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## The Neumann KH 420

The KH 420 represents the result of using the latest techniques in acoustical, electronic and mechanical design to bring a new benchmark in audio reproduction quality. In-house computer optimized drivers, a waveguide featuring Mathematically Modeled Dispersion™ (MMD<sup>™</sup>), flexible acoustical controls, digital input options, and an extensive mounting hardware range allow the KH 420 to be used in diverse acoustical conditions, with any source equipment, and in a wide variety of physical

The KH 420 has been designed for use as a mid-field or main monitor. It is particularly well-suited for use in music, broadcast, and post production studios for tracking, mixing, and mastering. The KH 420 can be used free-standing or flush mounted into a wall, and, in multichannel systems, can be mixed freely with other loudspeakers in the range.

A digital input module (DIM 1) with a delay feature for lipsync and time-of-flight adjustment can be added.





## **THREE-WAY MONITOR KH 420**

## Two-color + dimmable Neumann logo

Displays operation status and activation of the extensive protection system, and additional information if a DIM 1 is fitted

Elliptical Mathematically Modeled Dispersion™ (MMD™) waveguide for tweeter and midrange drivers

Smoother off-axis response

More forgiving of diverse acoustical environments

Wide horizontal dispersion brings freedom of movement across the mixing console

Narrow vertical dispersion reduces reflections off the mixing console and ceiling

### Powerful alloy fabric dome

Low-distortion high-frequency reproduction

### Midrange driver

Dedicated driver reproduces important midrange frequencies and reduces Doppler effect which reduces intermodulation distortion

New lightweight dome driver design with neodymium magnet has very high sensitivity which reduces distortion

## Long throw bass driver and flow optimized die cast basket

Linear pistonic motor gives very low non-linear distortion even at high excursions

Reduced air noise and rocking modes

# Vented cabinet (magnetically shielded) with field rotatable waveguide

Large front panel ports with high capacity for reduced compression

Vertical or horizontal cabinet mounting is possible

Computer optimized housing to reduce resonances and modes

### More features:

Smooth front panel with no discontinuities > Reduced diffraction and smoother frequency response

## Production consistency

Any KH 420 is "pair matched" to any other KH 420

Pinpoint localization of reproduced signals



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## **THREE-WAY MONITOR KH 420**

## XLR analog input with ground lift

Low noise symmetrical input stage with high common mode rejection ratio (CMRR)

Reduced buzzes in electrically noisy environments and overcomes ground loops

Universal dual switchedmode power supply (100 ... 240 V)

One version works in any country and robust to poor quality mains supplies

Dual power supplies (bass and mid/treble) for a better transient response

### Mounting hardware options

Great flexibility for mounting cabinets in diverse locations

Electronics panel can be remote located

## Accelerated Heat Tunneling heat sink

More efficient cooling of power amplifiers

 Equally effective whether the cabinet is mounted vertically or horizontally

## Robust and reliable electronic design

Powerful 330 + 140 + 140 Wpk amplifiers give an excellent transient response

 Independent thermo limiters for woofer, midrange and tweeter to protect the voice coils.
Woofer soft clip and excursion limiters Lipsync delay (O ... 10/12 frames)\* To align audio and video signals

Time-of-flight delay (0 ... 400 ms)\* > To compensate for listening distance differences

### Signal select\*

Analog, Digital A, Digital B, Digital A+B (all available with and without delay) 11

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Digital XLR and BNC inputs and buffered BNC output /

24 bit, 192 kHz, AES3 and S/P-DIF\* Compatible with commonly used digital signals



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Frequency Response and Acoustical Controls (Bass/Mid/Treble)



Parametric EQ



Horizontal Isobar Dispersion Plot



Group Delay



Max. Output Level (at 1% / 3% / 10% THD)



Acoustics	KH 420	
Free field frequency response	26 Hz 22 kHz, ± 3 dB	
Pass band free field frequency response	28 Hz 20 kHz, ± 2 dB	
Self-generated noise (with controls set to 100 dB SPL and 0 dB)	< 20 dB(A) at 10 cm	
Total harmonic distortion < 0.5 % at 95 dB SPL at 1 m	> 120 Hz	
Max. SPL in full space / calc. in half space at 3% THD at 1 m	116.4 / 122.4 dB SPL (averaged 100 Hz 6 kHz)	
Bass Capability (max. SPL calc. in half space at 3% THD at 1 m)	109.9 dB SPL (averaged 50 100 Hz)	
Max. short term SPL with IEC-weighted noise (IEC 60286-5) at 1 m, in typical listening conditions	109 dB(C) SPL	
Max. short term SPL with music material at 3 m, in typical listening conditions (pair)	103 dB(C) SPL (full range) 109 dB(C) SPL (with subwoofer)	
Max. long term SPL with pink noise at 3 m, in typical listening conditions (single/pair)	90 / 96 dB(C) SPL (full range) 90 / 96 dB(C) SPL (with subwoofer)	

## Electronics

Bass/Midrange/Treble Class AB amplifiers, cont. (peak) output power*	295 W (330 W) / 130 W (140 W) / 130 W (140 W)	
Controller design	analog, active	
Crossover frequencies / slope	570 Hz, 2 kHz / 24 dB/oct.	
Equalization: Bass / Mid / High	0, -2.5, -5, -7.5 dB / 0, -1.5, -3, -4.5 dB / +1, 0, -1, -2 dB	
Equalization: Parametric EQ	Gain: +4 –12 dB, Frequency: 25 320 Hz (3 ranges), Q: 1 8	
Protection circuitry	Excursion and Peak Limiter: Low; Thermo Limiter: Low, Mid, High; Overheat: Amplifiers	
Infrasonic filter frequency; slope	9 Hz; 18 dB/oct.	

