

E



T+A

The E-series

It was back in 2007 that we developed the first E-series machines, and their unique design philosophy ushered in a revolution in high-quality Hi-Fi and High-End audio systems. T+A was one of the world's first manufacturers to expand thoroughbred Hi-Fi equipment by giving it the facility to reproduce music files from a vast range of sources and in a huge range of formats, and to stream them from a network.

Right at the start of the process of designing the initial E-series our development team settled on an unusual but perfectly rational approach. As ever, a classic high-quality integrated amplifier would take its place as the core device of the E-series. The amplifier's analogue inputs can be connected to a variety of source devices such as a turntable and CD player, which are then reproduced at a superlative standard of quality. To cater for the digital sources we could have developed a computer-based network device, but this would never have satisfied our high standards in terms of audiophile quality. Instead we designed our Multi Source Players (Music Player) in the form of classic, high-quality CD players with extremely good D/A converters, and equipped them internally with additional digital sources and supplementary inputs for external source devices. This approach opens up even wider possibilities for accessing high-resolution musical content from network servers, computers, or from the Internet, and reproducing it at extremely high quality; the standard can even exceed that of CD, since data rates from the Net can be significantly higher than those provided by the conventional CD or even SACD. The overall result is that our Multi Source Players can cope with music in a vast range of formats, and play it at an unprecedented level of quality.

The new E-series consists of three devices which have been developed from the ground up, based on important technologies which we incorporated in our High-End R-series. The PA 1000 E is an audiophile integrated amplifier which is complemented perfectly by the MP 1000 E Multi Source Player. The amplifier provides a set of additional analogue inputs, while its modern output stage technology and enormous power output enable it to drive loudspeakers - even large and demanding types - to perfection.

The MP 1000 E now offers the same range of facilities offered by the High-End R-series Music Player, and its new DAC is capable of processing high-resolution PCM and even DSD files. It also features a high-quality CD mechanism, a new Streaming Client, music services, Bluetooth streaming, FM, FM-HD and DAB+ radio, as well as supplementary digital inputs for external sources, including USB Device and Master Mode.

It was almost inevitable that we have also combined these two exceptional separate components to form a single machine - the R 1000 E Music Receiver. It marries the essential elements of both units, and constitutes an inspired all-purpose machine; it is the ideal first step into the audiophile world of the E-series. All the new E-series devices can be controlled via IP and can easily be integrated into moderne Smart-Home media control systems.

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 permit ourselves no lazy compromises, 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 the application of the latest technologies make a T+A system a sound investment for the future.



PA 1000 E

Integrated Amplifier

Nominal output

Into 4 Ohms	2 x 250 Watts
Into 8 Ohms	2 x 140 Watts

Total harmonic distortion

< 0,005 %

Inputs

5 x high level (RCA)
2 x balanced (XLR)

Outputs

Pre Out, REC Out, Headphone

Phono modules (optional)

for MM or MC

The core of the E-series is the PA 1000 E: an integrated amplifier bursting with power and superb sound. The unit was developed from the legendary Power Plant, whose outstanding sound we succeeded in improving further. The pre-amplifier is a crucial element in determining the sonic characteristics of the amplifier as a whole, and for this reason our development aim was absolute neutrality, superb musical fidelity and outstanding dynamic characteristics. The use of the latest op-amps (operational amplifiers) mounted on discrete, voltage-stabilised circuit boards (OAD = Op Amp Decoupling) ensures absolutely consistent signal processing regardless of load, i.e. uncoloured sound! Naturally there is a two-stage volume control based on a High-End ALPS precision potentiometer to ensure a high overload margin and good signal to noise ratios. A Flat switch is present, which entirely removes the sophisticated tone controls and Loudness function from the signal path.

The PA 1000 E is equipped with high-quality balanced and unbalanced inputs. The balanced input section (XLR) is mounted on its own circuit board, is of fully symmetrical construction, and is coupled directly to the pre-amplifier via differential amplifiers of superb quality. The RCA and XLR inputs are flexible in operation, and can be assigned to different source devices. The input selector switches incorporate gold-contact relays of outstanding quality in order to guarantee freedom from harmonic distortion and background noise.

