Pocket Guide 2012

English

KK 204/205

KM A Series

TLM 102

Studio and Stage Microphones

Analog and digital (incl. Accessories)

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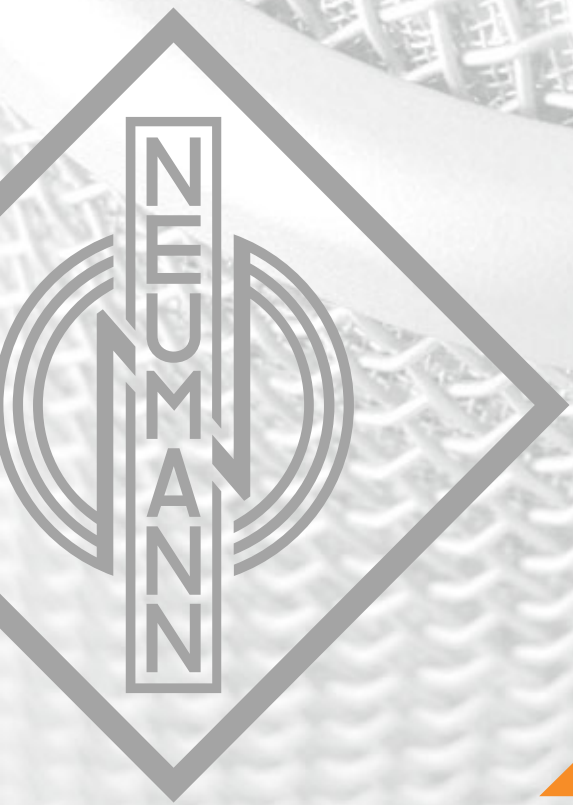
Product Information

Solution-D

Digital Microphones



www.neumann.com

Why digital signal processing?

With the development of the first digital recording equipment, the digitization of audio data began many years ago, at the end of the signal processing chain. By now, almost all audio signal processing components are available in digital form.

It is well-known that digital signals provide the necessary conditions for mathematically precise calculation and processing, allowing signals to be modified, copied, transmitted and stored as desired, with no loss of quality.

In contrast, analog signal processing is characterized by limited precision, error accumulation, a lack of redundant signal information, and no possibility to include error correction procedures. In the analog signal transmission chain, every processing step is thus associated with a deterioration of signal quality. This results in a progressive decrease in dynamic range, due to the introduction of noise voltages and nonlinear distortion.

Moreover, digital processing permits the performance of functions that are difficult or impossible to implement by means of analog signal processing. This is particularly the case with functions that require intermediate data storage.

A microphone technology milestone

With the Solution-D digital microphone system, Neumann has succeeded in bringing the dynamic range and signal fidelity of the best analog studio microphones into the digital domain, thus making possible an entirely digital signal chain for audio production.

Thanks to optimized A/D conversion, especially developed synchronization technology, and the capability of controlling standard microphone parameters and various integrated signal processing functions remotely, Solution-D meets the most demanding requirements of professional audio production. The fundamental principle of the technology permits recordings to be made with no „bottlenecks“ in the signal chain.

An extremely fast peak limiter integrated into the microphone provides constant protection from overloading. The Neumann A/D converter, which is likewise located in the microphone, eliminates the necessity of tedious experimentation with external converters and preamps. The Neumann sound, with optimal quality, is therefore captured directly on the hard drive. Users can rely onw this, and thus have more time for the essentials.

Components and interfaces

The power supply, remote control, synchronization, and signal and data transmission of the digital microphones

conform to the AES42 standard. Neumann made a decisive contribution to the development of this standard, which supplies the necessary preconditions for the implementation of digital microphone technology.

A Solution-D digital microphone system consists of the following components: One or more digital microphones, a Digital Microphone Interface (DMI) and the Remote Control Software (RCS), which facilitates the operation and permits the remote control of the microphones. A PC or Mac can serve as the control computer, which of course can also be used simultaneously as Didital Audio Workstation for recording. A DMI permits connection to all subsequent devices that have an AES/EBU interface.

As an alternative to a DMI, a „Connection Kit" can be used to connect Solution-D microphones to the AES/EBU or S/PDIF interface of a recording system. However, if a Connection Kit is used, it is not possible to control the microphone functions remotely. Thus a control computer is not required. In this case, if it is necessary to synchronize several microphones, a sample rate converter must be used.

All of the possible Solution-D system configurations are illustrated on the following pages.

If users later wish to take advantage of additional adjustable parameters and remotely controlled functions, the system can be expanded at any time through the acquisition of a separate DMI.

Remote control of standard microphone parameters

The DMI digital microphone interfaces permits familiar microphone settings such as the directional characteristic, pre-attenuation and low-cut filter to be controlled remotely and saved. Changing the settings of microphone parameters is greatly simplified, which makes it possible for settings to be tested rapidly from the monitoring position, in order to optimize the sound quality. All of the settings can be saved together with any desired additional information, thus eliminating the necessity of keeping a hand-written log of the recording procedure.

Integrated digital audio signal processing

An A/D converter, developed and patented by Neumann, receives the signal directly from the capsule, and is optimized for the specific signal and impedance parameters of the capsule. Level matching that may be desired for subsequent equipment takes place in the digital domain, in the microphone. Analog components such as preamplifiers and A/D converters are thus no longer required, resulting in considerable cost savings.

The special A/D converter technology makes it possible to have the complete dynamic range of the microphone capsule available in the digital domain, with no restrictions. Setting gain levels is therefore no longer critical.

A particularly significant feature is the peak limiter function. Located for the first time in the most effective position, at the signal source, it reduces transient peaks as the level reaches 0 dBFS, when distortion would normally be inevitable. Analog microphones require extensive headroom in the subsequent signal path to handle such signal peaks, which are short but have a large amplitude. Independently of the peak limiter, a compressor/limiter can also be activated, permitting detailed adjustment via the corresponding parameters.

In addition, functions such as mute and phase reverse are also integrated into the microphone. Visual commands such as „On air" are implemented by means of remotely controlled LEDs in the D-01 microphone. Acoustic commands in the form of various test signals can be used to facilitate line checks.

The firmware of all the digital microphones can be updated via uploading at any time.

Data transmitted by the microphone

Information transmitted by the microphone includes the name of the manufacturer, the model and serial number, the software version installed in the microphone, and the remotely controllable functions that are supported by the microphone. Status indicators such as „ready for operation" and specific warning functions are also transmitted.

A/D conversion

Despite continuing improvements, integrated circuits available on the market still constitute a limiting factor in the conversion of audio data from analog to digital form. The best currently available delta-sigma A/D converters typically achieve a dynamic range of 115 dB to 120 dB, A-weighted, with a word length of 24 bits.

TRUE TO THE ORIGINAL:

The satisfaction of recording the uncolored original, with no „bottlenecks" between the capsule and the recording system.

TRUE CONVERSION:

The guarantee of having one of the best A/D converters available.

In comparison, a high-quality analog condenser microphone has a dynamic range of up to 130 dB. A/D conversion with a considerably better performance is therefore required, in order to prevent the addition of noise to the signal. At the same time, this process must be optimally adapted to the signal levels and source impedance found in the microphone.

If the A/D conversion is carried out only after the signal reaches the mixing console or other equipment, this is usually associated with loss of signal quality, since the conversion takes place only after the gain levels have been set. Headroom aspects and noise contributed by the microphone preamplifier and A/D converter thus affect the dynamic range.

Consequently, the development goal was to achieve high-quality digitization of the capsule signal directly in the microphone, so that level matching and other processing steps could be carried out in the digital realm. This is the only way of maintaining the full quality of the microphone signal.

Synchronization

The AES42 standard defines the following two methods of synchronizing the microphone with the receiver (e.g. a mixing console or a DMI digital microphone interface).

Mode 1: The microphone operates asynchronously, using the sampling rate of its internal quartz oscillator. In this case, a sample rate converter is required at the receiver. This mode should be used only if mode 2 synchronization is not possible, since conventional sample rate converters often impair the dynamic range, and increase the latency time.

Mode 2: The microphone is synchronized with a master word clock. This can be either an external word clock or the internal word clock of the DMI. In this case a frequency/phase comparison with the master word clock is carried out in the AES42 receiver (DMI). A control signal is generated that is transmitted to the microphone via the remote control data stream, controlling the frequency of the quartz oscillator in the microphone.

Via the BNC output of the DMI, the internal word clock generator can be used to synchronize additional DMIs and subsequent processing equipment, such as a mixing console.

The microphones

The signal generated by the capsule is converted directly into a digital signal. The result is a digital output signal with 24 bits and, for example, a dynamic range of 130 dB (A-weighted) in the case of the D-01.

If required, the digital signal processing (DSP) functions integrated into the microphone can be configured and controlled remotely via the DMI digital microphone interface and the RCS remote control software. These functions include gain setting, changing the directional characteristic in the case of the D-01, pre-attenuation, a low-cut filter, a compressor/limiter with an additional de-esser function, and a peak limiter. Here in particular the digital approach can provide a significant advantage. The peak limiter, which receives the output signal almost directly from the capsule, functions as a completely automatic „safety valve“, permitting the safe utilization of the entire available dynamic range even in stressful recording situations.

External components that were previously required, such as analog preamplifiers and A/D converters, are no longer necessary.

To permit clear identification, the microphones send information such as the name of the manufacturer, model, serial number and currently installed software version to the receiver.

The microphones are equipped with three-pin XLR connectors. A bidirectional signal conforming to the AES42 standard is transmitted, containing the balanced digital microphone output signal, the phantom power supply, and a remote control data stream, which includes a signal for synchronizing the microphones with a master clock.

The D-01 large-diaphragm digital microphone

Its 15 different remotely controlled directional characteristics and numerous additional features permit the D-01 to be optimally adapted to almost any recording situation. These comprehensive features demonstrate what can be achieved with digital microphone technology. The D-01 has a newly developed capsule, and is valued by users particularly for its hitherto unknown transparency and fidelity to detail.

TRUE HANDLING SAFETY:

Anti-clipping processing ensures handling safety, and reduces stress.

The System

Description

The TLM 103 D large-diaphragm digital microphone

For many years the analog version of the TLM 103 D has played an important role for ambitious home recording and project studios. This microphone has made the Neumann sound available to a broad spectrum of demanding audio engineers and musicians. The TLM 103 D provides all of the sound features of its analog counterpart, in addition to the advantages of digital circuit technology described above.

The KMS 104 D and KMS 105 D digital vocal microphones

The microphones KMS 104 D and KMS 105 D are the transition of the well-established KMS 104/105 analog microphones into the digital domain. Based on the AES42 standard, these microphones are an ideal choice for live and on-stage applications. They provide all of the features of their analog counterparts. Additionally, they offer the advantages of the digital circuit technology, such as extended dynamic range, a more robust operation (EMC safe) and the avoidance of clipping as a result of the integrated peak limiter/ compressor. Use of one of the digital microphone interfaces together with the Remote Control Software (RCS) permits pre-programmed settings to be stored in the microphones.

The KMR 81 D digital shotgun microphone

The KMR 81 D is the transition of the well-established KMR 81 i shotgun microphone into the digital domain. It provides all of the features of its analog counterpart, which made it a favorite of sound engineers in movie and documentary productions. Additionally it offers the advantages of the digital circuit technology, such as extended dynamic range, a more robust operation (EMC safe) and the avoidance of clipping as a result of the integrated peak limiter/compressor. The settings for all functions can be recalled, set and stored in the microphone by using one of the digital microphone interfaces.

The KM D digital miniature microphones

The KM D microphones are the digital counterparts of the well-known, successful 180 miniature microphone series.

In the analog realm, the KM 184 in particular is regarded as a standard for miniature condenser microphones, and is one of the best-selling of all Neumann microphones.

Eight different capsule characteristics are provided. The KM D microphones have a modular design, so that the KM D output stage can be combined with different capsules. All capsule heads can also be used with the analog KM A output stage.

The S/PDIF and AES/EBU Connection Kits

In addition to the DMI digital microphone interface, Neumann also provides „Connection Kits“ at an attractive price, to permit the simple connection of individual microphones to the widely used S/PDIF and AES/EBU interfaces. This allows numerous users to enjoy easy access to „Neumann sound direct to disk“, without the extensive functionality of a comprehensive DMI. Power is provided by an included plug-in power supply unit.

Of course it is possible to upgrade to a DMI at any time, in order to take advantage of the additional configuration capabilities and DSP functions.

The DMI-2 digital microphone interface

The 2-channel DMI-2 digital microphone interface provides powering and remote control of Solution-D microphones, and outputs their audio data in AES/EBU format.

Microphones of other manufacturers that are compatible with the AES42 standard (e.g. the Sennheiser MKH 8000 with MZD 8000) can of course also be connected to the digital microphone interface, if they can be synchronized.

The Interface is operated via the Neumann RCS remote control software, which is installed on a desktop or laptop computer. The computer is connected to the DMI via a USB port and a USB to RS 485 interface converter. If a large number of microphones is used, several DMIs can be cascaded. In this case, each digital microphone interface can be addressed individually.

In addition to a word clock input and output, the DMIs also have an internal word clock generator. If no master word clock signal (e.g. from a mixing console) is present at the input, the DMI internal word clock is used automatically to synchronize the microphone channels, and the signal is switched to the word clock output.

TRUE TIME SAVINGS:

Reduced time requirements and personnel costs, particularly due to faster post production processing.

TRUE ECONOMY:

Lower investment costs, since separate A/D converters and preamps are no longer needed. This also means space and weight savings (e.g. in the OB van).

External commands such as „On Air“ (red light) can be controlled via a 9-pin user port.

Overview of the most important functions:

- AES42 to EBU conversion
- Powering, remote control and synchronization of the microphones without a sample rate converter (AES42, mode 2*)
- Automatic word clock or AES11 synchronization
- All sample rates, from 44.1 kHz to 192 kHz
- Complete control and storage of the settings via Mac or PC

* Explanation Mode 2:
The DMI performs a frequency/phase comparison between the word clock signal recovered from the mic signal, and the word clock of the DMI. From the phase deviation thus determined, the DMI calculates a control signal which is transmitted via the remote control data stream to the mic, where it controls the frequency of the internal quartz oscillator.

The DMI-2 portable digital microphone interface

The DMI-2 portable is the ideal digital microphone interface solution for ENG and other field recording applications.

It supports two digital microphones and allows adjustment of the Gain, Pre Attenuation and Low Cut filter settings at the device The front panel display shows the selected gain and, by means of bar graphs, shows the current signal level and any gain reduction. Of course, these functions can also be operated via the RCS software. Microphone presets can be stored inside the DMI-2 portable and recalled for use in the field.

The DMI-8 digital microphone interface

The DMI-8, an eight-channel version of the digital microphone interface is considerably simplifying the setup for multichannel applications.

In addition to the proven functions of the two-channel DMI-2 the DMI-8 also offers the following features:

- The capability of cascading up to 128 channels
- Level meter and gain setting on the front panel, operable even without a computer
- D-sub 25 outputs with Tascam® and Yamaha® pin assignments
- Optical ADAT® interface
- Open architecture for later connection to other multichan- nel interfaces and audio networks, such as Ether Sound® and MADI

The DMI-8 offers several possibilities for easy integration into audio networks. The ES100 (DMI-8) module permits integration into EtherSound networks.

The RCS remote control software

All parameters are displayed on the screen, and can be changed at any time. During production, the audio engineer can monitor the operating status and parameters of all of the connected microphones and, if necessary, can change the settings quickly and easily.

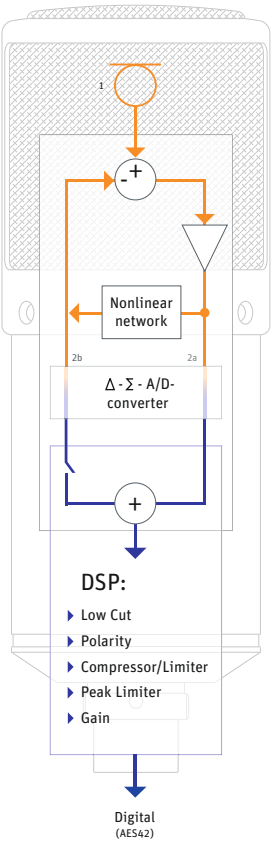
The parameters displayed include the directional characteristic, pre-attenuation, low-cut filter, gain, various microphone status indicators, command indicators, and mute and phase reverse functions. Signal levels and the operation of the compressor or limiter can also be monitored on the screen.

Information transmitted by the microphone, such as the name of the manufacturer, model and serial number, is also displayed for clear identification of the connected microphones. Moreover, it is possible to input additional information such as the name of the sound source. Settings for the complete microphone setup can of course be stored and retrieved as required.

RCS REMOTE CONTROL SOFTWARE:

The most recent updates for the Solution-D digital microphone system software are available in the Downloads section of our website www.neumann.com.

The Principle



Analog capsule

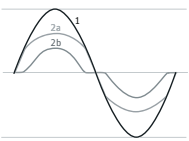
Ideal matching of Neumann A/D-converter with microphone capsule

Neumann A/D converter:

Patented process

Dynamic range ≥ 140 dB

The capsule signal is transferred to the digital domain without any loss of quality.



Entire range of functionality remote controlled

Synchronization with studio word clock

Clipping protection

Connection kit configuration examples (mono only,

D-01

Preset: 48 kHz[3)]

KM D

Preset: 44.1, 48 or 96 kHz[3)]
(other preset frequencies selectable and storable via RCS and DMI)

TLM 103 D

Preset: 48 kHz[3)]
(other preset frequencies selectable and storable via RCS and DMI)

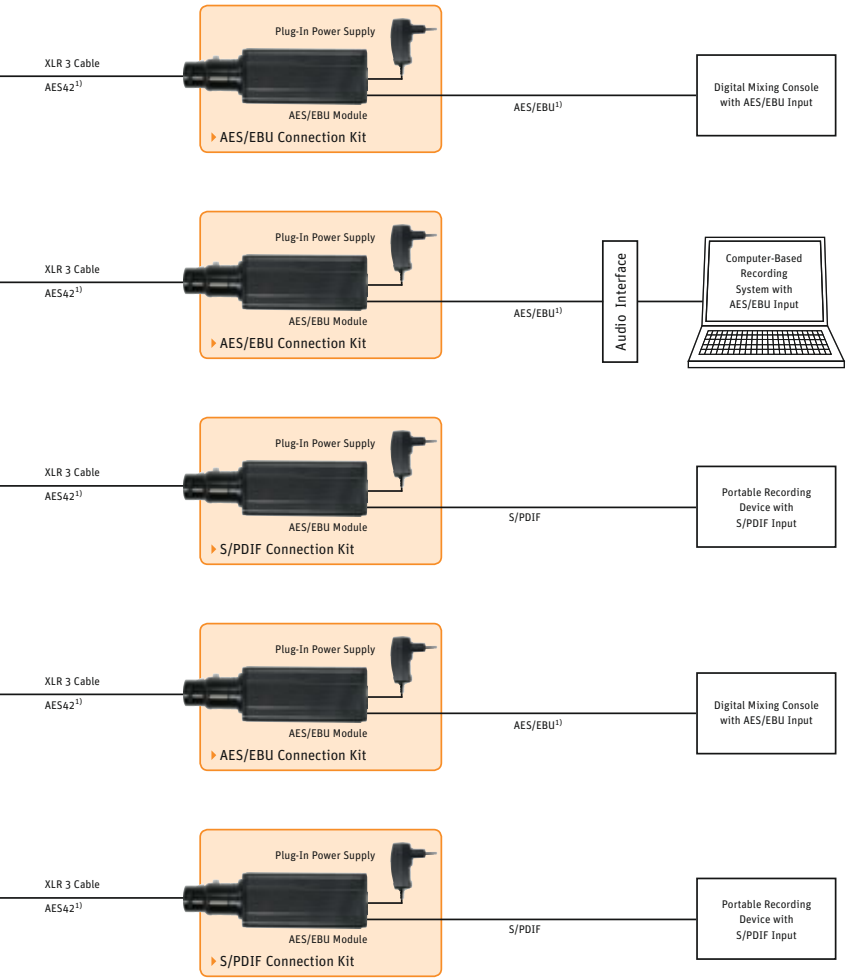
KMS 104 D / KMS 105 D

Preset: 48 kHz[3)]
(other preset frequencies selectable and storable via RCS and DMI)

KMR 81 D

Preset: 48 kHz[3)]
(other preset frequencies selectable and storable via RCS and DMI)

synchronization and remote control not possible):



[1)] 110 ohms AES/EBU cable recommended [2)] nx = Nextel black [3)] word clock frequency without remote control

DMI configuration examples

(full functionality is provided, including microphone synchronization, as well as remote

