HV Series

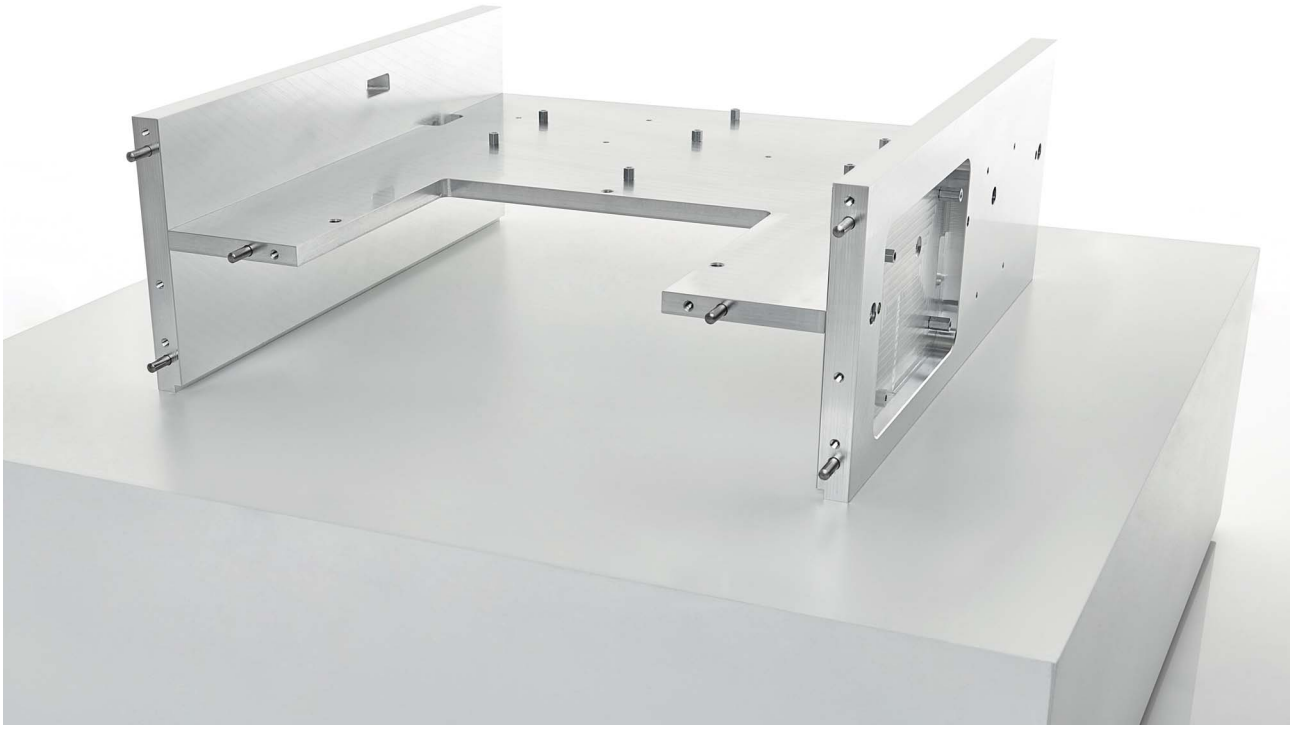
The standard for innovative High-End electronics

T+A

HV electronics - consistently High-End

T+A has developed a completely new, original series of High-End electronic equipment. The range bears the designation HV = High Voltage, and will be expanded with a line of no-compromise machines to form the absolute pinnacle of our solid-state products. This series has been created to cater for the demanding audiophile lover of two-channel reproduction.
In 2003 we introduced to the market our high-end line of valve equipment - the V series - which grew into a whole succession of unique valve-based machines incorporating the very latest circuit technology. Since their introduction these products, such as the D10 SACD player and the M10 mono power amplifier, have attained cult status. During their development we gathered a great deal of invaluable knowledge regarding the reasons behind typical valve parameters and their effect on overall sound quality, and these findings have helped us to develop entirely new design concepts which have brought outstanding results. We are now applying our unique expertise to the new pure-bred analogue solid-state amplifier stages employed in the HV series.
All the amplifiers of the HV series are driven at significantly higher voltages than are normally employed. This high-voltage technology is applied to the output stages and pre-amplifier stages alike, and also in the power amplifiers, and the result is extremely linear characteristic curves with low distortion; the net result is a system offering tremendous dynamic qualities.
The case design is incredibly sophisticated: we decided to employ solid aluminium only, without even considering the cost implications. We use no ferromagnetic materials of any kind. The individual sub-assemblies, such as preamplifier or mains power supplies, are housed in their own, sealed chambers, separated from each other by thick, solid aluminium plates which provide perfect shielding.

The **P 3000 HV** is the „State of the Art“ pre-amplifier and delivers highest audiophile sound quality and performance.
The **A 3000 HV** is the ultimate Mono/Stereo Amplifier with more than 500 Watts output power per channel and an enormous ability to deliver current.
The **PS 3000 HV** is an additional powersupply unit to increase output power and current capability.
The **PA 3000 HV** is a true powerhouse and the circuit topology and construction mirror those of the P 3000 HV and A 3000 HV.
The **MP 3000 HV** is a high-end multi-source player with CD-Mechanism, FM tuner, streaming client, Super-DAC and FD 100 RF remote control.



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. The external case parts also consist of high-quality aluminium, and are produced using very accurate and sophisticated extrusion tools. They are up to 40 mm thick!

Inevitably the cases are extremely heavy, and this is also desirable. The PA 3000 HV for example weighs almost 40 kg, and its mass de-couples it from all acoustic influences in the listening room.