## Analog Input

Impedance, electrically balanced	XLR, 14 kΩ	
Input gain control (sensitivity) at 1 m for a 0 dBu input	O dB to −14 dB	
Output level control	94, 100, 108, 114 dB SPL	
CMRR	> 56 dB @ 100 Hz 16 kHz	

## Digital Input (when optional DIM 1 accessory is fitted)

Format XLR / BNC	AES3 / AES3 and S/P-DIF	
Impedance XLR (balanced) / BNC (unbalanced)	110 Ω / 75 Ω (input/output)	
Input switching	Analog, Digital A, Digital B, Digital A+B (all available with and without delay)	
Digital converter: resolution, design	16 24-bit DAC, ΔΣ	
sampling rate	22.05, 24, 32, 44.1, 48, 64, 88.2, 96, 176.4, 192 kHz	
Digital sensitivity	-18 dBFS = 100 dB SPL at 1 m	
Audio-Video/lip sync and Time-of-Flight delay range	0 409.5 ms / 140.87 m (462' 6")	
Audio-Video/lip sync max. frames	0 10.2 (40 ms) frames 0 12.3 (33 ms) frames	
Resolution: time/distance	0.1 ms / 3.4 cm (1 ³/8")	
Latency D-A (A-D-A)	0.22 - 1.85 ms (0.54 ms)	

## Displays and Mains Power

Displays and indicators: power on	Neumann logo "White", dimmable: 100%/60%/30%/0%	
limit/clip	Neumann logo "Red", dimmable: 100%/60%/30%	
Mains Power Supply: voltage; frequency	100 - 240 V~; 50 - 60 Hz	
Power consumption: Idle / Full output	60 W (+5 W when DIM 1 fitted) / 800 W	

## Mechanics

Height x width x depth, mm (inches)	645 x 330 x 444 mm (25³/₃" x 13" x 17¹/₂")	
External volume	93 liters	
Weight	35 kg (+ 100 g when DIM 1 fitted)	
Drivers, magnetically shielded: Woofer / Midrange / Tweeter	265 mm (10") / 76 mm (3") / 25 mm (1")	
Mounting points	8 x M5 on rear	
Cabinet surface finish, color: custom	Painted, Anthracite (RAL 7021)	

## As a full service provider, Neumann offers an extensive range of accessories:

 LH 28 Tripod Stand Adaptor for mounting on standard 35 mm (1 3/8") diameter tripods.
LH 29 TV-spigot for mounting

LH 36 Tilting Adapter up to 18°.

onto a standard TV spigot.

▶ LH 37 Subwoofer Adaptor for mounting onto a subwoofer with top panel flange.

ange.

• LH 41 Base Plate to fit the loudspeaker onto a tripod stand with or without an LH 36.

▶ LH 42 Ceiling System to suspend the loudspeaker from a ceiling.

▶ LH 43 Surface Mounting Plate Used to spread the weight of a ceiling mounted loudspeaker.

▶ LH 45 Wall Bracket 'L' shaped adaptor for wall mouting.

LH 46 Adjustable Ceiling Drop Adaptor to vertically position a loudspeaker suspended off a ceiling.

REK 4 Remote Electronics Kit to locate the electronics panel up to 30 m (90') away from the loudspeaker cabinet. Cables are also available.

To aid transportation, storage and protection of the loudspeaker:

FKH 420 Flight Case for one KH 420

▶ GKH 420 B Metal Grille to protect the drivers.



The mounting hardware can be used in	different combinations
o locate the loudspeaker in many places	

Mounting on a floor stand:	KH 420 + LH 41 + LH 28 + K&M 26750 and 26735 or KH 420 + LH 41 + LH 36 + LH 28 + K&M 26750 and 26735
Mounting on a design monitor stand:	KH 420 + LH 41 + K&M 26795 or KH 420 + LH 41 + LH 36 + LH 29 + K&M 26795
Mounting on a lighting stand:	KH 420 + LH 41 + LH 29 or KH 420 + LH 41 + LH 36 + LH 29
Mounting on a subwoofer:	KH 420 + LH 41 + LH 28 + pole + KH 870 or KH 420 + LH 41 + LH 36 + LH 28 + pole + KH 870 or KH 420 + LH 41 + LH 36 + LH 37 + KH 870 or KH 420 + LH 41 + LH 37 + KH 870
Mounting on a wall:	KH 420 + LH 42 + LH 45
Mounting off a ceiling:	KH 420 + LH 42 + LH 43 or KH 420 + LH 42 + LH 46
Mounting off a lighting or truss bar:	KH 420 + LH 42 + LH 29

## Order Info

Product	Art. Number	
KH 420 G Active mid-field monitor with analog controller, electronic-balanced input, Metallic Anthracite	505988	
KH 420 G CCC Active mid-field monitor with analog controller, electronic-balanced input, Metallic Anthracite, CCC/KC certified	506792	
Adding digital inputs	Art. Number	
DIM 1 Digital input module with a delay feature for lipsync and time-of-flight adjustment	502251	
Recommended for KH 420	Art. Number	
KH 870 G 2 x 10" subwoofer with 7.1 Bass Manager	503947	
KH 870 G CCC 2 x 10" subwoofer with 7.1 Bass Manager, CCC certified	505566	

Please refer to the website > www.neumann.com for additional technical information. Furthermore, look for the extensive range of accessories that turn individual products into a complete monitoring system. In particular, look for the "Hardware Mounting Matrix" which shows how to connect the various LH brackets and adapters together to make a complete mounting solution. Detailed mechanical drawings are also available.