XLR 3 Cable
AES42[1)]

XLR 3 Cable
AES42[1)]

KMS 104 D/KMS 105 D

XLR 3 Cable AES42[1)]

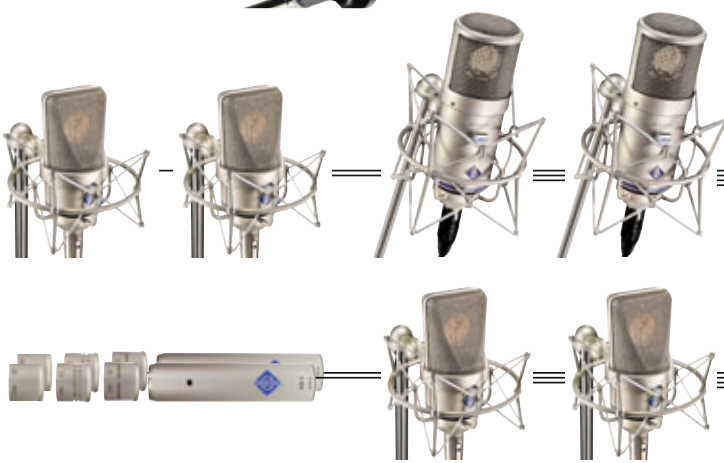
XLR 3 Cable AES42[1)]

KM D

XLR 3 Cable AES42[1)]

XLR 3 Cable AES42[1)]

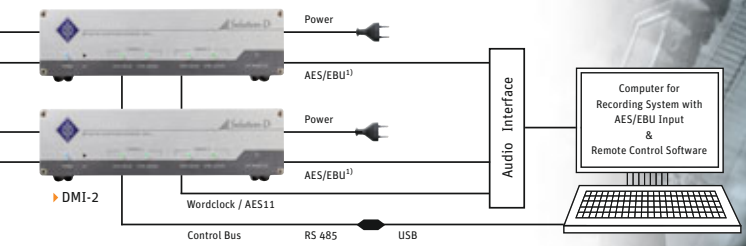
KMR 81 D/KM 120 D (MS Configuration)

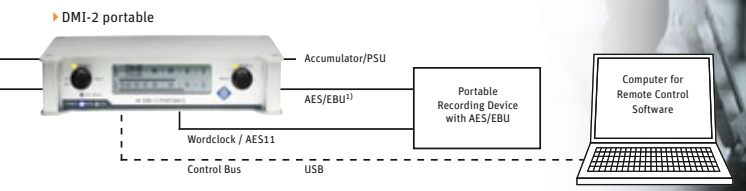


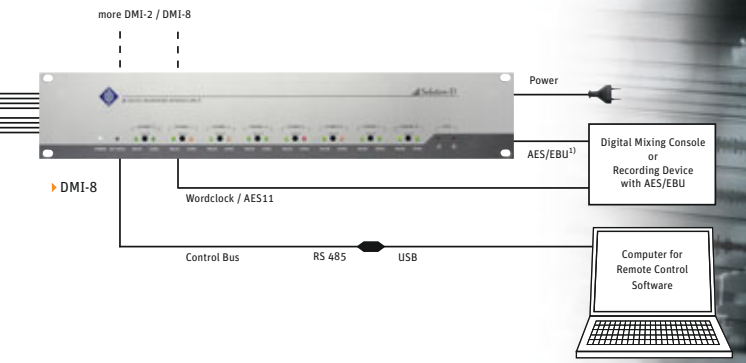
XLR 3 Cable
AES42[1)]

XLR 3 Cable
AES42[1)]

control and the display of parameters via PC or Mac):







[1)] 110 ohms AES/EBU cable recommended

Large Diaphragm Microphones

D-01 microphone
in wooden box

TLM 103 D:

TLM 103 D microphone, stand mount, wooden box

TLM 103 D mt:

TLM 103 D mt microphone, stand mount, wooden box

Vocal Microphones

KMS 104 D:

KMS 104 D microphone, stand mount, nylon bag

KMS 104 D bk:

KMS 104 D bk microphone, stand mount, nylon bag

KMS 105 D:

KMS 105 D microphone, stand mount, nylon bag

KMS 105 D bk:

KMS 105 D bk microphone, stand mount, nylon bag

Miniature Microphones

KK 131

KK 143

KK 145

KK 183

KK 184

KK 185

KK 131 nx

KK 143 nx

KK 145 nx

KK 183 nx

KK 184 nx

KK 185 nx

KM 133 D
incl. SBK 133

KM 183 D

KM 184 D

KM 185 D

KM 133 D st
incl. SBK 133

Toolbox

Components & Sets

The KK... capsule heads can be used with the digital KM D (nx) as well as with the analog KM A (nx) output stage.

KK 120

KM D, Preset: 44.1, 48 or 96 kHz[1)]

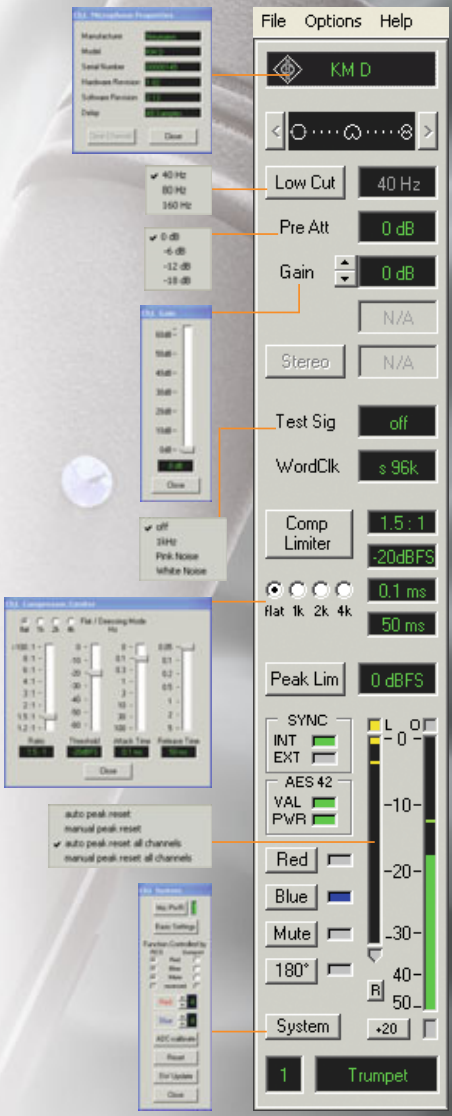
KK 120 nx

KK 133 nx

KM D nx, Preset: 44.1, 48 or 96 kHz[1)]

KM 133 D nx KM 183 D nx KM 184 D nx KM 185 D nx incl. SBK 133

KM 183/184/185 D (nx) are delivered with windscreen and clamp, also available as stereo sets.



[1)] word clock frequency without remote control

Toolbox

Components & Sets

Shotgun Microphones

- KMR 81 D nx:

KMR 81 D nx microphone, windscreen, twist pack

Power Supplies

- Connection Kit S/PDIF

Contains: 1 S/PDIF Module, Plug-In Power Supply

- Connection Kit AES/EBU

Contains: 1 AES/EBU Module, Plug-In Power Supply

Digital Microphone Interface

- DMI-8[2] (incl. RCS[1], without cables)

- DMI-2 (incl. RCS[1] and cables)

- DMI-2 portable (incl. RCS[1])

[1] Remote Control Software
[2] ES100 (DMI-8) Network plug-in module on request available

Applications

Application Hints

D-01

- Universally applicable, and particularly suitable for applications where maximum resolution and transparency are desired.

KK 120 + KM D

- MS-Stereo microphone, in combination with the KM 184 D
- Two crossed KK 120s in Blumlein technique
- Inconspicuous spot microphone with optimum attenuation of lateral sound sources
- Single microphone for two speakers facing each other

KK 131 + KM D

- For close miking of instruments when there is no need to attenuate extra-neous noise, and in a balanced acoustic environment to record acoustic guitar, wind instruments, strings, percussion, and drums
- Flat frequency response for close miking, spot mic

KK 133 + KM D = KM 133 D

- Its special acoustic properties make this an ideal mic for most classical recordings
- Main mic, especially for capturing room acoustics
- A superb AB stereo pair for perfect balance of direct and reverberant sound
- Decca tree, setup with three microphones
- Spot mic for piano, wind instruments, organ, choir

KK 143 + KM D

- Polar response characteristic acts more like an omni. Therefore, it is an ideal tool to record larger instrument ensembles
- As AB stereo pair, especially in rooms with less than ideal acoustics
- As spot mic for strings, wind instruments, percussion, and Leslie speakers
- Acts very neutral when used close up to bass instruments, such as double bass, bass amps, guitar amps

KK 145 + KM D

- It naturally compensates for proximity effect
- Very neutral tonal balance during close miking of speech, as in TV, movie and video, PA
- Acts very neutral when used close up to bass instruments, such as double bass, bass amps, guitar amps, leslie speakers, toms

KK 183 + KM D = KM 183 D

- Ideal as AB stereo pair because of the flat frequency response in the diffuse sound field
- For close miking of instruments when there is no need to attenuate extraneous noise, and in a balanced acoustic environment to record acoustic guitar, wind instruments, strings, percussion, drums
- Main mic, especially for capturing room acoustics
- For stereo recordings with a baffle plate
- Spot mic for piano, wind instruments, organ, choir

KK 184 + KM D = KM 184 D

- For universal use, especially for recording situations when it is necessary to attenuate off-axis sound (mainly from the rear) from other nearby instruments.
- As XY and ORTF stereo pair
- Broadcasting mic for announcers
- Spot mic and overhead
- Close miking of strings, wind instruments, percussion, piano, Leslie speakers and guitar amps

KK 185 + KM D = KM 185 D

- Especially for recording situations when it is necessary to attenuate off-axis (lateral and rear) sound from other nearby instruments.
- As XY stereo pair
- Overhead, toms
- In situations that are susceptible to acoustic feedback
- To attenuate unwanted sound of nearby instruments
- Recording of speech, as in TV, movie and video productions, PA systems
- Produces especially warm and bass supporting sound for artists who perform in proximity effect range

TLM 103 D

- A universal cardioid mic
- Vocalist recording
- Announcer's mic for broadcasting/voice over
- Due to minimal self-noise: on-air mic for radio/broadcast, very low amplitude signals, radio drama, sampling, foley/sound effects
- Home recording and project studios
- Spot mic for wind instruments, strings, percussion, guitar amps, drum overhead

KMS 104/105 D

- For vocals and speech on stage
- For announcers, for broadcasting/dubbing
- Especially suitable for in-ear monitoring
- For environments susceptible to feedback

KMR 81 D

- Recordings for broadcasting/ENG, film and video productions
- Medium length shotgun spot mic in noisy surroundings
- Balanced weight during handheld and boom/fishpole operation

Delivery Range D-01

D-01 Microphone in wooden box

Catalog No. D-01

D-01 Single Microphone	ni	008482

Selection of Accessories D-01

Elastic suspension, EA 1	ni	008449
Elastic suspension, EA 1 mt	blk	008450
Stand mount, SG 2	blk	008636
Auditorium hanger, MNV 87	ni	006804
Auditorium hanger, MNV 87 mt	blk	006806
Popscreen, PS 15	blk	008472
Popscreen, PS 20 a	blk	008488
Microphone cable, IC 3 mt	blk	006543

Delivery Range KM D

KM 183 D / KM 184 D / KM 185 D:
KM 183 D (nx) ... KM 185 D (nx) Microphone
WNS 100 Windscreen
SG 21 bk Stand mount
Wooden box

KM 133 D:
KM 133 D (nx/st) Microphone
SBK 133 Sound diffraction sphere
SG 21 bk Stand mount
Wooden box

KM D Stereo sets:
2x KM 183 D (nx) ... KM 185 D (nx) Microphone
2x WNS 100 Windscreen
2x SG 21 bk Stand mount
Wooden box

Catalog No. KM D

KM 133 D	ni	008628
KM 133 D nx	nx	008629
KM 133 D st	st	008655
KM 183 D	ni	008553
KM 183 D nx	nx	008554
KM 183 D stereo set	ni	008572
KM 183 D nx stereo set	nx	008573
KM 184 D	ni	008555
KM 184 D nx	nx	008556
KM 184 D stereo set	ni	008574
KM 184 D nx stereo set	nx	008575
KM 185 D	ni	008557
KM 185 D nx	nx	008558
KM 185 D stereo set	ni	008576
KM 185 D nx stereo set	nx	008577

Selection of Accessories KM D

Output stage, KM D (44.1 kHz)	ni	008578
Output stage, KM D nx (44.1 kHz)	nx	008581
Output stage, KM D (48 kHz)	ni	008579
Output stage, KM D nx (48 kHz)	nx	008582
Output stage, KM D (96 kHz)	ni	008580
Output stage, KM D nx (96 kHz)	nx	008583
Analog output stage, KM A	ni	008634
Analog output stage, KM A nx	nx	008635
Capsule head, KK 120	ni	008589
Capsule head, KK 120 nx	nx	008590
Capsule head, KK 131	ni	008591
Capsule head, KK 131 nx	nx	008592
Capsule head, KK 133	ni	008639
Capsule head, KK 133 nx	nx	008640
Capsule head, KK 143	ni	008593
Capsule head, KK 143 nx	nx	008594
Capsule head, KK 145	ni	008595
Capsule head, KK 145 nx	nx	008596
Capsule head, KK 183	ni	008566
Capsule head, KK 183 nx	nx	008567
Capsule head, KK 184	ni	008568
Capsule head, KK 184 nx	nx	008569
Capsule head, KK 185	ni	008570
Capsule head, KK 185 nx	nx	008571
Elastic suspension, EA 2124 A mt	blk	008433
Table stands, MF 2	blk	007266
Table stands, MF 3	blk	007321
Auditorium hanger, MNV 21 mt	blk	006802
Double mount, DS 120	blk	007343
Stand mount, SG 21 bk	blk	008613
Stand mount, SG 109	blk	008614
Swivel joint SG 110 nx	nx	008611
Foam windscreen, WNS 100	blk	007323
Foam windscreen, WNS 110	blk	008535
Foam windscreen, WNS 120	blk	008427
Foam windscreen, WS 100	blk	006751
Popscreen, PS 15	blk	008472
Microphone cable, IC 3 mt	blk	006543
Microphone cable, LC 4 (5 m)	nx	008606

Delivery Range TLM 103 D

TLM 103 D (mt) Microphone
SG 2 Stand mount
Wooden box

Catalog No. TLM 103 D

TLM 103 D	ni	008603
TLM 103 D mt	blk	008604

Order Information

Selection of Accessories TLM 103 D

Elastic suspension, EA 1 ..... ni 008449
Elastic suspension, EA 1 mt..... blk 008450
Stand mount, SG 2..... blk 008636

Auditorium hanger, MNV 87..... ni 006804
Auditorium hanger, MNV 87 mt ..... blk 006806

Windscreen, WS 87..... blk 006753

Popscreen, PS 15..... blk 008472
Popscreen, PS 20 a..... blk 008488

Microphone cable, IC 3 mt..... blk 006543

Delivery Range KMS 104 D/KMS 105 D

KMS 104 D (bk) ... KMS 105 D (bk) Microphone
SG 105 Stand mount
Padded nylon bag

Catalog No. KMS 104 D/KMS 105 D

KMS 104 D..... ni 008643
KMS 104 D bk..... blk 008644

KMS 105 D..... ni 008645
KMS 104 D bk..... blk 008646

Selection of Accessories KMS 104 D/ KMS 105 D

Microphone cable, IC 3 mt..... blk 006543
Adapter cable, AC 25 ..... blk 006600
Adapter cable, AC 27 ..... blk 006602

Table stand, MF 3 ..... blk 007321
Windscreen, WSS 100..... blk 007352

Delivery Range KMR 81 D nx

KMR 81 D nx Microphone
WS 81 Windscreen
Twist pack

Catalog No. KMR 81 D nx

KMR 81 D nx..... nx 008648

Selection of Accessories KMR 81 D nx

Elastic suspension, EA 2124 A mt..... blk 008433
Auditorium hanger, MNV 21 mt..... blk 006802
Stand mount, SG 21 bk ..... blk 008613

Microphone cable, IC 3 mt..... blk 006547
Windscreen set, WKE 81 Set..... gr 539381

Interfaces and Power Supplies

Connection Kit AES/EBU:
AES/EBU Module
Plug-In Power Supply

Connection Kit S/PDIF:
S/PDIF Module
Plug-In Power Supply

Connection Kit AES/EBU..... 008584
Connection Kit S/PDIF..... 008585

DMI-2:
Digital Microphone Interface DMI-2
RCS software and USB driver
USB cable
RJ 45 patch cable
BNC cable
USB 485 converter
AC line cable

Interface, DMI-2 EU 008561
Interface, DMI-2 UK 008587
Interface, DMI-2 US 008588

DMI-2 portable:
Digital Microphone Interface DMI-2
RCS software and USB driver

Interface, DMI-2 portable..... 542400

DMI-8:
Digital Microphone Interface DMI-8
RCS software and USB driver

Interface, DMI-8 EU 533130
Interface, DMI-8 UK 533132
Interface, DMI-8 US 533131
Network Module, ES100 (DMI-8) 539398
DMI-8 connection set (USB cable,
RJ 45 patch cable, USB 485 converter..... 533126
(not included in the supply schedule)

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog

Meaning of color codes:
ni = nickel, nx = nextel black, blk = black, gr = gray, st = stainless steel

General Specifications of the Solution-D microphones

Interface: AES42

Remote controlled functions:
- Polar pattern[4)]
- Low-cut: flat, 40, 80, 160 Hz
- Pre-attenuation: 0 , –6, –12, –18 dB
- Gain: 0...63 dB in 1 dB steps, clickless
- Testsignal: 1 kHz, pink noise, white noise
- Sampling rates: 44.1, 48, 88.2, 96, 176.4, 192 kHz
- Parametric compressor/limiter (incl. de-esser function)
- Independent peak limiter avoiding any clipping
- Switch functions: soft muting, phase reverse, signal lights
- Signal lights: red[4)] and blue LEDs
- System functions, firmware download

A/D conversion: Neumann process (patented), 28-bit internal word length

Digital signal processing: Fixed-point, variable internal word length 28 bits to 60 bits

Synchronization:
- Asynchronous operation (free-running, AES42 - Mode 1), basic frequency accuracy: ± 25 ppm
- Synchronous operation (AES42 - Mode 2), pulling range: Min. ± 100 ppm

Power supply (phantom power complying with AES42)

Output: XLR3M, 24 bits as per AES/EBU (AES3)

KM D /KM A + KK... Specifications

Typ	KK 131	KK 133	KK 183	KK 143	KK 184	KK 145	KK 185	KK 120
Acoustical operating principle	pressure transducer			pressure gradient transducer				
Directional pattern	omni free-field equalized	omni diffuse-field equalized	omni diffuse-field equalized	cardioid wide	cardioid	cardioid low frequency roll-off	hyper-cardioid	figure-8, side-fire
Frequency range	20 – 20000 Hz							
Sensitivity (KM A)[1)]	12 mV/Pa	15 mV/Pa	12 mV/Pa	15 mV/Pa	15 mV/Pa	14 mV/Pa	10 mV/Pa	12 mV/Pa
Sensitivity (KM D)[1)2)]	–41 dBFS	–40 dBFS	–41 dBFS	–39 dBFS	–39 dBFS	–40 dBFS	–42 dBFS	–41 dBFS
Signal-to-noise ratio[2)], CCIR[3)]	70 dB	66 dB	69 dB	70 dB	70 dB	70 dB	69 dB	69 dB
Signal-to-noise ratio[2)], A-weighted[3)]	81 dB	79 dB	81 dB	81 dB	81 dB	80 dB	78 dB	79 dB
Equivalent noise level, CCIR[3)]	24 dB	28 dB	25 dB	24 dB	24 dB	24 dB	25 dB	25 dB
Equivalent noise level, A-weighted[3)]	13 dB	15 dB	13 dB	13 dB	13 dB	14 dB	16 dB	15 dB
Max. SPL (KM A)[1)] for THD <0.5% for THD <0.5% with preattenuation	140 dB 150 dB	138 dB 148 dB	140 dB 150 dB	138 dB 148 dB	138 dB 148 dB	138 dB 148 dB	142 dB 152 dB	140 dB 150 dB
Max. SPL (KM D) at 0 dBFS[1)]	135 dB	134 dB	135 dB	133 dB	133 dB	134 dB	136 dB	135 dB
Max. SPL (KM D) with 18 dB preatt[1)3)]	153 dB	152 dB	153 dB	151 dB	151 dB	152 dB	154 dB	153 dB
Current consumption (KM A)	max. 3.5 mA (P48)							
Current consumption (KM D)	max. 150 mA (DPP)							
Matching connector	XLR 3 M							
Weight (output stage)	70 g							
Dimensions (L x Ø) (microphone)	108 mm x 22 mm	128 mm x 22 mm	108 mm x 22 mm	108 mm x 22 mm	108 mm x 22 mm	108 mm x 22 mm	108 mm x 22 mm	130 mm x 24 mm
Weight (capsule only)	11 g	49 g	11 g	15 g	15 g	15 g	19 g	37 g
Dimensions (L x Ø) (capsule only)	18 mm x 22 mm	38 mm x 22 mm	18 mm x 22 mm	18 mm x 22 mm	18 mm x 22 mm	18 mm x 22 mm	18 mm x 22 mm	40 mm x 24 mm

