



**Professional  
Reference Loudspeaker Systems**

# PROGRESS IN SOUND

## INNOVATION IN STUDIO SPEAKER DESIGN

For over 20 years now, KSDigital has developed and manufactured high-performance studio monitors. Our developments rely on innovations in the areas of electro-acoustics, sound propagation and, last but not least, digital signal processing wherever it is superior to analogue technology in terms of precision and sound neutrality. Bringing together modern digital signal processing with 20 years of experience in the building of speakers as well as the planning and implementation of complex sound engineering in many broadcasting centres, theatres and festival arenas (Reichstag in Berlin, for example) led, in 1997, to the development of a new generation of speakers. Many patented innovations in the areas of electro-acoustics, sound propagation and digital signal processing are implemented in KSDigital products.

Modell	Speaker Configuration						Advanced Features					
	Fullrange Monitor	Subwoofer	Nearfield	Midfield	Main	Distance	FIRTEC	DMC	NEXT	Coaxial Point Source	Digital Input	Remoteable
c5-Reference	x	x				> 0.3 m	x		x			x
c8-Reference	x	x	x			> 0.5 m	x		x			x
c88-Reference	x	x	x	x		> 0.5 m	x		x			x
B88-Reference		x										x
c120	x		x	x		> 1.0 m	x		x	x		x
cb120		x										x
cb150		x										x
adm15	x				x	> 1.5 m	x			x		x
a100	x	x				> 0.8m	x		x			x
a200mk2	x		x	x		> 1.0 m	x			x		x
a300	x		x	x		> 1.0 m	x			x		x
B300		x								x		x
B210		x										x
linemaster	x				x	> 1.6 m	x	x	x	x		x

KSD-RC:

Volume, 6 parametrische EQ, High-Low Shelv, Delay



“Since I own the large KS system, the way I hear and the way I work has changed.”

Florian Sitzmann Bruchsal, Germany

Amplifier	Power	Page
PWM	50/170W	8
PWM	50/175W	8
PWM	50/170/170W	9
PWM	> 500W	9
PWM	> 500W	10
PWM	> 500W	10
PWM	> 500W	11
MOSFET / bass driver PWM	100/200/400W	20
PWM	50/170W	12
PWM	> 500W	14
PWM	> 500W	16
PWM	> 500W	18
PWM	> 500W	24
MOSFET	100/200/400W	22

# KSDIGITAL DIGITALE STUDIOMONITORE





ADM15



C8



C5



B210



# C-LINE REFERENCE

For over 10 years, the **C-Line** has been the compact listening reference in many studios around the world. One of the main reasons for this is the coaxial principle that delivers exact information to the sound engineer even if the room's acoustics are not ideal. A coaxial chassis avoids different run-times between bass and high-ranges. Firstly, this means that one can sit at any distance from the sound source, and secondly, much more direct sound arrives at the listening position than is reflected from the room, which is the ideal solution for smaller listening spaces, transmission vans or in the near field at a DAW workstation. Additionally, the **KSD Reference series** has now been fitted with patented Firtec/DSP that not only guarantees neutral tonality but also correctly timed reproduction. This phase linearity permits the exact positioning of individual instruments in the virtual stereo sound stage, with each instrument precisely positioned. Six user filters serve to adjust the set-up in one's own studio. An optional remote control („KSD-RC“) allows not only the access to the user EQ's and other parameters like „delay“ etc. but also allows simple adjustment of the volume and replaces an external monitor controller (with its signal editing and sound losses). Available with a cherry wood front or in complete black.





### **The acoustic advantages of the C-REFERENCE-LINE**

- point source, universally from 30cm hearing distance upwards
- compact in flow-optimized steel housing
- DSP (digital signal processor) with FIRTEC equalization for neutral and correct timing (!)
- Installation and room adaptation via KSD-RC via 6 parametric EQs, Delay and gain

### **The acoustic advantages of the B88-REFERENCE**

- universally applicable with high-pass outputs for active satellite speakers
- subwoofer in flow-optimized steel cabinet
- DSP (digital signal processor) for accurate crossover and equalization
- high SPL in lowest octave (from 28 Hz)
- satellite outputs with appropriately weighted signal
- adjustable delay and level on the subwoofer
- volume and filter adjustable via KSD-RC



Abb. C5-Reference

**C5** The newly designed steel cabinet offers a maximum in internal volume with compact external dimensions and optimal stability. The sound image remains calm and balanced. The special rear-directed form of the bass reflex port prevents audible air turbulence. The completely newly developed 6" coaxial chassis offers best sound performance and tonal neutrality with virtually no harmonic distortion. The supplied table stand decouples the **C5 Reference** from its installation area and permits an exact directional setup of the work station.

**C8** As a genuine midfield monitor the C8 Reference allows a listening distance from approx. 50cm up to several meters. The available performance in combination with cabinet volume and the newly developed high-performance chassis offers the sound engineer a full-range, main monitor for small to medium size areas. In this way, a sub-woofer is unnecessary to control the entire frequency range. The special form of the rear-directed bass reflex port prevents audible air turbulence. The carbon fibre membrane of the newly developed 8" coaxial chassis prevents the usual break-out of the conus up to higher frequencies at the same time having an extremely low weight. The 1" self-manufactured tweeter offers the lowest harmonic distortion with a maximum in neutrality. The special coaxial design of the tweeter leads to an optimised radiation behaviour.



