capacity
240000 µF

The PS 3000 HV is a supplementary mains unit which was developed specifically for the A 3000 HV power amplifier and the PA 3100 HV integrated amplifier. Both deliver more than 500 Watts of power into 4 Ohms, and at such a high level of sound quality and performance that simply increasing the output power – and with it the voltage – produces no significant improvement in sound. Our research and development work in high-performance amplifiers – including the M10 and S10 – and the development of the HV design philosophy which flowed from this work, have shown clearly and unambiguously that the stability of the voltage and current supplied by a mains unit is of major and even crucial importance to the sound quality of a power amplifier. From this we have drawn the only rational conclusion, and developed a supplementary external power supply.
The principle is ingenious, and functions in the following way:
if the PS 3000 HV is connected to the A 3000 HV or PA 3100 HV using the special PowerLink with M 23 high-current connectors, the A 3000 HV's or PA 3100 HV's internal power supply is used to supply energy to the input stages and the high-voltage amplifier; much lower power is required for this part of the system, and as a direct result the interference generated in the A 3000 HV or PA 3100 HV itself is much lower. The external PS 3000 HV supplies the energy for the output stages, i.e. it is responsible for the high currents required by the power output stages. With a power capacity of 1800 Watts the PS 3000 HV is substantially more powerful than the mains unit of the A 3000 HV or PA 3100 HV itself, and can also call upon twice the reservoir capacity. The net result is a substantial improvement in the current delivery capacity and stability of the system as a whole.


POWER LINK OUT
ONLY CONNECT TO T+
DO NOT CONNECT TO
READ USER MANUA
HV
mply
ndards
E USE

PA 3000 HV
Integrated Amplifier

Nominal output
Into 4 Ohms 2 x 500 Watts Into 8 Ohms 2 x 300 Watts
Distortion
< 0,005 %
Inputs
7 x high level (RCA) 4 x balanced (XLR)
Outputs
Pre Out, REC Out, Headphones
Phono modules (optional)
for MM or MC
Signalprocessor module
optional
Features
Trigger input +5 ... 20V for external switching-on Input 4 can be configured in surround mode (Surround pass-through)

The P 3000 HV preamplifier and the A 3000 HV power amplifier share many components with the integrated amplifiers PA 3000 HV / P 3100 HV, as well as the fundamental design principles and circuit topology. Most of the case components are the same, and the integrated amps and A 3000 HV also employ the same mains units and voltage supplies, output stages, input amplifier and high-voltage amplifier stages. The P 3000 HV preamplifier also shares many parts such as the input section, the pre-amplifier, the relay-based volume control, the output section and the front case profiles, complete with control processor and VFD screen. Achieving absolutely outstanding results from combined devices - such as integrated amplifiers - is more difficult than from separate components, because both the sensitive preamplifier stages and the powerful output stages are required to share a common case. This problem calls for great sophistication in design, and that is why our cases are sub-divided into separate compartments made of 10 mm thick aluminium plates. This construction provides highly effective shielding between the various sub-assemblies, and in this way our development team has succeeded in producing superb sound quality: the measured values, the specification and the power generated by the amplifier are at the limits of what is physically feasible from an integrated amplifier of this size. The components and materials are uncompromisingly first-rate, and the casework sets such high standards that it is superior to much more expensive equipment.

PA 3100 HV
Integrated Amplifier

The PA 3100 HV is a further development of the PA 3000 HV, and most of its sub-assemblies are identical. The immediately obvious difference is the pair of VU meters in the front panel, which display the power generated per channel in logarithmic form in Watts into 4 Ohms. A revision of the preamplifier section (D.C. coupling) has brought an additional improvement in sound quality.

A further development is the redesigned analogue mains section and voltage power supply, which is similar to that of the A 3000 HV. This makes it possible to connect the supplementary PS 3000 HV power supply in order to gain a further increase in stability and performance of the power supply system as a whole. The additional unit provides an extra 1800 Watt of supply power, enabling the system to control even the most difficult loudspeakers without effort, so that they can unfold the best possible sound quality.

As an option the PA 3000 HV and PA 3100 HV can also be fitted with High-End phono preamplifier modules which feature different circuit topologies to suit MM or MC systems. It is also possible to install the analogue signal processor module which has been developed for the P 3000 HV to provide channel-separate tone and loudness functions and features three narrow band equalizers to linearize room resonances.

The all-metal F3001 infrared remote control handset is supplied as standard and controls the complete system via the HLink bus.

Nominal output
into 4 Ohms 2 x 500 Watts Into 8 Ohms 2 x 300 Watts
Frequency responce
0,5 Hz - 300 kHz
Inputs
7 x high level (RCA) 4 x balanced (XLR)
S / N ratio
105 / 110 dB
Mains supply
1500 W
Phono modules (optional)
for MM or MC
Signalprocessor module
optional
Features
VU-meter for output power into 4 Ohms connectivity for additional PS 3000 HV

MP 3000 HV
Multi Source CD-Player

D/A-Converter
Double Differential Quadrupel Converter up to 32 Bit/384 kHz
Total harmonic distortion
< 0,001 %
CD drive unit
heavy, shielded mass-damping housing, 3-point antiresonance suspension
Internal sources
CD-transport, FM-radio, Internet Radio, High Res Streaming Client, digital connection board
Inputs
Digital: 6 x SP/DIF, 2 x USB Mastermode, 1 x USB Device Mode (PC)
Outputs
Analogue XLR + RCA, Digital Out

T + A was the first High-End manufacturers to equip a CD player with additional digital sources. The idea was unusual at the time, but it was certainly logical and justified. The sound quality of a digital music source is determined to a great extent by the quality of the digital-to-analogue converter (DAC) employed. Since T+A CD players had always boasted excellent converters, it made a good deal of sense to add additional digital sources to them, such as a network streaming client, a tuner and various inputs for external digital sources, instead of producing a separate case for each individual source. This makes obvious economic sense, but is also sensible in technical terms, since there is no need for additional cases, converters, mains power supplies and cable connections. It is much more effective to build one really superior converter and play back all the sources through it – even though that converter is more expensive in the first place.

That is why we have developed the unique Double Differential Quadruple Converter for PCM digital to analogue conversion. It processes the signals from the jitter reduction stage, whose own design philosophy is probably unique, and receives data from the high-quality pushrod-operated CD mechanism, the FM tuner, the streaming client and the seven digital inputs. The D/A converter is followed by the current / voltage converter, which is so crucial to sound quality, and an analogue output stage, both of which are of fully discrete construction, and incorporate our HV technology.

The FD 100 bi-directional RF remote control system can be used to control all functions of the HV-system. It displays the full content of the device screen and coverart as well.

MP 3100 HV
Multi Source SACD-Player

The MP 3100 HV shares the same overall design as the MP 3000 HV, but is equipped with additional digital sources. The integral disc mechanism is a completely new development: an SACD drive featuring the very latest decoder, capable of reading CD and SACD discs at the very highest standard of quality. This means that the machine has to be capable of processing DSD data as well as PCM data. As in the MP 3000 HV we use our superior double differential quadruple converter for all the digital processing of PCM data, whereas for DSD data we employ the unique analogue True 1-bit DSD converter from the PDP 3000 HV, which processes DSD data as a native bitstream instead of converting the data. The overall result is that the machine can reproduce at the highest quality DSD data up to DSD 512, as delivered from the USB input of the digital connecting board.
The Streaming Client fitted to the unit is the T+A High-Res Streaming Board, which provides high resolution in addition to various music services, Internet radio, inclusion in home networks via LAN and WLAN, USB Master Mode and HD streaming from network servers.
The integral tuner offers FM, FM-HD and DAB+, and offers superb sound quality.
Another important facility is a high-quality Bluetooth streaming module which can be used to access music from mobile devices.
The MP 3000 HV and MP 3100 HV - or even an entire HV system - can be controlled using the FD 100 radio remote control handset or the T+A Control App.

D/A-Converter

PCM: Double Differential Quadrupel Converter up to 32 Bit/384 kHz
DSD: T+A True 1-Bit Converter, native DSD bitstream up to DSD 512 (22 MHz)

Channel separation

> 110 dB

SACD drive unit

heavy, shielded mass-damping housing with 3-point antiresonance suspension

Internal sources

SACD-transport, FM, FM-HD, DAB+, Internet Radio, High Res Streaming Client with music services Deezer, qobuz and Tidal, Bluetooth streaming, digital connecting board

Inputs

Digital: 6 x SP/DIF, 2 x USB Mastermode, 1 x USB Device Mode (PC)

Output stage

Double mono „State of the Art“ with 120 kHz cut of frequency

PDP 3000 HV
DSD/PCM SACD-Player

SACD drive unit

Push rod supported mechanism carrier block. Machined out of one 25 mm thick Aluminum block.

