

KAD AUDIO - Technology Solutions

K5 Active Speaker System explained

KAD K5 SYSTEM DESIGN PHILOSOPHY

A compact stand mount Speaker system with symmetrical MTM driver topology, with balanced connections between DAC and Amplifier channels and symmetrical digital input. The KAD philosophy is to maximize symmetry in every active loudspeaker design. The KAD K5 loudspeaker system has a typical frequency transfer between 34Hz and 24 kHz @ -3dB, and a group delay < 1 msec from 150Hz up; Each K5 contains five driver units, forming a two-way system with integrated double subwoofer. Length 55 cm; width 21.5 cm; depth 38.5 cm. Weight 25 Kg.

ACOUSTICAL DESIGN ASPECTS

We try to reduce early room interaction as much as possible, and thereby avoid unwanted coloration of sound. The KAD K5 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 K5 system is based on one guiding sound directivity principle known as the d'Appolito MTM configuration for the mid-range (MF). The mid-woofers thereby extend to a cross-over frequency low enough to hand over to a double sub-woofer pair at the rear of the K5 cabinet.

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 K5 speaker system contains one ADAU1452 SigmaDSP 32-bit @ 295 MHz providing three digital signal processing channels (HF, MF, LF);

DIGITAL TO ANALOGUE CONVERSION (DAC)

Each KAD K5 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 rear LF driver section;

CLASS-D AMPLIFICATION

The motor in the K5 speaker system is formed by three separate channels of amplification delivering upto 1000 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 K5 system is to ideally create a source agnostic loudspeaker, capable of reproducing Classic, Jazz or pure acoustic Voice recordings with utmost precision and transparency and of course the K5 does not shy away from Techno or Rock music either. Paramount to achieve this goal is to have optimal phase and frequency alignment of all driver units, virtually working together as one. The KAD K5 speaker system uses cross-over frequencies at 80 Hz (LR 24db/oct) for the LF drivers and 2.3 kHz (256 tap FIR ~180dB/oct) between the MF and HF drivers.

SEVEN DRIVER UNITS

The first and foremost critical components in any loudspeaker system are driver units. For the KAD K7 and K5 series loudspeakers we made a selection of the finest from the Nordics. The base line configuration of the K5 loudspeaker is equipped with a 1" DXT® Tweeter with acoustical lens, two 5.5" mid woofers with paper cone, two 7" long-stroke (Xmax 12 mm) woofers with aluminum cones. For the top-line K5 we have chosen a beryllium tweeter known for its brightness combined with two magnesium 5.5" mid drivers to reproduce a lifelike human voice experience. Two Titan series woofers with high power rating delivering an impactful and extended sub-bass that will surprise many, given the size of the speaker enclosure.