P 3000 HV - Pre-Amplifier

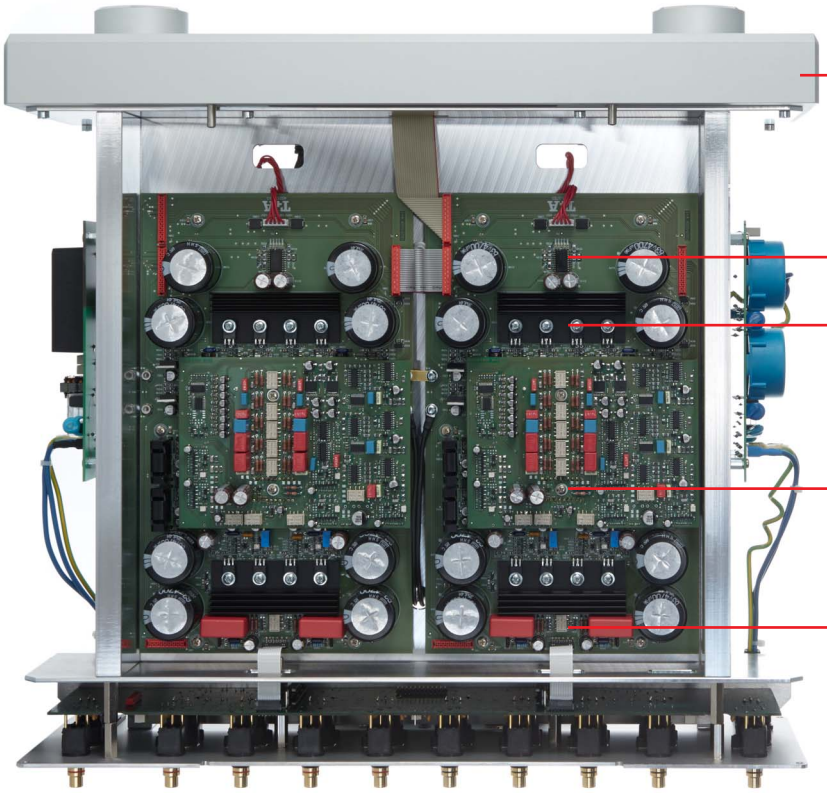
The P 3000 HV is the audiophile High-End pre-amplifier of the series, and represents the universal control centre for the individual new HV machines. It is equipped with unique, newly developed technologies and innovative circuit designs. Its measured results, specification and sound quality represent 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.
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 pre-amplifier 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 20%) of the possible excursion of the amplifier 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 pre-amplifiers and power amplifiers.

The connector section on the back panel provides impressive evidence of the P 3000 HV’s uncompromising design and symmetrical double-mono construction. Both balanced and unbalanced 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 E-2000 and an ground terminal are also present.
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.

The High-End sockets are soldered directly to the circuit board,
and screwed permanently to the aluminium back panel.

P 3000 HV - Pre-Amplifier

Internal view of the upper case compartment



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

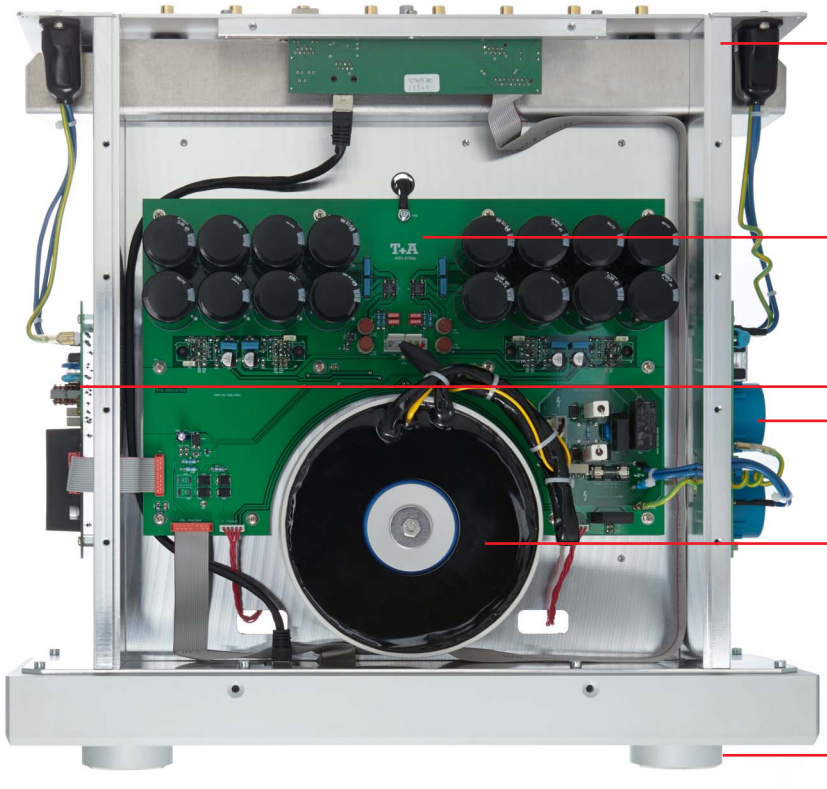
High-End Headphone amplifier with high current capability.

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

Analogue signal processor module with tone and loudness functions and narrow band parametric equalizers.

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

Internal view of the lower case compartment



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

Overdimensioned mains power supply section with huge reservoir capacity.

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

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.

The internal picture also clearly shows the symmetrical double-mono construction of the P 3000 HV. The channels are kept consistently separate. The pre-amplifier circuit boards are of exact identical construction, and are located under the case top cover; this layout eliminates electromagnetic influences. The circuit boards are housed in their own compartment made of thick-walled (10 to 15 mm) aluminium plates, and are completely separated and shielded from the mains unit and power supply in the bottom section of the case. The circuit topology is based on a differential cascode amplifier with hand-selected audio J-FET transistors. All stages are of completely discrete construction with-out op-amps (operational amplifiers). Their linear nature is not derived from “hard” negative feedback, as in the case of standard op-amps, but from the quality of the circuit topology and the components employed, which are carefully selected and adjusted. For this reason virtually no overall negative feedback is required. T+A HV technology enables signals up to 80 Vss to be processed without distortion - a value which is unique for a transistor pre-amplifier.

The bottom compartment accommodates the over-sized mains unit with its special and very refined toroidal transformer, which is encapsulated and shielded, and the enormous reservoir capacity of more than 75,000 µF. In contrast to power amplifiers, which require a mains unit which is as “hard” as possible, the pre-amplifier needs a mains power supply which is totally linear and interference-free. The special transformer employed has a very low stray field, and together with our new mains section technology this ensures a smooth charging characteristic which avoids current peaks with their potential for interference.

