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THREE-WAY MONITOR KH 420



ENGLISH

KH 420



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The Neumann KH 420

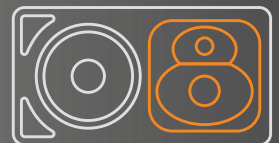
The KH 420 represents the result of using the latest techniques in acoustical, electronic and mechanical design to bring a new benchmark in audio reproduction quality. In-house computer optimized drivers, a waveguide featuring Mathematically Modeled Dispersion™ (MMD™), flexible acoustical controls, digital 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 locations.

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.



ROTATABLE WAVEGUIDE



1
Two-color + dimmable
Neumann logo

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

2
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

3
Powerful alloy fabric dome

- ▶ Low-distortion high-frequency reproduction

4
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

5
Long throw bass driver and
flow optimized die cast basket

- ▶ Linear piston motor gives very low non-linear distortion even at high excursions
- ▶ Reduced air noise and rocking modes

6
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



4-position bass, mid and treble acoustical controls **1**

- ▶ More control in diverse acoustical environments

Parametric EQ **2**

- ▶ Fixes unpredictable low-frequency response deviations caused by room acoustics
- ▶ Three frequency ranges for accurate adjustment
- ▶ Fine adjustment for frequency, gain and Q

Wide range input gain and output level controls **3**

- ▶ Easier interfacing with signal sources and highest achievable signal-noise ratio

Display dimmer **4**

- ▶ For low lighting level conditions or behind the screen applications

KH 420 WITH DIM 1 MODULE



5 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

6 Universal dual switched-mode 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

7 Mounting hardware options

- ▶ Great flexibility for mounting cabinets in diverse locations
- ▶ Electronics panel can be remote located

8 Accelerated Heat Tunneling heat sink

- ▶ More efficient cooling of power amplifiers
- ▶ Equally effective whether the cabinet is mounted vertically or horizontally

9 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

10 Lipsync delay (0 ... 10/12 frames)*

- ▶ To align audio and video signals

Time-of-flight delay (0 ... 400 ms)*

- ▶ To compensate for listening distance differences

11 Signal select*

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

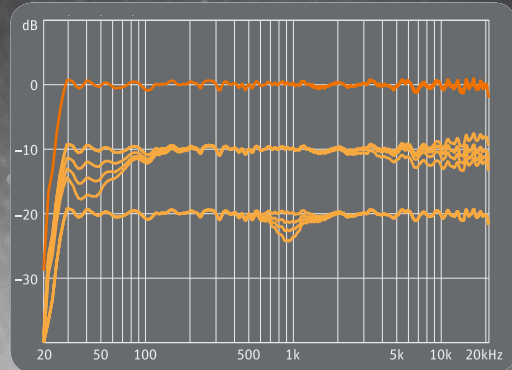
12 Digital XLR and BNC inputs and buffered BNC output / 24 bit, 192 kHz, AES3 and S/P-DIF*

- ▶ Compatible with commonly used digital signals

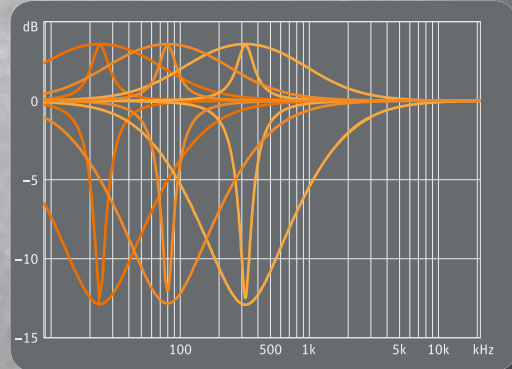
* When optional DIM 1 Digital Input Module (accessory) is fitted



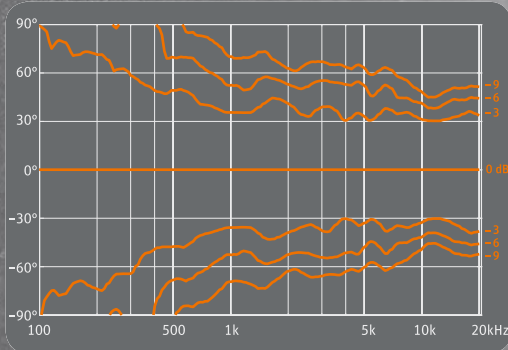
Frequency Response and Acoustical Controls (Bass/Mid/Treble)



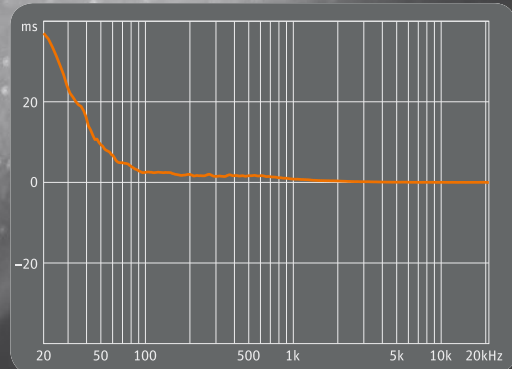
Parametric EQ



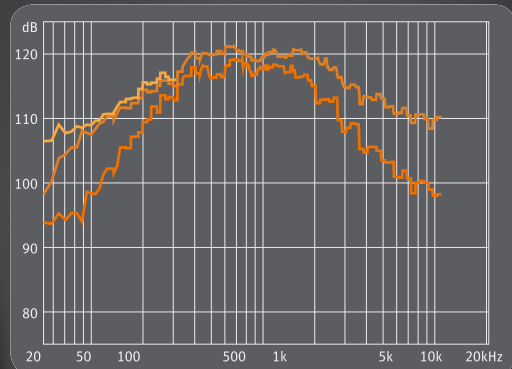
Horizontal Isobar Dispersion Plot



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 k Ω
Input gain control (sensitivity) at 1 m for a 0 dBu input	0 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, $\Delta\Sigma$
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 (25 ³ / ₈ " x 13" x 17 ¹ / 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)

Accessories

▶ 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 onto a standard TV spigot.



▶ LH 36 Tilting Adapter up to 18°.



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



▶ 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 mounting.



▶ 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 to 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, Anthracite	505988



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 adaptors together to make a complete mounting solution. Detailed mechanical drawings are also available.