[1)] at 1 kHz
[2)] re 94 dB SL
[3)] according to IEC 60268-1; CCIR-weighting according to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS

Technical Data

D-01 Specifications

Acoustic transducer: K 07 large double-diaphragm capsule, diameter 30 mm with protected internal electrodes
Directional characteristic: 15 remote controllable polar patterns, from omni to cardioid to figure-8

Frequency response: 20 Hz to 20 kHz
Free-field sensitivity[1][2]: –44 dBFS
Equivalent noise level, CCIR[3]: 19 dB
Equivalent noise level, A-weighted[3]: 8 dB-A
Signal-to-noise ratio[2], CCIR[3]: 75 dB
Signal-to-noise ratio[2], A-weighted[3]: 86 dB
Maximum SPL at 0 dBFS: 138 dBSPL
Dynamic range, A-weighted[3]: 130 dB

Supply voltage range: +6 V to +10,5 V
Current consumption: max. 220 mA

Weight: approx. 700 g, Diameter: 63.5 mm, Length: 185 mm

TLM 103 D Specifications

Acoustic transducer: Pressure gradient transducer
Directional characteristic: Cardioid

Frequency response: 20 Hz to 20 kHz
Free-field sensitivity[1]: –39 dBFS
Equivalent noise level, CCIR[3]: 17.5 dB
Equivalent noise level, A-weighted[3]: 7 dB-A
Signal-to-noise ratio[2], CCIR[3]: 76.5 dB
Signal-to-noise ratio[2], A-weighted[3]: 87 dB
Maximum SPL at 0 dBFS: 134 dBSPL
Dynamic range, A-weighted[3]: 127 dB

Preset:
- Sampling rates: 48 kHz
- Gain: 10 dB
- Compressor on, Attack time 100 ms, Release time 0.5 s, Threshold –10 dBFS, Ratio 2:1

Supply voltage range: +6 V to +10,5 V
Current consumption: max. 150 mA

Weight: approx. 460 g, Diameter: 60 mm, Length: 132 mm

KMS 104/105 D Specifications

Acoustic transducer: Pressure gradient transducer
Directional characteristic: Cardioid/Supercardioid

Frequency response: 60 Hz to 20 kHz
Free-field sensitivity[1]: –47 dBFS
Equivalent noise level, CCIR[3]: 27 dB
Equivalent noise level, A-weighted[3]: 16 dB-A
Signal-to-noise ratio[2], CCIR[3]: 67 dB
Signal-to-noise ratio[2], A-weighted[3]: 78 dB
Maximum SPL at 0 dBFS: 141 dBSPL
Dynamic range, A-weighted[3]: 125 dB

Preset:
- Sampling rates: 48 kHz
- Gain: 10 dB
- Compressor on, Attack time 100 ms, Release time 0.5 s, Threshold –10 dBFS, Ratio 2:1

Supply voltage range: +7 V to +10,5 V
Current consumption: max. 150 mA (DDP)

Weight: approx. 300 g, Diameter: 48 mm, Length: 180 mm

KMR 81 D Specifications

Acoustic transducer: Interference transducer
Directional characteristic: Supercardioid/lobe

Frequency response: 20 Hz to 20 kHz
Free-field sensitivity[1]: –36 dBFS
Equivalent noise level, CCIR[3]: 21 dB
Equivalent noise level, A-weighted[3]: 9 dB-A
Signal-to-noise ratio[2], CCIR[3]: 73 dB
Signal-to-noise ratio[2], A-weighted[3]: 85 dB
Maximum SPL: 123 dBSPL
Dynamic range, A-weighted[3]: 114 dB

Preset:
- Sampling rates: 48 kHz
- Gain: 10 dB
- Compressor on, Attack time 100 ms, Release time 0.5 s, Threshold –10 dBFS, Ratio 2:1

Supply voltage range: +7 V to +10,5 V
Current consumption: max. 150 mA

Weight: approx. 90 g, Diameter: 22 mm, Length: 212 mm

DMI-2 (Digital Microphone Interface) Specifications

2 channels, Inputs: XLR3F, AES42
Outputs: XLR3M, AES/EBU, 24 bit

Control bus: RS 485 via RJ 45 jack. Second RJ 45 jack for cascading purposes (up to 4 DMI devices today, 16 devices in future). Connection to the computer's USB port via Neumann USB485 interface converter (included).

User Port: 9-pin sub-D, 3 functions per channel

Synchronization: AES42 - Mode 2 (PLL system using an external Word Clock and remote controlling the VCXO in the microphone, default mode), AES42 - Mode 1, (asynchronous, needs a sample rate converter (SRC) at the receiver side).

Word clock input: BNC, 75 ohms.
Word clock output: BNC, 75 ohms, automatically set to the internal word clock master when no external word clock received. Selectable internal sampling rates: 44.1, 48, 88.2, 96, 176.4, 192 kHz.

External Word clock: 44.1, 48, 88.2, 96, 176.4, 192 kHz or AES 11 format.

Indicators: Data Valid (AES42) and Sync Locked (Mode 2) for each channel, Power On and Ext. Word Clock.

Power supply: 90-240 V, 50/60 Hz.

Storage of the last microphone settings and reloading to the microphones after power on automatically without the need of the computer/RCS.

DMI-2 portable (Digital Microphone Interface) Specifications

Ports: 2x AES42 IN (XLR3F), 1x AES/EBU (AES3) OUT (XLR3M), 2x Word Clock IN/OUT (BNC), 1x Remote Control (USB)

Indicators: Monochrome display, bar graphs for gain, level and gain reduction, LED's for Power, Battery status, Synchronization and Valid

Phantom power (DPP): +10 V, max. 250 mA per channel, short-circuit proof

Remote control data: Pulses (+2 V), superimposed on the phantom power, approx. 750 bits/s or 9,600 bits/s (depending on the microphone)

Microphone synchronization: AES42 – Mode 2 (synchronous mode)
Microphone clock control via PLL

Technical Data

DMI-2 portable Synchronization: automatically to an external word clock or AES11 signal, if present, otherwise the internal word clock generator is activated

Word clock (or AES11) input: BNC
- Vin: >100 mV at 75 ohms
Word clock (or AES11) output: BNC
- Vout: = Vin (external synchronization)
- Vout: approx. 1.5 V at 75 ohms (internal word clock generator)

Internal word clock generator: 44.1 / 48 / 88.2 / 96 kHz/176.4 / 192 kHz, Accuracy ±25 ppm

Control elements: 2x push-switch rotary encoder
CTL (Control interface): 1x USB port

Power supply: DC 10-18 V (Hirose) , NP1 rechargeable battery or AC/DC converter
Power consumption: <8 VA

Dimensions: (W x H x D) 186 x 44 x 126 mm
Weight: approx. 625 g.

DMI-8 (Digital Microphone Interface) Specifications

AES42 inputs: 8x XLR3F , Audio data in accordance withAES/EBU (AES3) data format, Digital phantom power (DPP), Remote control data

Outputs: 2x SUB-D 25, AES/EBU (AES3) data format, Yamaha® and Tascam® pinout, 1x Toslink, ADAT® format up to 48 kHz, 1x RJ 45, GN format up to 192 kHz, incl. power-out pin: approx. +15 VDC, max.1 A, short-circuit-proof

Microphone synchronization: AES42 – Mode 2 (synchronous mode)
Microphone clock control via PLL

DMI-8 Synchronization: automatically to an external word clock or AES11 signal, if present, otherwise the internal word clock generator is activated.

Word clock (or AES11) input: BNC
- Vin: >100 mV at 75 ohms
Word clock (or AES11) output: BNC
- Vout: = Vin (external synchronization)
- Vout: approx. 1.5 V at 75 ohms (internal word clock generator)

Internal word clock generator: 44.1/48/88.2/96/176.4/192 kHz

Indicators: Power, Ext Word Clock, Valid,Level (microphone)

Control elements: 8x Channel Select, GAIN +/–

Control bus: 2 x RJ 45 ports; connection to computer USB port via the Neumann USB 485 interface converter; connected in parallel for the purpose of cascading. RS 485 with additional power-out pin (approx. +11.3 V, max. 500 mA)

Device address (ID): 0 to 15, adjustable viacoding switch on the backof the device

User port: 9-pin sub-D, 1 switch function per channel (Mute and/or Light 1/Light 2 selectable)

Power supply: 90 V to 240 V; 50/60 Hz

Features of the RCS (Remote Control Software)

Communication via USB port (Win 2000/98SE/ME/XP, Vista, MAC OS version 8.6...10 on PowerPC)

Up to 8 channels displayed simultaneously on the screen

Controllable functions: polar pattern, low-cut, pre-attenuation, gain, test signals, limiter/compressor/de-esser, peak limiter, phase reverse, mute, sampling rate, synchronization mode, signal lights,...

Display: peak level meter, gain reduction meter for compressor/limiter/de-esser and peak limiter, microphone properties (manufacturer, model, serial number, hardware and software revision, internal latency time), DMI properties, status signals (overload, limiter active, data valid, sync locked, power on)

Saving/Loading of configurations
Individual channel labelling

Software update of Neumann microphones and DMI device

Connection Kit S/PDIF (AES/EBU) Specifications

Connector: input XLR3F, output Cinch (XLR3M)
Weight: approx. 96 g (S/PDIF), approx. 130 g (AES/EBU)
Width: 32 mm, Height: 26 mm, Length: 105 mm
Power supply: 90-240 V, 50/60 Hz

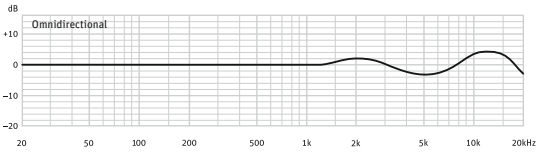
For remote control of DSP functions you have to use the DMI.

All data with respekt to 0 dB pre-attenuation and 0 dB gain.

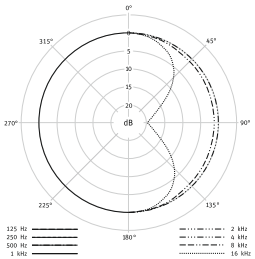
[1] at 1 kHz
[2] re 94 dBSPL
[3] according to IEC 60268-1;
CCIR-weighting according to CCIR 468-3, quasi peak;
A-weighting according to IEC 61672-1, RMS
[4] D-01 only

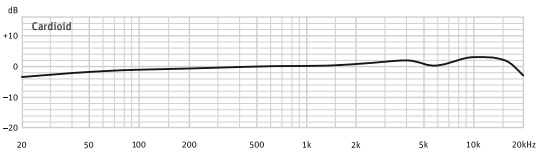
Diagrams

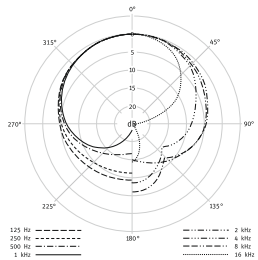
D-01

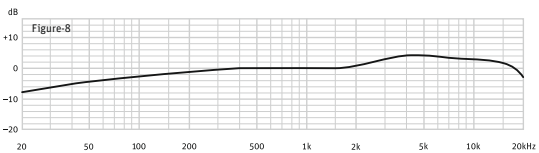


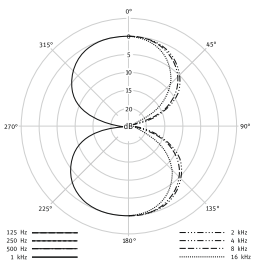
measured in free-field conditions (IEC 60268-4), tolerance ± 2 dB



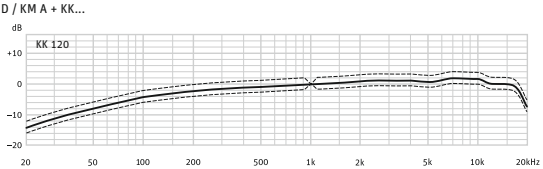




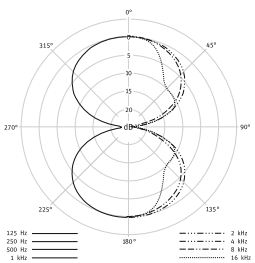


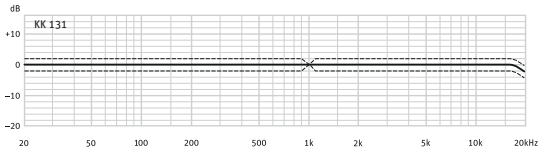


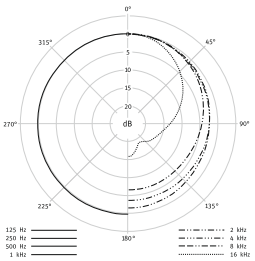
KM D / KM A + KK...

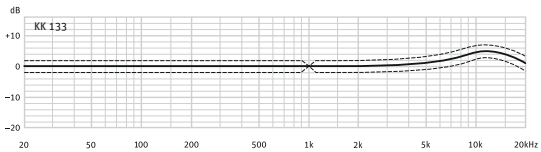


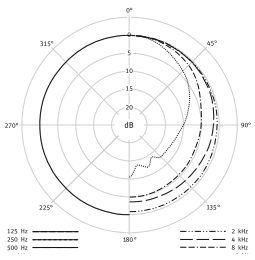
measured in free-field conditions (IEC 60268-4)

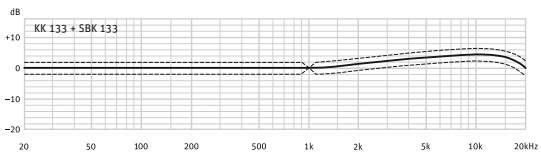


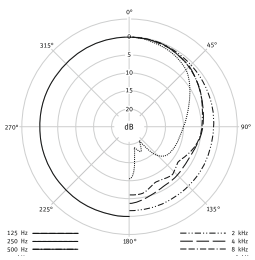

KK 131
dB
+10
0
−10
−20
20
50
100
200
500
1k
2k
5k
10k
20kHz

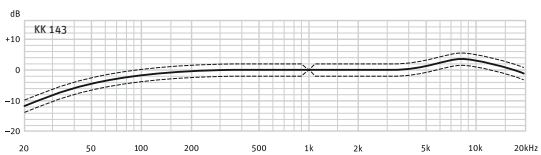

0°
45°
90°
135°
180°
225°
270°
315°
5
10
15
20
dB
125 Hz
250 Hz
500 Hz
1 kHz
2 kHz
4 kHz
8 kHz
16 kHz

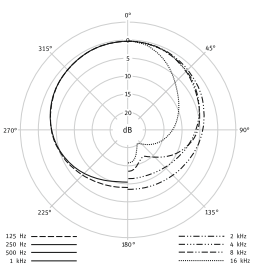

KK 133
dB
+10
0
−10
−20
20
50
100
200
500
1k
2k
5k
10k
20kHz


0°
45°
90°
135°
180°
225°
270°
315°
5
10
15
20
dB
125 Hz
250 Hz
500 Hz
2 kHz
4 kHz
8 kHz

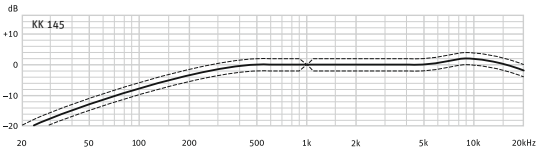

KK 133 + SBK 133
dB
+10
0
−10
−20
20
50
100
200
500
1k
2k
5k
10k
20kHz

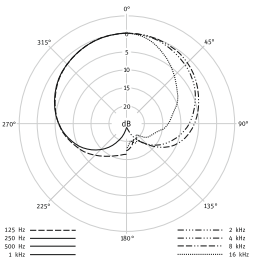

0°
45°
90°
135°
180°
225°
270°
315°
5
10
15
20
dB
125 Hz
250 Hz
500 Hz
2 kHz
4 kHz
8 kHz

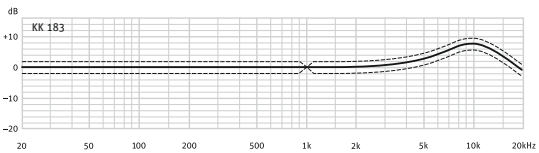

KK 143
dB
+10
0
−10
−20
20
50
100
200
500
1k
2k
5k
10k
20kHz

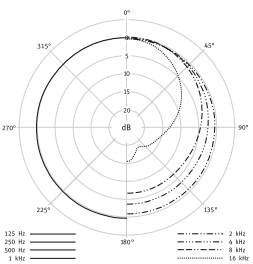

0°
45°
90°
135°
180°
225°
270°
315°
5
10
15
20
dB
125 Hz
250 Hz
500 Hz
1 kHz
2 kHz
4 kHz
8 kHz
16 kHz

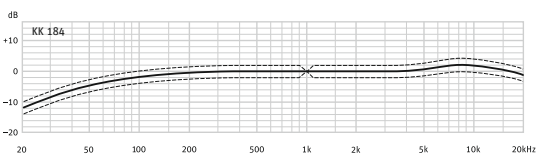
Diagrams

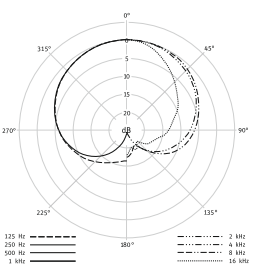

KK 145
dB
+10
0
−10
−20
20
50
100
200
500
1k
2k
5k
10k
20kHz

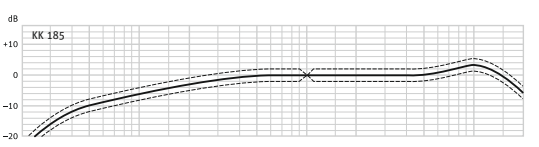

0°
45°
90°
135°
180°
225°
270°
315°
5
10
15
20
dB
125 Hz
250 Hz
500 Hz
1 kHz
2 kHz
4 kHz
8 kHz
16 kHz

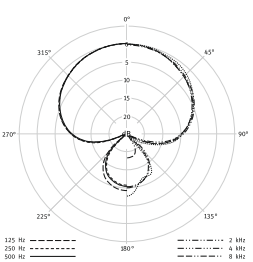

KK 183
dB
+10
0
−10
−20
20
50
100
200
500
1k
2k
5k
10k
20kHz


0°
45°
90°
135°
180°
225°
270°
315°
5
10
15
20
dB
125 Hz
250 Hz
500 Hz
1 kHz
2 kHz
4 kHz
8 kHz
16 kHz

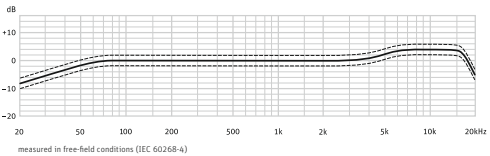

KK 184
dB
+10
0
−10
−20
20
50
100
200
500
1k
2k
5k
10k
20kHz


0°
45°
90°
135°
180°
225°
270°
315°
5
10
15
20
dB
125 Hz
250 Hz
500 Hz
1 kHz
2 kHz
4 kHz
8 kHz
16 kHz

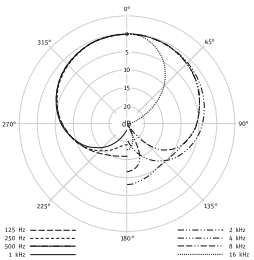

KK 185
dB
+10
0
−10
−20
20
50
100
200
500
1k
2k
5k
10k
20kHz


0°
45°
90°
135°
180°
225°
270°
315°
5
10
15
20
dB
125 Hz
250 Hz
500 Hz
1 kHz
2 kHz
4 kHz
8 kHz
16 kHz

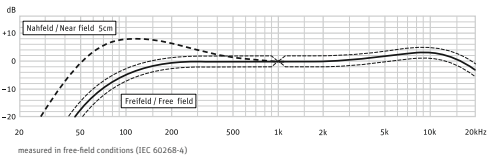
TLM 103 D



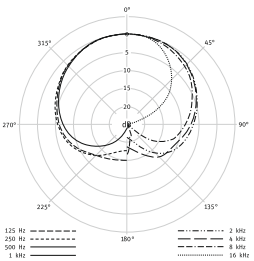
measured in free-field conditions (IEC 60268-4)