In the P 3000 HV all the 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 bi-stable relays employed 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. Even the volume control of the P 3000 HV is assembled from discrete, non magnetic precision resistors and gold-contact relays. The result is totally precise channel matching, devoid of distortion and noise.

In practical daily use problems often arise with room acoustics or loudspeaker positioning. To alleviate this difficulty 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 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. As you would expect, these functions can also be completely by-passed by means of relays.

Upon request the P 3000 HV can be fitted with High-End phono pre-amplifiers, 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 pre-amplifier. 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 pre-amplifier's requirements are fundamentally different from those of an power amplifier: pre-amplifiers 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.

All HV machines are based on the double-mono principle, i.e. the left and right channels are kept completely separate (even mechanically), each employing identical circuit boards, so that both channels share exactly the same sound characteristics.

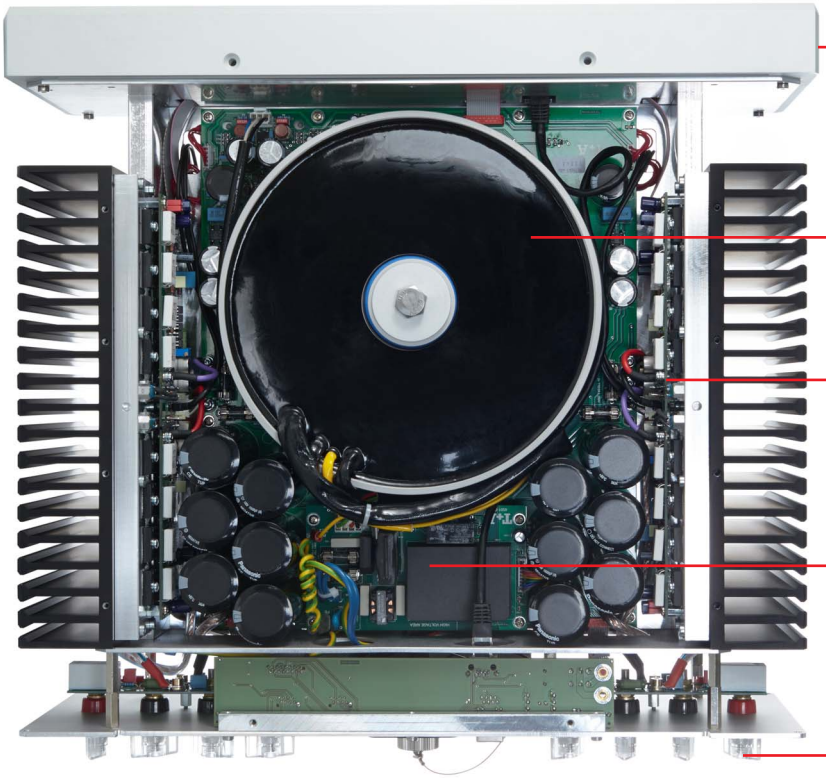
The components employed are carefully specified and painstakingly selected, in order to ensure that they have optimum characteristics for their precise purpose. This is an area where we can exploit our full thirty years of experience in building amplifiers, as this has proved to us the crucial importance of the quality of audiophile modules to the final sound quality. That is why we use low-loss mica capacitors with silver electrodes, induction-free thick-layer planar resistors, low-noise audio precision resistors, nickel-free gold-plated terminals manufactured specifically for T+A etc.

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 PA 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 (120,000 µF / 100 V in total) with low inductivity are wired together in parallel, thereby reducing the internal resistance and inductivity of the reservoir capacity to one sixth of that exhibited by standard mains power supplies. This design ensures that the mains unit is very fast, and can deliver gigantic quantities of current ultra-fast, without time delay, even when handling high slew rate signals.

For the most exacting requirements a further option exists for improving the quality of the voltage and current supply: this is the PS 3000 HV supplementary mains unit.

A 3000 HV - Power Amplifier

Internal view of the lower case compartment



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

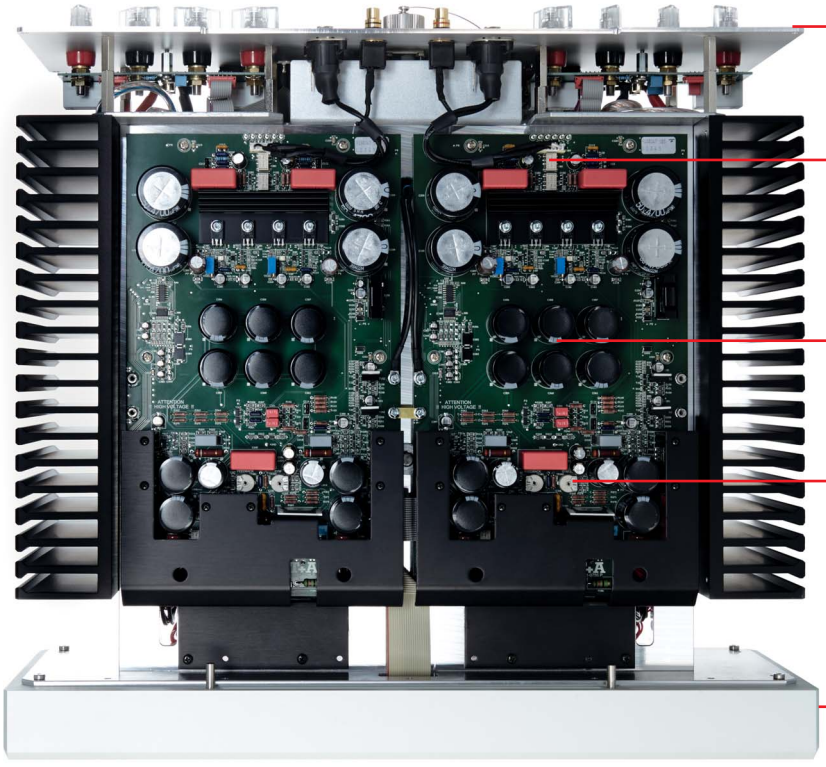
Extremely “hard” torroidal transformer with 1000 Watts power, sealed in an aluminium enclosure.