Abb. C8-Reference



## TECHNICAL SPECIFICATIONS:

Model	C5-Reference	C8-Reference	C88-Reference
<b>Construction</b>	Coax	Coax	Coax
<b>AD / DA converter</b>	je 24 bit sigma delta, 64 x oversampling		
<b>Analog IN</b>	je XLR-symmetric +4 dB (V)		
<b>DSP</b>	je FIRTEC™ equalization, FIR-crossover, limiter, 6 User-EQ, patent: 19823110		
<b>Chassis</b>	1" tweeter 6" Bass / Mid-Driver	1" tweeter 8" Bass / Mid-Driver	1" tweeter 8" Bass/Mid-Driver 8" Bass-Extension-Driver
<b>Amplifier</b>	50 W / 175 W peak	50 W / 175 W peak	50 W / 170 W / 170 W
<b>Remote control</b>	KSD - RC	KSD - RC	KSD - RC
<b>Frequency range</b>	48 - 22000 Hz (+/- 3 dB)	38 - 22000 Hz (+/- 3 dB)	32 - 22000 Hz (+/- 3 dB)
<b>Power</b>	Wide range 110 V - 230 V		
<b>Dimensions (B x H x T)</b>	200 x 245 x 220 mm Höhe inkl. Stand 290mm	240 x 290 x 310 mm ohne Stand	480 x 240 x 310 mm
<b>Weight</b>	11 kg	12 kg	22 kg
<b>Tablestand</b>	inklusive	inklusive	





Abb. C88-Reference

**C88** The C88 Reference has been developed as a main monitor but can be utilized at very low listening distances (from approx. 1 meter) due to its coaxial chassis. The additional bass chassis serves the lowest octave and relieves the coaxial chassis in that range. The carbon fibre membrane of the newly developed 8" coaxial chassis prevents the usual break-out of the conus up to higher frequencies, while being extremely light-weight at the same time. The 1" self-manufactured tweeter offers lowest harmonic distortion with maximum neutrality. Placed just in front of the 8" chassis, the specially constructed conus, leads to an optimised radiation behaviour and prevents an unstable sound image, as even with higher volumes the hub of the bass chassis doesn't influence the radiation behaviour of the tweeter.

## B88

The new, super-compact B88-REFERENCE monosubwoofer has been developed as a bass extension for the Reference series, all KSD monitors and monitors from other manufacturers. The integrated digital signal processing in combination with the two power amplifiers extends existing monitoring systems by the lowest octave. Two 250W PWM amplifiers operate DSP-controlled on two high-performance eight-inch chassis. Two XLR high-pass outputs allow connection of the satellite monitors with the appropriate signal above 80Hz. This results in a controlled and powerful reproduction of the deep bass - without any rumbling or pumping - with a stress-free, detailed reproduction of the bass-free satellite speakers. The digital signal processor linearizes the frequency response, internal filters allow fine tuning to the room and the application area. The delay, which can be set directly on the knob, compensates for any spatial offset between the B88-REFERENCE and the satellites. The special high-performance drivers in the flow-optimized steel housing produce an extremely controlled, 'dry' bass signal for full sub-end control without the usual ventilation noise. Whether as a monosub-bass extension or as a third way for existing stereo speakers, the B88-REFERENCE extends the frequency response down and improves the playback performance of the entire setup.

The B88-REFERENCE can also be used for transmitting the LFE channel in 5.1 or other multi-channel setups. Like all Ksdigital loudspeakers, the B88-REFERENCE can be adapted to the listening situation with the optional KSD remote in gain, phase/delay and 6 parametric EQs. Available with Cherry and Black Satin Front



Abb. B88

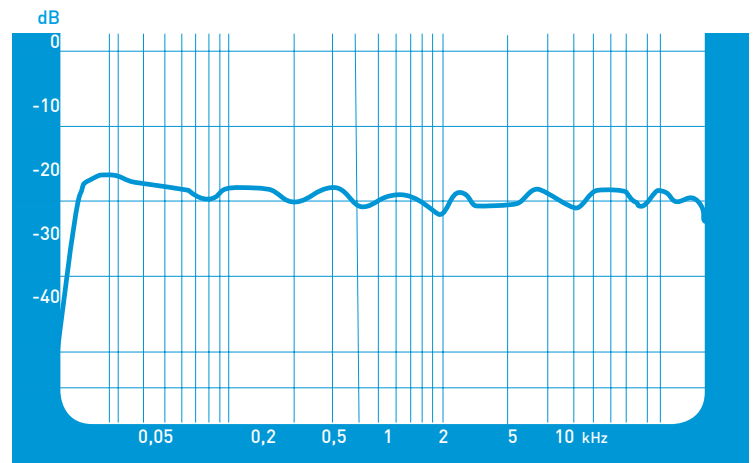
## TECHNICAL SPECIFICATIONS:

<b>Model</b>	<b>B88</b>
<b>Analog IN</b>	XLR-symmetric +4 dB (V)
<b>Process</b>	left/right input with HP-Outs left and right,
<b>Digital signal processing</b>	mono-sum subwoofer and EQ
<b>Frequency range</b>	28-80 Hz 30-80 Hz
<b>Onboard control</b>	level, delay
<b>by KSD-RC</b>	room equalization bass level finetuning, volume
<b>Chassis</b>	double 8" cone
<b>Amplifier</b>	250W // 250W
<b>Weight:</b>	28kg
<b>Dimensions</b>	480 x 240 x 310 mm

# CX-COAXIAL

**FIRTEC-equalizer, impulse true, coaxial reference monitor of the highest quality**

The **CX-Coaxial system** is a modular system comprised of different but harmonized components. The main fields of application are sound studios from classic to rock recordings, video and film studios. The scalable size facilitates an adaption to the existing control room, just as our KSD-RC remote control allows filter adjustments to adapt the listening area. The compact cabinet of the cube with an edge length of 45 cm also facilitates mobile applications. The CX-Coaxial system comprises the **Midfield-Coaxial system C120-Coax**, a two-way full range loudspeaker which, when connected to the digital **FIRTEC** equalizer permits linear phase, neutral amplitude and time-aligned reproduction. **The C120-Coax** is equipped with a 12" bass-mid chassis whose core accommodates a 1" compression driver. This radiates to a computer optimized CD-horn that evenly floods the entire working area. The **C120-Coax** covers the entire range from 25Hz to 22KHz or can be combined, depending on the size of the room, with bass systems of the CX series.