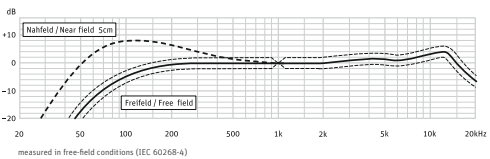
KMS 104 D



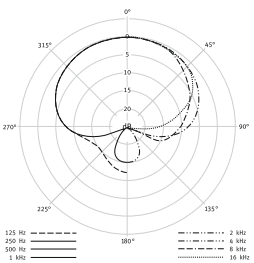
measured in free-field conditions (IEC 60268-4)



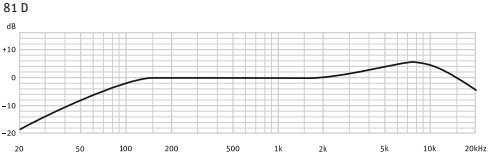
KMS 105 D



measured in free-field conditions (IEC 60268-4)



KMR 81 D



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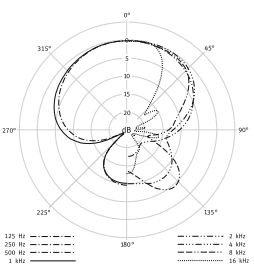
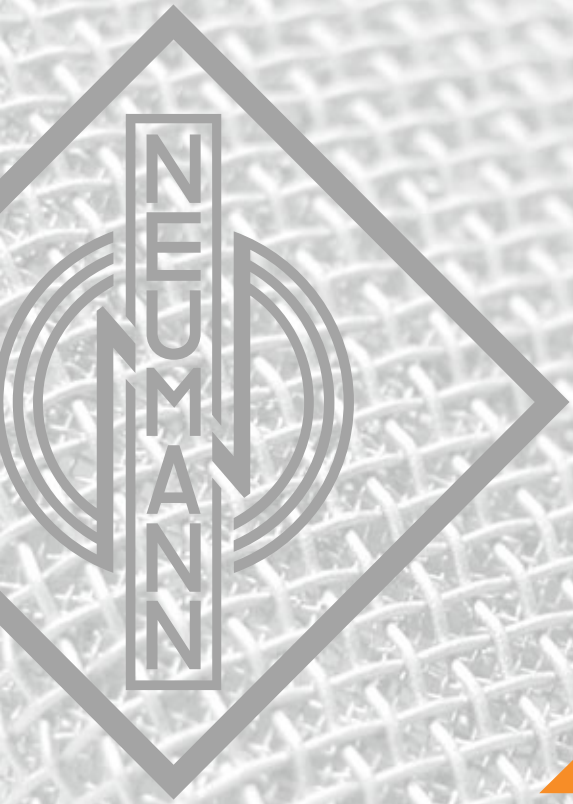


M 147 Tube

Tube Microphone



www.neumann.com

The M 147 Tube is a vacuum tube condenser microphone with cardioid characteristic. At the heart of this microphone is the K 47/49 dual diaphragm capsule, inherited from this model's now legendary predecessors, the U 47 and the M 49.

Following the capsule is a tube that functions as an impedance converter. The next stage is an efficient, transformerless output circuit, that guarantees an extremely low self-noise level. Note: This innovative combination of current tube technology with the most advanced solid-state circuitry was decisive in awarding the 1997 TEC Award to the related M 149 Tube mic.

The M 147 Tube can feed extremely long microphone cables without affecting the quality of the audio signal.

Like all Neumann tube microphones, the M 147 Tube comes with an elegant satin nickel finish.

The microphone is delivered as a complete set in a high-quality aluminum case. Included with the microphone are a microphone cable, a metal swivel mount for a mic stand, and a compact universal power supply for standard mains sockets. Our modern manufacturing methods makes it possible to offer this complete set at a very attractive price.

Applications

The famous capsule, together with complimenting tube characteristics, makes the M 147 Tube especially well suited as a vocal mic. In addition, it is a superb spot mic for all types of musical instruments.

The extremely low self-noise of its tube circuitry makes the mic perfectly suited for use in modern recording chains, analog and digital.

Acoustic Features

The M 147 Tube is addressed from the side where the microphone body has the diamond-shaped Neumann company logo. The black color identifies tube microphones.

The capsule is equivalent to the one used in the U 47, and is the deciding factor in determining the sound characteristic. It has a flat frequency response to the upper midrange, and a boost of up to 3 dB above 2 kHz.

The headgrille design is a smaller version of the U 47. It protects the capsule effectively against popping and wind noise.

Polar Pattern

The M 147 Tube has a cardioid characteristic, leaning more toward super-cardioid due to its distinctive capsule design. At higher frequencies the pattern becomes more directional. This is very similar to the model after which this new tube microphone was patterned, the U 47 and the successor, the U 47 fet.

Features

- *Universal tube microphone*
- *Pressure gradient transducer with the large diaphragm capsule from the legendary U 47 and M 49*
- *Transformerless circuitry*
- *Low self noise level*
- *Comes with swivel stand mount made of metal, universal power supply, and cable in an attractive aluminium case*

Application Hints

- *Vocalist mic: its warm and yet transparent sound gives volume and presence*
- *Announcer's mic for broadcasting/voice over*
- *Spot mic for close miking of solo instruments, especially strings, wind instruments, and piano*

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Delivery Range

M 147 Tube microphone,
N 149 A power supply incl. power cable, SG 2 swivel mount, KT 8 microphone cable, dust cover, aluminium case

Sinlgle: *M 147 Tube microphone, SG 2 swivel mount, wooden box*

Catalog No.

M 147 Tube (230 Volt, EU)	*ni*	*008435*
M 147 Tube (117 Volt, US)	*ni*	*008434*
M 147 Tube (230 Volt, UK)	*ni*	*008436*
M 147 Tube Single	*ni*	*008451*

Selection of Accessories

Elastic suspension, EA 1	*ni*	*008449*
Elastic suspension, EA 1 mt	*blk*	*008450*
Auditorium hanger, MNV 87	*ni*	*006804*
Auditorium hanger, MNV 87 mt	*blk*	*006806*
Table stand, MF 3	*blk*	*007321*
Table stand, MF 4	*blk*	*007337*
Stand extension, STV 4	*blk*	*006190*
Stand extension, STV 20	*blk*	*006187*
Stand extension, STV 40	*blk*	*006188*
Stand extension, STV 60	*blk*	*006189*
Popscreen, PS 15	*blk*	*008472*
Popscreen, PS 20 a	*blk*	*008488*
Windscreen, WS 87	*blk*	*006753*
Microphone cable, IC 3 mt	*blk*	*006543*

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog

Meaning of color codes: blk = black, ni = nickel

Electrical Features

When compared to other microphones, the impedance converter used in the M 147 Tube is distinguished by its extremely low self-noise level of only 12 dB-A / 24 dB CCIR weighted.

Similar to the recently introduced M 149 Tube, the new M 147 Tube combines a specifically selected vacuum tube (triode) with modern circuitry. This technique takes full advantage of the special transfer characteristics of the tube and passes the processed audio signal of the capsule to the microphone output, without any coloration or unwanted side effects.

The tube amplifies the capsule's signal by approximately 10 dB, thus preventing any possible influences from subsequent electronics. The M 147 Tube delivers a high output voltage, and therefore can feed microphone cables up to 300 m length without signal degradation.

The ideal operating conditions (anode current and heater voltage) of the tube are maintained throughout its life expectancy. A sensor lead detects any voltage drop that occurs through the microphone cable and compensates for it in the N 149 A power supply.

The tube warms up gradually using inverse current limiting to guarantee long life.

Operational Stability

Both, the capsule and the entire circuitry are shock mounted to prevent any structure-borne noise.

Because of its wide operating range, the M 147 Tube can reproduce extremely low frequency signals without distortion.

This implies that the microphone may also be sensitive to unwanted LF interference by structure-borne noise, or wind noise. To avoid possible signal degradation, we offer the EA 1 elastic suspension and the WS 87 windscreen as accessories.

During close miking of vocals we recommend using the PS 15 or PS 20 a pop screen. You will find detailed information in our accessory catalog.

Filter

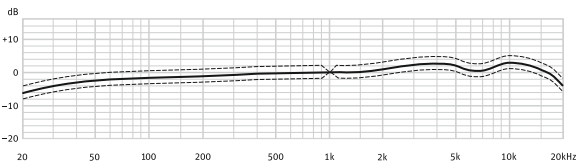
The electronic circuitry of the M 147 Tube mic has a flat frequency response from 20 Hz to well above 20 kHz. Only the attributes of the capsule determine the typical sound characteristics of the microphone.

N 149 A Power Supply

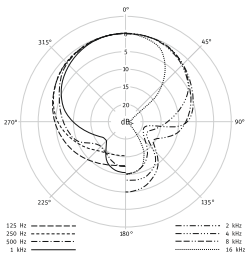
The N 149 A universal power supply works with all mains AC voltages from 100 V to 240 V, 50 or 60 Hz. Mains power is connected through a standard IEC 320 mains socket. The only difference between the three versions of the M 147 Tube set is the power cord supplied. Note: The N 149 V power supply is fully compatible with the M 147 Tube microphone.


NEUMANN

Technical Data



measured in free-field conditions (IEC 60268-4)



Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Cardioid*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*20 mV/Pa*
Rated impedance	*50 ohms*
Rated load impedance	*1000 ohms*
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	*70 dB*
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	*82 dB*
Equivalent noise level, CCIR[1]	*24 dB*
Equivalent noise level, A-weighted[1]	*12 dB-A*
Typical SPL (tube characteristic)[2]:	
for < 0.5% THD (for < 5% THD)	*114 (134) dB*
Maximum output voltage	*8 dBu*
Dynamic range of the microphone amplifier:	
(A-weighted) for < 0.5% THD (for < 5% THD)	*102 (122) dB*
Powering	*Power supply N 149 A*
Matching connector microphone	*DIN 8F*
Matching connector power supply	*XLR3F*
Weight	*460 g*
Diameter	*57 mm*
Length	*142 mm*

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS

[2] measured as equivalent el. input signal

Selection of Accessories

Elastic suspension, EA 1 (mt)

Auditorium hanger, MNV 87 (mt)

Table stand, MF 3 (in connection with stand extension)

Table stand, MF 4 (in connection with stand extension)

Stand extensions, STV 4 /20 / 40 / 60

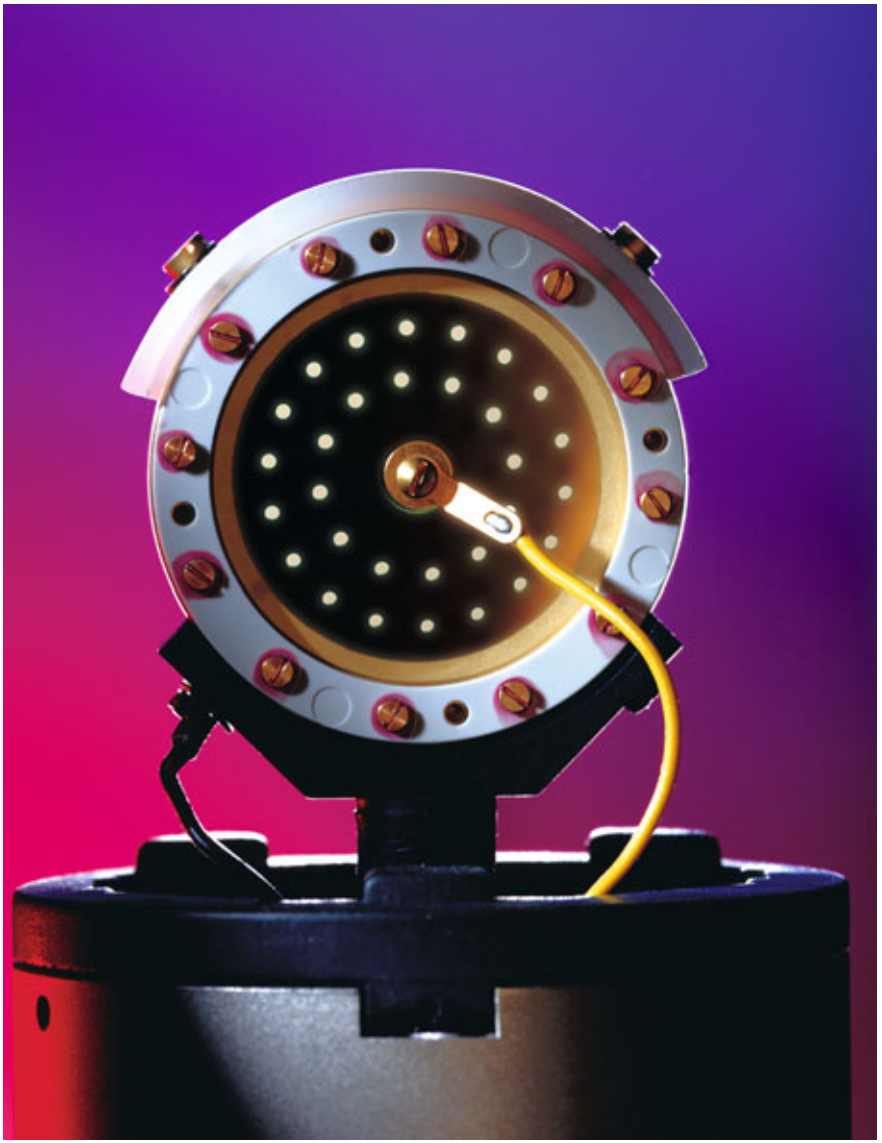
Popscreen, PS 15

Popscreen, PS 20 a

Windscreen, WS 87

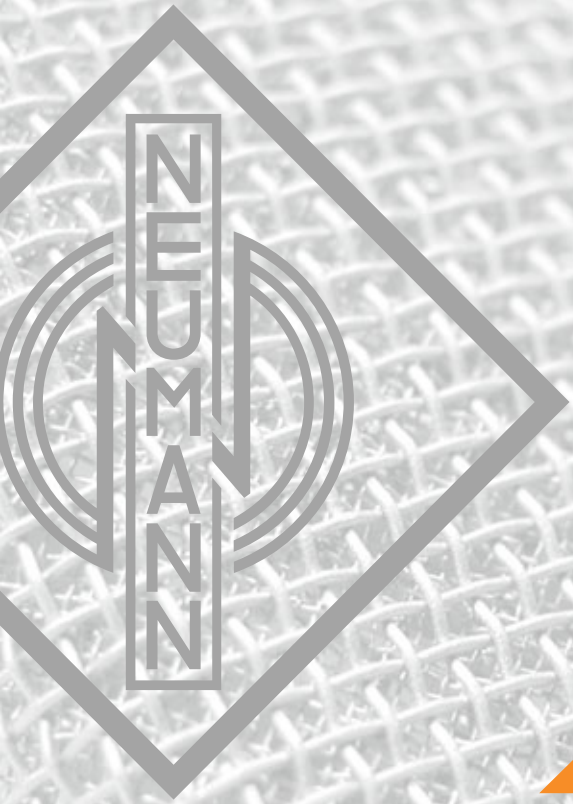
Microphone Cable, IC 3 mt

Adapter Cable, AC 25



M 149 Tube

Tube Microphone



www.neumann.com

The M 149 Tube is a variable dual-diaphragm microphone. The K 49 capsule – well-known from the legendary U 47 and M 49 microphones – is followed by a tube functioning as an impedance converter. In contrast to earlier concepts – utilizing a transformer – the tube is complemented with a transformerless output circuit design.

The M 149 Tube can thus feed long microphone cables without any coloration.

Two slide switches are located below the large, acoustically very open headgrille.

The switch at the front allows selection one of nine directional patterns. The slide switch at the rear operates a seven-step high pass filter. It allows a very fine adjustment of the cut-off frequency.

Applications

There are nine polar patterns to choose from, making this microphone an ideal choice for a wide range of recording situations.

As its ancestors, the M 149 Tube is a superb vocalist microphone, not only because of the capsule, but also due to its modern circuitry, characterized by extremely low noise level.

Acoustic features

The M 149 Tube is addressed from the front, marked with the Neumann logo. Also on the front is the switch for the selection of the polar patterns.

The capsule is mounted elastically inside the headgrille to eliminate structure borne noise. The surface below the capsule is shaped like a cone to disperse any reflected sound from the acoustic upper half space. This avoids any interference with the primary sound arriving at the capsule directly.

A large headgrille surrounds the capsule. It is acoustically very open and therefore increases the sonic realism.

Polar patterns

The polar pattern switch selects one of nine directional patterns: omnidirectional, wide-angle-cardioid, cardioid, hypercardioid, figure-8, and one additional intermediate pattern between each major position.

Electrical features

The circuit of the M 149 Tube microphone has been developed to exceed traditional designs. We have selected a modern tube (triode) and combined its exceptional transmission characteristics with the advantages of our proven transformerless output circuit. The aim was to provide a more controlled environment for the audio signal on its path from the capsule to the output section.

The final stage is an integrated amplifier, especially designed for such applications. It features very low distortion (THD < 0.002 % at ± 10 V), very low self-noise, and high output current capability. As a result, the tube circuit is completely decoupled from the microphone output and its characteristic response curve will be unaffected by very high signal levels or varying load conditions.

The lower output impedance and higher output current capability allow cable lengths up to 300 m (1000 feet) without any degradation of the audio signal.

The tube amplifier changes the high impedance of the capsule and adds 10 dB of gain to the audio signal, providing optimum operating spec-

Technical Data

Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Omnidirectional, wide angle cardioid, cardioid, hypercardioid, figure-8 plus one intermediate position each*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*34/47/62 mV/Pa*[1]
Rated impedance	*50 ohms*
Rated load impedance	*1000 ohms*
Signal-to-noise ratio, CCIR[2] *(rel. 94 dB SPL)*	*66/69/71 dB*[1]
Signal-to-noise ratio, A-weighted[2] *(rel. 94 dB SPL)*	*78/81/83 dB*[1]
Equivalent noise level, CCIR[2]	*28/25/23 dB*[1]
Equivalent noise level, A-weighted[2]	*16/13/11 dB-A*[1]
Typical SPL (tube characteristic)[3]*:*	
for < 0,5% THD	*120 dB*
for < 5% THD	*136 dB*
Maximum output voltage	*18 dBu*
Dynamic range of the microphone amplifier cardioid: (A-weighted) for < 0,5% THD (for < 5% THD)	*101 (121) dB*
Powering	*Power supply N 149 A*
Microphone matching connectors	*DIN8F*
Power supply matching connectors	*XLR3F*
Weight	*730 g*
Diameter	*70 mm*
Length	*201 mm*

[1] Omnidirectional / cardioid / figure-8 [2] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [3] measured as equivalent el. input signal

ifications. The wide dynamic range is impressive, as peak output can be ±10 V, at 20 mA.

The ideal operating point of the tube is maintained throughout its entire life expectancy. Plate current and filament voltage are constantly regulated. A sensor circuit monitors and compensates for any voltage drop across the microphone cable. The tube is heated up slowly through inverse current limiting to guarantee long life. Optimum operating conditions are reached within a very short time.

Filter

A seven-position slide switch is located on the back of the microphone. It selects a high-pass filter, advancing in half-octave steps between 20 Hz and 160 Hz (–3dB). This filter is useful to suppress rumble from air-conditioning and in windy situations.

In addition, the filter provides an effective tool to control the audio signal when the microphone is used at close distance and therefore proximity effect alters the program material.

Delivery Range

The specifically designed new N 149 A power supply unit feeds the M 149 Tube through an 8-core cable. The output connector for the audio signal is a 3-pin XLR. The output signal is balanced.

The microphone comes as a set in a high-quality aluminum case, together with the 8-core microphone connecting cable, the N 149 A power supply with plug-in mains unit, the EA 170 full elastic microphone suspension and a dust cover.

Features

- *Switchable tube microphone*
- *Transformerless circuitry*
- *High output level*
- *Pressure gradient transducer with the M 49 capsule*
- *Acoustically very open wire mesh cage*
- *Nine directional characteristics: omni, wide angle cardioid, cardioid, hypercardioid, figure-8, and one intermediate position each*
- *7fold switchable low frequency roll-off*

Delivery Range

M 149 Tube Microphone
N 149 A Power supply unit with power cable,
EA 170 Elastic suspension,
KT 8 Microphone cable,
Aluminium case,
Dust cover

Single: *M 149 Tube Microphone, Wooden box*

Catalog No.

