

K-Loudspeakers



T+A



High Performance in Aluminium

Over the last few years many people's ideas of what constitutes a modern stereo or home cinema system have undergone significant changes. Formerly the decision on which new loudspeakers to purchase was based primarily on their sound quality, but today the overall design, the materials employed, and - above all - their size are at least equally important. Unfortunately - and we use that word as loudspeaker manufacturers with more than thirty years of experience - we are now required to make ever smaller speaker cabinets. The laws of physics state that the bass response and, in general terms, the low sound reproduction of a loudspeaker are dependent upon the volume of the cabinet and the area of the speaker cones, but this inconvenient fact is all too frequently ignored. The result is that people who buy low-priced sub-woofer / satellite systems are often seriously disappointed when they find that it exhibits serious shortcomings, and tends to sound appalling with demanding music.

None of us can circumvent the laws of physics, and large cabinets will always have an advantage in absolute bass reproduction, but it is also possible to achieve very good results in terms of sound from relatively small cabinets - certainly in the mid-range / high-frequency area, but also in the bass - provided that the expertise is available, and sufficient effort is invested. This is exactly what we have managed to accomplish with the new K-series of loudspeakers. The very latest extrusion technologies make it possible to produce large formed components from solid aluminium, and this is the key to making speaker cabinets with relatively thin walls and large net volumes compared with conventional speaker cabinets made of timber. This is crucial for low, powerful and clean bass reproduction. Of course, we didn't stop at efficient cabinets: we also developed very special, ultra-sophisticated drive units which are a perfect match to the aluminium housings. The overall outcome is that everyone is happy: the aesthete can have his superbly elegant, slender cabinets, while the audiophile can enjoy outstanding sound quality!

The K-series of loudspeakers is the perfect complement to the electronic units of our successful K-series and E-series. The slim, aesthetically satisfying cabinets are manufactured to the highest standards of craftsmanship using the finest possible materials. They are equipped with the very latest, specially developed drive units and components, and bring out the best of the superb sound qualities of our amplifiers. The K-series is the perfect basis for stereo fans and lovers of small or medium-sized surround systems alike. Consisting of three floor-stander, one bookshelf unit, one centre loudspeaker, one mini-speaker and an active sub-woofer, this series includes the optimum loudspeaker for all applications.

KS 300



The flagship of the K-series is the **KS 300**, a compact and superbly elegant floor-standing loudspeaker which is 95 cm high and just 19 cm wide. This unique speaker exemplifies the design philosophy of the whole series in terms of technology and sound quality: heavy, solid aluminium cabinets, high-end drive units and cross-overs, and an open, neutral sound image with outstanding dynamics and precise bass.

The cabinets consist of profiled aluminium extrusions, and the sophisticated cabinet design combines refined appearance with enormous strength and rigidity. Special absorbent material is used to damp the cabinet walls, effectively preventing the speaker cabinet from adding to the sound with unwanted resonance effects.

The loudspeaker's two high-tech bass drive units are an exact match to the cabinet, and their unique carbon-stiffened cones generate incredibly deep and accurate bass at very high pressure levels.

The mid-range unit is an inspired design which fluently encompasses the entire vocal range from 300 to 2000 Hz, creating an unbelievably natural sound characterised by dynamism and liveliness. The cone, made of GREYCONE® material, is totally resonance-free, while its specially developed circular surround prevents any problems with high excursions.

The legendary T+A annular high-frequency radiator effortlessly covers the remainder of the frequency range up to and beyond 40000 Hz; it is airy, fast, dynamic, and devoid of any trace of harshness.

The sophisticated three-way crossover unit is assembled using only the finest components. Painstakingly calculated, and carefully optimised for best possible transient response and transmission characteristics, the crossover effortlessly processes even the highest-level signals, and ensures that the three frequency ranges are accurately executed.

KS 350



The floorstanding loudspeakers KS 300, KS 350 and KS Active are also available with cabinet and cover in Alu silver 43.



The **KS 350** is even better looking than its big sister, the KS 300: it is only 15 cm wide, 21 cm deep and 94 cm high. In spite of its slender build the speaker still provides superb bass, while its open, natural-sounding mid-range / treble creates a tremendously transparent, spacious effect with clearly delineated low frequencies.

