



▶ NEUMANN.BERLIN

THREE-WAY MONITOR KH 310



ENGLISH

KH 310



The Neumann KH 310

The KH 310 is an active near-field monitor with various input options (analog and digital) for demanding applications in the areas of music production, broadcasting, post-production, mixing and mastering. It is also excellently suited for use as a front loudspeaker in medium-sized surround systems, or as a rear loudspeaker for larger multi-channel systems.

The drivers, all developed by Neumann, have been adapted to one another using acoustic simulations and an extensive series of measurements. A long-throw bass driver ensures low distortion even at high sound pressure levels.

The mid-frequencies essential for speech and vocals are reproduced with exceptional precision by a dedicated mid-range driver. High frequencies are handled by an alloy fabric dome in an elliptical Mathematically Modeled Dispersion™ (MMD) waveguide. The result is a transparent reproduction with a wide usable listening area while minimizing reflections in the vertical plane.

Thanks to a sealed cabinet and acoustic controls for bass, low-mid and high frequencies, the KH 310 is also a problem-solver for acoustically challenging spaces such as smaller project and post-production studios and OB vans.



Compact sealed horizontally-oriented cabinet (magnetically shielded)

- Easy to install into tight spaces, no standing wave resonances, fastest bass transient response, reduced acoustical and visual obstruction of main monitors and live room.

1
Powerful alloy
fabric dome

- ▶ Low-distortion high-frequency reproduction

2
Elliptical Mathematically
Modeled Dispersion™
(MMD™) waveguide

- ▶ Smoother off-axis response
- ▶ More forgiving of diverse acoustical environments

3
Two-color + dimmable
Neumann logo

- ▶ Displays operation status and activation of the extensive protection system and digital delay settings/digital signal errors in the D version

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

- ▶ Low distortions at high sound levels

Composite sandwich cone

- ▶ Damping of break-up modes

Ribbed surround

- ▶ Reduces radial standing waves

!
More features:

Wide horizontal dispersion

- ▶ Freedom of movement across the mixing console

Narrow vertical dispersion

- ▶ Reduces reflections off the mixing console

One-piece front panel with no discontinuities

- ▶ Reduced diffraction and smoother frequency response

Production consistency

- ▶ Any KH 310 is "pair matched" to any other KH 310
- ▶ Pinpoint localization of reproduced signals





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A VERSION



KH 310 A
▶▶ THREE-WAY ACTIVE LOUDSPEAKER
HIGH RESOLUTION · MAGNETICALLY SHIELDED

1
ACOUSTICAL CONTROLS (dB)
0dB -1.0dB -2.0dB -3.0dB -5.0dB -7.5dB
BASS LOW-MID TREBLE

2
OUTPUT LEVEL (dB SPL at 1 m)
114 108 100 94
INPUT GAIN
For 0 dB: 15 0 0

3 **4**
DISPLAY BRIGHTNESS (%)
100 50 30 15
LIFT CONNECT GROUND

5
ANALOG INPUT
PIN 1: REDD (DND)
PIN 2: SIGNAL+
PIN 3: SIGNAL-
Max. input level: 24 dBu
Electromagnetically shielded

DESIGNED IN GERMANY · MADE IN IRELAND

CAUTIONS AND WARNINGS

Refer to qualified personnel for servicing. There are no user-serviceable parts inside this product.
Connect only to correctly earthed mains power.
Do not expose this appliance to moisture or rain.
This loudspeaker is capable of delivering sound pressure levels in excess of 85 dB(A), which may cause permanent hearing damage.