M 149 Tube (230 V, EU)	*ni*	*008390*
M 149 Tube (117 V, US)	*ni*	*008399*
M 149 Tube (230 V, UK)	*ni*	*008403*
M 149 Tube Single	*ni*	*008391*

Selection of Accessories

Auditorium hanger, MNV 87	*ni*	*006804*
Auditorium hanger, MNV 87 mt	*blk*	*006806*
Table stand, MF 3	*blk*	*007321*
Table stand, MF 4	*blk*	*007337*
Stand extension, STV 4	*blk*	*006190*
Stand extension, STV 20	*blk*	*006187*
Stand extension, STV 40	*blk*	*006188*
Stand extension, STV 60	*blk*	*006189*
Popscreen, PS 15	*blk*	*008472*
Popscreen, PS 20 a	*blk*	*008488*
Microphone cable, IC 3 mt	*blk*	*006543*
Adapter cable AC 25	*blk*	*006600*

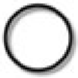
A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

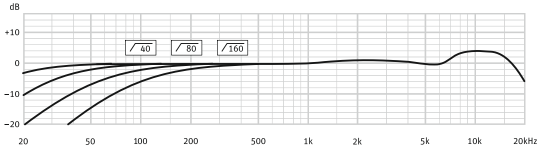
Meaning of color codes:
blk = black ni = nickel

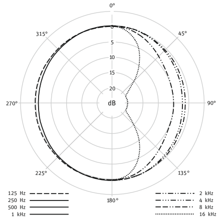
Application Hints

- *Universal tube mic*
- *Its warm and yet transparent sound gives volume and presence to a vocalist*
- *A wide range of adjustments provide the most subtle differentiation of sound, especially in the range of proximity effect*
- *Mic for broadcasting, dubbing, and voice-over*
- *Spot mic for close miking of solo instruments, especially strings, wind instruments, and piano*

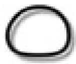
These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

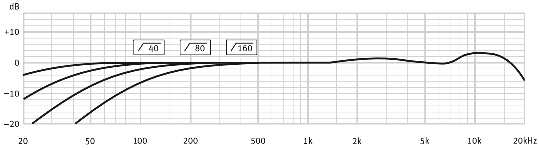


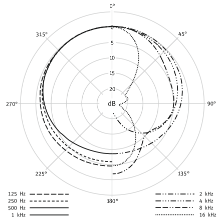


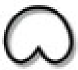


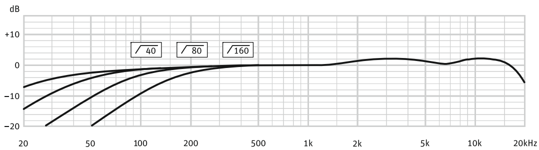
measured in free-field conditions (IEC 60268-4), tolerance ±2 dB

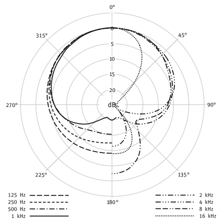


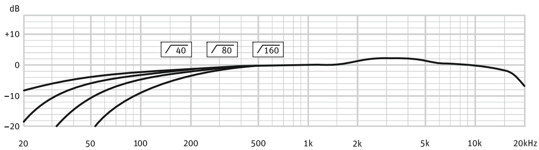


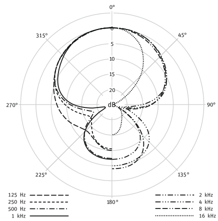


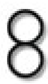


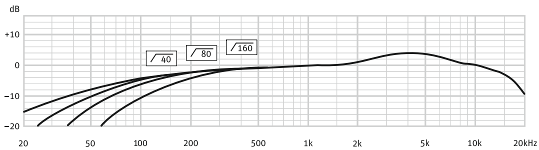


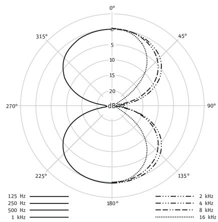






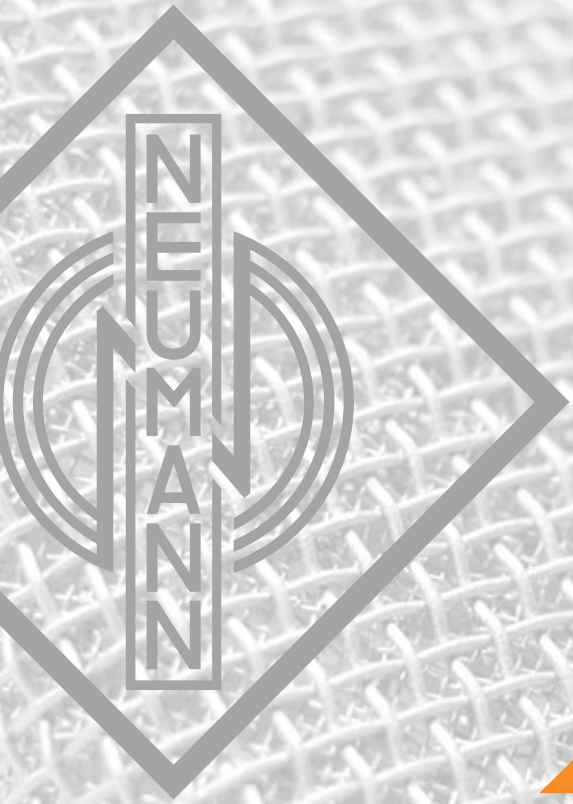






M 150 Tube

Tube Microphone



www.neumann.com

The design of the microphone is a registered design of the Georg Neumann GmbH in certain countries.

Since the 1950s, the Neumann M 50 has been heralded as the ideal microphone for orchestral recording and string scoring. With its phenomenal transient response and unique directional characteristic, this classic mic has endeared many fans, both in the control room and on the soundstage.

The new M 150 Tube takes many of the features from the original M 50 and incorporates them in a very modern microphone. With low self noise, a Titanium membrane and capsule, transformerless tube amplifier and sophisticated power supply, the M 150 Tube is not a reissue but an entirely new microphone in its own right.

Acoustical features

The Titanium diaphragm of the pressure capsule is 12 mm in diameter and is exceedingly thin. Although Titanium has been known to have unique and desirable characteristics for some time, it has, until very recently, been very difficult to procure in the quality necessary for use in a microphone of this type.

The headgrille is shaped just like that on the original M 50, as requested by various top engineers in the recording industry. Due to mounting the pressure capsule with the diaphragm flush to the surface of a small (40 mm) sphere, the directional characteristic of the M 150 Tube is entirely unique.

At the lowest frequencies, this system is a pure omnipressure transducer with a perfectly circular polar pattern. However, in the mid- and upper frequencies, the pickup pattern becomes more narrow.

The M 150 Tube is an ideal microphone for any stereo, 5.1 or 7.1 surround recording, particularly DECCA Tree technique.

Features

- *All Titanium capsule*
- *Unparalleled transient accuracy*
- *Pressure omni capsule for extended low frequency response*
- *Modern version of the world-famous M 50*
- *Very low self noise of 15 dB-A*
- *Transformerless tube amplifier based on the award-winning M 149 Tube microphone*
- *Ideal for DECCA tree recording and surround miking techniques*
- *Stereo sets with consecutive serial numbers*

Electrical features

The dynamic range of the M 150 Tube is 119 dB, allowing reproduction of the full musical expression, without restraint.

With a low self noise of 15 dB-A, more gain can be used without risk of adding noise to the final product. The transformerless output circuit of this microphone allows for extremely fine reproduction of small signals and low frequency information. Also, long cable runs can be used with no loss of signal quality.

Application Hints

- *Its special acoustic properties make this an ideal mic for most classical recordings*
- *A superb AB stereo pair for perfect balance of direct and reverberant sound*
- *Decca tree, setup with three microphones*
- *A highest quality spot (solo) mic*

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Delivery Range

M 150 Tube: *M 150 Tube Microphone, N 149 A Power supply, EA 170 Elastic suspension, KT 8 Connecting cable, Aluminium case*

M 150 Tube Stereo-Set: *2x M 150 Tube Microphone, 2x N 149 A Power supply, 2x EA 170 Elastic suspension, 2x KT 8 Connecting cable, Aluminium case*

Catalog No.

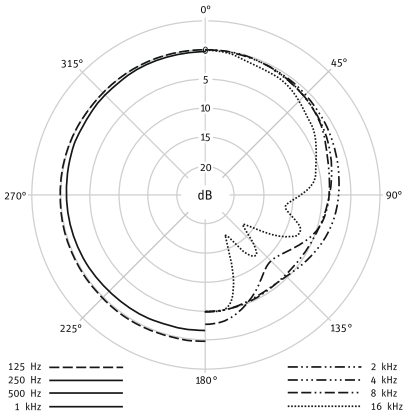
M 150 Tube (230 V, EU)	ni	008456
M 150 Tube (230 V, UK)	ni	008458
M 150 Tube (117 V, US)	ni	008457
M 150 Tube Stereo set (230 V, EU)	ni	008462
M 150 Tube Stereo set (230 V, UK)	ni	008464
M 150 Tube Stereo set (117 V, US)	ni	008463

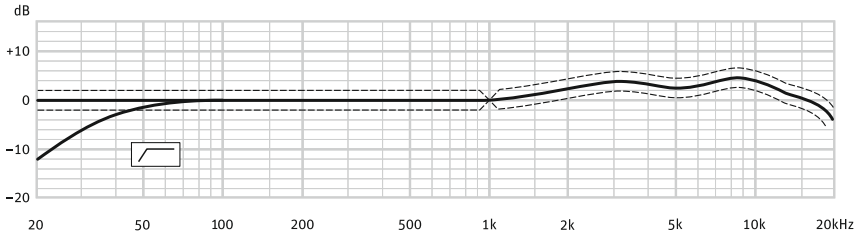
Selection of Accessories

Power supply, N 149 A (EU)	blk	008447
Power supply, N 149 A (US)	blk	008446
Power supply, N 149 A (UK)	blk	008448
Elastic suspension, EA 170	ni	007271
Auditorium hanger, MNV 87	ni	006804
Floor stand, MF 4	blk	007337
Stand extension, STV 60	blk	006189
Popscreen, PS 15	blk	008472
Popscreen, PS 20 a	blk	008488
Microphone cable, IC 3 mt	blk	006543

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog

Meaning of color codes:
blk = black,
ni = nickel





measured in free-field conditions (IEC 60268-4)

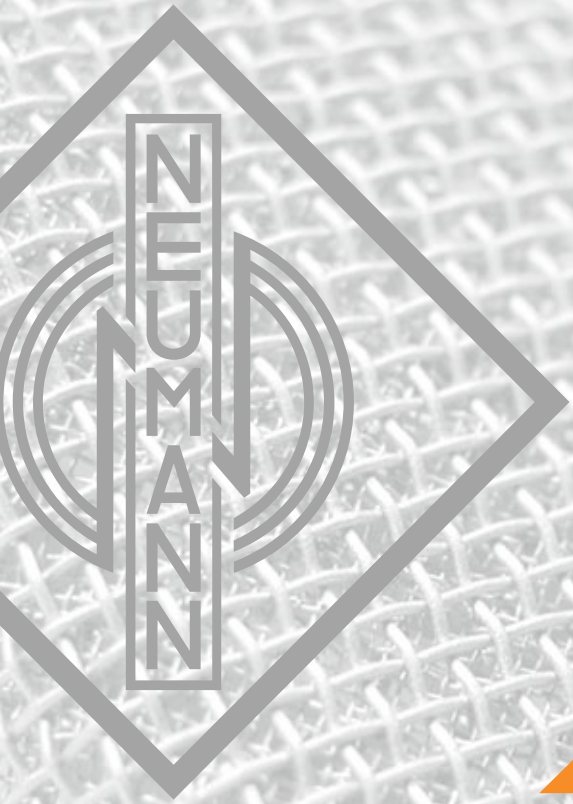
Technical Data

Acoustical operating principle	*Pressure transducer*
Directional pattern	*omnidirectional*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*20 mV/Pa*
Rated impedance	*50 ohms*
Rated load impedance	*1 kohms*
Signal-to-noise ratio, CCIR[1)] (rel. 94 dB SPL)	*66 dB*
Signal-to-noise ratio, A-weighted[1)] (rel. 94 dB SPL)	*79 dB*
Equivalent noise level, CCIR[1)]	*28 dB*
Equivalent noise level, A-weighted[1)]	*15 dB-A*
Typical SPL (tube characteristic)[2)]:	
for < 0.5% THD (for < 5% THD)	*114 (134) dB*
Maximum output voltage	*8 dBu*
Dynamic range of the microphone amplifier:	
(A-weighted) for < 0.5% THD (for < 5% THD)	*99 (119) dB*
Powering	*Power supply N 149 A*
Matching connector microphone	*DIN 8F*
Matching connector power supply	*XLR3F*
Weight	*800 g*
Diameter/Length	*78/165 mm*

[1)] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2)] measured as equivalent el. input signal

TLM 49

Large Diaphragm Microphone



www.neumann.com

The design of the microphone is a registered design of the Georg Neumann GmbH in certain countries.

The TLM 49 is a large-diaphragm studio microphone with a cardioid directional characteristic and a warm sound which is especially optimized for vocal performance. It is supplied as a set, with an elastic suspension.

The design is inspired by that of the legendary M 49 and M 50 microphones of the 1950s. Naturally the TLM 49 has the typical Neumann fine matte nickel finish. The "sound design" is also oriented toward that of the M 49 and the U 47.

By combining its retro look with proven Neumann transformerless circuit technology, this microphone ensures low self-noise and the use of high gain levels.

Applications

During the development phase, the sound was adjusted in extensive practical tests, so as to make the TLM 49 ideal particularly for vocal and speech recording. However, in addition, it is also suitable for instrumental applications in professional production studios and demanding home recordings.

Polar patterns

The large-diaphragm capsule of the TLM 49 provides a cardioid directional characteristic with a tendency toward supercardioid, due to the special capsule construction. Following the example of the M 49, high frequencies are more directional. The capsule diameter is 34 mm.

The front of the microphone is indicated by the red Neumann logo on the microphone body. The capsule is oriented so that the microphone is addressed from the front.

Acoustic features

The TLM 49 uses the famous K 47 capsule, which was also used in the M 49 and the U 47. The capsule has a linear frequency response up to the upper mid-range. Above 2 kHz there is a gentle presence boost up to 3 dB.

The capsule is enclosed by a large microphone headgrille, which is acoustically very open and is hence neutral with regard to the sound.

Electrical features

The letters TLM stand for "transformerless microphone". With TLM technology the usual output transformer is replaced by an electronic circuit.

As with traditional transformers, it ensures good common mode rejection, and prevents RF interference that may influence the balanced audio signal.

Noise signals which affect the balanced modulation line are therefore effectively suppressed. The microphone can operate at sound pressure levels of up to 129 dB, and provides a dynamic range of 117 dB (A-weighted).

Operational reliability

The entire interior structure is mounted elastically, to prevent the transmission of structure-borne noise. In addition, the capsule is mounted with a rubber shock mount.

Due to the wide frequency response, the TLM 49 can also transmit extremely low-frequency signals without coloration. Of course this means that the microphone is also sensitive to noise signals such as vibration noise and wind noise in this frequency range. The TLM 49 is therefore supplied with the elastic suspension EA 3, which effectively protects the microphone from structure-borne noise. If the microphone is addressed at extremely close range, pop screen PS 15 or PS 20 a can be used in front of the microphone to provide protection against plosive sounds.

Features

- *Sound profile optimized for vocal performance*
- *Pressure gradient transducer with the large-diaphragm capsule of the legendary U 47*
- *Cardioid characteristic*
- *Retro design*
- *Transformerless output circuitry*
- *Acoustically very open wire mesh headgrille*
- *Complete set with elastic suspension*

Application Hints

- *Vocal microphone: Lends richness, power and brilliance to the voice, while remaining balanced and transparent*
- *Announcer's microphone for broadcasting, dubbing and voice-overs*
- *Spot microphone and for recording e.g. strings, piano and guitar*

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Delivery Range

TLM 49 Microphone, EA 3 Elastic suspension

Catalog No.

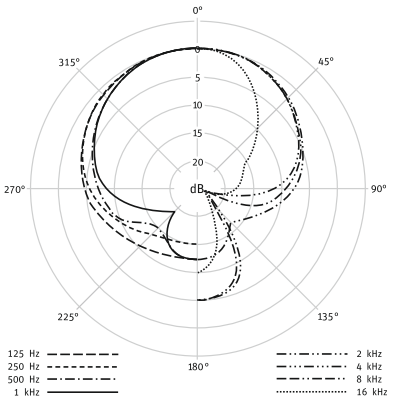
TLM 49 Set	*ni*	*008550*

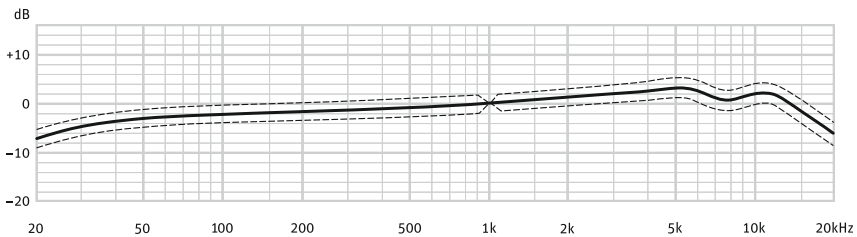
Selection of Accessories

Power supply, N 248	*blk*	*008537*
Battery supply, BS 48 i	*blk*	*006494*
Auditorium hanger, MNV 87	*ni*	*006804*
Auditorium hanger, MNV 87 mt	*blk*	*006806*
Popscreen, PS 15	*blk*	*008472*
Popscreen, PS 20 a	*blk*	*008488*
Microphone cable, IC 3 mt	*blk*	*006543*
Microphone cable, IC 4	*ni*	*006547*
Microphone cable, IC 4 mt	*blk*	*006557*

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

Meaning of color codes:
blk = black,
ni = nickel





measured in free-field conditions (IEC 60268-4)

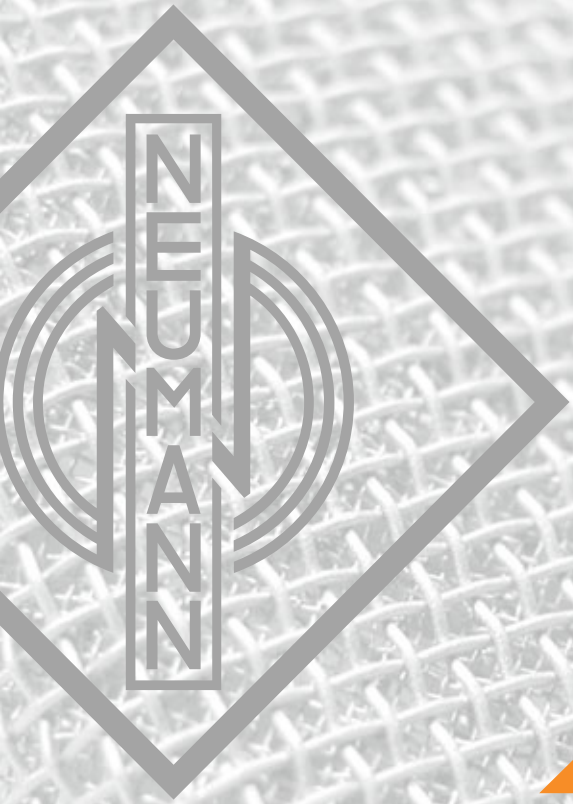
Technical Data

Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Cardioid*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*13 mV/Pa*
Rated impedance	*50 ohms*
Rated load impedance	*1000 ohms*
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	*71 dB*
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	*82 dB*
Equivalent noise level, CCIR[1]	*23 dB*
Equivalent noise level, A-weighted[1]	*12 dB-A*
Maximum SPL for THD < 0.5%[2] (THD < 5%[2])	*110 (129) dB*
Maximum output voltage for THD < 5%[2]	*–1 dBu*
Dynamic range of the amplifier (A-weighted, 0.5%[2])	*98 dB*
Dynamic range of the amplifier (A-weighted, 5%[2])	*117 dB*
Supply voltage (P48, IEC 61938)	*48 V ± 4 V*
Current consumption (P48, IEC 61938)	*3.2 mA*
Matching connector	*XLR3F*
Weight	*825 g*
Diameter	*78 mm*
Length	*165 mm*

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal, THD_2 dominant

TLM 102

Large Diaphragm Microphone



www.neumann.com

The design of the microphone is a registered design of the Georg Neumann GmbH in certain countries.

The TLM 102 defines a new generation of Neumann studio microphones. This applies not only to the design of the microphone but also to the price.

Smart. Sweet. Powerful.