The KS 350's cabinet is again based on profiled aluminium extrusions produced from a single tool, a method which endows the cabinet with tremendous stiffness and strength. A cabinet built in this way is very heavy, and this weight is very important for accurate bass reproduction and a clean, uncoloured mid-range. In spite of the speaker's compact external dimensions the net internal volume is relatively large, since the walls are only a few millimetres thick. This characteristic, combined with the perfectly matched bass drivers, is the key to the speaker's astonishingly deep and precise bass response. The design incorporates three high-tech bass units which are a completely new development, featuring a special ultra long excursion suspension and a cone of a very hard material. The entire vocal range is handled by one high-end mid-range driver with stiffened cone and extensive internal damping, while our outstanding annular radiator - also used in the KS 300 - is responsible for the treble range up to and beyond 40000 Hz. The three-way cross-over unit is built using the finest components available, and matches the cabinet perfectly. It is designed for optimum transient response and transmission characteristics, provides effortless processing even at extremely high levels, and ensures that the three frequency ranges are handled as accurately as possible.

KR 450



The **KR 450** is a compact bookshelf monitor offering outstanding sound quality. Although only 19 cm wide and just 30 cm tall, the KR 450 generates the quality and level of sound normally associated with substantially larger loudspeakers. The high-quality drive units have been very carefully developed to match the cabinet. A 25 mm fabric dome tweeter and special 150 mm bass driver enable this loudspeaker to produce transparent, open sound with tremendous deep bass. The unit's linear frequency response is due to the sophisticated crossover unit, which also expands the low bass response and provides an excellent spread of sound even when positioned on a shelf. Although these loudspeakers look very small, they have a substantial net volume. This is possible because the cabinet is made primarily of aluminium, which affords very great strength and stiffness even with relatively thin walls.

K-MINI



This compact cube **K-MINI** is a genuine mini-speaker which we developed for use with our KW 650 sub-woofer, although it can also be employed as a small rear or supplementary loudspeaker. Like the whole K-series, the speaker's high-quality cabinet features solid brushed aluminium covers and a cabinet consisting of black anodised extruded aluminium profiles.

The 80 mm co-axial drive unit is equipped with a 14 mm aluminium dome tweeter, and conveys the entire mid-range / high-frequency range with an ultra-wide dispersion angle. A phase-optimised cross-over unit ensures very natural and spacious reproduction.

KC 550



This Centre speaker **KC 550** is very small and compact, despite its construction as a sophisticated three-way system. Just 12 cm in height and depth, it looks very good with any flat-screen television. Its task in a surround system is to provide superlative reproduction of the mid-range, which is particularly important for comprehensibility of speech and natural sound. At the same time it improves the positional accuracy and spatial character of the sound; these characteristics also make an impressive contribution in stereo mode.

Thanks to its aluminium cabinet, the KC 550 boasts a relatively large effective volume in which the two 8 cm bass units generate a very clean, dynamic sound image, even at high levels. In combination with the newly developed co-axial mid-range / high-frequency unit, this produces a very open, clear sound image. In contrast with conventional designs, the adoption of a co-axial drive unit for the mid- / high-frequency range endows this centre speaker with a superb dispersion angle, which means that the sound image remains homogeneous even to listeners located in non-central positions.



Single-piece pressing: the solid aluminium cabinet of the KS 300, KS ACTIVE and KS 350. The manufacturing process incorporates integral supplementary stiffening ribs, guides for internal bracing, grille mountings and screw channels. This type of large, heavy, complex extrusion can only be produced to the required standard of precision using the latest technologically advanced extrusion machines.



This CAD drawing shows the internal construction of the KS 300: the mid-range unit is housed in its own airtight chamber, which is separated from the rest of the cabinet by an MDF partition. This component, in conjunction with additional plates, damps the cabinet walls extremely effectively. A relatively large internal volume is available to the two bass units, which can therefore be tuned to operate at very low frequencies. A bass port augments the lowest frequencies.



Producing the whole cabinet from aluminium offers the advantage that the cabinet walls and case cover can be significantly thinner than those of a timber equivalent, thereby providing greater internal volume. This method also ensures that the whole cabinet is very heavy and much more rigid; these two characteristics are extraordinarily important in the quest for accurate bass reproduction - because the cabinet is entirely 'dead' - and uncoloured mid-range reproduction - because there is no resonance to excite the mid-range drivers.

If poorly designed, metal cabinets can develop an unpleasant "bell sound" which falsifies the sound image. T+A has been building loudspeakers of all-aluminium construction since 2001 (TALIS series), and has profound experience in the measures and technologies required to eliminate these effects. The interior of the speaker cabinets is equipped with stiffening ribs and guides for damping plates and absorbers which very effectively damp the cabinets. The cabinet covers feature integral channels for the side panels, which stop any residual cabinet sound before it starts.