Outputs

Separate output sockets and signal paths for PCM and DSD.

DAC-inputs

AES-EBU, BNC, Coax, TOS-Link, USB Device Mode (PC)

D/A converter

PCM: Double Differential Quadrupel Converter up to 32 Bit/384 kHz
DSD: T+A True 1-Bit Converter, native DSD bitstream up to DSD 512 (22 MHz)

The PDP 3000 HV is a puristic SACD / CD player in the HV series without additional digital sources and our most sofisticated player. He has been developed specifically to reproduce high-resolution audio data without any trace of compromise. For this reason we have equipped the machine with a uniquely superior disc mechanism which reads CD and SACD media perfectly, and transfers their data to its superb PCM and DSD converters. To convert PSM data we are using our unique Double-Differential Quadrupel Converter and for the conversion of DSD data up to DSD 512 we have even develop a new technology: the native T+A True 1-bit DSD Converter, a genuine analogue single bit converter. Since this unique converter concept is ideal for use with external sources, we have also designed the PDP 3000 HV to operate as a DAC, featuring seven digital inputs. This technology is unparalleled on the world market and explains the huge number of excellent reviews for our DPD 3000 HV.

The High End loader unit of the PDP 3000 HV is machined from a single block of aluminium, 25 mm thick. All the drive mechanism components are installed in this heavy block, whose substantial mass isolates it from the remainder of the case. The whole block runs on two polished steel pushrods, and is gently opened and closed by a spindle drive system.

HV-INDIVIDUAL

Virtually any shade between white and black is possible.

As distinctive as you yourself.
HV-Individual gives you the opportunity to order your preferred system in the precise colour to satisfy your personal taste, in accordance with your individual requirements and ideas. You can order your HV devices painted in any RAL hue and many special paint types, such as car finishing lacquers.

It is up to you to decide the colour to be applied to the case components and the heat-sinks or sheet metal covers. All you have to do is select the most pleasing colour for the printing on the front panel. Simply ask us.

Beautiful diamond-cut chamfers for a premium, top-class appearance.

Upon request we can also paint the heat-sinks of our amplifiers the same colour as the case. In contrast, the heat-sinks of our standard machines are always black.

Printing in your chosen colour, in this case a delicate light grey.

Our paints are scratch-resistant and particularly high in quality, and are mixed to a special formulation in accordance with T+A's exacting requirements. The best way to clean the painted surfaces is to use an ultra-fine microfibre cloth - suitable for paint finishes - and clean water.

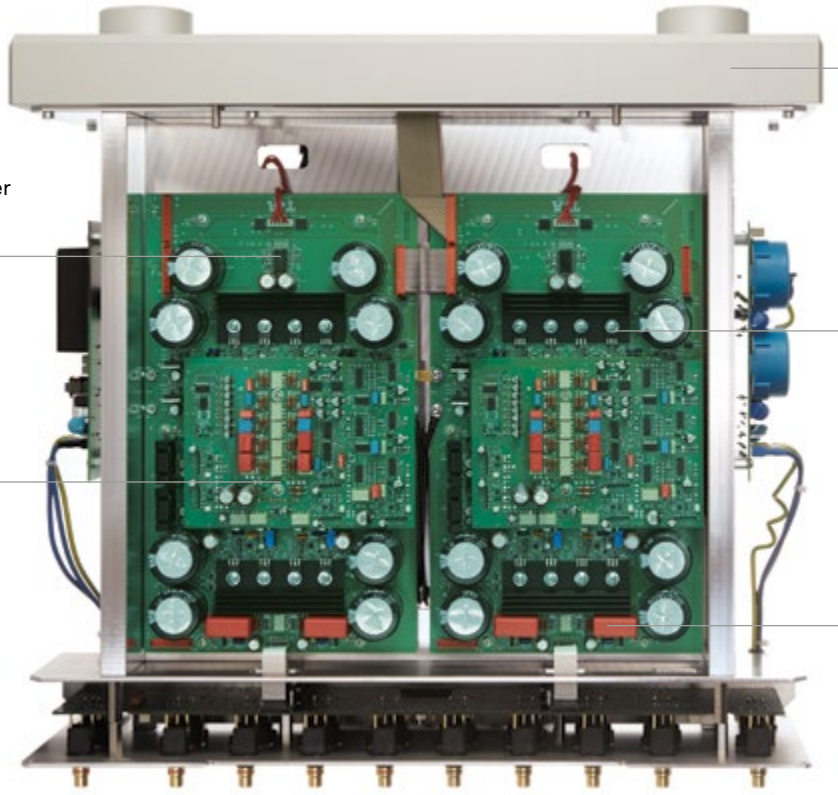
Cabinets
Hand made

The tremendous rigidity and stability of the HV series casework is due to a frame consisting of solid aluminium plates, screwed together, to which all the sub-assemblies and exposed external components are attached.

Within the case the metal plates form sealed chambers (compartments) which very effectively de-couple and shield the various sub-assemblies from each other. The aluminium plates are 10 to 15 mm thick, and their surfaces are machined perfectly flat on precision equipment in order to ensure absolute dimensional accuracy. This is how we achieve extremely accurate fits between the external case parts and socket areas, with close tolerances and ultra-fine joint lines. The case components are manufactured from pure aluminium, either using sophisticated extrusion tools - for the side cheeks and cover panels - or machined from solid blocks for the front panels.

Non-magnetic materials are employed for all components and case parts, because this completely eliminates any chance of magnetically induced signal distortion. Such distortion can result in discoloration and degradation in the sound. All the essential chambers, supports and openings are produced using the latest milling machines, utilising a single process in order to maintain absolute dimensional accuracy. The ample thickness of the material we use ensures excellent shielding characteristics and very efficient heat dissipation. After the machining process the case components are blasted with glass beads in a refined process before being hard-anodised. Finally a special aluminium lacquer is applied to ensure that all components exhibit an identical hue.
By their very nature the cases of all HV-series devices are extremely heavy, and this is both deliberate and desirable. For example, the PA 3000 HV weighs almost 40 kg, and its considerable mass isolates it completely from all acoustic influences present in the listening room.

Technology



The solid aluminium front panel provides perfect electro-magnetic shielding and contains the control processorboard and the VFD display.

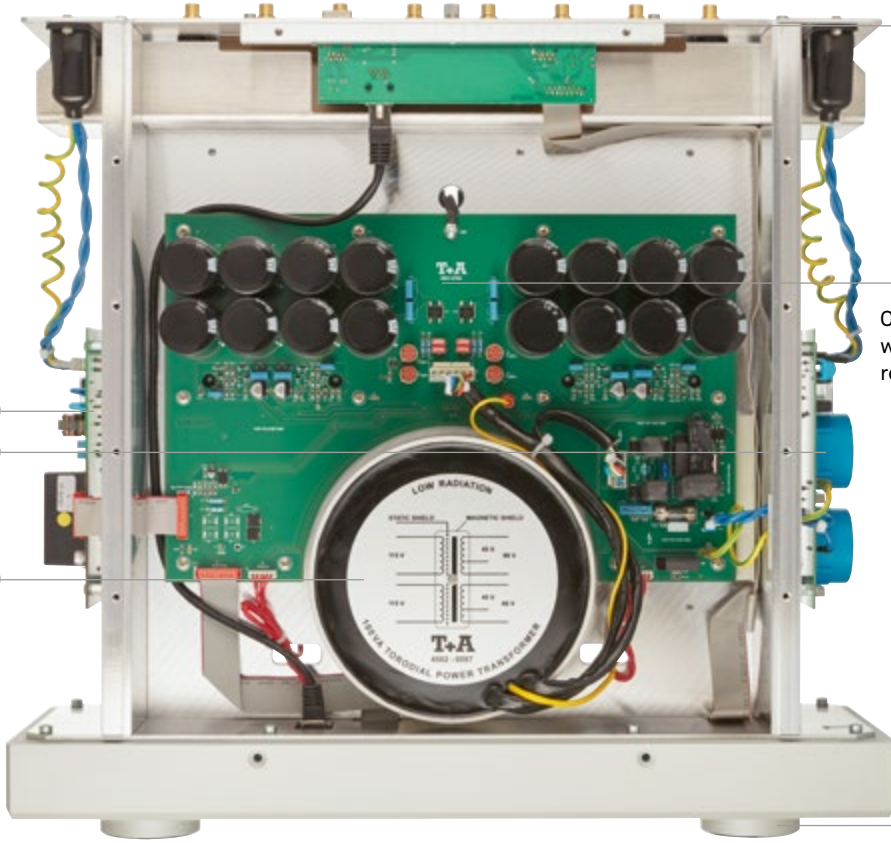
High-End Headphone amplifier with high current capability.