MAINS POWER



AC 100-240 V
50/60 Hz
Max. power consumption: 400 W

KH310A/G

D VERSION



KH 310 D
▶▶ THREE-WAY ACTIVE LOUDSPEAKER
HIGH RESOLUTION · MAGNETICALLY SHIELDED

1
ACOUSTICAL CONTROLS (dB)
0dB -1.0dB -2.0dB -3.0dB -5.0dB -7.5dB
BASS LOW-MID TREBLE

2
OUTPUT LEVEL (dB SPL at 1 m)
114 108 100 94
INPUT GAIN
For 0 dB: 15 0 0

3 **4**
DISPLAY BRIGHTNESS (%)
100 50 30 15
LIFT CONNECT GROUND

6
DELAY
0ms 125.0ms 250.0ms
0.0ms 1.0ms 2.0ms 3.0ms 4.0ms 5.0ms 6.0ms 7.0ms 8.0ms 9.0ms 10.0ms 11.0ms 12.0ms 13.0ms 14.0ms 15.0ms 16.0ms 17.0ms 18.0ms 19.0ms 20.0ms 21.0ms 22.0ms 23.0ms 24.0ms 25.0ms 26.0ms 27.0ms 28.0ms 29.0ms 30.0ms 31.0ms 32.0ms 33.0ms 34.0ms 35.0ms 36.0ms 37.0ms 38.0ms 39.0ms 40.0ms 41.0ms 42.0ms 43.0ms 44.0ms 45.0ms 46.0ms 47.0ms 48.0ms 49.0ms 50.0ms 51.0ms 52.0ms 53.0ms 54.0ms 55.0ms 56.0ms 57.0ms 58.0ms 59.0ms 60.0ms 61.0ms 62.0ms 63.0ms 64.0ms 65.0ms 66.0ms 67.0ms 68.0ms 69.0ms 70.0ms 71.0ms 72.0ms 73.0ms 74.0ms 75.0ms 76.0ms 77.0ms 78.0ms 79.0ms 80.0ms 81.0ms 82.0ms 83.0ms 84.0ms 85.0ms 86.0ms 87.0ms 88.0ms 89.0ms 90.0ms 91.0ms 92.0ms 93.0ms 94.0ms 95.0ms 96.0ms 97.0ms 98.0ms 99.0ms 100.0ms 101.0ms 102.0ms 103.0ms 104.0ms 105.0ms 106.0ms 107.0ms 108.0ms 109.0ms 110.0ms 111.0ms 112.0ms 113.0ms 114.0ms 115.0ms 116.0ms 117.0ms 118.0ms 119.0ms 120.0ms 121.0ms 122.0ms 123.0ms 124.0ms 125.0ms 126.0ms 127.0ms 128.0ms 129.0ms 130.0ms 131.0ms 132.0ms 133.0ms 134.0ms 135.0ms 136.0ms 137.0ms 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7
SIGNAL SELECT
AES 3 INPUT
AES 3 INPUT
AES 3 INPUT

8
AES 3 INPUT

5
ANALOG INPUT
Max. input level: 24 dBu
Electromagnetically shielded

DESIGNED IN GERMANY · MADE IN IRELAND
Göing Neumann GmbH, Offenhausen · 96134 Heide, Germany



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

- ▶ More control in diverse acoustical environments

2 Wide range input gain and output level controls

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

3 Display dimmer

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

4 Ground lift

- ▶ Reduced buzzes in electrically noisy environments and overcomes ground loops

5 XLR analog input

6 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

7 Signal select

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

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

- ▶ Compatible with commonly used digital signals

9 Universal switched-mode power supply (100 ... 240 V)

- ▶ One version works in any country and robust to poor quality mains supply

10 Mounting hardware options

- ▶ Great flexibility for mounting cabinets in diverse locations

11 Robust and reliable electronic design

- ▶ Powerful 210 + 90 + 90 Wpk amplifiers give an excellent transient response

- ▶ Large efficient heatsink

- ▶ Independent thermo limiters for woofer, midrange and tweeter to protect the voice coils. Woofer soft clip and excursion limiters



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▶ Acoustics

	KH 310 A	KH 310 D
Free field frequency response	34 Hz ... 21 kHz, ± 3 dB	
Pass band free field frequency response	36 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	> 85 Hz	
Max. SPL in full space / calc. in half space at 3% THD at 1 m	110.3 / 116.3 dB SPL (averaged 100 Hz ... 6 kHz)	
Bass Capability (max. SPL calc. in half space at 3% THD at 1 m)	104.5 dB SPL (averaged 50 ... 100 Hz)	
Max. short term SPL with IEC-weighted noise (IEC 60286-5) at 1 m, in typical listening conditions	113 dB(C) SPL	
Max. short term SPL with music material at 2.3 m, in typical listening conditions (pair)	100 dB(C) SPL (full range) 107 dB(C) SPL (with subwoofer)	
Max. long term SPL with pink noise at 2.3 m, in typical listening conditions (single/pair)	93 / 99 dB(C) SPL (full range) 94 / 100 dB(C) SPL (with subwoofer)	