The reduced overall size contributes to an exceptionally compact appearance, which unites all of the typical design components of a Neumann microphone. The harmonious proportions and gleaming grille ring ensure that even at first glance, the TLM 102 attracts attention.

The TLM 102 is impressive in terms of sound: In the interior is a newly developed large-diaphragm capsule (cardioid) with a maximum sound pressure level of 144 dB, which permits the recording of percussion, drums, amps and other very loud sound sources, for example. Instruments that are not especially loud also benefit from the very fast transient response of the TLM 102. However its most important applications are in the realm of vocals and speech; a slight boost above 6 kHz provides for excellent presence of the voice in the overall mix. Up to 6 kHz the frequency response is extremely linear, ensuring minimal coloration and a clearly defined bass range. The capsule is elastically mounted for the suppression of structure-borne noise. A pop screen integrated into the grille serves to suppress plosives in vocal and speech recording.

Due to its price and flexible field of application, the TLM 102 is ideal for the home recording and project studio sector, as well as for the broadcasting area, especially when clear lines of sight to the speakers are a priority.

The TLM 102 is available in black and nickel, a stand mount is included.

Features

- *Large-diaphragm microphone with cardioid directional characteristic (pressure gradient transducer)*
- *Compact, characteristic but smaller-scale Neumann design*
- *Very high maximum sound pressure level*
- *Slight presence boost above 6 kHz*
- *Transformerless circuitry*

Application Hints

- *Vocals and speech*
- *In particular, pickup of especially loud instruments: Drums, percussion, wind instruments and amps*
- *Home recording, project and broadcasting studios*

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Delivery Range

TLM 102 (bk) Microphone
SG 2 Stand mount swivel

Catalog No.

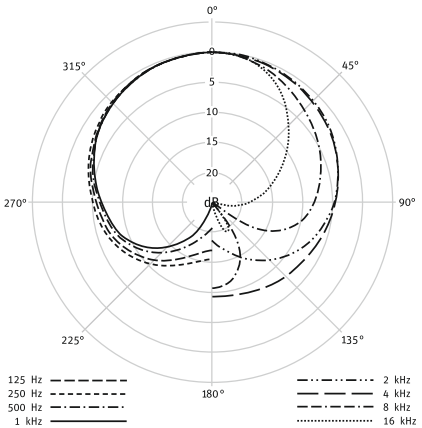
TLM 102	*ni*	*008626*
TLM 102 bk	*blk*	*008627*

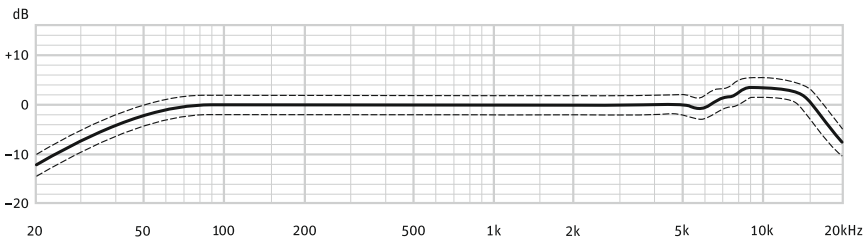
Selection of Accessories

Elastic suspension, EA 4	*ni*	*008641*
Elastic suspension, EA 4 bk	*blk*	*008642*
Auditorium hanger, MNV 87	*ni*	*006804*
Auditorium hanger, MNV 87 mt	*blk*	*006806*
Floor stand, MF 5	*gr*	*008489*
Stand extension, STV 40	*blk*	*006188*
Stand extension, STV 60	*blk*	*006189*
Popscreen, PS 15	*blk*	*008472*
Windscreen, WS 2	*blk*	*008637*
Power supply, N 248	*blk*	*008537*
Microphone cable, IC 3 mt	*blk*	*006543*
Microphone cable, IC 4	*ni*	*006547*

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

Meaning of color codes:
blk = black,
ni = nickel,
gr = gray





measured in free-field conditions (IEC 60268-4)

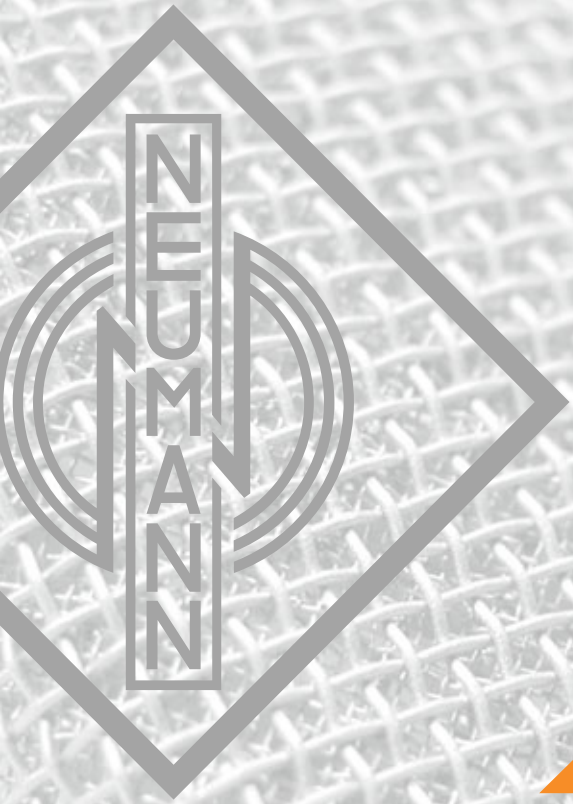
Technical Data

Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Cardioid*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*11 mV/Pa*
Rated impedance	*50 ohms*
Rated load impedance	*1000 ohms*
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	*73 dB*
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	*82 dB*
Equivalent noise level, CCIR[1]	*21 dB*
Equivalent noise level, A-weighted[1]	*12 dB-A*
Maximum SPL for THD 0.5%[2]	*144 dB*
Maximum output voltage	*13 dBu*
Dynamic range of the microphone amplifier (A-weighted)	*132 dB*
Supply voltage (P48, IEC 61938)	*48 V ± 4 V*
Current consumption (P48, IEC 61938)	*3.5 mA*
Matching connector	*XLR3F*
Weight	*210 g*
Diameter	*52 mm*
Length	*116 mm*

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal

TLM 103

Large Diaphragm Microphone



www.neumann.com

The design of the microphone is a registered design of the Georg Neumann GmbH in certain countries.

The TLM 103 is the ideal large diaphragm microphone for all professional and semi-professional applications requiring the utmost in sound quality on a limited budget.

By utilizing the tried and true transformerless circuit found in numerous Neumann microphones, the TLM 103 features yet unattained low self-noise and the highest sound pressure level transmission. The capsule, derived from that used in the U 87, has a cardioid pattern, is acoustically well-balanced and provides extraordinary attenuation of signals from the rear.

The TLM 103 is available in satin nickel and matte black. Delivery includes an SG 1 metal swivel mount and a wooden jeweler's box.

Applications

Due to the universal cardioid pattern, straightforward handling, extremely low self-noise level, and finally, the price, the TLM 103 is predestined for all demanding applications from home recording to professional broadcasting and commercial recording studios.

Polar pattern

The TLM 103 is equipped with a large diaphragm capsule with cardioid pattern. By focusing on this pattern – used in most recording situations – the attenuation of unwanted rear sound has been optimized.

Off-axis sounds are rendered naturally while isolation is increased. This also leads to a high feedback suppression when the microphone is used in live situations or where loudspeaker playback is a factor.

Acoustic features

The TLM 103 is addressed from the front, marked with the red Neumann logo on the microphone body.

The K 103 large diaphragm capsule is based on the K 87, well known from the U 67 / U 87 microphones.

The capsule has a flat frequency response up to about 5 kHz, and above that, a wide flat 4 dB presence boost.

The large wire mesh headgrille protects the capsule from plosive sounds and effectively prevents pop noises.

These characteristics are achieved without resorting to corrective resonance effects. Therefore, the microphone maintains an excellent impulse response and reproduces the finest details of music and speech without coloration.

Electrical features

With just 7 dB-A / 17.5 dB CCIR the self-noise level of the TLM 103 is so reduced that even the smallest signals are reproduced basically noise-free. As it is capable of handling sound pressure levels up to 138 dB without distortion, the TLM 103 provides a dynamic range of 131 dB (A-weighted).

The letters TLM stand for "transformerless microphone". With TLM technology the usual output transformer is replaced by an electronic circuit.

As with traditional transformers, it ensures good common mode rejection, and prevents RF interference that may influence the balanced audio signal.

Operational safety

The entire internal construction is elastically mounted to attenuate any structure borne noise that could interfere with the TLM 103's operation. Furthermore the capsule is set on an elastic mount.

The frequency range reaches below 20 Hz and ths even very low bass signals are reproduced without coloration.

Due to this low frequency extension, the TLM 103 is more sensitive to structure borne interference and wind noise. For such cases, the elastic suspension EA 1 and the windscreen WS 87 are available as accessories. For close vocal use, the PS 15 or PS 20 a pop screens are recommended.

Features

- *Large diaphragm cardioid microphone*
- *Pressure-gradient transducer with one-diaphragm capsule*
- *Transformerless circuitry*
- *Extremely low noise: 7 dB-A*
- *Includes swivel mount*
- *Straightforward handling for homerecording and professional studios*
- *High-quality professional equipment for limited budgets*

Application Hints

- *A universal cardioid mic*
- *Vocalist recording*
- *Announcer's mic for broadcasting/voice over*
- *Due to minimal self-noise: on-air mic for radio/broadcast, very low amplitude signals, radio drama, sampling, foley/sound effects*
- *Home recording and project studios*
- *Spot mic for wind instruments, strings, percussion, guitar amps, drum overhead*

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Delivery Range

TLM 103 (mt) Microphone, SG 2 Stand mount swivel in Wooden box

Mono set: *TLM 103 (mt) Microphone, EA 1 (mt) Elastic suspension in aluminium case*

Stereo set: *2x TLM 103 (mt) Microphone, 2x EA 1 (mt) Elastic suspension in aluminium case*

Studio set: *TLM 103 (mt) Microphone, EA 1 (mt) Elastic suspension*

Catalog No.

TLM 103	*ni*	*008430*
TLM 103 mt	*blk*	*008431*
TLM 103 Mono set	*ni*	*008508*
TLM 103 mt Mono set	*blk*	*008509*
TLM 103 Stereo set	*ni*	*008501*
TLM 103 mt Stereo set	*blk*	*008502*
TLM 103 Studio set	*ni*	*008545*
TLM 103 mt Studio set	*blk*	*008544*

Selection of Accessories

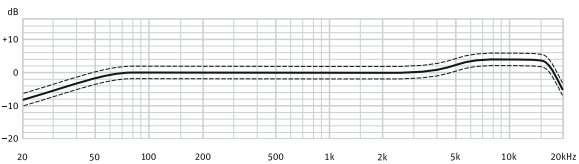
Power supply, N 248	*blk*	*008537*
Auditorium hanger, MNV 87	*ni*	*006804*
Auditorium hanger, MNV 87 mt	*blk*	*006806*
Elastic suspension, EA 1	*ni*	*008449*
Elastic suspension, EA 1 mt	*blk*	*008450*
Popscreen, PS 15	*blk*	*008472*
Popscreen, PS 20 a	*blk*	*008488*
Microphone cable, IC 3 mt	*blk*	*006543*
Microphone cable, IC 4	*ni*	*006547*

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

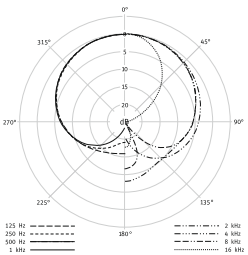
Meaning of color codes:
blk = black,
ni = nickel


1998
TEC
AWARDS
TECHNICAL EXCELLENCE & CREATIVITY
OUTSTANDING TECHNICAL ACHIEVEMENT
MICROPHONE TECHNOLOGY
Neumann TLM 103
PRESENTED BY
MIX
FOUNDATION

Technical Data



measured in free-field conditions (IEC 60268-4)



Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Cardioid*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*23 mV/Pa*
Rated impedance	*50 ohms*
Rated load impedance	*1000 ohms*
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	*76.5 dB*
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	*87 dB*
Equivalent noise level, CCIR[1]	*17.5 dB*
Equivalent noise level, A-weighted[1]	*7 dB-A*
Maximum SPL for THD 0.5%[2]	*138 dB*
Maximum output voltage	*13 dBu*
Dynamic range of the microphone amplifier (A-weighted)	*131 dB*
Supply voltage (P48, IEC 61938)	*48 V ± 4 V*
Current consumption (P48, IEC 61938)	*3 mA*
Matching connector	*XLR3F*
Weight	*approx. 450 g*
Diameter	*60 mm*
Length	*132 mm*

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal

Selection of Accessories

Power supply, N 248

Battery supply, BS 48 i

Elastic Suspension, EA 1 (mt)

Table Stand, MF 3 (in connection with IC 4)

Auditorium Hanger, MNV 87 (mt)

Popscreen, PS 15

Popscreen, PS 20 a

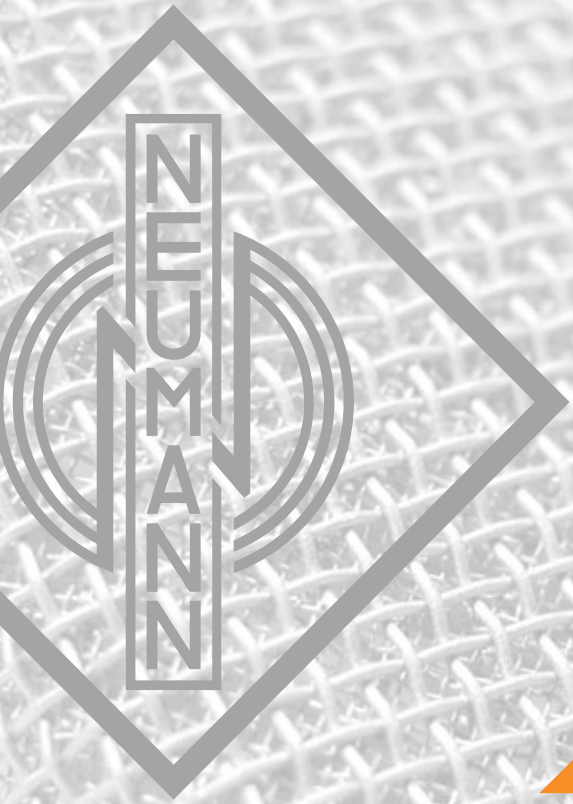
Windscreen, WS 87

Microphone Cable, IC 3 mt

Microphone Cable, IC 4 (mt)

TLM 193

Large Diaphragm Microphone



www.neumann.com

The design of the microphone is a registered design of the Georg Neumann GmbH in certain countries.

The TLM 193 is a large diaphragm microphone with a cardioid polar pattern. With this microphone Neumann continues its long tradition, and is offering high end technology at an affordable price for musicians and the home recording studio.

The microphone uses a transformerless circuit, featuring extremely low self noise and large dynamic range.

The polar response is very linear over a wide incidence angle. Thus, even signals coming from the side are reproduced faithfully and without coloration.

The exposed surface of the microphone capsule is at ground potential, making it immune to typical interference and contamination. The microphone is supplied with a swivel mount.

Applications

The TLM 193 is a microphone with cardioid characteristic for professional recording and live applications. It is the ideal microphone for professional productions, for musicians and project studios.

Polar pattern

The TLM 193 has a large diaphragm capsule with cardioid characteristic.

Acoustic features

The TLM 193 is addressed from the front, marked with the Neumann logo.

The large diaphragm capsule inside the headgrille has a very smooth frequency response for all polar patterns over a wide acceptance angle.

The curves are flat and parallel to the 0° frequency curve up to 10 kHz within a pickup angle of ± 100°.

Features

- *Large diaphragm cardioid microphone*
- *Pressure-gradient transducer*
- *Transformerless circuitry*
- *Extremely low noise: 10 dB (A)*
- *Includes swivel mount*
- *The "plug and play" microphone for professional studios, musicians and homerecording applications*
- *High-quality professional equipment for mid-size budgets*

The TLM 193 differs from omnidirectional pressure transducers, where, due to physical reasons, the diffuse-field and free-field responses never agree.

This microphone has a very even diffuse-field response for all polar patterns. This is important in a reverberant environment, as more reflections arrive at the microphone from different directions.

The acoustic information is not affected in its tonal quality when recorded by the microphone. This characteristic is achieved without resorting to corrective resonance effects.

Therefore, the microphone maintains an excellent impulse response reproducing all transient phenomena of music and speech without coloration.

Electrical features

The letters TLM stand for "transformerless microphone". With TLM technology the usual output transformer is replaced by an electronic circuit.

As with traditional transformers, it ensures good common mode rejection, and prevents RF interference, that may influence the balanced audio signal.

Compared to other microphones the self noise level of the TLM 193 is considerably reduced. As it is capable of handling sound pressure levels up to 140 dB without distortion, the TLM 193 provides a dynamic range of 130 dB (A-weighted).

Operational safety

All exposed surfaces of the microphone capsule, including the diaphragms, are at ground potential. This technology makes them highly immune to electrical and atmospheric interference and contamination through microscopic dust particles.

The capsule is elastically mounted to avoid any structure borne noise that could interfere with its operation.

The frequency response of the TLM 193 amplifier is linear down to 20 Hz. Even very low bass signals are reproduced without coloration. This implies that the microphone becomes more sensitive to subsonic frequencies, from structure borne noise or pop and wind noise.

To avoid any LF interference, we recommend to use the EA 1 elastic suspension, the PS 15 pop screen, or the WS 89 windscreen.

Application Hints

- *A universal cardioid mic*
- *Ideal for close miking of instruments with high sound pressure levels*
- *Announcer's mic for broadcasting/dubbing*
- *Home recording and project studios*
- *Vocalist recording*
- *Spot mic for*
  - *wind instruments*
  - *strings*
  - *percussion*
  - *guitar amps*

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Delivery Range

TLM 193 Microphone
SG 2 Stand mount swivel
Wooden box

Catalog No.

TLM 193 ..... blk 008381

Selection of Accessories

Battery supply, BS 48 i ..... blk 006494
Power supply, N 248 ..... blk 008537

Auditorium hanger, MNV 87 mt ... blk 006806

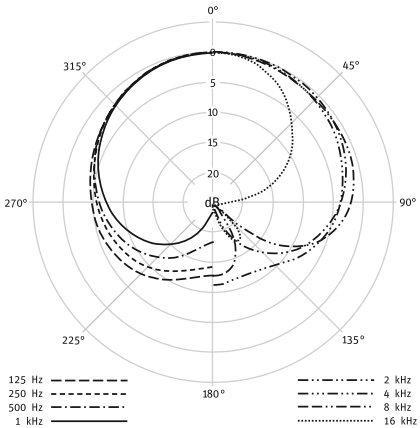
Elastic suspension, EA 1 mt ..... blk 008450

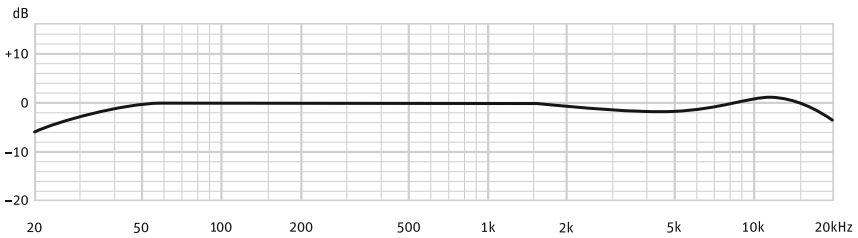
Popscreen, PS 15 ..... blk 008472
Windscreen, WS 89 ..... blk 007197

Microphone cable, IC 4 mt
(with stand mount swivel) ..... blk 006557

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

Meaning of color codes:
blk = black,
ni = nickel





measured in free-field conditions (IEC 60268-4), tolerance ±2 dB

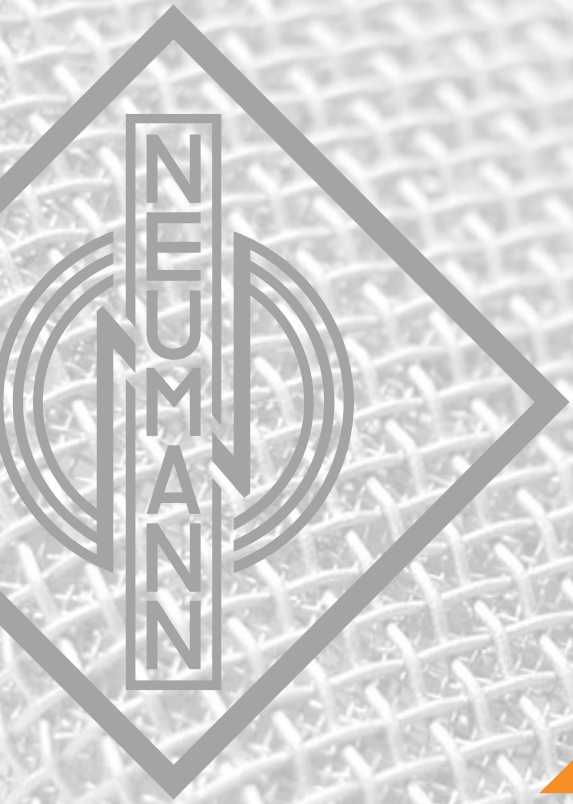
Technical Data

Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Cardioid*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*18 mV/Pa*
Rated impedance	*50 ohms*
Rated load impedance	*1000 ohms*
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	*73 dB*
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	*84 dB*
Equivalent noise level, CCIR[1]	*21 dB*
Equivalent noise level, A-weighted[1]	*10 dB-A*
Maximum SPL for THD 0.5%[2]	*140 dB*
Maximum output voltage	*13 dBu*
Dynamic range of the microphone amplifier (A-weighted)	*130 dB*
Supply voltage (P48, IEC 61938)	*48 V ± 4 V*
Current consumption (P48, IEC 61938)	*3 mA*
Matching connector	*XLR3F*
Weight	*480 g*
Diameter	*49 mm*
Length	*175 mm*

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal

TLM 67

Large Diaphragm Microphone



www.neumann.com

The design of the microphone is a registered design of the Georg Neumann GmbH in certain countries.