High voltage single ended class A amplifier stage with galvanic separation from the output stage.

Analogue signal processor module with tone and loud-ness functions and narrow band parametric equalizers.

State-of-the-Art preampli-fier with volume control, consisting of precision resis-tors and gold contact relays.

Internal view of the upper case compartment



Solid aluminium mounting plate for the input and out-put sockets; Nickel-free and gold-plated.

High performance digital power supply unit and dual analog mains filter, shielded in external compartments, each with its own mains socket.

Overdimensioned mains po-wer supply section with huge reservoir capacity.

Special design torroidal transformer with soft charging characteristics and sealed in an aluminium enclosure with insulating compound material.

Solid metal source select and volume control knobs with needle roller bearings.

Internal view of the lower case compartment

The connector section on the back panel provides impressive evidence of the P 3000 HV's uncompromising design and connectivity facilities. Both balanced (XLR) and unbalanced (Cinch) sockets are available as outputs. There are four balanced inputs which alternatively can be configured as unbalanced types, plus two further unbalanced inputs and a recorder input.

Input No. 4 can be operated in surround (pass-through) mode in order to use the power amplifier for the front channels of a surround decoder. The analogue and digital mains power supplies are completely separate from each other, and even feature separate mains sockets! HV-Link (HV data bus), LAN socket, trigger input, RC-in for external E-2000 and an ground terminal are also present.

Preamplifier
P 3000 HV

Preamplifiers are the most important components of any High-End system. Source devices connected deliver low-level signals to the preamplifier's input section, and the unit's task is to switch and amplify these signals, regulate their volume, process them where necessary and deliver them to the output sockets, ready for the power amplifiers. All this has to be accomplished without altering or falsifying the signals' content. We have invested a vast amount of effort in designing preamplifiers which meet these requirements in full. The devices are of discrete, fully symmetrical construction, while every single component is the very finest available. The circuitry is housed in cases of uncompromising construction.

In the ingenious overall circuit design of the HV (= High Voltage) series - developed in-house by T+A - all the amplifier stages operate at much higher operating voltages than usual: in the preamplifier the figure is up to 100 Volt, in the power amplifier up to 360 Volt. In a similar manner to valve amplifiers, the actual modulation of all the stages can be kept very low. Only a very small percentage (less than 10%) of the characteristic curve of the transistors is used, thereby virtually eliminating the curvature (non-linearity) of that characteristic. Additional measures for improving the linear nature of the voltage amplifier stages are also employed, such as cross-coupled differential amplifier cascodes or improved "Hawksford" cascodes with double J-FET control transistors. In addition to outstanding linearity, the high operating voltages employed offer the advantage of extremely wide dynamic range. We have developed this unique technology for use in all the HV-series machines, since the tremendous sonic improvements which it makes possible can be exploited in the output stages of source devices such as the MP 3000 HV multi-source player as well as in preamplifiers and power amplifiers.

Technology

The socket area on the back panel of the A 3000 HV illustrates very effectively the fundamental philosophy behind the HV series: all our machines are based on the double-mono principle, i.e. we separate the left and right channels completely (even at the mechanical level) and always employ identical circuit boards, so that both channels have exactly the same sonic characteristics. The sockets fitted to our devices are extremely robust, and of the very highest quality.

The enormous power of the output stages calls for particularly rugged, high-quality loudspeaker terminals. They are machined from pure, solid brass, and rhodium-plated overall.
Rhodium is the perfect contact material: as conductive as silver, as enduring as platinum, as corrosion-proof as gold - and unfortunately as expensive as all three put together.

Power Amplifier
A 3000 HV

Although the circuit topology is crucial to the quality of an power amplifier, another factor is equally important: the mains power supply. The mains power supply of the A 3000 HV is completely unprecedented; without exaggeration it can be described as “rock-hard”, i.e. it never collapses. The basis is a huge, extremely stable and high-performance 1000 Watts toroidal transformer with minimal stray fields. It is also magnetically shielded all round, and hermetically sealed. Twelve oversized electrolytic reservoir capacitors with low inductivity are wired together in parallel. This design ensures that the mains unit is very fast, and can deliver gigantic quantities of current ultra-fast, without time delay.

The right-hand pictures show the underside and the topside. The entire electronic power circuit with output stages and mains power supply is housed in its own shielded compartment in the underside of the machine. The dividing wall between top and bottom sections is 10 mm thick and is also made of aluminium. Voltage amplification and current amplification circuitry is housed on separate circuit boards in separate case sections, in order to prevent mutual interaction. The sophistication of the design does not stop there, as we have even provided galvanic separation between the two. Thanks to this uncompromising design there is absolutely no feedback of the loudspeaker currents into the voltage amplifier stages. The voltage amplifier is an extremely linear, broad-band, cross-coupled differential cascode amplifier, followed by a single-ended Class A large signal stage which provides superb sound quality. The fully symmetrical current amplifier stage (output stage) is fitted with MOSFET drivers and the latest “thermal tracking” bi-polar output transistors; this combination delivers a very harmonious audiophile sound image combined with tremendous current delivery capacity. The output stage transistors feature integral temperature monitor diodes which we use to maintain the power transistors at an absolutely constant operating point, regardless of temperature, allowing us to control the circuit’s distortion behaviour perfectly. By maintaining full symmetry in the arrangement of all conductors in the output stages and mains power supply we have succeeded in providing a complete lack of magnetic stray fields, and no electromagnetic feedback into the input stages.

Magneticly and staticly shielded, extremely “hard” torroidal transformer with 1000 Watts power, sealed in an aluminium enclosure.

The solid aluminium front panel provides perfect electro-magnetic shielding.

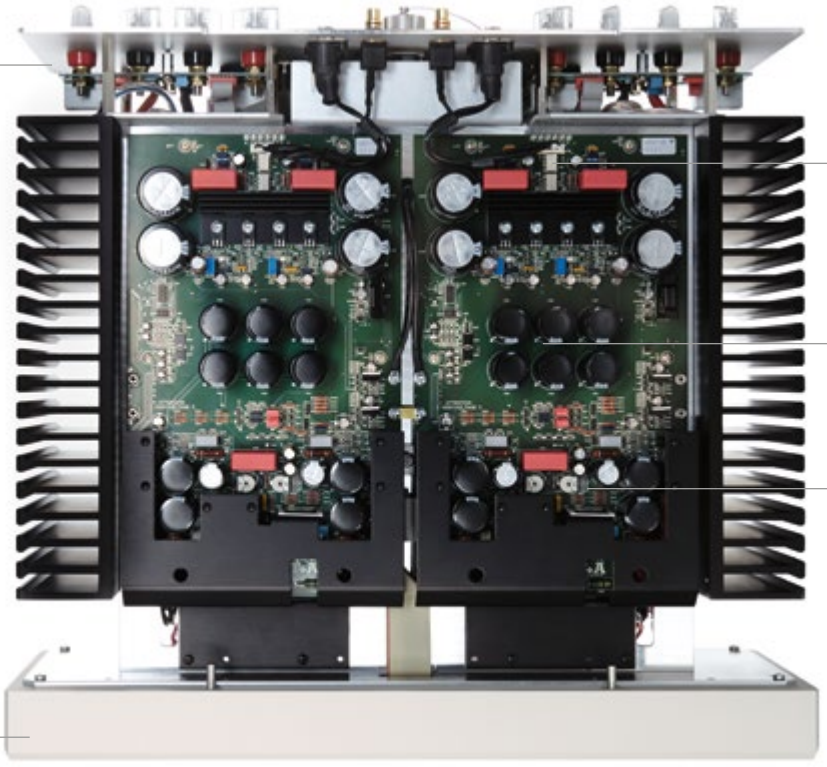
High-performance output stage with special heat-sink profile for optimised heat dissipation.

Mains power supply section with extensive and sophisticated reservoir capacity and stabilisation measures.

Professional loudspeaker terminals with rhodium-plated surfaces.

Internal view of the lower case compartment

Solid aluminium mounting plate for the input and output sockets.



State-of-the-Art input section.

Channel separated linear stabilisation and additional reservoir capacity.