The power amplifiers take the form of switching output stages, whose output signal is generated by a large number of very brief positive and negative pulses. Our switching output stages have been developed entirely in-house, and are far removed from ready-made "off the shelf" integrated IC amplifiers; instead the output stages are of discrete construction, equipped with the very latest, ultra-fast MOSFET transistors and intelligent driver modules with high current capacity. The oversized analogue mains power supply incorporates a toroidal transformer with low leakage fields and separate buffering for each stage, ensuring that huge reserves of energy are available at all times. It is this feature which endows the output stages with their enormous dynamic range.



R 1000 E

Music Receiver

This all-purpose device contains the genes of the superlative PA 1000 E and MP 1000 E separate devices. It is equipped with the very latest technologies and components, and certainly ranks as one of the most modern and innovative receivers available anywhere in the world. It combines classic analogue technology for the amplifier section with the latest digital circuit design for the internal sources. It also features a large number of extremely high-quality inputs for external analogue and digital sources, making it the perfect universal nerve centre of a really modern, high-quality stereo system. It can cope with almost anything: you can connect a turntable (optional phono modules are available) or improve the sound of your television; connect a set-top box using an optical lead, or even stream music from a PC - there are no limits! What's more, the R 1000 E caters for all formats, since its high-quality converter processes the audiophile DSD format to the highest standard as well as PCM files! The outstanding feature of this superb device is that we have equipped it with every available modern source: a high-quality CD mechanism, an aptX® Bluetooth module, a high-performance digital tuner, the Digital Connecting Board for external sources and our new High Res Streaming Client Board. This simply means that the R 1000 E can access everything which delivers music: CD, FM, FM-HD and DAB+ radio; Internet radio with Airable Internet Radio Service; UPnP network music servers; USB memory media; laptops and PCs, music services and mobile devices with Bluetooth!

The output stages of the PA 1000 E are powerful and sound superb, so our development team decided to adopt their circuit design in full for the R 1000 E, with only a slight reduction in output power: more than 180 Watts into 4 Ohms are available per channel. The classically constructed mains power supply also features an oversized toroidal transformer which is highly stable under load, has large reservoir capacities and incorporates sophisticated stabilisation measures, enabling the machine to drive large, complex and demanding speakers effortlessly whilst maintaining ultra-high sound quality.

Nominal output

Into 4 Ohms	2 x 180 Watts
Into 8 Ohms	2 x 115 Watts

D/A-Converter

Double-Mono-Differential
PCM up to 32 Bit/192 kHz
DSD 64 (3 MHz)

Internal sources

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

Inputs

Analogue: 3 x high level (RCA)
Digital: 5 x SP/DIF, 2 x USB
Mastermode, 1 x USB Device
Mode (PC)

Outputs

Pre Out, Line Out, Sub Out,
Digital Out, Head phone

Phono modules (optional)

for MM or MC



MP 1000 E

Multi Source Player

D/A-Converter

Double-Mono-Differential
PCM up to 32 Bit/384 kHz
DSD up to DSD 256 (12 MHz)

Total harmonic distortion

< 0,001 %

Channel separation

>106 dB

Internal sources

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

Inputs

Digital: 5 x SP/DIF, 2 x USB
Mastermode, 1 x USB Device
Mode (PC)

Outputs

Pre Out XLR + RCA (optional
variable), Line Out, Digital Out,
Head phone

This is a unique device reflecting an ingenious design philosophy, as it combines the classic music source of CD with the ability to play digital music formats from a vast range of sources! Please note: the MP 1000 E is NOT a computer; it is a first-class audiophile CD player incorporating supplementary functions designed to enable other internal and external digital sources to exploit its outstanding converter. With this aim in mind we developed a mainboard which can process five different digital sources at superb quality and devoid of jitter; a new Streaming Client (SCL), which is a network-enabled processor board featuring WLAN, LAN and USB interfaces; a high-quality digital tuner; a High-End CD mechanism and a Digital Connecting Board fitted with five high-quality digital SP/DIF inputs, a computer USB input and an aptX® Bluetooth module. These features permit the MP 1000 E to access everything which delivers music: Internet radio with Airable Internet Radio Service; UPnP network music servers and USB memory media; FM, FM-HD and DAB+ radio; CDs and music from computers, laptops or other external sources via the SP/DIF inputs. HD Bluetooth streaming from mobile devices is also possible at superb quality.