▶ Electronics

Bass / Midrange / Treble Class AB amplifiers, cont. (peak) output power*	150 W (210 W) / 70 W (90 W) / 70 W (90 W)	
Controller design	analog, active	
Crossover frequencies	650 Hz, 2 kHz	
Crossover slope	24 dB/oct., 4th order	
Equalization: Bass / Low-Mid / High	0; -2.5; -5; -7.5 dB / 0; -1.5; -3; -4.5 dB / +1; 0; -1; -2 dB	
Protection circuitry	Excursion and Peak Limiter: Low; Thermo Limiter: Low, Mid, High	
Infrasonic filter frequency; slope	15 Hz; 6 dB/oct.	

▶ Analog Input

Impedance, electrically balanced	XLR, > 13 k Ω	
Input gain control (sensitivity) at 1 m for a 0 dBu input	0 dB to -15 dB	
Output level control	94, 100, 108, 114 dB SPL	
CMRR	> 56 dB @ 100 Hz ... 15 kHz	

▶ Digital Input/Output

Format XLR / BNC	-	AES3 / AES3 and S/P-DIF
Impedance XLR (balanced) / BNC (unbalanced)	-	110 Ω / 75 Ω
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	-	32 ... 192 kHz
Digital sensitivity / D-A dynamic range	-	-18 dBFS / 120 dB
Audio-Video/lip sync and Time-of-Flight delay range	-	0 ... 409.5 ms
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 ($1 \frac{3}{8}$ "")
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	24 W / 300 W	30 W / 300 W

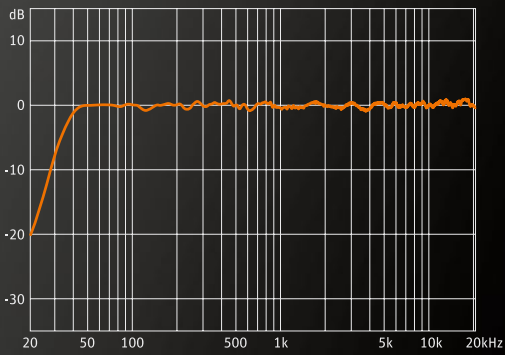
▶ Mechanics

Height x width x depth, mm (inches)	253 x 383 x 292 mm (10 " x $15 \frac{1}{8}$ " x $11 \frac{1}{2}$ "")	
Internal net volume / external volume	16.2 liters / 28.3 liters	
Weight	13.0 kg	13.1 kg
Drivers, magnetically shielded: Woofer / Midrange / Tweeter	210 mm ($8 \frac{3}{4}$ "") / 75 mm (3") / 25 mm (1")	
Mounting points	2 x M8 on side panels, depth from outside of cabinet 25 mm (1"). Rear panel screws for attaching LH 41 base plate. Rear panel brackets.	
Cabinet surface finish, color: custom	Painted, Anthracite (RAL 7021)	

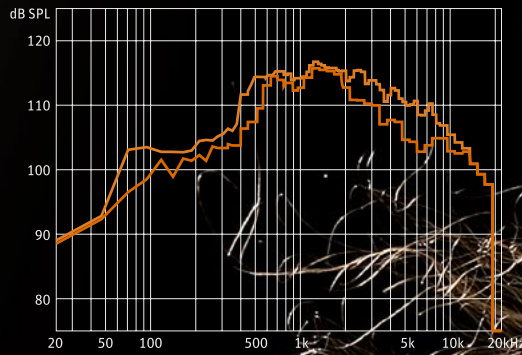
* THD+N < 0.1% with limiter deactivated

THREE-WAY MONITOR KH 310

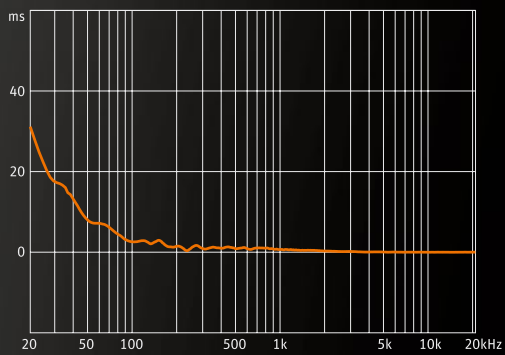
Frequency Response



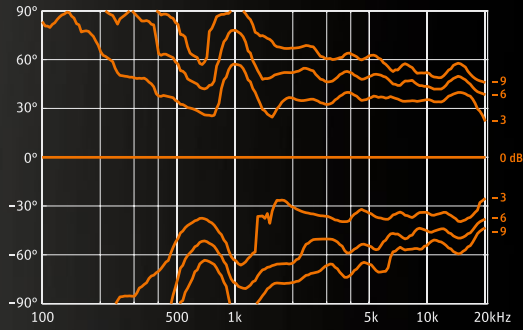
Maximum Output Level (at 1% / 3% THD)