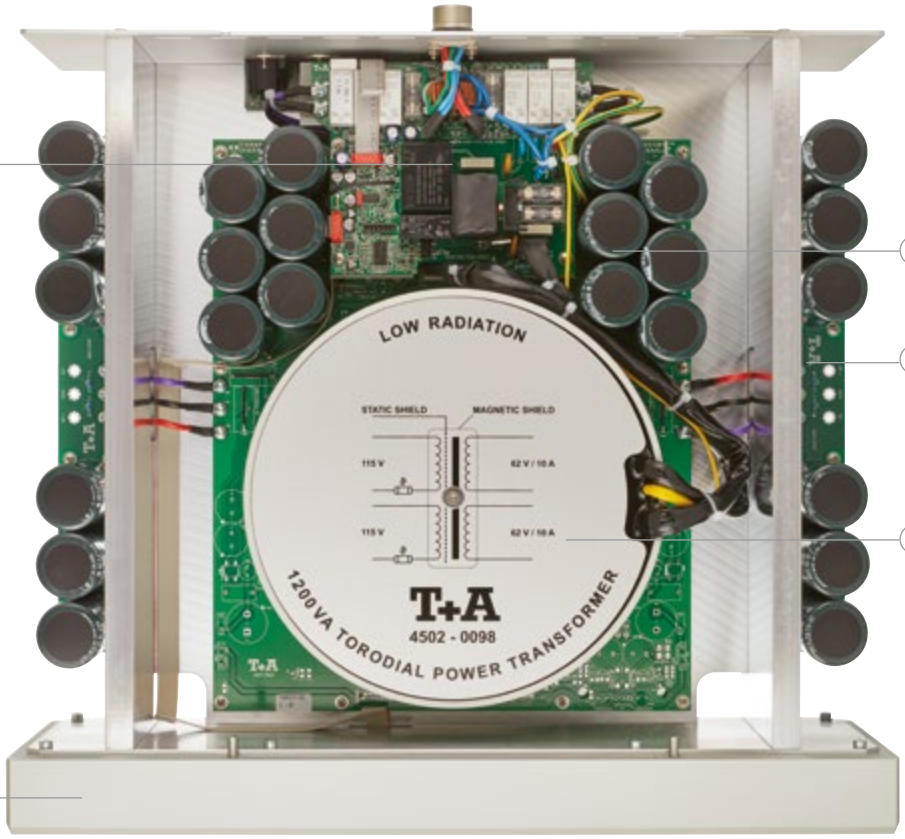
High voltage single ended class A amplifier stage with galvanic separation from the output stage.

40 mm massive front panel with VU-meter and shielded control board.

Internal view of the upper case compartment

Technology

Microprocessor board for the external power supply of PA 3100 HV and A 3000 HV with controlled power „ramp up“ and soft start function.

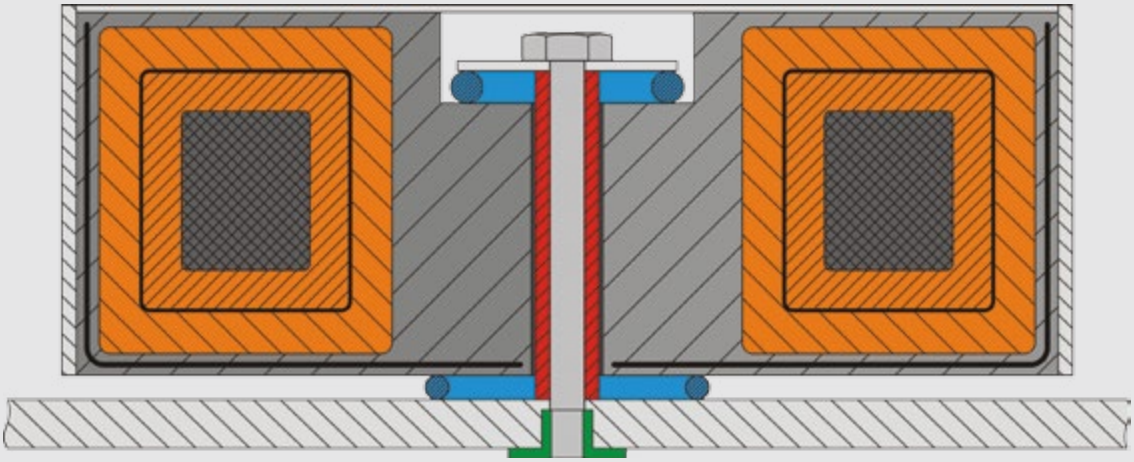


Mains power supply section with extensive and sophisticated stabilisation measures and huge reservoir capacity of 240.000 µF.

Extremely “hard” torroidal transformer with 1200 Watts power, sealed in an aluminium enclosure and additionally damped by an insulating compound material.

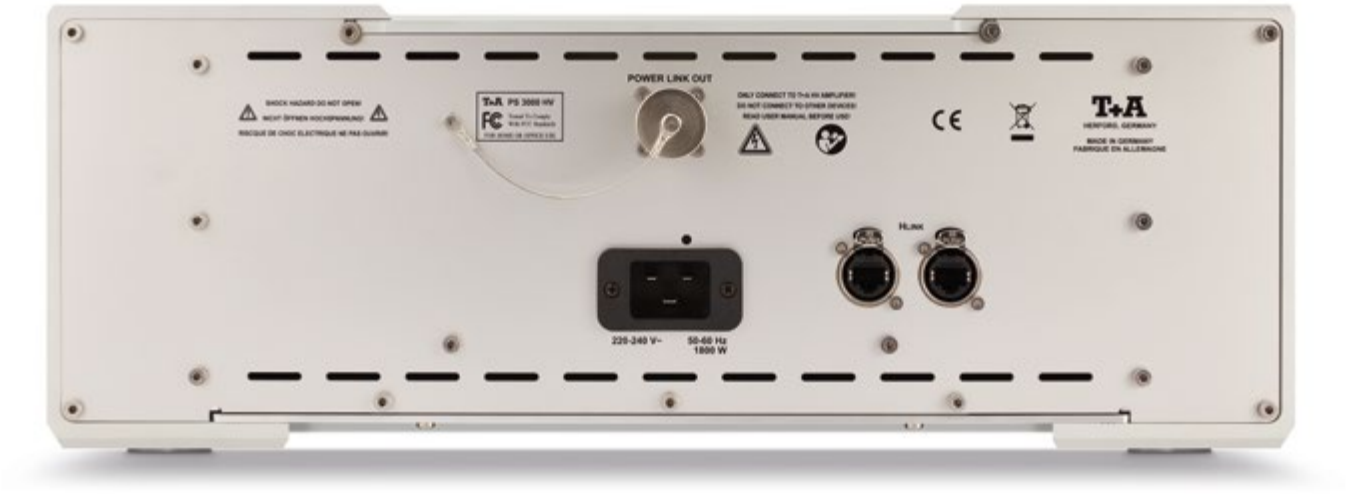
40 mm massive front panel with VU-meter and shielded control board.

Internal view of the upper case compartment



The heart of the PS 3000 HV is a 1200 VA transformer which is painstakingly encapsulated and potted in an aluminium ring. The insulating compound material completely saturates the windings and bonds them together, thereby eliminating any risk of mechanical movement in the winding wires! The encapsulated transformer is effectively shielded, and is screwed to the 10 mm thick base plate with bi-directional resonance absorbers as mechanical de-coupling measure. This tremendously sophisticated arrangement is used in all HV-series machines, and effectively prevents any hint of unpleasant transformer hum despite the enormous power levels.
To ensure that all the household fuses are not instantly tripped when the system is switched on, all HV devices are equipped with a Soft-Start function: the control processor limits the initial power-on current, and only allows the machines to ramp up gradually!

The PS 3000 HV is controlled completely by the A 3000 HV power amplifier and the PA 3100 HV integrated amplifier via the HLink bus and the PowerLink connection.
In a High End Stereo System consisting of one P 3000 HV and two A 3000 HV for each A 3000 HV power amplifier one PS 3000 HV is required if you want to improve the sound quality.



Power Supply
PS 3000 HV

The PS 3000 HV is a supplementary mains unit which was developed specifically for the A 3000 HV power amplifier and the PA 3100 HV integrated amplifier. Both deliver more than 500 Watts of power per channel into 4 Ohms, and at such a high level of sound quality and performance that simply increasing the output power - and with it the voltage - produces no significant improvement in sound. Our research and development work in high-performance amplifiers - including the M10 and S10 - and the development of the HV design philosophy which flowed from this work, have shown clearly and unambiguously that the stability of the voltage and current supplied by a mains unit is of major and even crucial importance to the sound quality of an power amplifiers. From this we have drawn the only rational conclusion, and developed a supplementary external power supply. The principle is ingenious, and functions in the following way: if the PS 3000 HV is connected using the special PowerLink, the A 3000 HV's and PA 3100 HV's internal power supplies are used to supply energy to the input stages and the high-voltage amplifier; much lower power is required for this part of the system, and as a direct result the interference generated is much lower. The external PS 3000 HV supplies the energy for the output stages, i.e. it is responsible for the high currents required by the power output stages.