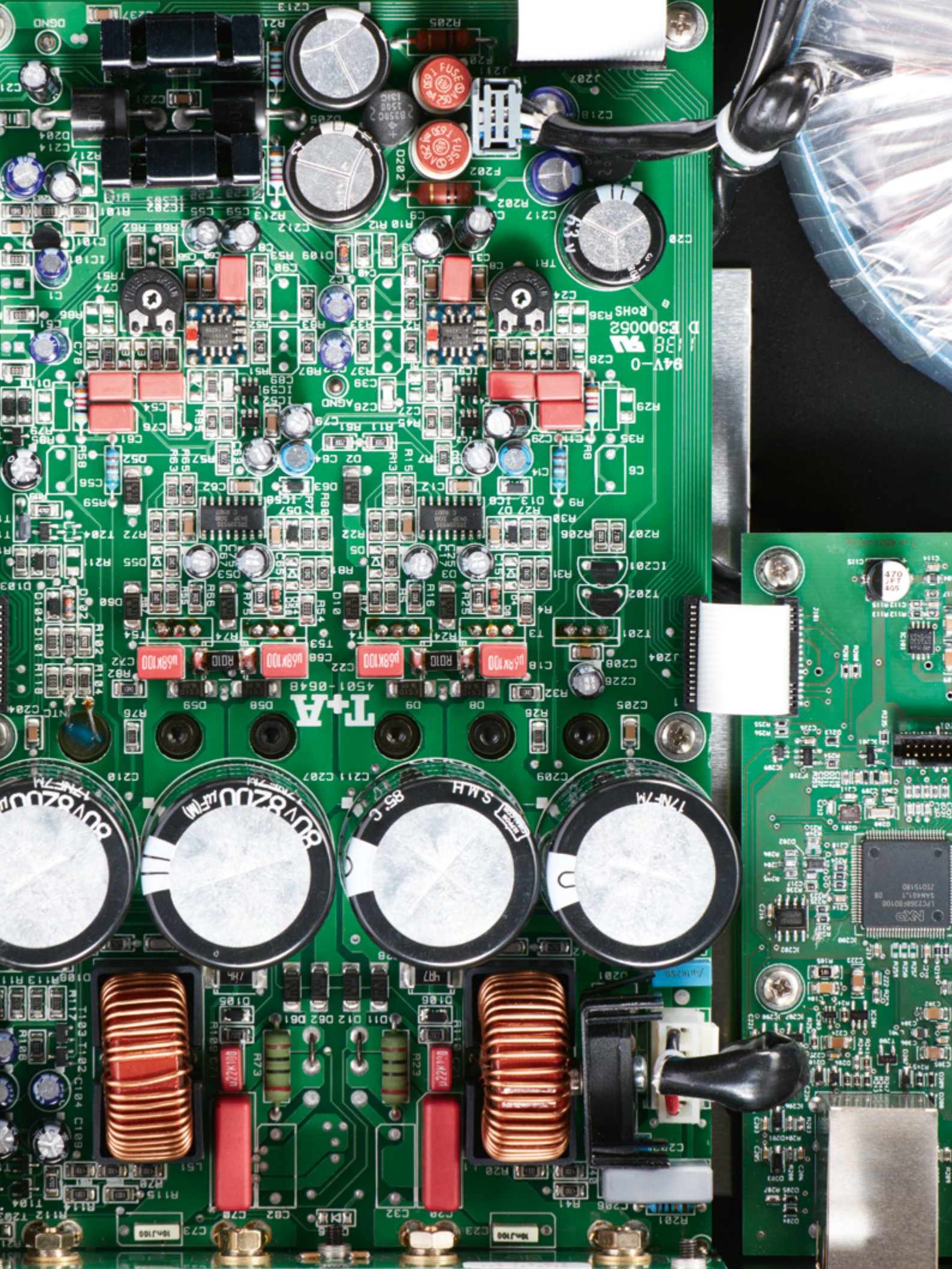
The USB Device Mode input is intended for streaming music files from a computer, and we deliberately designed it to be of exceptionally high quality. It can process data rates up to 32-bit / 384 kHz for PCM and DSD 256 (12 MHz). The heart of the MP 1000 E is its double-mono differential converter (DAC) combined with audiophile high-bandwidth analogue output stages. It even possesses a sophisticated clock resynchronisation circuit to eliminate jitter and all forms of external interference. It is this combination which is responsible for the MP 1000 E's incredibly natural, lively "analogue sound", which is refreshingly different from many other digital players.