Frequency characteristic C120-Coax + CB120

## CB120

With the **CB120**, KSDigital offers a compact sub bass module as the smallest extension possible to the **C120-Coax**. The **CB120** is equipped with a 12" long hub bass speaker that is adequately driven by 400W impulse power. The active electronic plug-in is suitable for every setup with inputs for both right and left signal as well as switchable satellite outputs. Whether as single mono-subwoofer, or as a 3-way extension per side, this bass module integrates itself with a handover frequency of 80Hz (Bessel filter) ideally into the audio setup of the **CX system**. For extra-large listening areas, we offer two 12" modules **CB120** per side, perfectly fitted and held in the **CX stainless steel system** stand.

## THE ACOUSTIC ADVANTAGES OF THE CX-COAXIAL:

- ➔ Phase locked coupling of the radiated sound to input signal
- ➔ Point sound source
- ➔ Extremely compact cabinet size with a full bandwidth from 25Hz upwards.



## TECHNICAL SPECIFICATIONS:

Model	C120-Coax	
Construction	2-Way Coax	
Concept	Midfield, selfpowered	
Tweeter	2,8" Neodym	
Mid / Low driver	12" cone	
Amplifier	280W-Peak / 150W each way	
SPL (max)	>140 dB peak	
Frequency range	25-22.000 Hz	
Weight	30,0 kg	
Bass-Extension	CB120	CB150
Bass driver	12"	15"
Amplifier	400W	400W
Weight	30,0 kg	32,0 kg
Dimensions	45,0 x 45,0 x 48,0 cm	

## CB150

With the **CB150**, KSdigital offers the most powerful sub-bass module of the CX audio system. Here, the system cabinet is equipped with a 15" long-hub bass speaker that is fed by a 400W analogue audio power amplifier. The active electronic plug-in with inputs for both right and left signal as well as switchable satellite outputs is suitable not only for mono subwoofer operation, or as a direct 3-way extension for the **C120-Coax** with a separate module for left and right, but is also perfect for every setup.



Image C120 + CB150

# A100

a compact 2-way near/midfield reference monitor

The A100 offers the compact entry into linearity, pulse fidelity and performance of the A-Line monitors. By using the patented FIRTEC technology, the A100 displays a defined spatial panorama and allows an exact positioning of individual instruments and events in the music signal.

The 8" diaphragm of the bass mid driver provides sufficient amplifier power even at low listening levels, but also allows high listening volumes without any problems.

The high performance fabric dome is available from 1200Hz and thus transmits all overtones. This unusually low crossover frequency is part and pre-requisite for the musical reproduction of the loudspeaker. The tweeter's waveguide turned from solid aluminium offers a defined radiation for a wide sweet spot and gently dazzles the cabinet edges of the speaker.

In addition to the high and low shelving accessible from the rear, they allow six parametric EQs to match the position of the monitor in the studio. These, as well as all other parameters such as volume, delay, can be controlled with the optional KSD-RC.



## The acoustic advantages of the A200:

- phase- and amplitude-linear playback with minimum latency ( $\leq 5\text{msec}$ )
- impulsive reproduction due to patented FIRTEC technology and high power reserves
- 6 parametric filters and two shelvings for one optimization of the constellation in the control room
- remote controllable via KSD-RC or KSD-VOL, TIME FILTER TECHNOLOGY



## TECHNISCHE DETAILS

Model	A100
Analog IN	XLR symmetric (+4dBV) auf 24 Bit/ 192 Khz ADC
DSP-Signalverarbeitung	Process FIRTEC™ equalization, FIR crossover, limiter
User-Equalization	High-, Lowshelving-EQ, 6 parametric EQs
Chassis	1.2" dome tweeter, 8" sub-mid-woofer
Amplifier	70W / 175W peak
max SPL	114dB (peak)
Remote control (optional)	remotable via KSD-RC, KSD-VOL
Frequency range	35-22000 Hz (+/3dB)
Dimensions	24 x 37 x 30 cm, 13,5 kg

# A200mk2

## 3-Way Midfield-Referenz Monitor

The new **A200mk2** is a compact, powerful 3-way reference monitor for all applications. With the new composite steel housing we have been able to further optimize the acoustic properties. The larger internal volume of the housing (by this materials) in combination with the new 10" bass chassis increases the toughness and punch in the bass range. The new mid-high unit with 3" dome midrange and 1" HT dome creates a completely homogeneous radiation field. This means that the **A200mk2** can be operated both, horizontally and vertically without loss of power. When operated in upright position, the **A200mk2** can be extended with the **B300** bass extension to create a large main monitor at any time.

As with all FIRTEC monitors from KSD, the **A200mk2** also produce all frequencies in such a way that they arrive the sound engineers' ears at the same time, i.e. not time-delayed. The neutrality and the time accuracy are unique on the market and allow an application in all areas of the professional production process: recording, mixing as well as mastering as last reference.

The design of the amplifiers and power supplies used ensures extremely low distortion and low noise. Our patented FIRTEC system filters produce a phase-linear, time-correct reproduction over the entire frequency range. The Mid- and High-Waveguide fades out the cabinet edges and linearizes the frequency response in addition to the digital signal processing.