With an output of 1200 VA the PS 3000 HV is substantially more powerful than the mains unit of the A 3000 HV and PA 3100 HV itself, and can also call upon twice the reservoir capacity. The net result is a substantial improvement in the current delivery capacity and stability of the system as a whole.
The great advantage of this arrangement in terms of sound quality is that the A 3000 HV and PA 3100 HV are effectively isolated from the load currents and mains-induced interference which can have an adverse effect upon sound quality.
The large VU meter can be set up to display various items of information such as the power supply voltage or the current delivered.

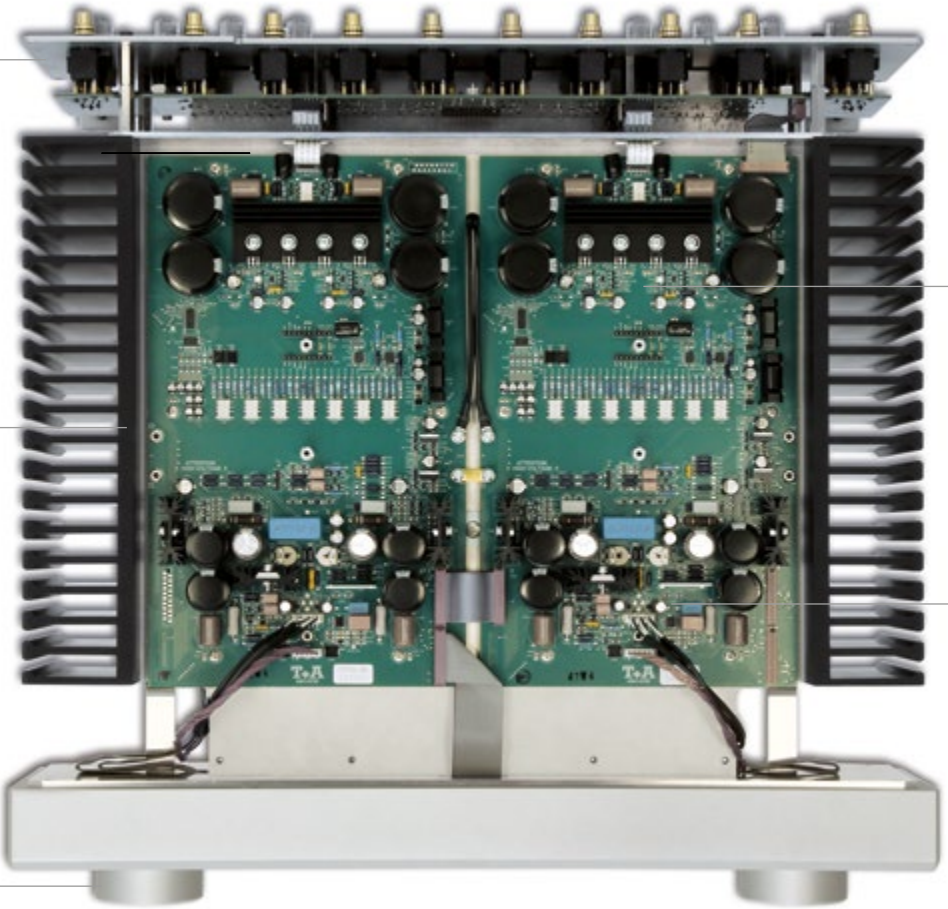
Technology

Our integrated amplifiers are based on the components of the P 3000 HV preamplifier and the A 3000 V power amplifier. For this reason the socket area on the back panel also constitutes a combination of both devices.
Outputs are available both in balanced (XLR) and asymmetrical (Cinch) form. Four balanced inputs are available, which can be configured as asymmetrical sockets if required, together with two further asymmetrical inputs and a recorder socket. Two pairs of loudspeakers can be connected to the rugged, high-quality loudspeaker terminals, which are made of pure, rhodium-plated brass. A Power Link socket (PA 3100 HV only), HLink (HV data bus), LAN socket and Trigger input for external switching-on are also present.

Integrated Amplifiers
PA 3000 HV
PA 3100 HV

Like all HV machines, the PA 3000 HV and PA 3100 HV are of consistently symmetrical, channel-separate construction. The preamplifier circuit boards with input section, the volume control and the high-voltage amplifier are located in the upper compartment under the case top cover; the symmetrical layout eliminates electromagnetic influences. The compartment consists of thick-walled aluminium plates, and is completely separated and shielded from the power output stages, the current and voltage supplies and the loudspeaker outputs in the bottom compartment.
As with the P 3000 HV, the circuit topology is based on a differential cascode amplifier with individually selected audio J-FET transistors, and stages of completely discrete construction without op-amps (operational amplifiers). Virtually no overall negative feedback is required due to this circuit arrangement and the quality of the components employed. The high operating voltage of HV technology is the key to excellent linearity combined with extremely wide dynamic range: signals up to 30 Vss can be processed without distortion.
The signal switching and adjusting functions are carried out by encapsulated gas-tight gold-contact relays, which are totally immune to contact problems due to corrosion, dust, etc., and do not suffer from ageing effects even after many years of operation. The preamplifier even employs bi-stable relays, which require no permanent coil current, and this in turn eliminates any adverse inductive effect on the audio signals. The direct integration of the relays into the circuit minimises the signal paths, and connecting cables - as required for conventional volume potentiometers - are no longer necessary. The volume control is assembled from discrete precision resistors and gold-contact relays. The result is totally precise channel matching, devoid of distortion and hiss.
The output stages of our integrated amplifiers are the same as in the magnificent power amplifier A 3000 HV. They share the same design principles, circuit topology, transformer and power supply section. Therefore they have the same enormous output power and superb sound quality.

The output stage is of fully symmetrical construction, operates at up to +/- 85 Volts, and can deliver currents of 60 Ampere.



Solid aluminium mounting plate for the input and output sockets.

State-of-the-Art pre-amplifier with volume control, consisting of precision resistors and relays.

Revised heat-sink profile for optimised heat dissipation.

Voltage amplifier stage for the output stage. Galvanicaly isolated.

Solid metal source select and volume control knobs with needle roller bearings.

Internal view of the upper case compartment

Technology

The Multi Source Players MP 3000 HV and MP 3100 HV are equipped with High-End analogue outputs in the form of symmetrical (XLR) and asymmetrical (RCA) sockets, and also feature a jitter-free digital output. The LAN, WLAN and USB ports are assigned to the streaming client, while the aerial sockets are intended for the digital tuner, the FD 100 radio remote control and the Bluetooth receiver of the MP 3100 HV. The LAN port can be used for software updates and integration in a home automation system.
The digital connecting board includes professional and semi-professional high quality digital inputs for converting external digital sources, such as TVs, set-top boxes or PCs: 1 x AES-EBU, 5 x SP/DIF (2 high quality BNC, 1 standard-Coax, 2 optical TOS-Link) , 1 x USB Device Mode with support for asynchronous data transfer in highest resolution. The voltage power supplies are consistently separate for the digital and analogue mains sections, and even feature their own mains sockets. A complete system can be controlled via the HLink data bus.

Multi Source Player
MP 3000 HV
MP 3100 HV

The sound quality of any digital source is crucially dependent on the quality of the digital signal processing and the overall converter design. In both these areas we offer extremely sophisticated solutions.
Depending on the data format, the signals from our Players' digital sources - both external and internal - pass through the same digital signal processing with all our pioneering features, such as T+A DSP oversampling with optimised algorithms, clock generation with jitter elimination and re-synchronisation, true 1-bit conversion for DSD and quadruple conversion for PCM.

Jitter is one of the most serious problems affecting digital music. It develops in the source device (especially in computers) and during the data transfer process between source and converter. For perfect reproduction any jitter must be removed from the data before they are converted into analogue signals in the DAC. For this reason we have developed a unique two-stage method of clock generation and resynchronisation (jitter elimination): in the first stage the circuit processes and decodes the data it receives. The flow of received data allows a raw clock to be generated, from which coarse jitter caused by the source device and the transfer path is removed in the first cleaning stage by means of a PLL circuit. The resultant clock is now examined in great detail by the micro-processor. If it fulfils certain minimum criteria in terms of frequency and stability, the D/A converters switch to an ultra-precise internally generated master clock with extremely low phase noise. This clock is completely de-coupled from the source device, thereby eliminating all traces of jitter interference from the source and the transfer path.
The local master clock is generated by a pair of separate quartz oscillators adjusted to extremely fine tolerances. This design excludes all traces of interference from external source devices, and even the typically hideous interference from computers is rendered harmless.
Like the converter, the analogue section is also of fully channel-separate construction (double mono), and is completely galvanically separated by means of jitter-free i-Coupler devices.