As an option the MP 1000 E can be fitted with the VVM pre-amplifier module to provide volume control; this may be necessary, for example, if you wish to use active loudspeakers with the machine.





The MP 1000 E is fitted with the same High-End CD loader unit as our R-series. The outstanding features of this design are its stainless steel pushrods, aluminium / ABS tray, the floating laser unit bearing, and heavy-duty Mabuchi motors.



Technology

The PA 1000 E provides five high-quality inputs which are selected using gold-contact relays; two of these can be set up as XLR inputs. It is also possible to upgrade IN4 to a phono input using the PHE MM or PHE MC internal modules (earth terminal present). REC OUT and PRE OUT are available. The heavy-duty loudspeaker terminals are gold-plated and contain no ferro-magnetic metals.

For the E-series we developed a new high-performance "E2 Link" bus system, which transfers all commands of the FM1000 remote control handset from the MP 1000 E to the PA 1000 E. If the unit is operated without the MP 1000 E, an FBS FM2000 remote control handset is required in order to control it from a distance. In this case the E 2000 IR receiver is connected to the RC IN socket.



Integrated Amplifier PA 1000 E

Basically our new E-series amplifiers are what are known as PWM output stages (PWM = Pulse Width Modulation), with a modulator of analogue construction. The output stages feature analogue negative feedback, which smooths out the effect of voltage fluctuations in the mains power supply, thereby eliminating signal distortion induced by the power supply voltage; this is an otherwise unavoidable problem in pure "forward concept" circuit

designs. However, the negative feedback is relatively weak and frequency-dependent (more pronounced in the bass, where large currents are present, and diminishing in the mid-range / treble). The result is a very controlled, open sound image which never tends towards harshness, characterised by perfectly contoured and well defined bass. The lively, musical nature of this design philosophy is unique. Switched output stages - if correctly designed - can sound simply wonderful as well as generating tremendous power combined with significantly reduced losses and minimal waste heat. A particularly important factor in the circuit design is a power sup-

ply which is stable under load and capable of delivering high currents. This is necessary in order to deliver energy reliably to the output stages, and not collapse even when the power requirement and peak signals are very large.

That is why the newly developed mains power supply features multiple stabilisation measures, the reservoir capacity of the output stages is high, and the high-performance toroidal transformer is isolated by a floating mount system. The overall result is that the amplifiers can effortlessly drive even power-hungry loudspeakers; after all, the PA 1000 E delivers peak currents of up to 50 Ampere.

Technology

The back panel of the R 1000 E reveals the machine's extensive connection facilities: six high-quality analogue inputs and outputs are available, IN3 can also be upgraded as a phono input using either the PHE MM or PHE MC internal module (earth terminal present).

The external Bluetooth aerial provides good reception range, while the aerial socket is designed for FM and DAB+ radio. A jitter-free digital output, five high-quality digital inputs (co-ax and optical) and a USB Device Mode input for connecting a PC are also present.

The LAN and WLAN sockets complete the network connection to the Streaming Client, while the USB inputs (there is another on the front panel) are intended for the connection of hard discs.

The „E2 Link“ bus system is designed for IP control and the option of connecting additional devices.

The R 1000 E is supplied with the FM1000 system remote control handset. The optional bi-directional RF remote FD100 can also be used if a gateway is installed.