In the world of studio microphones, the numbers “47”, “67” and “87” have associations that inspire enthusiasm among professionals in the field. It is of course no coincidence that the name of the new TLM 67 contains the number “67”. In many respects, the TLM 67 is based on the “workhorse” of the 1960s, the legendary U 67. Like the U 67, the TLM 67 incorporates the K 67 capsule. In addition, the special new circuit design closely reproduces the sound characteristics of the classic U 67, without the use of tubes. Similar Neumann circuit technology has already proved very successful in the TLM 49.

The TLM 67 is extremely versatile. Its three switchable directional characteristics (omnidirectional, cardioid and figure-8), selectable 10 dB pre-attenuation and high-pass filter permit detailed adjustments to be made, depending upon the specific recording situation.

Exterior design

The TLM 67 is a large-diaphragm condenser microphone in the classic Neumann style, with a unique dual-color design. The stylish pearl-gray of the microphone body combined with the classic Neumann nickel lends the microphone a touch of distinctive individuality.

The legendary, frequently imitated design of the Neumann U 67 was the first to be developed by Neumann employees in collaboration with the famous German designer, Wilhelm Braun-Feldweg. The design of the TLM 67 represents a contemporary development of that of the U 67, transferring its positive impact to the present era. The enhanced exterior design thus links past and future microphone design trends.

On the occasion of its 80th anniversary, the Neumann company is honoring its founder, Georg Neumann, with a three-dimensional metal emblem on the front of the TLM 67. The distinctive Neumann attraction is conveyed in every detail of the microphone.

Applications

Due to its extensive control features, the TLM 67 is suitable for a wide range of applications. In addition to its primary role as a vocal microphone for all types of music and spoken voice, in orchestral recordings the TLM 67 can be used as a main microphone and as a spot microphone for individual instruments.

Acoustic features

The microphone is addressed from the side on which the Neumann logo is located.

A large wire mesh grille encloses the elastically mounted double diaphragm capsule. The directional characteristics omnidirectional, cardioid or figure-8 can be selected via a switch below the grille. The selected setting is indicated by a symbol shown in a window above the switch.

Electrical features

The letters "TLM" stand for "transformerless microphone". In the TLM 67, an electronic circuit is used rather than a conventional output transformer. Like a transformer, the circuit ensures good common mode rejection, effectively suppressing interference signals that affect the balanced modulation line. The microphone can operate at sound pressure levels of up to 105 dB without distortion, and has a dynamic range of 94 dB (A-weighted), without the use of the pre-attenuation switch.

Filter and pre-attenuation

The pre-attenuation switch on the back of the microphone can be used to reduce transmission levels by approx. 10 dB. It should be used only when there is a risk of overloading following devices due to very high sound pressure levels. Use of the switch does not increase the dynamic range of the microphone, but rather shifts it by 10 dB, to higher sound pressure levels. The other switch on the back of the microphone can be used to change the cutoff frequency of the built-in high-pass filter, so as to suppress the effects of impact sound and wind noise, or to compensate for the proximity effect.

Operational reliability

Elastic mounting of the capsule supplies protection from the transmission of structure-borne noise. If required, the EA 87 elastic suspension and WS 87 windscreen are available as accessories, for further suppression of structure-borne and wind noise. The PS 15 or PS 20 a popscreen can be used if the microphone is to be addressed at close range.

Features

- *Sound characteristics based on the legendary U 67*
- *Three switchable directional characteristics*
- *Switchable high-pass filter and pre-attenuation*
- *Transformerless circuit design*
- *New dual-color exterior design*

Application Hints*

- *Extremely versatile*
- *Vocal microphone (soloists and background choir)*
- *Broadcasting, dubbing and voiceovers*
- *Overhead microphone*
- *Spot microphone, and suitable e.g. for strings, especially cello and double bass, as well as piano*

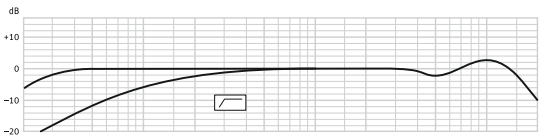
Delivery Range

TLM 67 microphone, Wooden box

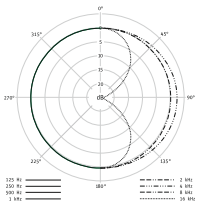
Catalog No.

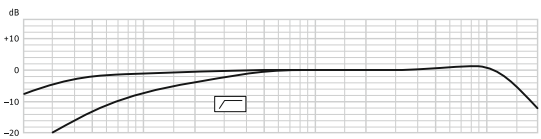
TLM 67 ..... *pgr* *008605*

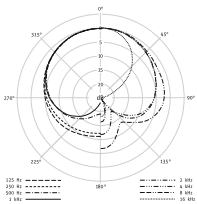
** These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.*

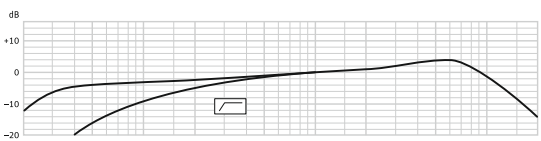


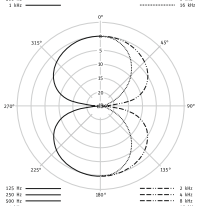
measured in free-field conditions (IEC 60268-4), tolerance ±2 dB











Technical Data

Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Omni/cardioid/figure-8*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*10/18/9 mV/Pa*
Rated impedance	*50 ohms*
Rated load impedance	*1 kohms*
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	*65/70/64 dB*
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	*78/83/77 dB*
Equivalent noise level, CCIR[1]	*29/24/30 dB*
Equivalent noise level, A-weighted[1]	*16/11/17 dB-A*
Maximum SPL (tube characteristic)[2]:	
for THD < 0.5 %	*110/105/111 dB*
for THD < 5 %	*130/125/131 dB*
Maximum output voltage	*–1 dBu*
Dynamic range of the microphone amplifier:	
(A-weighted) for < 0.5% THD (for < 5% THD)	*94(114) dB*
Power supply	*P48*
Matching connector microphone	*XLR3F*
Weight	*490 g*
Diameter/Length	*56/200 mm*

Selection of Accessories

Elastic suspension, EA 87	*ni*	*007297*
Auditorium hanger, MNV 87	*ni*	*006804*
Stand mount, SG 87	*blk*	*008619*
Windscreen, WS 87	*blk*	*006753*
Popscreen, PS 15	*blk*	*008472*
Popscreen, PS 20 a	*blk*	*008488*
Battery supply, BS 48 i	*blk*	*006494*
Battery supply, BS 48 i-2	*blk*	*006496*
Power supply, N 248	*blk*	*008537*
Microphone cable, IC 3 mt	*blk*	*006543*
Microphone cable, IC 4	*ni*	*006547*
Microphone cable, IC 4 mt	*blk*	*006557*

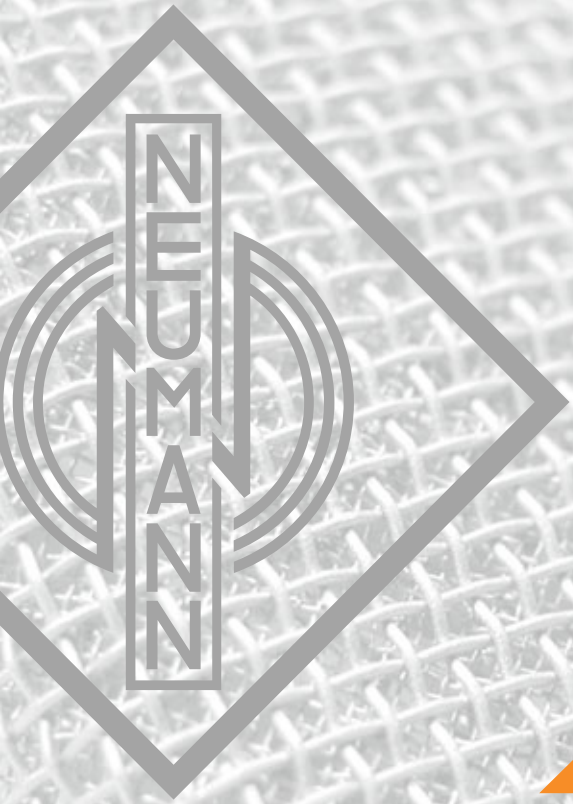
A complete survey and detailed descriptions of all accessories are contained in the accessories catalog

Meaning of color codes:
pgr = pearl gray,
blk = black,
ni = nickel

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal

TLM 170 R

Large Diaphragm Microphone



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The design of the microphone is a registered design of the Georg Neumann GmbH in certain countries.

The TLM 170 R was the first microphone to use the successful fet 100 technology. Along with a balanced, transformerless output stage it features extremely low self-noise and an impressive dynamic range.

Five directional characteristics are selectable by means of a rotary switch. In the sixth position, marked "R", the directional patterns can be controlled remotely with the N 248 power supply. There is no special cable necessary for this purpose.

The microphone has at its rear a 10 dB attenuation switch for extremely high sound pressure levels, and a high-pass filter to suppress structure born noise.

Applications

The TLM 170 R condenser microphone is a large diaphragm microphone with multiple polar patterns. Its sound has a very transparent characteristic, in contrast to some of our other microphones that have a distinct personality.

Therefore, this microphone is used for many diverse applications in professional recording studios, in broadcasting, film and television, and for semiprofessional productions. The polar patterns can be selected either at the microphone itself, or controlled remotely through the special N 48 R-2 power supply.

Acoustic features

The microphone is addressed from the front, marked with the Neumann logo. The large diaphragm capsule inside the headgrille has a

Features

- *Local and remote controlled large diaphragm microphone*
- *Pressure-gradient transducer with double membrane capsule*
- *Five directional characteristics: omni, wide angle cardioid, cardioid, hypercardioid, figure-8*
- *Patented circuitry for remote and local switching of directional characteristics*
- *Switchable low frequency roll-off and 10 dB preattenuation*
- *Tiltable, elastically suspended bracket mount*

very smooth frequency response for all polar patterns over a wide acceptance angle. The curves are flat and parallel to the 0° frequency curve up to 10 kHz within an angle of ± 100°.

As a result the TLM 170 R has a very even diffuse-field response for all polar patterns. This is important in a reverberant environment, as more reflections arrive at the microphone from different directions. The acoustic information is not affected in its tonal quality when recorded by the microphone. This characteristic is achieved without resorting to corrective resonance effects.

Therefore, the microphone maintains an excellent impulse response reproducing all transient phenomena of music and speech without any coloration.

The capsule is elastically mounted to avoid any structure borne noise that could interfere with its operation.

Polar patterns

In addition to the usual directional polar patterns: omnidirectional, cardioid, and figure-8, we have added a hypercardioid and wide-an-gle cardioid characteristic. When compared to the standard cardioid pattern, the hypercardioid characteristic suppresses sound from the side more efficiently. The wide-angle polar pattern is especially useful to record large sound sources.

Remote control

The N 248 controls the polar pattern remotely by varying the phantom voltage. The range is ± 3 V of the nominal 48 V value. (According to DIN standard a range of ± 4 V is permissible.)

The rotary switch on the microphone must be in the position R (= remote control). In this switch position the TLM 170 R microphone analyses the absolute value of the phantom power and selects the corresponding polar pattern. A standard 3-pin microphone cable is used, similar to the microphone's conventional operation. Cable lengths may be up to 300 m (1000 feet).

Electrical features

The letters TLM stand for "transformerless microphone". With TLM technology the usual output transformer is replaced by an electronic circuit.

As with traditional transformers, it ensures good common mode rejection, and prevents RF interference, that may influence the balanced audio signal.

Technical Data

Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Omnidirectional, wide angle cardioid, cardioid, hypercardioid, figure-8*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*8 mV/Pa*
Rated impedance	*50 ohms*
Rated load impedance	*1000 ohms*
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	*68 dB*
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	*80 dB*
Equivalent noise level, CCIR[1]	*26 dB*
Equivalent noise level, A-weighted[1]	*14 dB-A*
Maximum SPL for THD 0.5%[2]	*144 dB*
Maximum SPL for THD 0.5% with preattenuation[2]	*154 dB*
Maximum output voltage	*10 dBu*
Dynamic range of the microphone amplifier (A-weighted)	*130 dB*
Supply voltage (P48, IEC 61938)	*48 V ± 4 V*
Current consumption (P48, IEC 61938)	*3 mA*
Matching connector	*XLR3F*
Weight	*625 g*
Diameter	*60 mm*
Length	*152 mm*

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal

Operational safety

All exposed surfaces of the capsule, including the diaphragms, are at ground potential. This technology makes them highly immune to electrical and atmospheric interference and contamination through dust particles.

Filter and attenuation

The TLM 170 R microphone has a 10 dB attenuation switch to prevent the input of the following unit from being overloaded.

A second switch at the rear allows to attenuate the frequency response below 100 Hz to suppress undesired structure borne noise.

Use on tripods

The TLM 170 R is provided with a tilting side bracket to attach the microphone to booms or stands. The bracket is equipped with rubber elements that effectively protect the microphone from mechanical shock.

If necessary, it can be mounted on the other side of the microphone as well.

When using the IC 4 cable (for example to suspend the microphone from the ceiling with the MNV 87 auditorium hanger), the bracket and its holder need to be removed.

The microphone can then be connected to the swivel mount connector of the cable.

Delivery Range

Microphone TLM 170 R (mt), Dust cover, Wooden box

Stereo set: *2x TLM 170 R (mt) Microphone, 2x EA 170 (mt) Elastic suspension, Dust cover, Aluminium case*

Catalog No.

TLM 170 R	ni	007165
TLM 170 R mt	blk	007166
TLM 170 R Stereo set	ni	008503
TLM 170 R mt Stereo set	blk	008504

Selection of Accessories

Battery supply, BS 48 i	blk	006494
Power supply, N 248	blk	008537
Elastic suspension, EA 170	ni	007271
Elastic suspension, EA 170 mt	blk	007273
Auditorium hanger, MNV 87	ni	006804
Auditorium hanger, MNV 87 mt	blk	006806
Popscreen, PS 20 a	blk	008488
Windscreen, WS 87	blk	006753
Microphone cable, IC 4	ni	006547
Microphone cable, IC 4 mt	blk	006557

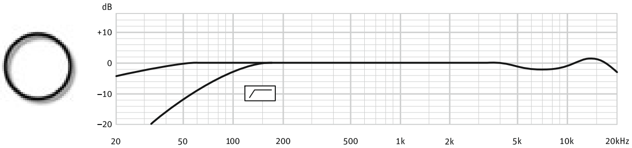
A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

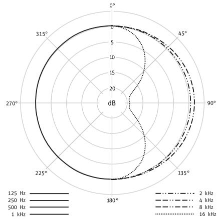
Meaning of color codes:
blk = black
ni = nickel

Application Hints

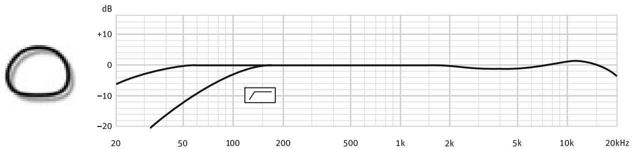
- *For universal use, very transparent, without coloration*
- *Announcer's mic for broadcasting, dubbing, voice-over*
- *Ideal mic for close miking of instruments with high sound pressure levels*
- *Spot mic for wind instruments, especially trumpet and saxophone, strings, piano, kick drum, guitar amps*
- *During recordings when the mic is in a location where it is difficult to change polar patterns, for example, suspended from a ceiling. A special remote control is available.*

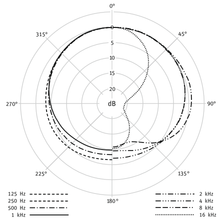
These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

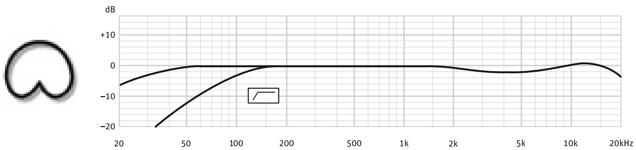


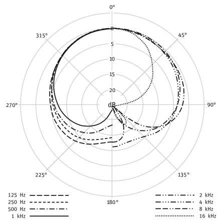


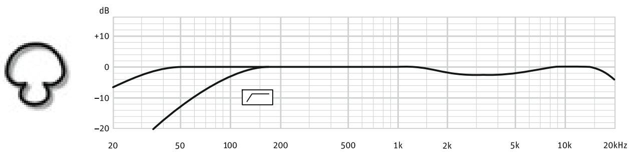
measured in free-field conditions (IEC 60268-4), tolerance ±2 dB

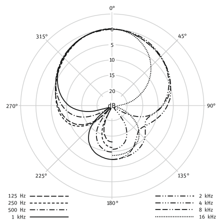


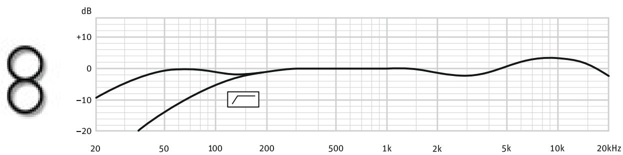


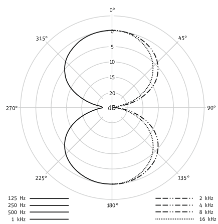






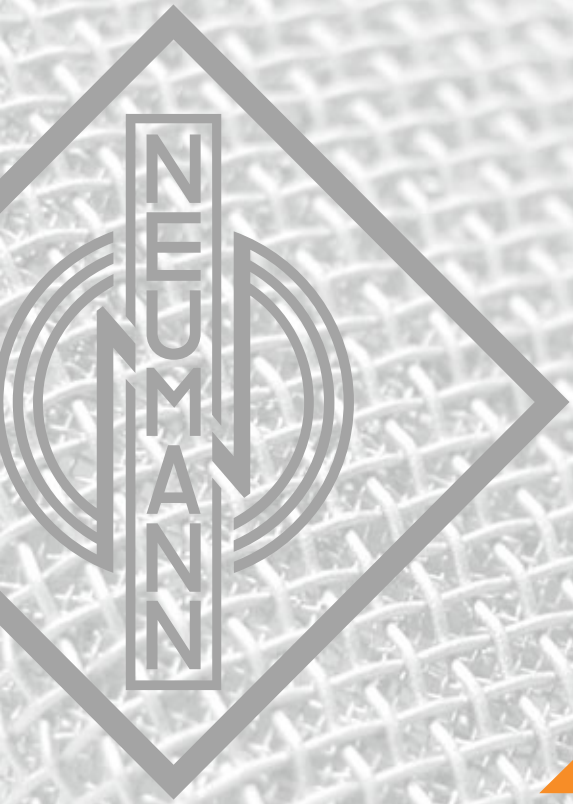






U 87 Ai

Large Diaphragm Microphone



www.neumann.com

The design of the microphone is a registered design of the Georg Neumann GmbH in certain countries.

