

KAD AUDIO - Technology Solutions

K7-EVO Active Speaker System explained

KAD K7 SYSTEM DESIGN PHILOSOPHY

Symmetrical in every detail, from speaker driver topology to the balanced connection between the four DACs and Amplifier channels. The KAD philosophy is to maximize symmetry in loudspeaker system design specifically where it counts. The KAD K7 loudspeaker system has a typical frequency transfer between 24Hz and 24 kHz @ -3dB, and a group delay < 1 msec from 250Hz up; Each K7 contains 7 driver units. Dimensions: Length 135 cm; width 21.5 cm; depth 38.5 cm. Weight 60 kg.

ACOUSTICAL DESIGN ASPECTS

We try to reduce early room interaction as much as possible, and thereby avoid unwanted coloration of sound. The KAD K7 speaker system is designed to beam music towards the listener and to keep it away from the surrounding walls, floor and ceiling as much as possible. This benefits the musical experience at the listening position, and the soundstage will become more lively and transparent. The KAD K7 system implements two sound directivity principles, i.e. cardioid bass for the low end (LF) (80Hz - 200Hz), and a d'Appolito based MTM configuration in the mid-range (MF);

DIGITAL SIGNAL PROCESSING (DSP)

The beating heart of every KAD active speaker system is the DSP, responsible for digital cross- over filtering, delay management, equalization, phase correction and time alignment of each driver unit. Every K7 speaker system contains one ADAU1452 SigmaDSP 32-bit @ 295 MHz providing four digital signal processing channels (HF, MF, LF-front, LF-rear);

DIGITAL TO ANALOGUE CONVERSION (DAC)

Each KAD K7 speaker system uses four separate D/A conversion channels for optimized signal- to-noise performance. Two TI Burr Brown, 32-bit/384kHz PCM5242 DACs are used for that purpose, one DAC chip is managing the MF/HF driver section and one DAC chip drives the double front and twin rear LF driver section;

CLASS-D AMPLIFICATION

The motor in the K7-EVO Loudspeaker system is formed by four separate channels of amplification delivering 1500 Watt-rms @ 1%THD-N in total. The Class-D amplification is of high-end quality (Hypex NCore®) and performs under normal listening conditions at less than 0.005% harmonic distortion.

DRIVER FREQUENCY CROSS-OVER FILTERING

The purpose of the multi driver concept of the KAD K7 system is to ideally create a source agnostic loudspeaker, capable of reproducing Techno, Rock, Classic, Jazz or pure acoustic Voice recordings each with utmost precision and transparency. Paramount to achieve that goal is to have optimal phase and frequency alignment of all driver units, virtually working together as one. The KAD K7 system uses a cross-over frequencies at 160 Hz (LR 24db/oct) for the LF and 2.4 kHz (256 tap FIR ~180dB/oct) between MF and HF. The rear LF cross-over is at 200 Hz to improve cardioid dispersion.

SEVEN DRIVER UNITS

The first and foremost critical components in any loudspeaker system are driver units. For the KAD K7 series loudspeakers we made a selection of the finest from the Nordics. The base line configuration of the K7 loudspeaker is equipped with a 1" DXT® Tweeter with acoustical lens, two 4.5" mid woofers with magnesium cone, four 7" long-stroke (Xmax 25 mm p-p) woofers with aluminum cones. For our top-line K7-EVO we provide the best of the best, starting with a diamond tweeter for best in class spectral purity in the highest regions, two graphene coated mid drivers for lowest possible distortion in the human voice spectrum and four Titan series woofers with high power ratings for the most impactful bass lines possible given the size of the speaker enclosure.