The AES input offers a lossless connection of the workstation as an alternative to the fully balanced analog input with 24 bit/192 KHz converter. A Texas/Burr-Brown DSP offers more than sufficient performance for low-latency signal processing ( $\leftarrow 4\text{msec}$ )

The high- and low-shelving filters on the amp plate are designed for quick and easy set-up and room adjustment. The optional KSD-RC provides access to 6 internal parametric EQs, gain, delay and can be used as a monitor controller by the full volume control of the complete monitoring system, even with multiple speakers, bass extension or Auro-3D(TM) and Dolby-Atmos(TM) setups. This allows a lossless connection of the **A200mk2** with fullscale level directly from the digital master output. Internally, the DSP converterless (DDD) supplies the three PWM power amplifiers with 250 W RMS power each. This direct connection prevents conversion losses and gives you an extreme resolution.



## The acoustic advantages of A200:

- ➔ linear phase reproduction with minimal latency ( $\leftarrow$  5msec)
- ➔ high impulse stability due to 10" bass driver, 3" dome midrange-driver and 1" highpower radiator for highrange
- ➔ adjustable to room and setup position with 6 freely accessible filters (peak/shelving)
- ➔ analogue and digitally input



A200mk2 + B300



## TECHNISCHE DETAILS

Model	A200
AD converter	24 bit sigma delta, 64 x oversampling
Digital IN	AES3 format , 32 - 210 KHz
Analog IN	XLR symmetric
DSP / Process	FIRTEC™ equalization, FIR crossover, limiter, 2 FIR-presets, 8 filter , patent: 19823110
Room Equalization	6 peakfilter and FIRTEC™ system equalization
Chassis	1" radiator, 3" midrange-dome, 10" bassunit
Amplifier	150W / 250 W / 250 W peak
SPL	118dB cont./123dB peak
Remote control (optional)	gain control, 6 filter remotable via KSD-RC
Frequency range	28-22000 Hz (+/-6dB)
Dimensions	42 x 30 x 31 cm, 18 kg

# A300

## 3 way active digital processed mainmonitor.

The **A300** was conceived as a classic 3-way reference monitor with **FIRTEC™** managed time-aligned sound reproduction. As with the legendary **ADM20**, all frequencies are radiated by the **A300** so that they simultaneously arrive – not out of sync - at the ear of the sound engineer. The tonal neutrality and this time alignment permit its use in all areas of professional production processes, from the recording as a mix-monitor or in mastering as a last reference. The assembly with a 10" high-performance bass driver, a 2" calotte mid-range driver and a calotte-free, 1" high frequency driver transmits from 26Hz upwards and thereby offers at every volume level sufficient reserves. The conception of the amplifier and power supply ensure a low noise reproduction with virtually no distortion. Our patented **FIRTEC** system filter generates a linear phase, time aligned reproduction across the entire frequency range. The wave guides suppress the cabinet edges and also linearize the frequency range for digital signal processing. The implemented 1" high range ring radiator ensures a low distortion reproduction, even at a high volume. Whether connected via its analogue input with a 24 bit / 192 KHz AD-converter or digitally connected loss-free to a workstation. The amplifier's accessible high- and low-shelving filter enables a fast room adjustment during its installation that can be enhanced with an optional **KSD-RC** extra internal filter if required. The peak EQs as well as the high- and low-shelving filters are freely configurable and permit an adaptation at the listening position. Also the listening volume can be controlled directly at the monitor so that a full level digital connection at the master output can be guaranteed to be loss-free. Another speciality is the converter-less connection of the 3 PWM power amplifiers with 250W RMS each. This direct connection prevents converter losses and leads to an extreme resolution in timing as well as in tonal areas.





## The acoustic advantages of A300:

- linear phase reproduction with minimal latency ( $\leftarrow$  5msec)
- high impulse stability due to 10" bass driver, 2" calotte midrange-driver and 1" highpower radiator for highrange
- adjustable to room and setup position with 5 freely accessible filters (peak/shelving)
- analogue or (optional) digitally controlled (27Bit-ADC)



## TECHNICAL SPECIFICATIONS:

Model	A300
AD converter	24 Bit / 192 KHz
Digital IN	AES3 format, 32 - 210 KHz
Analog IN	XLR symmetric
Process	FIRTEC™ equalization, FIR crossover, limiter, 2 FIR-presets, 8 filter
Equalization	8 peakfilter and FIRTEC™ system equalization
Chassis	1" radiator, 2" mid range dome, 10" bassdriver
3 Amplifier	280W-Peak / 150W each way
SPL	116dB cont./124dB peak
Remote control (optional)	gain control, 6 filter remotable via KSD-RC
Frequency range	24-22000 Hz (+/3dB)
Dimensions	56 x 30 x 40 cm, 23 kg

# B300

## – a A300 Reference Monitor Subwoofer Extension

The **B300** Subwoofer-Extension is specifically designed to expand the sub-bass of the **A300**. The **B300** in combination with the **A300** plays the frequency range above 22Hz (-3dB). A special mounting system keeps the A300 securely in place, decouples it from the bass energy and allows an inclination of up to 5° for adjusting the beam axis to the sweet spot. The built-in bass management with two high-pass outputs also allows the **B300** to be used with other suitable monitors, such as the **A200**, as a mono subwoofer extension.

The integrated digital signal processing (DSP) in combination with the two power amplifiers extends the existing monitoring systems by the lowest octave. Two 250W PWM amplifiers operate DSP-controlled on two high-performance 10 inch chassis. This results in a controlled and powerful reproduction of the deep bass - without any rumbling or pumping - with a stress-free, detailed reproduction of the bass-distressed top monitors. The digital signal processor linearizes the frequency response, internal filters allow fine tuning to the room and the application area. The delay, which can be set directly on the amp-plate-knob, compensates for any spatial offset between the B300 and the satellite loudspeaker. The high-performance drivers in a CAD designed cabinet produce a controlled 'dry' bass signal for full subband control without the usual ventilation noise.