The cabinets feature fully brushed surfaces with a black anodised finish. The covers, bottom panels and cruciform bases take the form of solid high-quality aluminium plates, brushed or bead-blasted and finally anodised silver. Not only do these surfaces look superb, they are also very unsensitive and easy to maintain.



The solid cruciform bases and heavy base plates ensure that these loudspeakers are extremely stable. Optional soft glides can be fitted instead of spikes.



The slim design of the aluminium cabinets enables the use of relatively large drive units. The sound image is entirely detached from the cabinet itself, and the speaker's ability to radiate sound is very consistent over the full frequency range.



The legendary annular treble radiator



High-End mid-range unit with pressure-cast aluminium cradle



High-End bass unit with super-magnet



Co-axial mid-range / treble unit with 20 mm dome

The drive units of the K-series loudspeakers are based on the technologies developed for the high-end drivers used in our SOLITAIRE® and CRITERION series, but they have been further developed and modified for use in these relatively slim cabinets. We use die-cast aluminium baskets and hard cones with stiffening coatings for the bass range, while the mid-range units feature special cones with moulded stiffening patterns and excellent damping characteristics.

The special high excursion cone suspension system of the bass units permits very large linear excursions, and this is the key to the reproduction of extremely low frequencies at high levels. Ultra-powerful magnet systems ensure very good efficiency and perfect cone control. The cones of the bass units in the floor-standing loudspeakers are extremely hard and torsionally rigid, making them capable of operating at very high levels; the cones used in the bass / mid-range units of the KR 450 and CM ACTIVE bookshelf speakers also feature special coatings which suppress cone resonance and coloration. The bass units of the KC 550 Centre loudspeaker have hard aluminium cones and high excursion suspensions.

A superb co-axial system is responsible for the mid-range / treble of the KC 550 Centre speaker and the K-MINI speaker. This drive unit provides extremely natural reproduction and a good spatial effect, which is particularly important in surround configurations.

The sophisticated mid-range units employed in the KS 300, KS ACTIVE and KS 350 are capable of transmitting the full vocal range, ensuring that the important mid-range and voice area are reproduced in a particularly natural way.

The treble range in the KR 450 and CM ACTIVE is reproduced by a special fabric dome tweeter with very low distortion, which deliver a very open and transparent sound image free from any hint of harshness.

The KS 300, KS ACTIVE and KS 350 are even equipped with our legendary annular treble radiator, which features a specially designed Rear Volume which ensures a very low resonance frequency. The annular radiator principle effectively nullifies the tendency towards compression at high levels, which is a common problem with dome tweeters.

Active Loudspeakers

Since T+A has been developing and building active loudspeakers for almost thirty years, we clearly have a predilection for this design principle. We are not alone in this, even though there are many people for whom passive speakers are the only choice. This is just as it should be, because our wide range of amplifiers and loudspeakers enables users to assemble exactly their preferred system, and it is precisely this diversity that makes the High End scene so interesting. Nevertheless, there are a number of physical facts which favour the active speaker type, provided that the design is sophisticated and refined:

1. Zero-loss, active cross-over units.
2. Accurate matching of the speaker units to the output stages and superb damping factor, ensuring optimum control of the drive units' travel characteristics.
3. Frequency response linearization, expanded bass range and perfectly controlled cone excursion.
4. Time-delay equalization, optimum transient response and phase characteristics.
5. No transmission losses due to loudspeaker cables.
6. Separate power amplifiers for bass, mid-range and treble for improved dynamics
7. Extremely low total harmonic distortion.
8. Active equalization to compensate speaker position and room acoustic effects.
9. No need for external power amplifiers and cables.

The new K-series of active loudspeakers consistently exploit all these theoretical advantages in favour of active speakers. The cross-over filters fitted to passive loudspeakers have to handle large currents, and these filters do not work in an ideal way due to internal resistance levels. Transients lose their attack, dynamic range is diminished and distortion develops. At the same time the drive units are not coupled directly to the power amplifiers, which means that external power amplifiers with superb damping factors will have more problems of controlling the units efficiently. This is not the case with genuine active loudspeakers, which are fitted with active cross-over circuits and separate, directly coupled power amplifiers for each driver. The active cross-over unit offers ideal characteristics: there are no losses, and the circuit's frequency response and phase characteristics are exactly as required and calculated. Active filters produce optimum results without losses. Unlike passive filters, they are not limited to simple networks; they can employ much more sophisticated, refined circuits which compensate for phase and frequency response errors inherent in the drive units.