True 1-Bit DSD Converter native Bitstream (MP 3100 HV). PCM-Quadruple converter with eight 32-bit converters, freely programmable signal processor, T+A oversampling algorithms and complete channel separation. Extremely broad dynamic range and low noise.

"State of the Art" analogue output stages of fully symmetrical construction operate with HV technology, and are completely galvanically de-coupled from the digital section. One switchable analogue reconstruction filters with 60 kHz/120 kHz limit frequency. "Ultra-wide" 120 Hz setting produces outstanding frequency response and phase constancy with power amplifiers offering the appropriate bandwidth.

Precision clock oscillators, second stage jitter elimination.

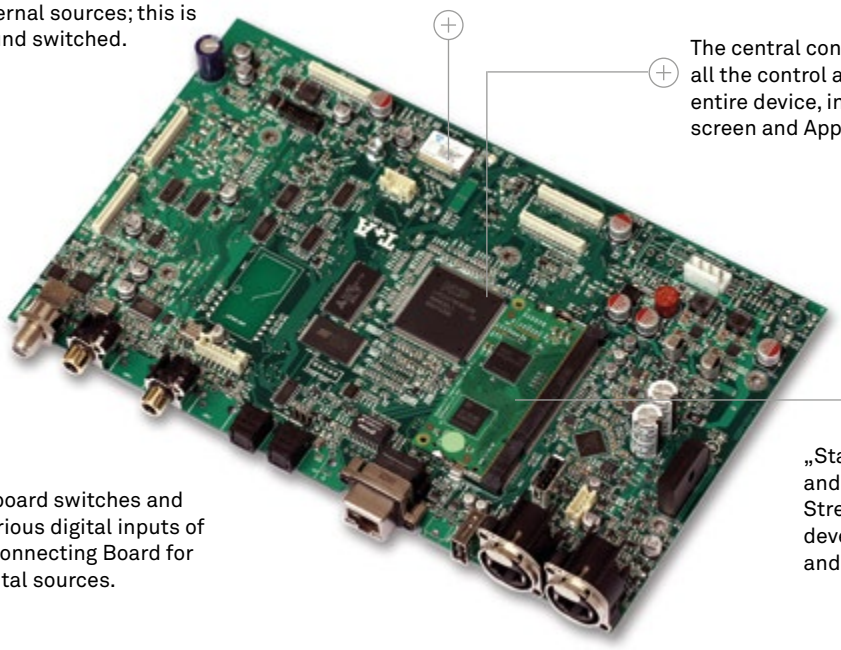
Solid aluminium support plate for the disc mechanism. Multiple de-coupling measures, three-point suspension system

Internal view of the upper case compartment MP 3100 HV

The four-layer Digital Processing Board (motherboard) is of extremely complex construction. It accommodates all the digital components for the internal sources; this is where they are routed und switched.

Our Bluetooth module of the MP 3100 HV is of very high quality, and works with the aptX® transmission protocol. The external aerial provides very good reception.

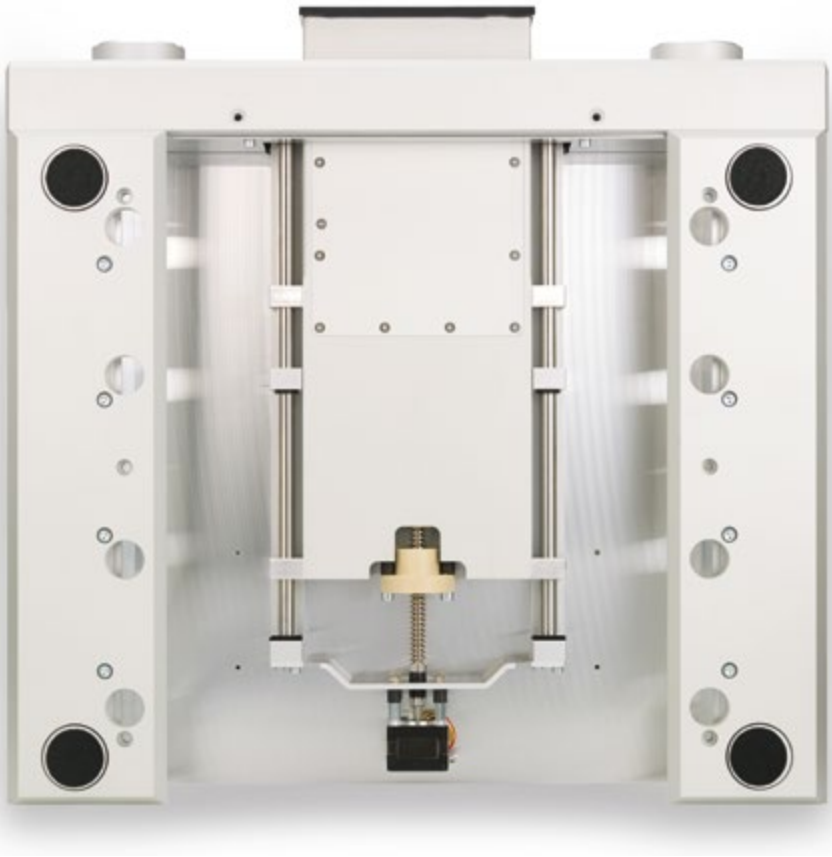
The central control processor, responsible for all the control and operating functions of the entire device, including CD, tuner, front panel screen and App control.



The motherboard switches and routs the various digital inputs of the Digital Connecting Board for external digital sources.

„State of the Art". The processor and memory board of the new Streaming Client: an in-house T+A development, extremely powerful and future-proof (MP 3100 HV).

Technology



The PDP 3000 HV's high-quality SACD mechanism is fully shielded and housed in a machined solid aluminium case, in order to prevent any trace of interaction between the moving parts of the mechanism and the rest of the player. The disc carrier block is mounted on just two close-tolerance pushrods which completely de-couple it from the heavy outer case. This in turn prevents the transmission of external pressure waves, vibration or structural sound from the mounting surface to the electronics and disc mechanism. A high-torque synchronous motor moves the disc carrier block smoothly and quietly by means of a precision-made de-coupled spindle. The top-loader mechanism makes it easy to insert discs without damaging them; they are held in place by an anti-resonance puck.

Absolut plane, machined base plate for the transport mechanism made of 10 mm massive aluminum. Perfect shielding for the analog section in the upper compartment from the digital section in the bottom.

Precision clock oscillators, final stage jitter elimination.

Double symmetrical PCM analogue output stage.

PCM analogue outputs.

DSP for PCM Signalprocessing.

Complete galvanic separation between digital- and analogue section.

PCM Quadrupel converter .

True 1 Bit DSD converter.

Double symmetrical DSD analogue output stage.

DSD analogue outputs.

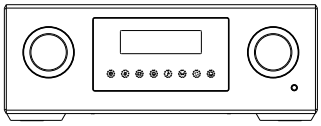
The back panel of the PDP 3000 HV illustrates very effectively the symmetrical, double mono design of the cabinet construction and circuit topology. The analogue output stages pass their signals directly to the professional-standard XLR or RCA output sockets for PCM and DSD operation.

Below them - behind the lower compartment - are the digital input sockets, the HV bus, the LAN socket and the separate sockets for the analogue and digital mains power supplies.

DSD/PCM SACD-Player PDP 3000 HV

The PDP 3000 HV is a totally purist device, designed as a pure SACD / CD player, and for this reason includes no other integral digital sources. Instead we have equipped it with a mechanical masterpiece: the drive mechanism block, which is machined from solid. Its considerable mass, its precision and its effective isolation from the environment bestow a supremely smooth character on disc reproduction.
Like all HV devices the PDP 3000 HV incorporates no ferro-magnetic materials; it is constructed entirely of pure aluminium, and contains aluminium dividers which separate five compartments housing the disc mechanism with decoder board and digital inputs, the D/A converter with analogue output stage, the analogue mains power supply, the digital mains power supply and - in the solid front panel - the control section with its ultra-bright screen and sensor buttons.
The core of the PDP 3000 HV is the converter section: the quadruple double-differential digital /analogue converter for PCM data and the T+A True 1-Bit DSD converter for DSD data. The signals pass through our equally unique jitter-reduction stage, which receives the data from the CD / SACD mechanism block or the seven digital inputs, before being processed by the converters. The USB device mode input is equipped with one of the latest USB interfaces, and is capable of reproducing PCM and DSD audio data of the highest quality; DSD data are passed directly to the converter modules. The current / voltage transducers which are downstream of the D/A converter are crucial to sound quality, and they are of fully discrete, channel-separate construction, and equipped with our HV technology, as are the analogue output stages.