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 upper 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.

The left-hand pictures show the underside and the topside of the A 3000 HV. 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 - of course - 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 philosophy there is absolutely no feedback of the loudspeaker currents into the voltage amplifier stages, and complete freedom from loudspeaker loading effects. 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, regardless of the momentary load. By maintaining full symmetry in the arrangement of all conductors in the output stages, speaker cables and mains power supply we have succeeded in providing complete compensation for all signal currents. The net result is a complete lack of magnetic stray fields, and no electromagnetic feedback into the input stages.
The enormous power of the power amplifier calls for particularly high-quality, stable loudspeaker terminals; they are machined from solid pure brass and rhodium-plated on every surface. Rhodium is the perfect contact material: as conductive as silver, as durable as platinum, as corrosion-resistant as gold (and unfortunately as expensive as all three put together).

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

PS 3000 HV - Power Supply

The PS 3000 HV is a supplementary mains unit which was developed specifically for the A 3000 HV power amplifier. The A 3000 HV delivers 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 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 to the A 3000 HV power amplifier using the special PowerLink with M 23 high-current connectors, the A 3000 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 itself is much lower. The external PS 3000 HV supplies the energy for the A 3000 HV's 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 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.

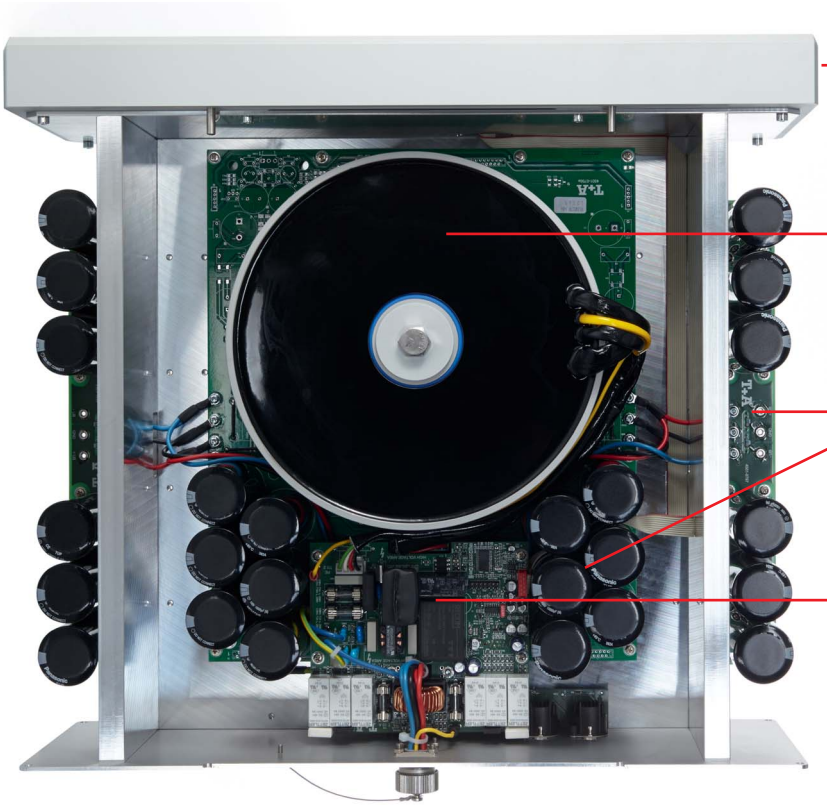
The great advantage of this arrangement in terms of sound quality is that the A 3000 HV is effectively isolated from the load currents and mains-induced interference which can have an adverse effect upon sound quality.

The PS 3000 HV is controlled completely by the A 3000 HV power amplifier via the HLink bus and the PowerLink connection. For each A 3000 HV one PS 3000 HV is required if you want to improve the power supply.

The large VU meter can be set up to display various items of information such as the power supply voltage or the current delivered.

PS 3000 HV - Power Supply

Internal view of the upper case compartment

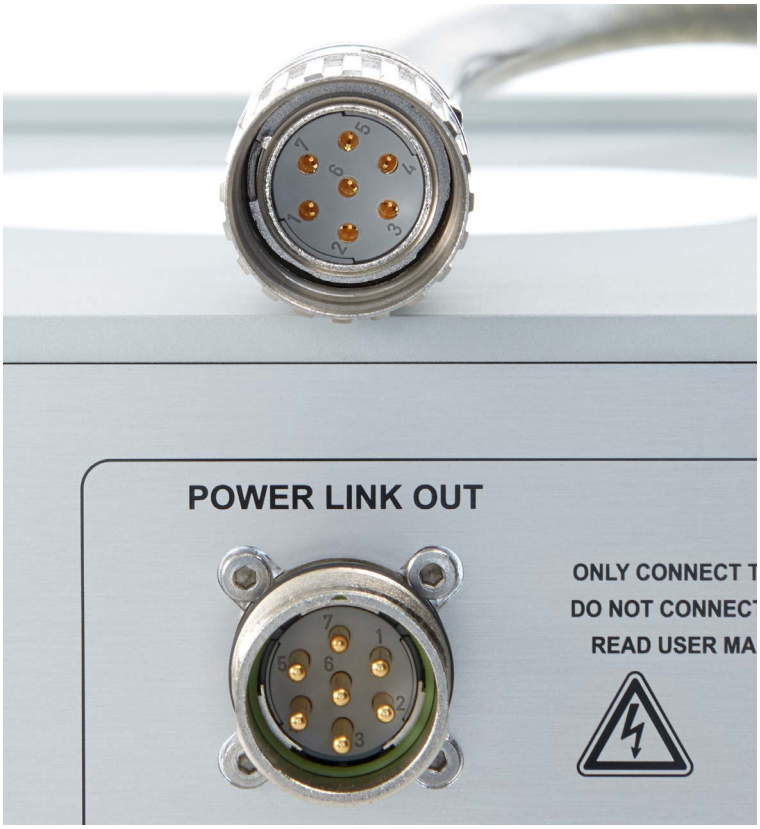


40 mm massive front panel with VU-meter and shielded control board.