Music Receiver
R 1000 E

The R 1000 E was developed as a combination of the essential elements of two separate High-End units: the PA 1000 E and the MP 1000 E. Since the case is no larger, it inevitably has a slightly reduced array of sockets than the two separate units, and its output power is also a little lower. At present the R 1000 E is certainly the most powerful, best equipped and most modern receiver in its price class available anywhere in the world!

Our development team designed an entirely new, superb-sounding pre-amplifier for the R 1000 E. It has many smart functions including balance, tone controls, variable Loudness, „Flat“ function and sub-sonic filter for use with satellite speakers and sub-woofers.

The outstanding 32-bit double-mono differential converter, the CD mechanism (without pushrods), the motherboard with Bluetooth module, the digital tuner and a new Streaming Client originate from the MP 1000 E. The R 1000 E also shares the same Digital Connecting Board for connecting external sources. The R 1000 E is also fitted with three high-quality analogue inputs (one of them upgradable as a phono input), a pre-amplifier output for connecting active loudspeakers or additional power amplifiers, two sub-woofer outputs and a Line output, which can be used for applications such as a radio transfer module.

The output stages have been adopted from the PA 1000 E, with the same overall circuit design, albeit with slightly reduced power. The mains power supply and ancillary circuits are of the same design as those of the PA 1000 E.

The optional high-quality phono modules for MM or MC pick-up systems are those of the PA 1000 E, and can be retro-fitted at any time.



FM1000 remote control handset

The MP 1000 E features very high-quality analogue outputs in balanced (XLR) and unbalanced (RCA) form, which are variable if necessary. One fixed line output is always present.

The external Bluetooth aerial provides good reception range, while the aerial socket is designed for FM and DAB+ radio.

A jitter-free digital output, five digital inputs (coax and optical) and a USB Device Mode input for connecting a PC are also present.

The LAN and WLAN sockets complete the network connection to the Streaming Client, while the USB inputs (there is another on the front panel) are intended for the connection of hard discs.

For the E-series we developed a new high-performance "E2 Link" bus system, which transfers all commands from the FM1000 remote control handset from the MP 1000 E to the PA 1000 E.



Multi Source Player MP 1000 E

We designed the MP 1000 E to continue the proud tradition of our legendary Disc Players, and it therefore ranks as a thoroughbred stereo CD player. For this reason it is vastly superior to any computer solution as far as audiophile requirements are concerned.

The digital signals from the CD mechanism, the Streaming Client Board, the digital tuner, and the Digital Connecting Board with SP/DIF and USB inputs are converted into analogue signals in a fully symmetrical process by the highly sophisticated double-mono differential converter (DAC), which produces very high standards of quality. It is the core of the MP 1000 E, and even features a sophisticated clock resynchronisation circuit to elimi-

nate jitter and all forms of external interference. The unit employs the latest 32-bit converters from Burr Brown (TI). These features make the MP 1000 E a High-End audio DAC for external sources as well as a High-End player for the integral sources! There are even two modes for the filter characteristics, allowing the user to fine-tune the converter to suit particular characteristics of the selected source. Downstream from the digital signal conversion a high-quality audiophile analogue output stage with high bandwidth (100 kHz) is responsible for further signal processing. This section is perfectly matched to the balanced and unbalanced outputs, and makes an important contribution to the machine's superb overall sound quality.

As an option the MP 1000 E can be fitted with the VVM pre-amplifier module to provide volume and tone control; this may be necessary, for example, if you wish to use active

loudspeakers or power amplifiers. The five High-RES digital inputs (coax at 192 kHz and optical at 96 kHz) can be used to enable external sources to be converted by the integral DAC to high quality levels; in this way other devices can exploit the extraordinary sound qualities of the MP 1000 E. The extremely high-class USB / DAC input is designed for streaming DSD or PCM music files from a PC at very high definition; up to PCM 384 or DSD 256 is possible. The machine also features input sockets for USB devices, LAN and a WLAN USB aerial.

The MP 1000 E is supplied complete with the FM1000 system remote control handset, which can also be employed to control the PA 1000 E. All that is required to complete the "E-2 Link" data bus connection. The optional FD100 radio remote control handset can be used if a gateway is installed.

„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.