Designed as a third way for the **A300** or in use as a monosubwoofer with existing stereo speakers, the **B300** expands the frequency response down and improves the playback performance of the entire setup.

The **B300** is also perfectly suited for transmitting the LFE channel in 5.1 or other multi-channel setups. With the optional KSD-RC Remote Control, the **B300** is perfectly adaptable to the listening situation, also in combination with all other KSD speakers in volume, gain, phase/delay and with the help of 6 parametric EQs.

## The acoustic advantages of AB300 System:

- ➔ linear phase reproduction with minimal latency ( $\leftarrow$  5msec)
- ➔ high impulse stability due to 10" bass driver, 2" calotte midrange-driver and 1" highpower radiator for highrange
- ➔ adjustable to room and setup position with 5 freely accessible filters (peak/shelving)
- ➔ analogue or (optional) digitally controlled (27Bit-ADC)
- ➔ 3 x 10" bassdriver



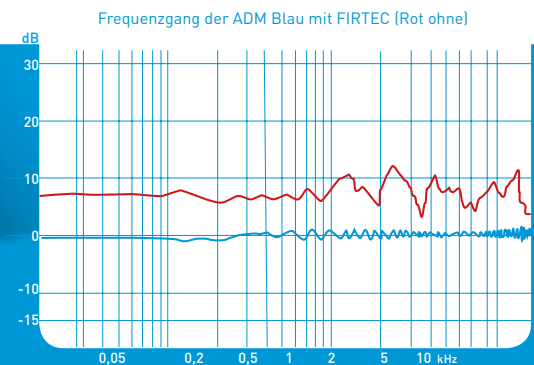
## TECHNICAL SPECIFICATIONS:

Model	AB300 System
AD converter	24 Bit / 192 KHz
Digital IN	AES3 format, 32 – 210 KHz
Analog IN	XLR symmetric
Process	FIRTEC™ equalization, FIR crossover, limiter, 2 FIR-presets, 8 filter
Equalization	8 peakfilter and FIRTEC™ system equalization
Chassis	1" radiator, 2" mid range dome, 3 x 10" bassdriver
5 Amplifier	> 1000 W
SPL	120dB cont.
Remote control (optional)	gain control, 6 userfilter remotable via KSD-RC
Frequency range	20-24000 Hz (+/3dB)
Dimensions	142 x 30 x 40 cm

# ADM15

## 3 way active digital processed mainmonitor.

The ADM15 is a 3 way active digital processed mainmonitor for high performance applications. By their dimension the ADM15 is an ideal replacement for Genelec 1038 or similar wall-mounted monitors. It can be utilized as the sole reference monitor in professional recording, broadcast or mastering studios. The signal processing like crossover, equalisation, time alignment a.s.o is completely in the digital domain. The linking to the recording environment happens directly to the digital signal source or by our stacked Sigma-Delta-Technology with a 27 bit and 64 oversampling converter with dynamic range of 130dB. An internal processing with 32 bit floating point ensures an internal dynamic range of 1500 dB. An additional KSDigital Patent (Pat Nr. 198 23 110) for signals lower than 24 bits processes these signal on a higher level for the internal signal processing. So the user has a fully analog workflow without any digital limitations. Five EQ's for a quick manual adaptation, as well as the possibility to calibrate the FIR filters for the listening area to build a individual setup for your control room. This can be done either on the loudspeaker itself or cableconnected with the Ksdigital Remote Control KSD-RC or by our webserver-based software called FIRControl. The MOSFET powerstages, with hand-selected audio-transistors, transport the sound with a slow rate of 80 V/ $\mu$ s and 150W for highrange, 200W for the midrange and 500W for the 15" bass driver.



## THE ACOUSTICAL ADVANTAGES OF THE ADM15:

- 3 way active digital processed mainmonitor
- 15" bass unit for a powerfull and tight performance
- CAD waveguide in mid- and highrange
- 1" highpower radiator for highrange
- 25 Hz bis 24 kHz ( $\pm 3$  dB) linear frequency and phase response
- remotable by KSD-RC
- digital or analog(27bit-192KHz) input stage (27Bit-ADC)



## TECHNICAL SPECIFICATIONS:

<b>Model</b>	<b>ADM15</b>
<b>AD / DA converter</b>	27 bit sigma delta, 64x oversampling
<b>Digital IN, OUT</b>	AES3 format, 32 - 192 KHz
<b>Analog IN, OUT</b>	XLR symmetric, active bypass connector
<b>Process</b>	FIRTEC™ equalization, FIR crossover, limiter, 2 FIR-presets, 8 user filter
<b>Equalization</b>	2 FIRTEC-Presets, Low-, Highshelvig, 6 parametric EQ´s, Phaseshifting
<b>Frequency range</b>	25 - 24000 Hz (+/- 3dB)
<b>Chassis</b>	1" radiator, 3" midrange dome, High-Performance 15" papercone
<b>Amplifier</b>	100W + 200W MOSFET Technologie, 400W-PWM
<b>SPL</b>	122dB peak
<b>Dimensions</b>	81 x 48 x 42 cm, 51 kg
<b>Remote control (optional)</b>	gain control, 6 userfilter remotable via KSD-RC

# LINEMASTER

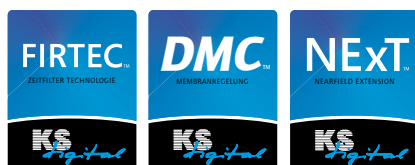
The only linear phase mastering monitor utilizing cylindrical wave technology, worldwide.