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

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

Micro-processor board for the power output section with controlled power „ramp up“ and soft start function for PS 3000 HV and A 3000 HV power supplies.

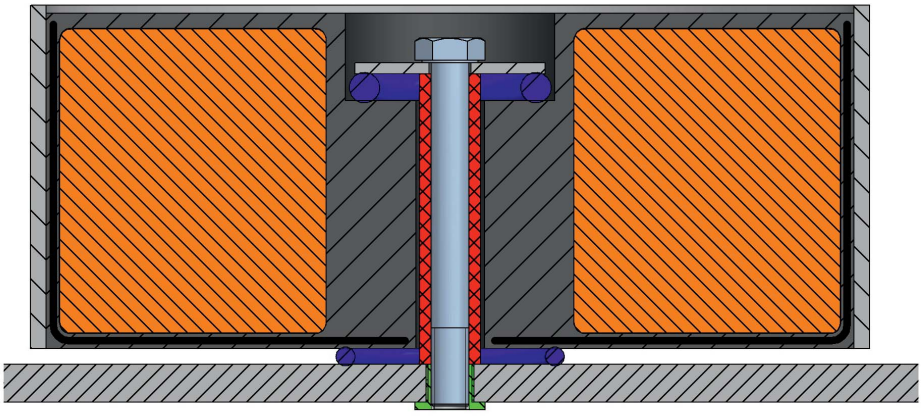


Special 7-pole Power-Link cable with safety pin connector. Micro processor controlled security power on switching.

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.

The transformer's huge power requires a corresponding level of reservoir capacity: 24 high-performance 100 V capacitors with low inductivity provide 240,000 µF of reservoir capacity. Internal resistance and inductivity are further reduced by parallel wiring, with the result that the mains unit is able to deliver vast quantities of engery up to 1200 Joule almost without time delay, even when required to cope with extremely fast peak signals.

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!



PA 3000 HV - Integrated Amplifier

The PA 3000 HV is the audiophile High-End integrated amplifier of the HV series. It was the first amplifier in the HV series, and within a single year has attained the leading position in the field of High-End integrated amplifiers despite strong competition. The superb sound quality obtained from the unique HV design philosophy has delighted many end-users, but has also impressed the review teams of many international specialist magazines. In fact, the PA 3000 HV and MP 3000 HV have gained many awards such as: EISA Award 2013/14, Reference Choice, Machine of the Year, Editor's Choice, Editor's Recommendation, etc. This success has spurred us on to develop individual components based on the PA 3000 HV; the P 3000 HV pre-amplifier and the A 3000 HV power amplifier share many components with the PA 3000 HV, as well as the fundamental design principles and circuit topology. Most of the case components are the same, and the PA 3000 HV 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 pre-amplifier 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.

The sound, the measured results, the specification and the power generated represent the limit of what is physically feasible for an integrated amplifier of this size. The components and materials employed are uncompromisingly first-class, and the casework sets standards which are not equalled even by much more expensive machines.

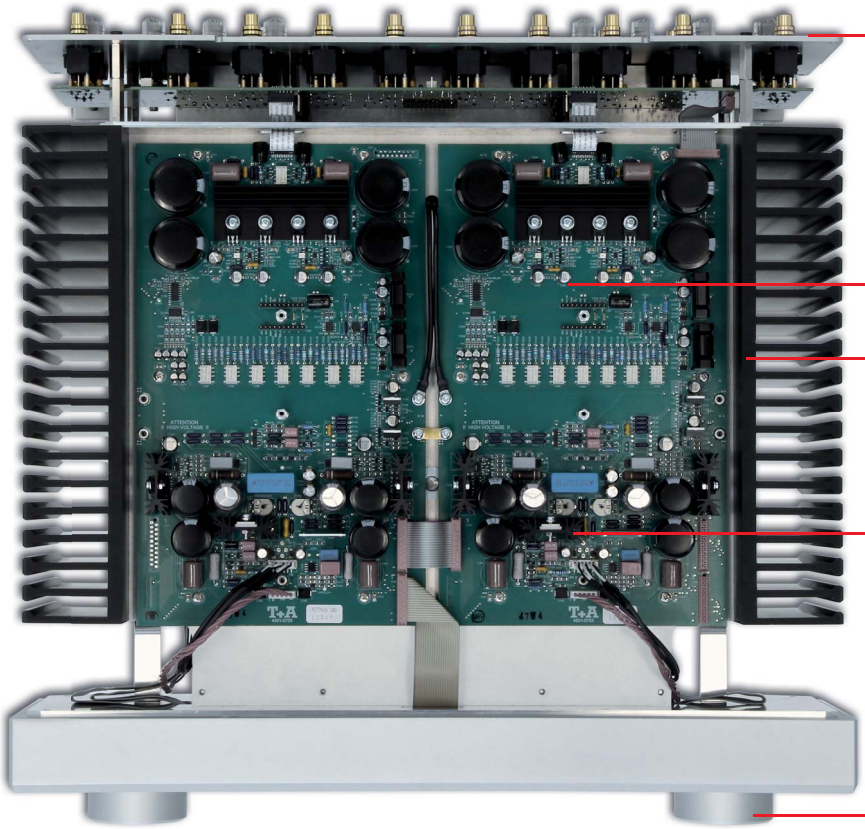
The socket section on the back panel reveals the PA 3000 HV's comprehensive connection facilities and rigidly symmetrical construction. There are four balanced inputs which can alternatively be configured as unbalanced types, plus two further unbalanced inputs and a recorder input. Input No. 4 can be operated in surround (pass-through) mode in order to use the power amplifier of the PA 3000 HV for the front channels of a surround decoder. For the pre-amplifier there is one balanced and one unbalanced output. Two pairs of loudspeakers can be connected to the solid high-current loudspeaker terminals, which are made of pure brass with all surfaces rhodium-plated. H-Link (HV data bus), LAN socket, trigger input, RC-in for E-2000 and an earth terminal are also present. Since the momentary power drain can be very high, the machine is fitted with an oversized mains input socket. The de-coupled feet are adjustable, ensuring that the machines stand stably even on uneven surfaces. Der PA 3000 HV is supplied complete with the F 3000 infra-red remote control unit.