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 Digital Connecting Board for connecting external digital sources. It offers three co-axial and two optical SP/DIF inputs, one SP/DIF output, two USB 2.0 and one USB Device Mode (PC) sockets.

Our Bluetooth module is of very high quality, and works with the aptX® transmission protocol. The external aerial provides very good reception even under difficult conditions.

The sophisticated digital tuner offers excellent sound quality, high sensitivity, good overload margin and reception of FM, FM-HD and DAB+ signals.

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

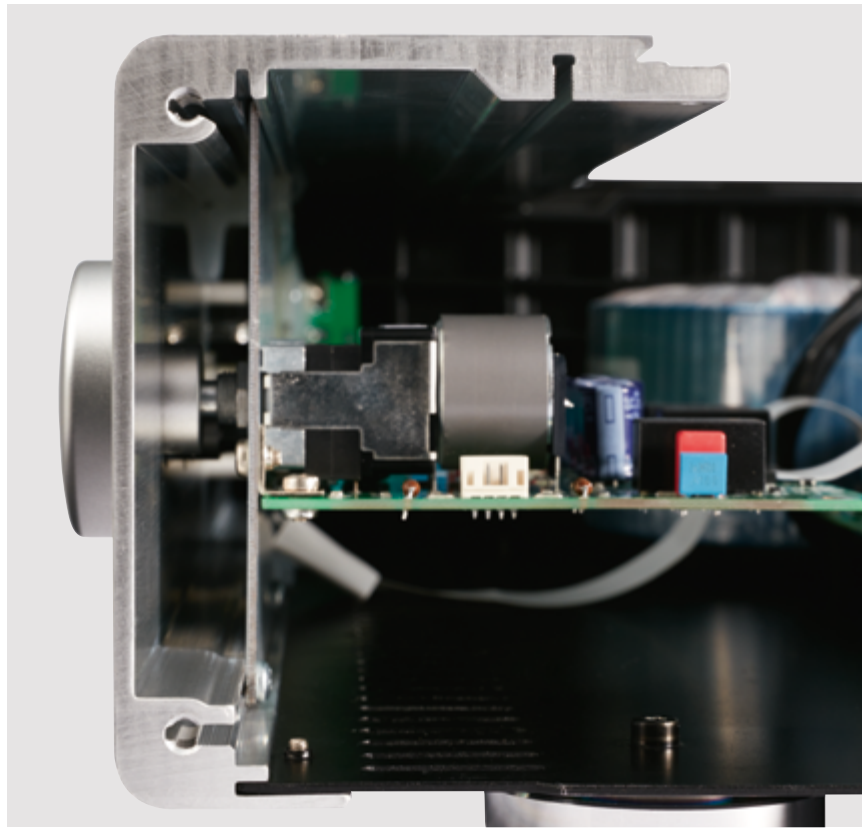
Cases Hand-made

The case of every E-series device is of all-metal construction. For the covers and front panels our engineers designed extrusion tools of very refined design which incorporate all the necessary guides and channels for circuit boards, components and screw fixings as standard. The pa-

nels are cut to length before all the essential holes, openings and recesses for screens, operating knobs and other controls are machined using the very latest automatic five-axis milling machines. This process guarantees fantastic accuracy and total consistency in production. Once machined, the front panels and covers are carefully brushed by hand, stained and hard-anodised. For the side panels we were obliged to pro-

duce a special, extremely complex tool, because we decided to employ pressure-cast zinc for these parts on account of its high mass and mechanical strength, which are much higher than in the case of aluminium, and free of cavities. Once cast, the side panels are finely bead-blasted and finished in a special durable lacquer to give a superb appearance.

The cases of the E-series components are tremendously strong and rigid thanks to the use of thick-walled aluminium for the front panels and covers, and extremely heavy side panels made of pressure-cast zinc. These elements are bolted permanently to the internal chassis, which houses the electronic sub-assemblies. This design philosophy shields the machine's internal components very effectively. The substantial weight of the case is supported on special absorber feet, and ensures that the machine is completely isolated from vibration and ambient resonances.