The main circuit board of the active unit accommodates the input section, the active cross-over unit, the output stages and the sophisticated mains section with stabilised multi-voltage power supply. The generously dimensioned, hum-free toroidal transformer features a high overload reserve, and is mounted separately on the base plate on absorbers.

KS ACTIVE

Fully active three-way floor-standing loudspeaker with equalization and room position calibration



Since the KS ACTIVE is fitted with four drive units, the speaker also features four identical, superb-sounding Class A/B output stages, of symmetrical push-pull design, which are directly coupled to the drive units. Each output stage generates a continuous power of 70 Watts, which means that 140 Watts are available for the bass range, and 70 Watts each for the mid-range and treble. Since the direct coupling incurs no losses, these figures represent enormous power; to produce a comparable performance with passive loudspeakers an amplifier with a rated output of at least 400 Watts would be required. The fully active loudspeaker design produces an incredibly clean, dynamic and consistently controlled sound image with amazing spatial qualities and fine resolution. The newly developed, high-quality drive units feature rigid, die-cast aluminium baskets; they can handle extremely high loads, and are perfectly matched to the cabinet with its multiple bracing and damping measures.



The active electronic unit forms a self-contained assembly which is mounted on the back panel of the loud-speaker cabinet. A metal plate carries the double-sided main circuit board bearing the XLR and Cinch (RCA) inputs, the mains power socket, the separate mains switch and the switches for position and room equalization. The KS ACTIVE switches itself on automatically when a music signal is present, or by a DC trigger voltage at the Cinch (RCA) socket (Caruso).

Since the cabinet, as with all K-series loudspeakers, is made entirely of solid aluminium, the power amplifiers are cooled directly by the cabinet's large-area back panel.

The overall design and connections of the KS ACTIVE make it ideal for use with our P 1260 R High-End pre-amplifier and the E-series MUSIC PLAYER. Even the small CARUSO is capable of driving the KS ACTIVE.

CM ACTIVE

The *CM Active* are fully active two-way monitors which are capable of providing sound quality surpassing that of much larger loudspeakers; for example, they complement the *Caruso* in an ideal manner in a large Hi-Fi system. Although these speakers look very compact, they actually boast a substantial internal volume, because their cabinets and internal components are identical to those of the KR 450 bookshelf speaker; the only difference is the high-quality active unit which replaces the passive cross-over unit.

The advantages offered by genuine fully active loudspeakers in terms of sound quality have been demonstrated in convincing fashion by T+A over the last few decades with the SOLITAIRE® and TCI active loudspeakers, and our expertise is again employed to the benefit of the *CM Active*. Each drive unit of the two-way speaker is powered by its own direct-coupled analogue push-pull Class A/B output stage of symmetrical construction; these units generate more than 70 Watt continuous power, and deliver superb sound quality. The sophisticated active cross-over unit is responsible for the speaker's linear frequency response, and also expands the low bass range, while the high-performance mains power supply provides best possible peak handling characteristics even at elevated volume. The high-quality drive units are accurately matched to the cabinet and generate an extraordinarily dynamic and powerful sound image with impressive low bass. Naturally the *CM Active* also harmonises with any other pre-amplifier; we highly recommend the E-series MUSIC PLAYER, or the R-series P 1260 R pre-amplifier.



The heat-sink of the amplifier unit is located on the back panel of the *CM Active*. The Cinch input serves as connection to the pre-amplifier output, while the mains switch is integrated into the mains input socket. An automatic power-on circuit switches the *CM Active* on as soon as a music signal is present at the terminals, and switches it off again about twenty minutes after the music signal has ceased. An LED behind the front grille indicates the speaker's power status.

The **KW 650** is one of the most compact and elegant loudspeakers to be found in our range. It is just incredible how clean and natural a bass foundation this little sub-woofer can lay down, and at what prodigious levels. The ultra-stylish cabinet is made of solid aluminium, and plays host to a massive 22 cm sub-bass speaker unit with progressive suspension and enormous cone travel capacity. A gigantic magnet and large coil ensure high efficiency, making it possible to adopt a sealed cabinet design. This feature totally eliminates the flowing sounds which are often so disturbing in bass-reflex speakers. The KW 650 is the ideal complement to small stereo loudspeakers such as the K-MINI or KR 450, but also makes an excellent high-power conveyor of ultra-low bass in a surround system.