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

In future the analogue signal processor module developed to act as signal controls for the P 3000 HV will be available for use with the PA 3000 HV.

PA 3000 HV - Integrated Amplifier

Internal view of the upper case compartment



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.

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

40 mm thick aluminium front panel with deeply machined recesses for shielding the screen circuit board and control processor.

Precision incremental controls for source selection and volume control.

Like all HV machines, the PA 3000 HV is of consistently symmetrical, channel-separate construction. The pre-amplifier 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.

In the PA 3000 HV 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 pre-amplifier 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 of the PA 3000 HV is assembled from discrete precision resistors and gold-contact relays. The result is totally precise channel matching, devoid of distortion and hiss.

The front panel is no less than 40 mm thick to provide outstanding shielding, and is machined from solid. All the electronic control circuitry is housed in a deeply inset compartment in this panel, which also bears on its front face the bright, dimmable glass VFD screen with its zero-wear sensor buttons.

The rotary source select and volume control knobs take the form of precision incremental encoders running in needle roller bearings, which give a uniquely satisfying sensation when operated.

MP 3000 HV - Multi Source Player

T + A was one of 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. Our first machine to incorporate the principle was the E-Series Music Player. 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!

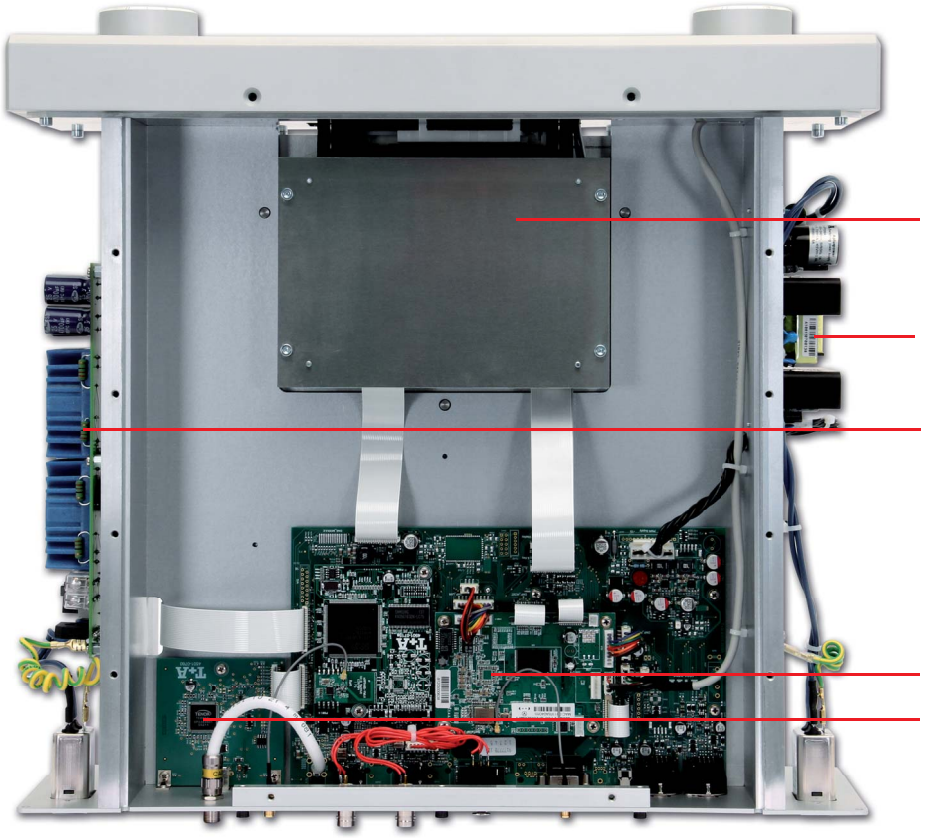
The MP 3000 HV incorporates further refinements of T+A's most renowned components, developed without compromise. It is by far the finest and most refined player we have every built, and features complete symmetry and channel separation in its construction. Its core is the new quadruple digital-to-analogue converter whose origins can be traced back to our High-End V-series and R-series CD-SACD players. 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 latest generation of streaming client and the seven digital inputs. The D/A converter chip 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.

Like the PA 3000 HV, the MP 3000 HV's case is made of pure aluminium, without any ferro-magnetic materials, and features five compartments separated by aluminium dividing walls. These compartments house the digital section, the D/A converter, the analogue mains supply, the digital mains supply and - in the solid front panel - the control circuitry with high-power screen and sensor buttons.

The back panel reflects the symmetrical construction of the case and the overall circuit design. The analogue output stages pass their signals directly to professional XLR or RCA output sockets. Below these, and behind the lower compartment, are found the sockets for the FM aerial, the receive aerial of the FD 100 radio remote control handset (supplied as standard), the USB DAC input (for PC), an SP/DIF output, five SP/DIF inputs (two high-quality BNC, one standard co-ax, two TOS-Link optical) and one AES-EBU input, the sockets for the streaming client with LAN, WLAN and USB Master-Mode (stick or HDD) and the H-Link (HV data bus) sockets. The voltage power supplies are consistently separate for the digital and analogue mains sections, and even feature their own mains sockets.

MP 3000 HV - Multi Source Player

Internal view of the lower case compartment



Heavy, hermetically shielded aluminium case for the disc module with disc mechanism and decoder board. Floating three-point suspension system mounted on the support plate.

Analogue and digital mains power supplies in their own compartment within the case, each with its own, carefully optimised mains filtering.

Main circuit board with digital inputs, streaming client board, FM tuner, source switching and first stage signal processing with jitter elimination. Separate input board for USB device mode (PC connection).

Case compartments of solid aluminium construction

High-performance dual-transformer mains power supply for the analogue section, effectively shielded in the external case compartment.