Developed and designed for use in the most demanding of mastering studios, the LineMaster is an uncompromising Loudspeaker system. The highest possible sound neutrality utilizing the linear phase and value **FIRTEC™** filter. The dynamic membrane control (**DMC™**) permits a lively impulsive base, a linear phase and no buildup or decay oscillations of the membrane. Also the controlled sound emission of the near field extension technology in **NEXT™** permits highest control, especially in the mastering area. The oversized power reserves of the output stage with 400W / 200W / 200W ensure that the conversion of the electrical signal occurs with the lowest possible level of distortion. Especially when mastering, one needs the assurance that the reproduction of the music is exact and unadorned, with the complete frequency range from the highest of highs to being able to perceive the deepest rumble of the airconditioning in a symphony orchestra.



## THE ACOUSTIC ADVANTAGES OF THE LINE-MASTER:

- ➔ more direct sound, less reflections in hotspot  
→ more control in mastering process
- ➔ phasilinear reproduction
- ➔ minimal latency (< 5msec)
- ➔ 5 userprogrammable EQs  
(b software or optional KSD-RC hardware controller)
- ➔ switchable between analogue or digital input
- ➔ volume and all other parameters remotable



## TECHNICAL SPECIFICATIONS:

Model	LINEMASTER
AD / DA converter	27 bit sigma delta, 64x oversampling
Digital floating point processor	32 bit floating point, 1500dB dynamic range
Digital IN, OUT	AES3 format, 32 - 96(110)KHz, 192 KHz vorbereitet
Analog IN, OUT	XLRsymmetric, active bass output
Process	FIRTEC equalization, 2 difference FIR-crossover, speaker time alignment, limiter, 2 FIR-presets 6 user programmable peakfilter with frequency, gain and peakcontrol, high-, low-shelve, all parameter free controlable via hardware remote
Frequency range	20Hz - 25kHz
Equalization	FIRTEC system equalization for control room, high-, low-shelve, distance shift, phase reverse, 6 user programmable EQs
Chassis	two 8" DMC carboncone units, four 6.5" midrange carbonbone 1" radiator on NEXT adapter (Pat.:DE102015102643A)
Amplifier	100W / 200W / 400W MOSFET technology
Crossover	80Hz, 800Hz
SPL	125dB peak
Dimensions:	172,5 X 48,0 X 30,0 cm, 68,0 kg



# KSD-B210

## Multimode-Subwoofer

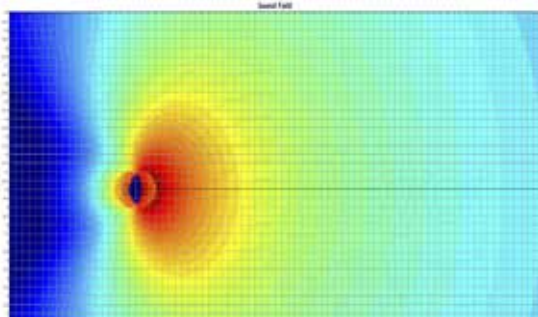
The KSD-B210 is an active, DSP driven, 10" double subwoofer with a total of 500W amplifier power. Two completely independent amplifier paths each drive a 10" high performance chassis in an individual bass chamber. This construction in connection with the DSP supported driver enables various operating modes.

1. Stereo subwoofer: In this mode, both chassis build the third path to the connected satellite loudspeakers. The base width of 80 cm permits stereo operation in the near field and extends the operation of the monitor such as the KSDC5 or KSD-C8 to the lowest octave from 25 Hz and upwards. The crossover is realized with a minimal phase in the DSP and supplies the satellites with a perfectly timed signal above 80 Hz.

2. Mono Subwoofer: In this mode both chassis operate parallel to each other. Their signal is calculated from both stereo inputs in the DSP. The satellites receive the appropriate stereo signal above the cut-off frequency. This operating mode supports any monitor in the lower octaves. Since the KSD-B210 can be positioned completely independently from the monitors in the room (delay is adjustable in the DSP), an improved bass coupling can thus be achieved in the listening room.

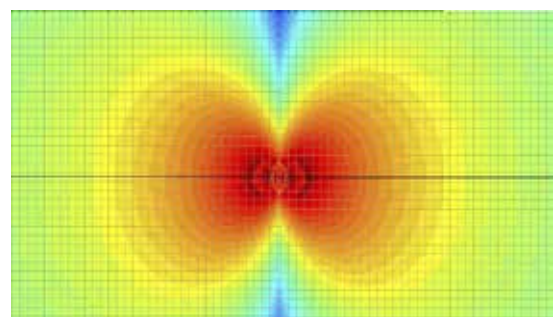
3. CSA-Cardioid subwoofer array: In this mode the KSD-B210 can be positioned so that one 10" chassis can be directed at the listening position and the second chassis in exactly the opposite direction. With phase rotation and appropriate delay (in DSP), the sound emitted backwards from both chassis is subtracted and the sound emitted toward the sound engineer is added. This avoids reflections on the rear wall and leads to a clear reduction of disruptive modes in the listening position. The backward damping is already considerable with 12 dB - 18 dB. To achieve a similar damping of the rear area by bass absorber would require the use of many absorbers, a lot of space and a high budget.

4. Dipole-joint emission: In this mode, both chassis are running in mono-subwoofer mode but anti-parallel. The KSD-B210 creates a dipole emitter with quick sound conversion. This can be very advantageous in more difficult geometric rooms and perfectly matches the satellite loudspeakers that represent dipoles themselves, for example electrostatic speakers. A dipole configuration can be wise even in combination with more ordinary monitors when the bass has to be coupled with maximum particle velocity (maximum particle velocity forms exactly in the middle between two side walls).



### IMAGING Radiation in CSA mode:

In this mode, the KSD-B210 achieves high backward damping with almost perfect summation of the energy of both drivers to the front.