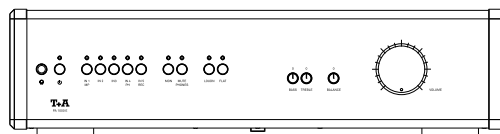


The pressure-cast zinc side panels are manufactured by a specialist company based in Herford. They are extremely accurately made, with ultra-close tolerances. Each panel weighs two kilogrammes, and their mass provides highly effective damping for the case.



PA 1000 E

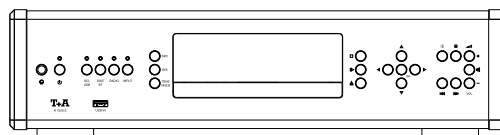
Integrated Amplifier



Specifications power-amplifier		
Nominal output per channel	4 Ohms / 8 Ohms	2 x 250 Watts / 2 x 140 Watts
Peak output per channel	4 Ohms / 8 Ohms	2 x 400 Watts / 2 x 220 Watts
Frequency response	(+0 -3dB)	1 Hz - 60 kHz
THD / Intermodulation		< 0,004 % / < 0,004 %
Specifications preamplifier (PRE, REC)		
Frequency response / THD		1 Hz - 300 kHz / 0,0025 %
S/N ratio / Channel separation		108 dBA / > 82 dB
Inputs	5 x unbal. (RCA) 2 x bal. (XLR)	250 mV _{eff} ... 3 V _{eff} / 20 kOhm 500 mV _{eff} ... 6 V _{eff} / 5 kOhm
Outputs	2 x unbal. (RCA)	PRE OUT, REC OUT 2,5 V _{eff} / 50 Ohms; Headphones 6,3 mm plug > 32 Ohms
Optional		plug-in phono module MM, 1 - 5 mV, 16 capacitance values plug-in phono module MC, 60 - 1000 µV, 16 impedance values
Remote control system		via MP 1000 E or optional remote control set FBS2000
Mains supply / Standby		220-230 V or 110-115 V, 50-60 Hz, 600 Watts / < 0,3 Watts
Dimensions (W x H x D) / Weight		44 x 11,5 x 38 cm (17,3 x 4,5 x 15 inch) / 14 kg (31 lbs)

R 1000 E

Receiver



Specifications power-amplifier		
Nominal output power	4 Ohms / 8 Ohms	2 x 180 Watts / 2 x 115 Watts
Peak output per channel	4 Ohms / 8 Ohms	2 x 350 Watts / 2 x 180 Watts
Frequency response	(+0 -3dB)	1 Hz - 60 kHz
THD / Intermodulation		< 0,004 % / < 0,004 %
Specifications preamplifier (PRE, REC)		
Frequency response / THD		1 Hz - 250 kHz / 0,0022 %
S/N ratio / Channel separation		106 dBA / > 90 dB
Outputs		
analogue	3 x unbal. (RCA)	PRE-, LINE-, SUB OUT 2,5 V _{eff} / 50 Ohms; Headphones 6,3 mm plug > 32 Ohms
digital	1 x coax	IEC 60958 (CDDA/LPCM)
Inputs		
analogue	3 x unbal. (RCA)	250 mV _{eff} ... 3 V _{eff} / 20 kOhm, optional Phonomodule as PA 1000 E
Digital Connecting Board	See MP 1000 E	
CD-Player; Bluetooth	See MP 1000 E	
Streaming Client, Radio	See MP 1000 E	
D/A-Converter	See MP 1000 E	
Accessories		IR-Remote control FM1000; WLAN Modul; FM-, Bluetooth aerial; power chord
Remote Control System		FM1000 or optional bi-directional radio remote FD100 with Gateway
Mains supply / Standby		220-230 V or 110-115 V, 50-60 Hz, 300 Watts / < 0,3 Watts
Dimensions (W x H x D) / Weight		44 x 11,5 x 37 cm (17,3 x 4,5 x 14,5 inch) / 13 kg (29 lbs)

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Technical modifications reserved!





T+A elektroakustik GmbH & Co. KG
Planckstraße 9 - 11
D-32052 Herford

T +49 (0) 52 21 / 7676-0
F +49 (0) 52 21 / 7676-76

info@ta-hifi.com
www.ta-hifi.com