We have fitted out the MP 3000 HV with a high-quality CD mechanism which offers very fast access times and superb error correction. Of course, the significance of the CD is steadily waning, as it is being superseded by streamed content; this is exactly the trend which the MP 3000 HV reflects. However, our audiophile customers very clearly retain a desire to be able to continue to use the CD, because nobody in his right mind would abandon his old collection, and in any case there is still a certain charm to the actual possession of the physical data medium. That is why we have selected a disc unit with a high-quality mechanism and heavy-duty motors, and invested a great deal of effort in its mechanical design in order to prevent any form of interaction between the moving mechanical parts and the remainder of the player. For this reason the CD mechanism features two-stage isolation: firstly it is installed in a solid, heavy housing which has a mass-damping effect, and prevents the transmission of structural sound from the base surface to the electronics and the disc mechanism; the second isolation measure is a three-point suspension system, optimised to prevent resonance effects, which de-couples the disc mechanism from the player's case itself. The CD drawer is guided accurately on two stainless steel pushrods, and features a high-quality aluminium - ABS support.

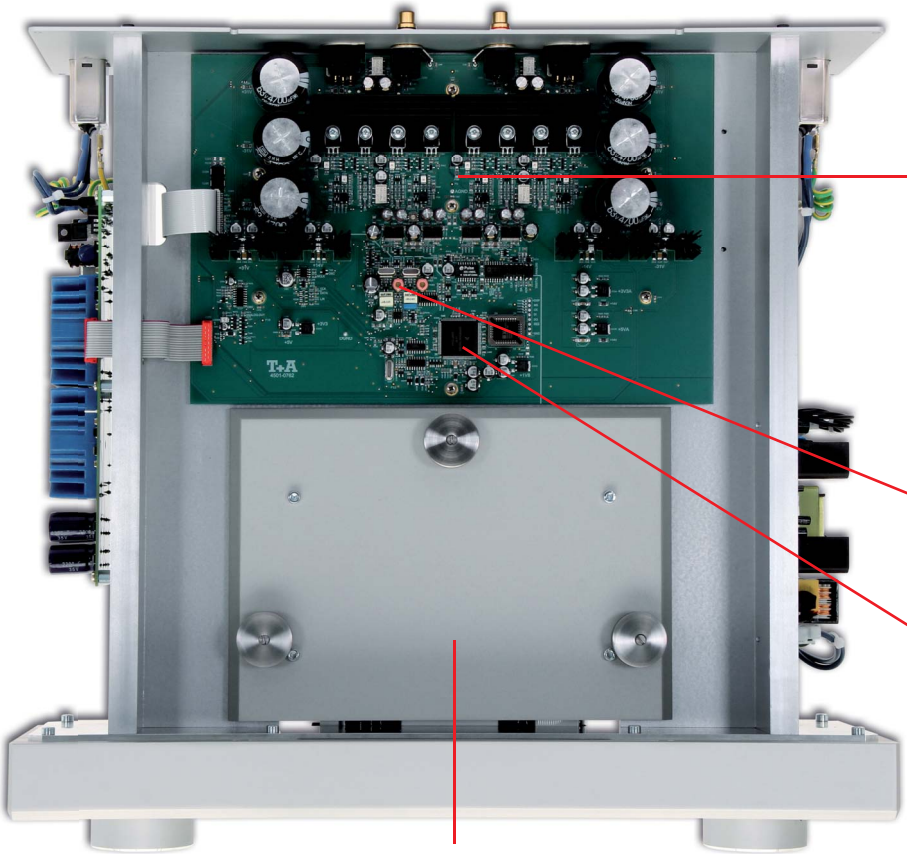
The streaming client (SCL) is a network-capable processor board which was designed specifically for audio applications, with audiophile requirements at the forefront. It offers USB sockets (one on the back panel, a second on the front), as well as WLAN and LAN interfaces, and provides a high-quality connection to networks and the Internet. We have very deliberately eschewed the use of a standard computer solution in order to avoid loss of quality caused by high frequency interference signals. The SCL supports high-resolution formats and media servers, and offers the convenient vTuner Internet Radio Station Service at no additional charge.

The VHF FM tuner has excellent sensitivity, high crosstalk attenuation and overload margins, and sounds excellent both with cable and an aerial system. It features Radiotext, pre-sets and auxiliary functions.

The fourth digital source takes the form of seven digital inputs, which can be used to connect any external source, such as set-top boxes, disc drives, digital recorders and players. The machine includes the following professional or semi-professional inputs: 1 x AES-EBU, 5 x SP/DIF (2 high-quality BNC, 1 standard co-ax, 2 TOS-Link optical) and high-quality connection facilities for PCs: 1 x USB Device Mode with USB Class1 (max. 96/24) and USB Class 2 Mode (max. 192/32), including support for asynchronous (USB 2 Mode) + synchronous (USB 1 Mode) data transmission.

MP 3000 HV - Multi Source Player

Internal view of the upper case compartment



"State of the Art" analogue output stages of fully symmetrical construction operate with HV technology, and are completely galvanically de-coupled from the converter. 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

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.

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

Solid machined aluminium front panel, 40 mm thick, with deeply recessed chambers for the integral screen (VFD) and control processor

Press-fitted needle roller bearings for the precision incremental controls used for source selection and volume control.

In the MP 3000 HV the four digital sources described above pass through the same digital signal processing path with all its revolutionary features, such as T+A DSP oversampling with optimised algorithms, clock generation with jitter elimination and resynchronisation.

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 (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 - one each for the clock groups 44.1 / 88.2 / 176.4 kHz and one for 48 / 96 / 192 kHz. This refined solution provides perfect converter clocks for all frequencies from 44.1 kHz up.

If the incoming signal does not satisfy the criteria for switching over to the local clock oscillators, a second PLL stage (2nd jitterbug) is employed instead of the quartz oscillators. This further refines the result of the first jitterbug stage, and reduces the residual jitter after the first stage by a factor of four.