### IMAGE Radiation in dipole mode:

The KSD-B210 radiates sound in both directions into a sound velocity maximum.





## TECHNICAL SPECIFICATIONS:

<b>Model</b>	KSD-B210
<b>Input</b>	2 x XLR-symtr., remote control In (param. EQs by CAT5)
<b>Signal Processing</b>	DSP-controlled signal processing
<b>Modi</b>	Basslevel, Mode-switch, Delaypoti: 0 m bis 3.3 m
<b>Power</b>	2 x 250 W PWM
<b>Frequency Range</b>	25Hz - 80Hz
<b>Phase</b>	Switchable
<b>Chassis</b>	2 pcs. 10" woofer
<b>Dimensions</b>	33 x 33 x 85 cm



# KSD-RC

## Hardware-Remote-Controller

The KSD-RC is a hardware remote controller for controlling the various digitally equalized KSDigital loudspeakers.

1. use as adaptation of the installation: With the KSD-RC, the individual parameters such as filters, delay etc. can be conveniently adapted to the acoustic ambience and your own listening habits from the listening position.
2. use as monitor controller: With the volume control knob, the listening level of all connected speakers can be easily adjusted to dB-accurate, the MUTE and DIM buttons in direct access are practical tools for everyday studio use. This allows direct connection of the speakers to the workstation or other sources without volume control. On the A-Line and Linemaster models, the M/S function can be used with digital input.





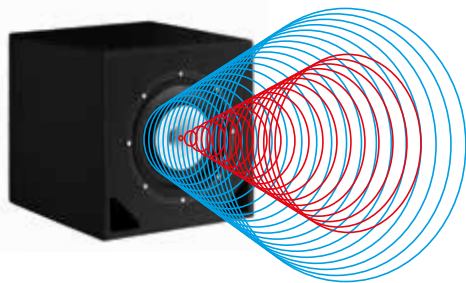
## TECHNICAL SPECIFICATIONS:

Parameter	KSD-RC
Volume Control	0...-75dB
Gain	-31dB ...0dB
EQ1..6-Freq:	6-Freq: selects filter operating frequency
EQ1..6-Gain:	12dB ... 126dB
EQ1..6-Q:	0.1 ... 20.0
Lowshelving:	-6dB ... +6dB
Higshelving:	-6dB ... +6dB
Delay:	0.0 3.1 m

# TECHNOLOGY



**KS-COAX:** coaxial set-up of the chassis means a shared arrangement of the sound sources on the Z axis. This has many advantages compared to a standard system. The membrane form of the bass/mid-range driver constitutes a wave guide for the high range driver and thereby directs the sound evenly to the listening position. In this way, the room's own acoustic characteristic is partly masked in the listening position bringing huge advantages, especially in acoustically difficult rooms. With neither horizontal nor vertical axial misalignment, an optimal impulse can be generated at the listening position. Coaxial systems, because of their impulse-true reproduction, principally have a neutral frequency and phase reproduction. As a genuine point source, the coaxial loudspeaker permits a significantly larger area of movement whilst listening. Vertical movement limitations or sound differences between listening while sitting and standing are substantially reduced in comparison with standard systems.



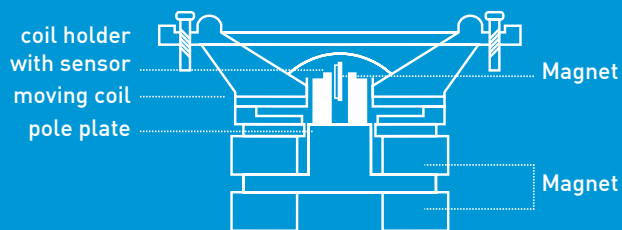
**Coax principle:** tweeter and bass/midrange driver uses the same axis.

**Red wave:** sound radiation tweeter

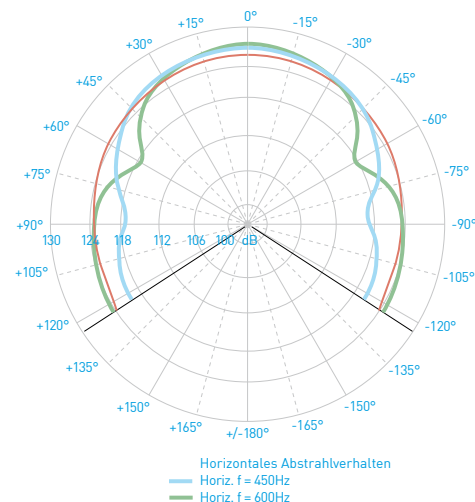
**Blue wave:** sound radiation bass chassis.



**dynamic movement controle - DMC™:** By virtue of their physical characteristics, all loudspeaker drivers produce errors when reproducing music signals. These errors may include decaying oscillations or delayed build up etc. These can affect, amongst others, the characteristics of amplitude, phase or frequency which is why one tries to minimize their effects with active filtering. Additional filters in the signal path however, distort the phase characteristic of the speaker and therefore reduce the impulse fidelity of the reproduction. The solution comes from a completely different approach to the problem of correcting the frequency characteristic: DMC™ Membrane Control. This system controls the movement of the membrane so that it exactly follows the music signal. Technically speaking, a loudspeaker driver is a special linear motor. As with every linear motor, speed, acceleration and distance travelled can be measured. As the speed and direction of movement of the membrane changes to the rhythm of the music, its exact position is being recorded by a sensor in the controlled driver. The values are fed into the analog controller where they are compared to the simultaneously measured values of the music signal. Only any differences to the expected values are transmitted to the output stage for correction. In this way it can be continuously guaranteed that the membrane only moves exactly in the way that is necessary to reproduce the signal input. In this way, decaying oscillations and other errors can be ruled out. With sound travelling at 330 meters/sec and the corrective electronics working at almost the speed of light, the errors are corrected even during their formation with zero latency. This basic principle however, means the very finest of attention to detail in its implementation and the design of sensors and active components and naturally requires the knowledge of the theoretical context, experience and feel. This effort is rewarded with a neutral, pure musical reproduction, a linear amplitude and (!) phase frequency characteristics down to the very lowest of frequencies without (!) latency times.