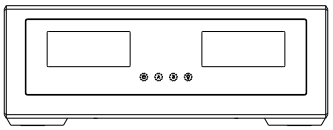
P 3000 HV
Preamplifier



Preamplifier stage	
Frequency response + 0 / – 3 dB	0,5 Hz - 300 kHz
Signal / noise ratio	108 / 112 dB
Total harmonic distortion	< 0,001 %
Intermodulation	< 0,001 %
Channel separation	> 108 dB
Nominal input sensitivity	
Unbalanced inputs (RCA)	7 x 250 mV_{eff} ... 9 V_{eff} / 20 kOhms
Balanced inputs (XLR)	4 x 500 mV_{eff} ... 18 V_{eff} / 5 kOhms

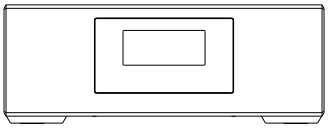
Outputs	
Headphones	50 Ohms high current
1 x Recorder	250 mV_{eff} / 100 Ohms
Pre Out RCA	nom 1 V_{eff}, max 9,5 V_{eff} / 50 Ohms
Pre Out XLR	nom 1,45 V_{eff}, max 19,6 V_{eff} / 50 Ohms
Reservoir capacity	75000 µF
Mains	2 x 110 - 120 V/60 Hz or 220 - 240 V/50 Hz, 10 + 60 Watts
Standby	< 0,5 Watt
Features	Trigger input +5 ... 20 V for external switching-on
	input 4 can be configured in surround mode
	analogue signal processing module
	slot for optional phono modules MM / MC
Dimensions (H x W x D), Weight	17 x 46 x 46 cm / 6.7 x 18.1 x 18.1 ˝, 28 kg / 61.7 lbs
Remote control	F 3001
Accessories	2 x power cord, remote control receiver E 2000
Finishes	case: silver laquer 47 or titanium laquer 64 heat sink black 42

A 3000 HV
Power Amplifier



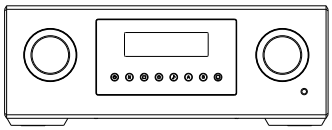
Output stage	
Stereo mode	
RMS output per channel into 8 Ohms / into 4 Ohms	300 Watts / 500 Watts
Peak output per channel into 8 Ohms / into 4 Ohms	380 Watts / 700 Watts
Mono mode	
Into 8 Ohms / into 4 Ohms	380 Watts / 650 Watts
Peak output into 8 Ohms / into 4 Ohms	430 Watts / 800 Watts
Power bandwith	1 Hz - 150 Hz
Frequency response + 0 / – 3 dB	0,5 Hz – 180 kHz
Slew rate	60 V/µs
Damping factor	> 65
Signal / noise ratio	> 115 dB
Total harmonic distortion	< 0,03 %
Reservoir capacity	120000 µF
Mains 110 V - 120 V/60 Hz or 220 - 240 V/50 Hz	1500 Watts
Standby	< 0,5 Watts
Features	Trigger input +5 ... 20 V for external switching on
	optional: can be remote controlled with E 2000 and F 3001
Dimensions (H x W x D), Weight	17 x 46 x 46 cm / 6.7 x 18.1 x 18.1 ˝, 38 kg / 83.8 lbs
Accessories	power cord, HLink-cable
Finishes	case: silver laquer 47 or titanium laquer 64 heat sink black 42

PS 3000 HV
Power Supply

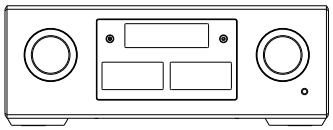


Reservoir capacity	240000 µF
Mains 110 V - 120 V/60 Hz or 220 - 240 V/50 Hz	1800 Watts
Standby	< 0,5 Watts
Features	meter for mains voltage, current and mains noise
Dimensions (H x W x D), Weight	17 x 46 x 46 cm / 6.7 x 18.1 x 18.1 ˝, 38 kg / 83.8 lbs
Accessories	power cord, Power-Link-cable, H Link-cable
Finishes	case: silver laquer 47 or titanium laquer 64 heat sink black 42

PA 3000 HV
Integrated Amplifier

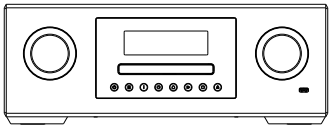


PA 3100 HV
Integrated Amplifier



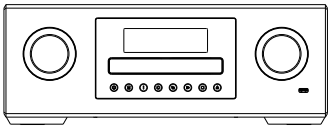
Preamplifier stage		
Frequency response +0 /-3dB	0,5 Hz - 300 kHz	0,5 Hz - 300 kHz
Signal / noise ratio	105 / 110 dB	105 / 110 dB
Total harmonic distortion	< 0,001 %	< 0,001 %
Intermodulation	< 0,001 %	< 0,001 %
Channel separation	> 90 dB	> 90 dB
Nominal input sensitivity		
High level (RCA)	7 x 250 mV_{eff} ... 6 V_{eff} / 20 kOhm	7 x 250 mV_{eff} ... 6 V_{eff} / 20 kOhm
Balanced (XLR)	4 x 500 mV_{eff} ... 12 V_{eff} / 5 kOhm	4 x 500 mV_{eff} ... 12 V_{eff} / 5 kOhm
Outputs		
Headphones	50 Ohms	50 Ohms
1 x Recorder	250 mV_{eff} / 100 Ohms	250 mV_{eff} / 100 Ohms
Pre Out RCA	nom 1 V_{eff}, max 9,5 V_{eff} / 50 Ohms	nom 1 V_{eff}, max 9,5 V_{eff} / 50 Ohms
Pre Out XLR	nom 1,45 V_{eff}, max 19,6 V_{eff} / 50 Ohms	nom 1,45 V_{eff}, max 19,6 V_{eff} / 50 Ohms
Output stage		
RMS output per channel i. 8 Ohms / i. 4 Ohms	300 Watt / 500 Watts	300 Watt / 500 Watts
Peak output into 8 Ohm / into 4 Ohm	380 Watt / 700 Watts	380 Watt / 700 Watts
Power bandwith	1 Hz - 150 Hz	1 Hz - 150 Hz
Frequency response + 0 / – 3 dB	0,5 Hz – 180 kHz	0,5 Hz – 180 kHz
Slew rate	60 V/µs	60 V/µs
Damping factor	> 65	> 65
Signal / noise ratio	> 115 dB	> 115 dB
Total harmonic distortion	< 0,03 %	< 0,03 %
Reservoir capacity	120000 µF	120000 µF
Mains 110 V/60 Hz or 220/240 V/50 Hz	1500 Watts	1500 Watts
Standby	< 0,5 Watts	< 0,5 Watts
Features	Trigger input +5 ... 20 V for external switching-on	Triggereingang +5 ... 20 V for external switching-on
	input 4 can be configured in surround mode	Input 4 can be configured in surround mode
	LAN interface fro home automation systems	LAN interface fro home automation systems
	slot for optional phono module MM / MC	slot for optional phono module MM / MC
	slot für analogue signal processing module	slot für analogue signal processing module
		connector for external power supply PS 3000 HV
Dimensions (H x W x D), Weight	17 x 46 x 46 cm / 6.7 x 18.1 x 18.1 ˝, 38 kg / 83.8 lbs	17 x 46 x 46 cm / 6.7 x 18.1 x 18.1 ˝, 38 kg / 83.8 lbs
Remote control	F 3001	F 3001
Accessories	power cord, E 2000 remote control receiver	power cord
Finishes	case: silver laquer 47 or titanium laquer 64 heat sink black 42	case: silver laquer 47 or titanium laquer 64 heat sink black 42