After the clock generation process the data are converted in our quadruple converter, which has again been improved. It is equipped with a high-performance 56-bit signal processor and offers four switchable oversampling algorithms. It also features four of the latest 32-bit converter chips for each channel, arranged in a double symmetrical quadruple circuit. This circuit perfectly compensates for lack of linearity, and the residual noise - which is excellent in any case with the 32-bit converters - is reduced again by approximately a further 6 dB. The overall result is virtually unsurpassable dynamic range with a perfect “black value”, extreme linearity and freedom from distortion, even in crucial passages and minute musical details.

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. This design excludes all traces of interference from external source devices, and even the typically hideous interference from computers is rendered harmless.

Specifications P 3000 HV

Pre-amplifier 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 output
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. 110-120 V/60 Hz or 220-240 V/50 Hz	60 W
Standby	< 0,5 W
Features	Trigger input +5 ... 20V for external switching-on Input 4 can be configured in surround mode (surround pass-through)
Dimensions (H x W x D)	17 x 46 x 46 cm 6,7 x 18,1 x 18,1“
Weight	28 kg (61,7 lbs)
Finishes	case: silver laquer 47 or titanium laquer 64
Remote control	F 3001

Specifications A 3000 HV

Output stage *	
RMS output per channel	
Stereo mode	
8 Ohms	300 Watts
4 Ohms	500 Watts
Peak output 8 Ohms	380 Watts
Peak output 4 Ohms	700 Watts
Mono mode	
8 Ohms	380 Watts
4 Ohms	650 Watts
Peak output 8 Ohms	430 Watts
Peak output 4 Ohms	800 Watts
Power bandwith	1 Hz – 150 kHz
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. 110-120 V/60 Hz or 220-240 V/50 Hz	1500 W
Standby	< 0,5 W
Features	Trigger input +5 ... 20V for external switching-on
Dimensions (H x W x D)	17 x 46 x 46 cm 6,7 x 18,1 x 18,1“
Weight	38 kg (83,8 lbs)
Finishes	case: silver laquer 47 or titanium laquer 64, heat sink: black 42

Specifications PS 3000 HV

Reservoir capacity	240000 µF
Mains. 110-120 V/60 Hz or 220-240 V/50 Hz	1800 W
Standby	< 0,5 W
Dimensions (H x W x D)	17 x 46 x 46 cm 6,7 x 18,1 x 18,1“
Weight	38 kg (83,8 lbs)
Finishes	case: silver laquer 47 or titanium laquer 64, heat sink: black 42

***** All measurements at 120 / 240 V mains voltage

Specifications PA 3000 HV

Pre-amplifier stage	
Frequency response + 0/ – 3 dB	0,5 Hz – 300 kHz
Signal / noise ratio	105 / 110 dB
Total harmonic distortion	< 0,001%
Intermodulation	< 0,001 %
Channel separation	> 90 dB
Nominal input sensitivity	
High Level (RCA)	7 x 250 mV_{eff} ... 6 V_{eff} / 20 kOhms
Balanced (XLR)	4 x 500 mV_{eff} ... 12 V_{eff} / 5 kOhms
Outputs *	
Headphones	50 Ohms
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
Output stage	
RMS output per channel 8 Ohms	300 Watts
4 Ohms	500 Watts
Peak output 8 Ohms	380 Watts
Peak output 4 Ohms	700 Watts
Power bandwith	1 Hz – 150 kHz
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/60 Hz or 220/240 V/50 Hz	1500 W
Standby	< 0,5 W
Features	Trigger input +5 ... 20V for external switching-on Input 4 can be configured in surround mode (Surround pass-through)
Dimensions (H x W x D)	17 x 46 x 46 cm 6,7 x 18,1 x 18,1“
Weight	38 kg (83,8 lbs)
Finishes	case: silver laquer 47 or titanium laquer 64, heat sink: black 42
Remote control	F 3000

***** All measurements at 120 / 240 V mains voltage

Specifications MP 3000 HV

CD-Player	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-compatible 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)
Tuner	FM Radio 87,5 - 108 MHz
Sensitivity	1.3 µV
Overload margin	> 125 dB
Stereo overload damping	40 dB
RDS display	Station Name, Radio text
Analogue outputs	
Unbalanced (RCA)	2,5 V_{eff} / 50 Ohms
Balanced (XLR)	5,0 V_{eff} / 50 Ohms
Digital outputs	1 x co-ax, IEC 60958 (LPCM)
Digital inputs	1 x AES-EBU 192/24, 5 x S/P-DIF: 2 high quality BNC 192/24 1 Standard-Coax and 2 opt. TOS-Link 96/24 1 x USB Device Mode in USB Class1 (max. 96/24) 1 x USB Class2 Mode (max. 192/32), Assists asynchronus (USB2 Mode) + synchronus (USB1 Mode) datatransfer 2 x USB Master-Mode for USB-Mass storage (Stick or HDD)
D/A converter	Double-Differential-Quadruple-Converter with 4 D/A-converters per channel, 32-Bit Sigma Delta, 352,8 kSps/384 kSps
Up-sampling	freely programmable signal processor with four 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	2 Hz - 20 kHz (44,1 kSps) 2 Hz - 22 kHz (48,0 kSps) 2 Hz - 40 kHz (96,0 kSps) 2 Hz - 80 kHz (192,0 kSps)
Total harmonic distortion	< 0.001 %
Signal : noise ratio	116 dB
Channel separation	110 dB
Mains socket	2 x 110-120 V or 220-240 V, 50 - 60 Hz, 40 W
Standby	< 0,5 W
Dimensions (H x W x D)	17 x 46 x 46 cm 6,7 x 18,1 x 18,1“
Weight	26 kg (57.3 lbs)
Finishes	case: silver laquer 47 or titanium laquer 64
Remote control	FD 100, bi-directional radio remote control system
Accessories	WLAN aerial, RF-aerial, charger for FD 100, BNC / RCA adapter

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.

Technical modifications reserved

T+A elektroakustik GmbH & Co. KG
Planckstr. 9 - 11 | D-32052 Herford | Telephone +49 (0) 52 21 / 7676-0
www.ta-hifi.com | info@ta-hifi.com

9118 - 0362