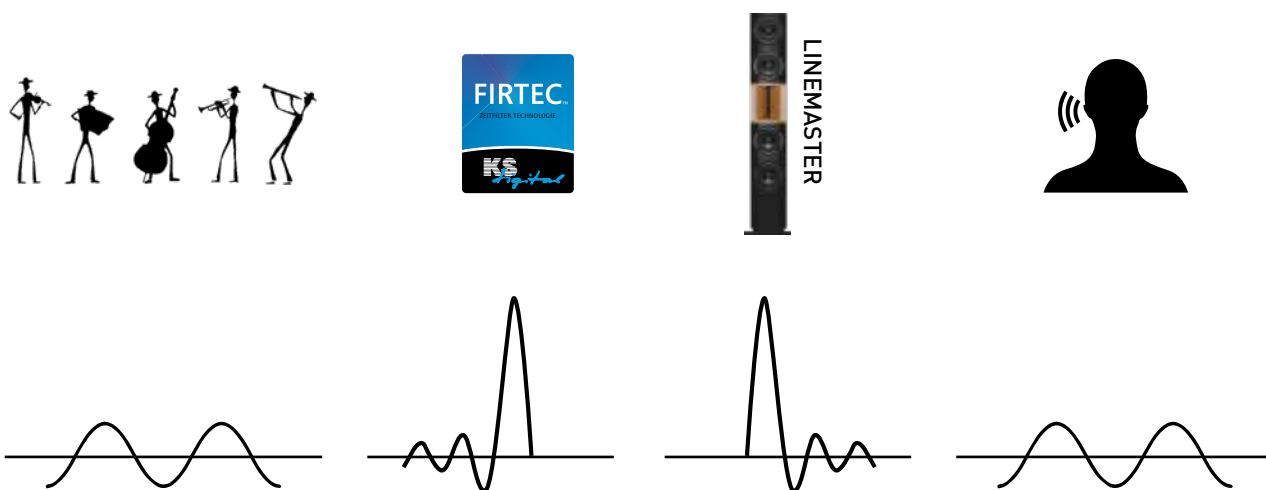


Section and illustration of an inductive controlled, mid-range KS driver

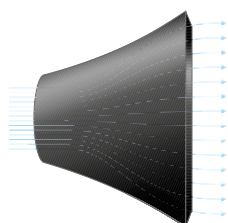




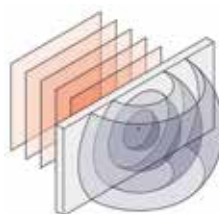
**KS-FIRTEC™** (FIR-Time filter technology): for correctly timed, linear phase and tonally correct reproduction. The programmed digital signal processor (DSP) in the FPGA works with a model of the physical characteristics of the loudspeaker including the type of chassis and cabinet. The parameters of the model can be then ascertained with real measurements of the loudspeaker setup. Accordingly, they consider all the tolerances of the components used including chassis, electronics or amplifier, even the acoustic phenomena around the edges of the cabinet. The main feature of the FIRTEC technology is that it linearizes not only the amplitude frequency response but also the phase progression. In other words, the FIRTEC process reproduces the music tonally untainted, all frequency ranges unadulterated and even in their correct time structure, identical to the way they were recorded, with no frequency ranges playing catch-up. All KS Digital loudspeakers are equipped with FIRTEC which ensures a constant phase progression over the entire frequency range with no latency. An absolute first worldwide with conus loudspeakers.



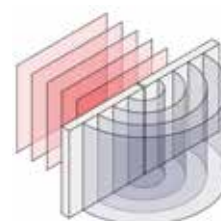
**Nearfield Extension: NE-X-T™** In the KSD-Linemaster, the reproduction of mid- and high-tone ranges from 800Hz and upwards is handled by a newly designed element radiating cylindrical waves. In cooperation with the Fraunhofer Institute for Applied Mathematics in Kaiserslautern, Germany, a slit shaped emitter was designed with an extremely powerful driver. With a cylindrical wave, the acoustic energy reduces by 3dB when the distance is doubled; with a normal spherical wave, this reduction is 6dB. This means that with the KSD-Linemaster, even in larger rooms, your listening area is practically anywhere in front of the speakers. Effectively, this means the intensity of the sound in your ear is due to a much higher proportion of direct waves and the effects of indirect or reflected waves is thereby significantly reduced. The room characteristics therefore have a much lesser influence on the acoustics. The direction of the cylindrical waves also ensures that reflections from the ceiling or floor are further minimized. In this way, a completely different musical experience can be enjoyed with an exactly defined sound. For frequencies up to 800Hz, the linear arrangement of the bass and mid-tone cone speakers also emits a perfectly matched cylindrical wave.



KS Digital cylindrical wave-adaptor  
to build a cylindrical wave



spherical wave in front of baffle  
Foto: [www.wikipedia.de](http://www.wikipedia.de)



cylindrical wave in front of baffle  
Foto: [www.wikipedia.de](http://www.wikipedia.de)

**KSdigital GmbH**

Altenkesslerstr. 17/D1, D-66115 Saarbrücken,

Telefon +49 681 - 844 932 50, [www.ksdigital.de](http://www.ksdigital.de), [info@ksdigital.de](mailto:info@ksdigital.de)