MP 3000 HV
Multi Source CD Player



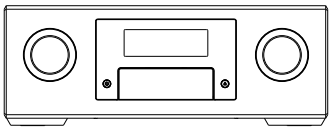
CD-Player		
Formats	CD/DA, CD-R, CD-RW, CD Text.	
Frequency range + Dynamics	2 Hz - 20 kHz / 100 dB	
Streaming Client		
Formats	MP3 , WMA, AAC, OGG Vorbis, FLAC (192/32 over LAN), WAV (192/32 over LAN), AIFF (192/32 over LAN), ALAC (96/24 over LAN)	
Supported media servers	UPnP 1.1, UPnP-AV und DLNA-kompatible Server, Microsoft Windows Media Connect Server (WMDRM 10), vTuner Internet Radio Service, DLNA-compatible Server	
Features	Auto network config., Internet Radio Station database (automatic updates)	
Interfaces	LAN: Fast Ethernet 10/100 Base-T, WLAN: 802.11 b/g/n	
Tuner	FM Radio 87,5 - 108 MHz, Sensitivity 1 µV; S/N > 65 dBA, Radio Text, Stationsname	
Connections		
Outputs analogue		
Coaxial (RCA) | balanced (XLR)	2,5 V_{eff} / 50 Ohm | 5,0 V_{eff} / 50 Ohm	
Digital outputs	1 x coax, IEC 60958 (LPCM)	
Digital inputs (digital connecting board)	1 x AES-EBU with 192/24, 5 x S/P-DIF:	
	2 x high quality BNC 192/24	
	1 x Standard-Coax and 2 opt. TOS-Link 96/24	
	1 x USB device mode: USB Class 2 Mode, supports asynchronus + synchronus datatransfer up to 192 kSps (depending on player software and operating system)	
	2 x USB Master-Mode for USB-Mass storage (stick or HDD)	
D/A-Converter	Double-Differential-Quadruple PCM-Converter with four 32-Bit Sigma Delta D/A converters per channel. 352.4 / 384 kSps conversion rate.	
Upsampling	T+A Digital Signal Processor - synchronous upsampling with 4 selectable oversampling algorithms: FIR short, FIR long, Bezier/IIR, Bezier	
Analogue filter	Phase-linear Bessel filter 3rd Order with 60 or 120 kHz cut off frequency	
Frequency responce	44,1 kSps	2 Hz - 20 kHz
	48 kSps	2 Hz - 22 kHz
	96 kSps	2 Hz - 40 kHz
	192 kSps	2 Hz - 80 kHz
Total harmonic distortion	< 0,001 %	
Signal / noise ratio	> 116 dB	
Channel separation	> 110 dB	
Mains	2 x 110-120 V or 220-240 V, 50-60 Hz, 2 x 40 W	
Standby	< 0,5 W	
Dimensions (H x W x D) / Weight	17 x 46 x 46 cm / 6.7 x 18.1 x 18.1 ˝, 26 kg / 57.3 lbs	
Remote control	FD 100, bi-directional radio remote control with display, T+A Control APP	
Accessories	WLAN aerial, RF-aerial, charger for FD 100, BNC / RCA adapter	
Finishes	case: silver laquer 47 or titanium laquer 64, heat sink black 42	

MP 3100 HV
Multi Source SACD Player



SACD drive unit		High precision linear tracking drive Double-Lasersystem: SACD: 650 nm , CD: 785 nm
Formats		SACD Stereo, CD, CD-R, CD-RW, CD Text
Frequency range and dynamics		CD: 2 Hz – 20 kHz / 100 dB, SACD: 2 Hz – 44 kHz / 110 dB
Streaming Client		
Formats / Standards		MP3, WMA, AAC, OGG Vorbis, FLAC, WAV, AIFF, ALAC / UPnP AV, T+A Control
Data rates		PCM 32...192 kHz,16/24 Bit; MP3 bis 320 kBit, variable and constant bit rate
Music services		Tidal, Deezer, qobuz. (Subscription required)
Features		Gapless Playback für MP3 (Lame), WAV, FLAC. T+A Control App for iOS und Android)
Interfaces		LAN: Fast Ethernet 10/100 Base-T, WLAN: 802.11 b/g/n
Tuner		
Internet Radio		Airable Internet Radio Service (> 11000 Stations).
FM, FM-HD		87,5 - 108 MHz; sensitivity 1 µV; S/N > 65 dBA.
DAB, DAB+		168 -240 MHz (Band III); Sensitivity 2,0 µV, S/N > 96 dBA.
Features		RDS/RDBS, Stationname (PS), Programm type (PTY), Radiotext (RT)
Bluetooth Standard / Codec		A2DP (Audio), AVRCP 1.4 (Control) / aptX®, MP3, SBC.
Connections		
Outputs analogue		
Co-axial (RCA) | Balanced (XLR)		2,5 V_{eff} / 50 Ohm | 5,0 V_{eff} / 50 Ohm
Output digital		1 x coax, IEC 60958 (LPCM)
Digital inputs (digital connecting board)		**1x AES-EBU** 192 kSps /24 bit
		5x S/P-DIF: 1x standard coax, 2 high quality BNC 192 kSps/24 bit and 2 optical TOS-Link 96 kSps /24 bit.
		1x USB: Device-Mode up to. 384 kSps (PCM) and DSD512*, supports asynchronous data transfer, * DSD256 and DSD512 only with a Windows PC with appropriate driver installed
		2 x USB Master-Mode for USB-Mass storage (Stick or HDD)
D/A-Converter	PCM	Double-Differential-Quadruple-Converter with four 32-Bit Sigma Delta D/A converters per channel. 352.4 / 384 kSps conversion rate.
	DSD	T+A True-1Bit DSD D/A-Converter native bitstream
Upsampling (PCM)		T+A Digital Signal Processor - synchronous upsampling with 4 selectable oversampling algorithms: FIR short, FIR long, Bezier/IIR, Bezier
Analogue filter		Phase-linear Bessel filter 3rd Order with 60 or 120 kHz cut off frequency
Frequency responce		like PDP 3000 HV
Total harmonic distortion		< 0,001 %
Signal / noise ratio		> 116 dB
Channel separation		> 110 dB
Mains		2 x 110-120 V or 220-240 V, 50-60 Hz, 2 x 40 W
Standby		< 0,5 W
Dimensions (H x W x D) / Weight		17 x 46 x 46 cm / 6.7 x 18.1 x 18.1 ˝, 26 kg / 57.3 lbs
Remote control		FD 100, bi-directional radio remote control with display, T+A Control APP
Accessories		WLAN aerial, RF-aerial, charger for FD 100, BNC / RCA adapter
Finishes		case: silver laquer 47 or titanium laquer 64, heat sink black 42

PDP 3000 HV
DSD / PCM Player



SACD drive unit	High precision linear tracking drive Double-GaAlAs-Lasersystem, CD: 785 nm / 10 mW SACD: 650 nm / 7 mW		
Formats	CD, CD-R, CD/RW, SACD Stereo, SACD Multichannel (2 Channel Downmix)		
Frequency range and dynamics	CD: 2 Hz – 20 kHz / 100 dB, SACD: 2 Hz – 44 kHz / 110 dB		
Connections			
Outputs analogue			
Coaxial (RCA) | Balanced (XLR)	2,5 Veff / 50 Ohm | 5,0 Veff /50 Ohm		
Output digital	1x coax, IEC 60958 S/P-DIF (LPCM)		
Digital inputs (digital connecting board)	**1x AES-EBU** 32...192 kHz / 16-24 Bit **5x S/P-DIF:** 1x Standard **Coax** and 2 high quality **BNC** 32...192 kHz / 16-24 Bit and 2 optical **TOS-Link** 32...96 kHz / 16-24 Bit. **1x USB:** Device-Mode up to. 384 kSps (PCM) and DSD512*, supports asynchronous data transfer * DSD256 and DSD512 only with a Windows PC with appropriate driver installed		
D/A-Converter			
PCM	Double-Differential-Quadruple-Converter with four 32-Bit Sigma Delta D/A converters per channel. 352.4 / 384 kSps conversion rate		
DSD	T+A True-1Bit DSD D/A-Converter native bitstream		
Upsampling	T+A Digital Signal Processor - synchronous upsampling with 4 selectable oversampling algorithms: FIR short, FIR long, Bezier/IIR, Bezier		
Analogue filter	Phase-linear Bessel filter 3rd Order with 60 or 120 kHz cut off frequency		
Frequency responce	PCM 44.1 kSps	2 Hz - 20 kHz	
	PCM 48 kSps	2 Hz - 22 kHz	DSD 64: 2 Hz - 44 kHz
	PCM 96 kSps	2 Hz - 40 kHz	DSD 128: 2 Hz - 60 kHz
	PCM 192 kSps	2 Hz - 80 kHz	DSD 256: 2 Hz - 80 kHz
	PCM 384 kSps	2 Hz -100 kHz	DSD 512: 2 Hz - 100 kHz
Total harmonic distortion	< 0.001 %		
Signal / noise ratio	> 116 dB		
Channel separation	> 110 dB		
Mains	2 x 110-120 V or 220-240 V, 50-60 Hz, 2 x 40 W		
Power consumption	Operation: 2 x 40 W, Standby < 0,5 W		
Dimensions (H x W x D) / Weight	17 x 46 x 46 cm / 6.7 x 18.1 x 18.1 ˝, 26 kg / 57.3 lbs		
Accessories	remote control F3001, BNC to RCA adaptor, 2x power cord, disc stabilizer		
Finishes	case: silver laquer 47 or titanium laquer 64, heat sink black 42		

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