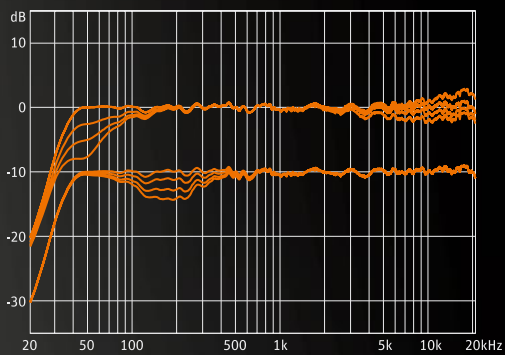
Group Delay



Horizontal Isobar Dispersion Plot



Acoustical Controls (Bass/Low-Mid/Treble)



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 25 Mounting Bracket for wall, ceiling fastening, and loudspeaker stands.



▶ 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.



▶ LH 47 Mounting Adaptor for ceiling and wall mounting.



▶ LH 48 Tripod Adaptor Plate (115 mm) to mount on König & Meyer tripods No. 26790 and No. 26795.



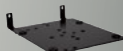
▶ LH 36 Tilting Adapter up to 18°.



▶ 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.



To aid transportation, storage and protection of the loudspeaker:

▶ BKH 310 Soft Carry Bag for one KH 310



▶ FKH 310 Flight Case for one KH 310



▶ GKH 310 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 310 + LH 25 + LH 28 or
KH 310 + LH 41 + LH 28 or
KH 310 + LH 41 + LH 36 + LH 28 or
KH 310 + LH 25 + LH 48 + K&M tripod 26795 or
KH 310 + LH 41 + K&M tripod 26795 or
KH 310 + LH 25 + LH 61 + LH 48 + K&M tripod 26795 or
KH 310 + LH 41 + LH 36 + LH 48 + K&M tripod 26795

Mounting on a lighting stand:

KH 310 + LH 25 + LH 29 or
KH 310 + LH 41 + LH 29 or
KH 310 + LH 41 + LH 36 + LH 29

Mounting on a subwoofer:

KH 310 + LH 25 + LH 37 + KH 870 or
KH 310 + LH 41 + LH 37 + KH 870 or
KH 310 + LH 41 + LH 36 + LH 37 + KH 870 or
KH 310 + LH 25 + LH 28 + pole + KH 870 or
KH 310 + LH 41 + LH 28 + pole + KH 870 or
KH 310 + LH 41 + LH 36 + LH 28 + pole + KH 870

Mounting on a wall:

KH 310 + LH 25 or
KH 310 + LH 25 + LH 43 or
KH 310 + LH 25 + LH 47 + LH 45

Mounting off a ceiling:

KH 310 + LH 25 or
KH 310 + LH 25 + LH 43 or
KH 310 + LH 25 + LH 47 + LH 43 or
KH 310 + LH 25 + LH 47 + LH 46

Mounting off a lighting or truss bar:

KH 310 + LH 25 + LH 29

▶ Order Info

Product	Art. Number
KH 310 A L G Analog input, Left version	505575
KH 310 A R G Analog input, Right version	505576
KH 310 A L G CCC Analog input, Left version, CCC certified	505577
KH 310 A R G CCC Analog input, Right version, CCC certified	505578
KH 310 D L G A/D input, delay feature, Left version	505995
KH 310 D R G A/D input, delay feature, Right version	505996
KH 310 D L G CCC A/D input, delay feature, Left version, CCC certified	505997
KH 310 D R G CCC A/D input, delay feature, Right version, CCC certified	505998



Recommended for KH 310	Art. Number
KH 810 G 10" subwoofer with 7.1 Bass Manager	503951
KH 810 G CCC 10" subwoofer with 7.1 Bass Manager, CCC certified	505545
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.