The active unit is equipped with extremely high-performance switch-mode output stages of discrete construction, specially designed for the bass driver's considerable hunger for current. For this reason it offers superb sound quality, combined with more than enough power to generate enormous volume. An active regulation circuit constantly monitors the level, always ensuring undistorted and natural reproduction. The KW 650 provides very wide-ranging adjustments to match individual set-up situations, as it offers the following variables: cut-off frequency, level, phase, and power-on function.

Specifications

	KS 300 3-way bass reflex	KS 350 3-way bass reflex	KR 450 2-way bass reflex	K-MINI 2-way closed	KC 550 3-way bass reflex	KW 650 Active sub woofer closed
Nominal load, Watts	130	100	80	40	110	
Output power, Watts						350
Music power, Watts	180	150	120	60	150	
Peak output, Watts					600	
Impedance, Ohm	4	4	4	4	4	
Transmission range Hz	30 - 45000	40 - 45000	40 - 30000	80 - 25000	70 - 25000	20 - 150
Sensitivity (1 Watt/1 m)	86 dB	85 dB	86 dB	85 dB	86 dB	
Bass drive unit, mm	2 x 150	3 x 120	1 x 150		2 x 80	1 x 220
Midrange drive unit, mm	1 x 150	1 x 120		1 x 80	1 x 80	
High-frequency drive unit, mm	1 x 35	1 x 35	1 x 25	1 x 20	1 x 20	
Crossover frequencies, Hz	250/2200	300/2200	2200	2500	300/2500	40 - 150
Dimensions H x W x D cm	95 x 19 x 27	94 x 15 x 21	30 x 19 x 27	12 x 14 x 12	12 x 44 x 12	29 x 27 x 27
Dimensions H x W x D inch	37.4x7.4x10.6	37x5.9x8.3	11.8x7.4x10.6	4.7x5.5x4.7	4.7x17.3x4.7	11.4x10.6x10.6
Plinth cm	23 x 33	19 x 27				
Plinth inch	9.0x13.0	7.4x10.6				
Weight	25 kg / 55 lbs	15 kg / 33 lbs	8 kg / 17.7 lbs	2 kg / 4.4 lbs	5 kg / 11.0 lbs	13 kg / 28.7 lbs

KS ACTIVE

Output / Peakpower	
Bass	140 Watts / 200 Watts
Midrange	70 Watts / 100 Watts
Treble	70 Watts / 100 Watts
Damping factor	> 400
Total harmonic distortion (THD)	< 0,05 %
Cross-over unit	3-way active
Cross-over frequencies	Amplitude, phase and timing correction 370 Hz und 2500 Hz
Frequency range	28 Hz - 45 kHz
Drive units	
Bass	2 x 150 mm long throw driver
Mid-range	1 x 150 mm special driver with embossed cone
Treble	1 x 35 mm ring radiator
Features	Automatic signal-controlled power-on circuit Can be switched on by DC trigger voltage at Cinch socket Supplementary manual mains switch Protective circuit guarding against overload, excessive temperature, DC voltage
Speaker position calibration	< 100 Hz (Bass) 5 steps +4, +2, 0, -3, -6 dB > 4000 Hz (Treble) 5 steps +3, +1.5, 0, -1.5, -3 dB
Inputs	1 x unbalanced (Cinch / RCA) 1V _{eff} / 20 kOhm 1 x balanced (XLR) 1,55V _{eff} / 10 kOhm
Mains power supply	115 V or 230 V / 50 - 60 Hz
Standby mode consumption	< 0,7 W
Dimensions H x B x T cm	95 x 19 x 27 excl. cruciform base
Dimensions inch	37.4x7.4x10.6
Weight	26 kg / 57.4 lbs

CM ACTIVE

Principle	Fully active bookshelf monitor Two-way bass-reflex
Output power (4 Ohm)	2 x 70 Watts
Peak power (4 Ohm)	2 x 100 Watts
Damping factor	> 400
T.H.D.	< 0.1%
Transmission range	35 - 30000 Hz
Drive units:	
Bass / mid-range	1 x 150 mm
Treble	1 x 25 mm fabric dome
Cross-over unit	Active
Cross-over frequency	2500 Hz
Features	Automatic power-on, Cinch / RCA input
Mains connection	EU version: 230 V / 50 - 60 Hz US version: 115 V / 50 - 60 Hz
Dimensions H x W x D cm	27 x 19 x 27
Dimensions inch	10.6 x 7.5 x 10.6
Weight	10 kg / 22 lbs
Finishes	Cabinet Alu black 42, covers Alu silver 43 Cabinet Alu silver 43, covers Alu silver 43 (only available for floorstanders KS 300, KS 350 and KS ACTIVE)

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