Features

- *Variable large diaphragm microphone*
- *Pressure-gradient transducer with double membrane capsule*
- *The studio microphone classic*
- *Three directional characteristics: omni, cardioid, figure-8*
- *Switchable low frequency roll-off*
- *Switchable 10 dB pre-attenuation*
- *Ideal as main and as support microphone in the most differing recording situations*

The U 87 is probably the best known and most widely used Neumann studio microphone. It is equipped with a large dual-diaphragm capsule with three directional patterns: omnidirectional, cardioid and figure-8. These are selectable with a switch below the headgrille.

A 10 dB attenuation switch is located on the rear. It enables the microphone to handle sound pressure levels up to 127 dB without distortion.

Furthermore, the low frequency response can be reduced to compensate for proximity effect.

Applications

The U 87 Ai condenser microphone is a large diaphragm microphone with three polar patterns and a unique frequency and transient response characteristic.

Users recognize the microphone immediately by its distinctive design. It is a good choice for most general purpose applications in studios, for broadcasting, film and television.

The U 87 Ai is used as a main microphone for orchestra recordings, as a spot mic for single instruments, and extensively as a vocal microphone for all types of music and speech.

Acoustic features

The U 87 Ai is addressed from the front, marked with the Neumann logo.

The frequency response of the cardioid and figure-8 directional characteristics are very flat for frontal sound incidence, even in the upper frequency range.

The microphone can be used very close to a sound source without the sound becoming unnaturally harsh.

By means of a high-pass filter interferences through subsonic and low frequencies are reduced remarkably.

Polar patterns

The dual-diaphragm capsule is elastically mounted and protected by a large headgrille.

A switch below the headgrille selects the three directional patterns: omnidirectional, cardioid and figure-8.

A window above this switch shows the symbol of the selected characteristic.

Electrical features

The letter A in the name indicates a more recent generation, as compared to the U 87 i microphones that were built from 1967 to 1986. Modifications apply to the electronic components of the microphone only; the capsule remained unchanged.

The present-day circuitry increases the operational headroom of the U 87 Ai by supplying the bias voltages for the capsule through a reduced resistance. The result is a higher sensitivity of 10 dB for identical sound pressure levels, and an improved S/N ratio of 3 dB.

Filter and attenuation

A switch located at the rear attenuates the sensitivity by 10 dB. When this switch is activated, the microphone accepts sound pressure levels up to 127 dB (equivalent to a sound pressure of 45 Pa) without distortion.

An additional switch at the rear allows to change the microphone's cutoff frequency. This reduces low frequency interference directly at the input of the microphone amplifier.

This setting also compensates for the unavoidable bass boost that occurs with all pressure gradient transducers when they are used at close distance (proximity effect).

The cardioid characteristic maintains a smooth frequency response at a distance of 30 to 40 cm, the figure-8 characteristic even at a distance of 15 to 20 cm.

Application Hints

- *For universal use*
- *The classical studio mic for vocalists (soloists and background vocalists)*
- *Announcer's mic for broadcasting, dubbing, voice-over*
- *Overhead*
- *Spot mic for*
  - *wind instruments*
  - *strings (especially cello and double bass)*
  - *piano*
  - *percussion*
- *Note: To record instruments with very high sound pressure levels we recommend our mics with TLM circuitry*

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Delivery Range

Microphone U 87 Ai (mt) in Wooden box

Studio set: *U 87 Ai (mt) Microphone, EA 87 (mt) Elastic suspension, Wooden box*

Stereo set: *2x U 87 Ai (mt) Microphone, 2x EA 87 (mt) Elastic suspension, 2x Dust cover, Aluminium case*

Catalog No.

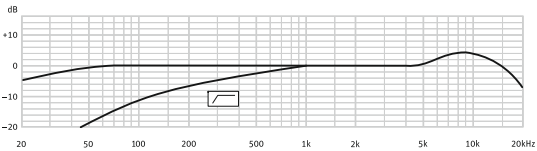
U 87 Ai	*ni*	*007022*
U 87 Ai mt	*blk*	*007023*
U 87 Ai Studio set	*ni*	*008660*
U 87 Ai mt Studio set	*blk*	*008661*
U 87 Ai Stereo set	*ni*	*008505*
U 87 Ai mt Stereo set	*blk*	*008506*

Selection of Accessories

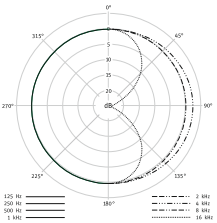
Battery supply, BS 48 i	*blk*	*006494*
Power supply, N 248	*blk*	*008537*
Auditorium hanger, MNV 87	*ni*	*006804*
Auditorium hanger, MNV 87 mt	*blk*	*006806*
Elastic suspension, EA 87	*ni*	*007297*
Elastic suspension, EA 87 mt	*blk*	*007298*
Stand mount swivel, SG 287	*blk*	*008658*
Popscreen, PS 20 a	*blk*	*008488*
Windscreen, WS 87	*blk*	*006753*
Microphone cable, IC 4 mt	*blk*	*006557*

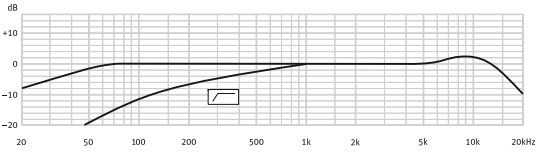
A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

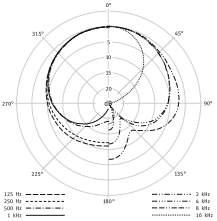
Meaning of color codes:
blk = black, ni = nickel

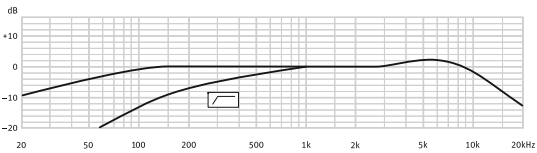


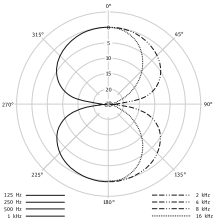
measured in free-field conditions (IEC 60268-4), tolerance ±2 dB











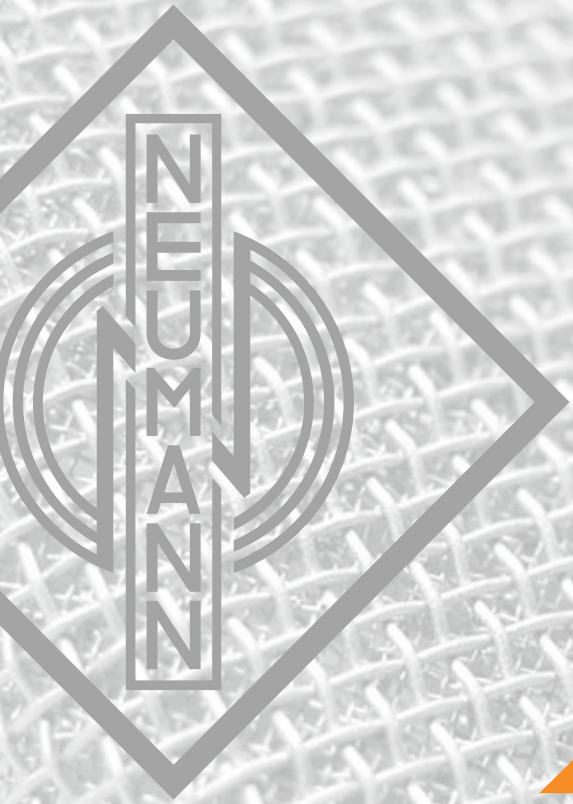
Technical Data

Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Omnidirectional, cardioid, figure-8*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*20/28/22 mV/Pa*[1]
Rated impedance	*200 ohms*
Rated load impedance	*1000 ohms*
Signal-to-noise ratio, CCIR[2] *(rel. 94 dB SPL)*	*68/71/69 dB*[1]
Signal-to-noise ratio, A-weighted[2] *(rel. 94 dB SPL)*	*79/82/80 dB*[1]
Equivalent noise level, CCIR[2]	*26/23/25 dB*[1]
Equivalent noise level, A-weighted[2]	*15/12/14 dB-A*[1]
Maximum SPL for THD 0.5%[3]	*117 dB (cardioid)*
Maximum SPL for THD 0.5% with preattenuation[3]	*127 dB*
Maximum output voltage	*390 mV*
Dynamic range of the microphone amplifier, A-weighted	*105 dB*
Supply voltage (P48, IEC 61938)	*48 V ± 4 V*
Current consumption (P48, IEC 61938)	*0.8 mA*
Matching connector	*XLR3F*
Weight	*500 g*
Diameter	*56 mm*
Length	*200 mm*

[1] Omnidirectional / cardioid / figure-8 [2] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [3] measured as equivalent el. input signal

U 89 i

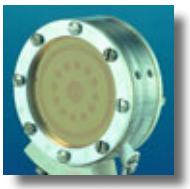
Large Diaphragm Microphone



www.neumann.com

The design of the microphone is a registered design of the Georg Neumann GmbH in certain countries.

The U 89 is a studio microphone for universal applications. The headgrille protects a dual-diaphragm capsule. A rotary switch below the headgrille selects from five different polar patterns. Therefore the microphone can be adapted easily to large sound sources, and those that are spread wide apart, or to sound sources to be recorded at a greater distance.



The amplifier accepts sound pressure levels up to 134 dB without distortion. This figure can be increased to 140 dB. An additional rotary switch activates a filter that changes the low frequency response either below 80 Hz or 160 Hz.

Applications

The U 89 i is similar in appearance to the U 87. It is of smaller size, and lighter weight. It features five instead of three directional characteristics and a higher maximum sound pressure level which make this microphone easier adaptable to different applications.

Polar patterns

In addition to the usual directional polar patterns: omnidirectional, cardioid, and figure-8, we have added a hypercardioid and wide-angle cardioid characteristic.

When compared to the standard cardioid pattern, the hypercardioid characteristic suppresses sound from the side more efficiently. The wide-angle polar pattern is especially useful to record large sound sources.

Acoustic features

The microphone is addressed from the front, marked with the Neumann logo. The large diaphragm capsule has a very smooth frequency response for all polar patterns over a wide acceptance angle. The frequency response curves are flat up to 10 kHz within a pickup angle of ± 100°.

As a result the U 89 i has a very even diffuse-field response for all polar patterns. This is important in a reverberant environment when more reflections arrive at the microphone capsule. The acoustic information is not affected in its tonal quality when recorded by the microphone.

Features

- *Variable large diaphragm microphone*
- *Pressure-gradient transducer with double membrane capsule*
- *Five directional characteristics: omni, wide angle cardioid, cardioid, hypercardioid, figure-8*
- *Thereby most versatile in all recording situations*
- *Two-stage roll-off filter*
- *Switchable 6 dB pre-attenuation*
- *Extended frequency range in comparison to U 87 Ai*

This characteristic is achieved without resorting to corrective resonance effects.

The capsule it is elastically mounted to avoid any structure borne noise that could interfere with its operation.

Filter and attenuation

The amplifier handles sound pressure levels up to 134 dB without distortion.

With a self noise level of 17 dB (A-weighted) the total dynamic range is 117 dB. Maximum sound pressure level is 140 dB when the –6 dB rotary switch is in the ON position.

A low frequency roll-off at 80 Hz or 160 Hz can be activated with the third rotary switch below the headgrille. This filter suppresses low frequency interference, yet maintains an even frequency response for close-up sound sources, for example, when proximity effect could adversely affect the program material.

A steep high-pass filter in the LIN position prevents the output transformer of the microphone from being overloaded due to undesired subsonic frequencies.

Operational safety

All exposed surfaces of the microphone capsule, including the diaphragms, are at ground potential. This technology makes them highly immune to electrical and atmospheric interference and contamination through microscopic dust particles.

Delivery Range

Microphone U 89 i (mt)
Wooden box

Catalog No.

U 89 i	*ni*	*006449*
U 89 i mt	*blk*	*006450*

Selection of Accessories

Battery supply, BS 48 i	*blk*	*006494*
Power supply, N 248	*blk*	*008537*
Auditorium hanger, MNV 87	*ni*	*006804*
Auditorium hanger, MNV 87 mt	*blk*	*006806*
Elastic suspension, EA 89 A	*ni*	*007195*
Elastic suspension, EA 89 A mt	*blk*	*007196*
Stand mount swivel, SG 289	*blk*	*008659*
Popscreen, PS 20 a	*blk*	*008488*
Windscreen, WS 89	*blk*	*007197*
Microphone cable, IC 4 mt (with stand mount swivel)	*blk*	*006557*

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

Meaning of color codes:
blk = black,
ni = nickel

Application Hints

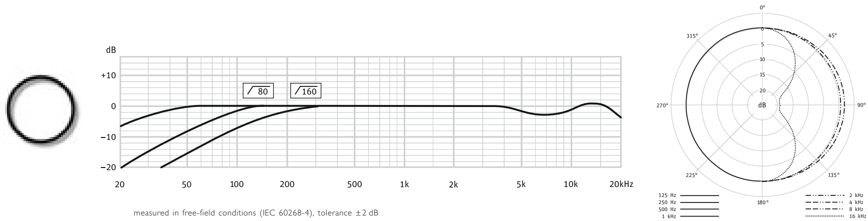
- *A microphone for universal usage*
- *Use as spot mic for*
  - *wind instruments,*
  - *strings,*
  - *piano*

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

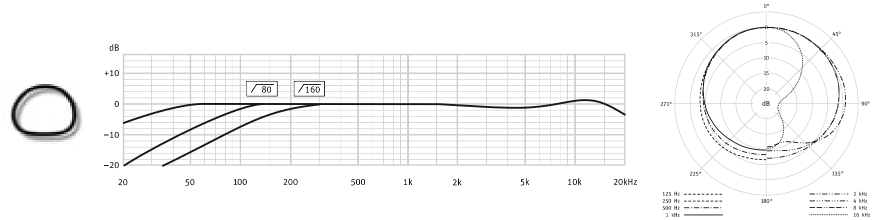
Technical Data

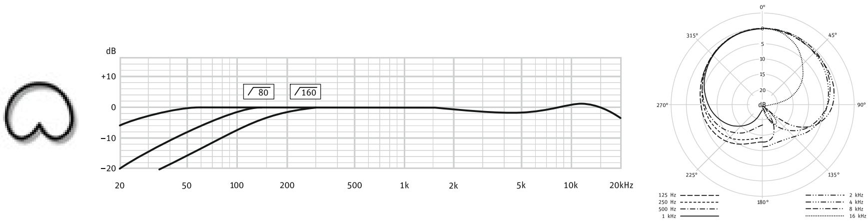
Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Omnidirectional, wide angle cardioid, cardioid, hypercardioid, figure-8*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*8 mV/Pa*
Rated impedance	*150 ohms*
Rated load impedance	*1000 ohms*
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	*66 dB*
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	*77 dB*
Equivalent noise level, CCIR[1]	*28 dB*
Equivalent noise level, A-weighted[1]	*17 dB-A*
Maximum SPL for THD 0.5%[2]	*134 dB*
Maximum SPL for THD 0.5% with preattenuation[2]	*140 dB*
Maximum output voltage	*800 mV*
Dynamic range of the microphone amplifier (A-weighted)	*117 dB*
Supply voltage (P48, IEC 61938)	*48 V ± 4 V*
Current consumption (P48, IEC 61938)	*0.8 mA*
Matching connector	*XLR3F*
Weight	*400 g*
Dimensions	*Ø 46 mm x 185 mm*

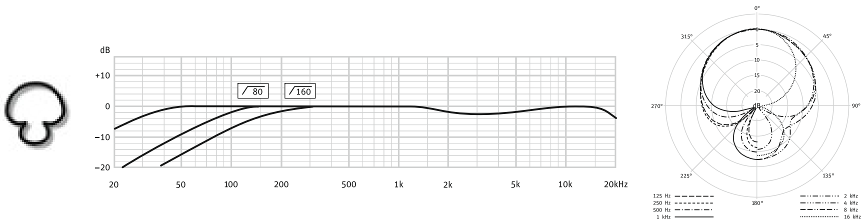
[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal

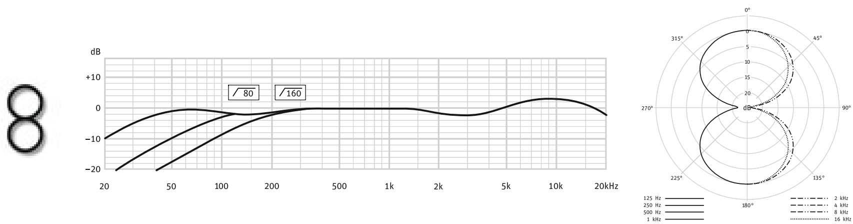


measured in free-field conditions (IEC 60268-4), tolerance ±2 dB









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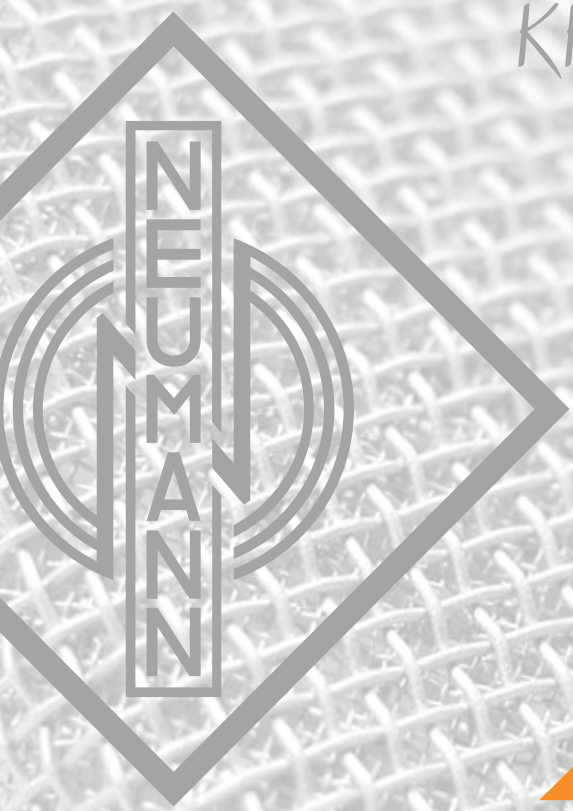
KK 204/205
KK 104/105 S

Capsule Heads for Sennheiser SKM 2000 and SKM 5200/SKM 5000 Wireless Systems



www.neumann.com

Thanks to the combination of the KK 104 S and KK 105 S capsule heads with the Sennheiser SKM 5200/5000 wireless systems, and the KK 204 and KK 205 with the SKM 2000 system, Neumann sound is also available in the wireless domain.

This opens up new sound dimensions for the most demanding live-performance engineering.

Here the key areas of expertise of Neumann and Sennheiser are united in an unprecedented manner to create products with no compromises for professional use. Neumann capsules have already been used in combination with the Sennheiser SKM 5200 system for the past 10 years on some of the largest stages of the world and at mega-events such as the Eurovision Song Contest, where the highest demands are placed on the sound and transmission reliability.

These systems reveal their strengths particularly in conjunction with Sennheiser in-ear monitoring.

The design of Neumann capsule heads for the Sennheiser handheld transmitters is based on the extremely successful, multiple award-winning wired stage microphones KMS 104, KMS 104 plus and KMS 105. From these microphones the capsule heads have acquired not only their outstanding sound characteristics and technical specifications, but also their robust construction and effective suppression of pop sounds and handling noise.

Features

- *Neumann capsule head engineering expands with Sennheiser liveperformance engineering*
- *Cardioid and Supercardioid characteristic*
- *Low susceptibility to handling noise*
- *Built-in, highly effective suppression of popping noises*
- *Easy dismantling for cleaning*
- *Pure, open, and neutral sound transmission*

Delivery Range KK 204/205

for Sennheiser SKM 2000 Wireless Systems:

KK 204 (bk) Capsule head, Padded nylon bag

KK 205 (bk) Capsule head, Padded nylon bag

Delivery Range KK 104/105 S

for Sennheiser SKM 5200 and SKM 5000 Wireless Systems:

KK 104 S (bk) Capsule head, Padded nylon bag

KK 105 S (bk) Capsule head, Padded nylon bag

KK 105 HD (bk) Capsule head, Padded nylon bag

Catalog No.

KK 204	*ni*	*008651*
KK 204 bk	*blk*	*008652*
KK 205	*ni*	*008653*
KK 205 bk	*blk*	*008654*
KK 104 S	*ni*	*008534*
KK 104 S bk	*blk*	*008533*
KK 105 S	*ni*	*008474*
KK 105 S bk	*blk*	*008476*
KK 105 HD	*ni*	*008559*
KK 105 HD bk	*blk*	*008560*

Selection of Accessories KK 104/105 S

Windscreen, WSS 100	*blk*	*007352*

Meaning of color codes:
blk = black,
ni = nickel

The sound can be described as full, transparent and naturally warm, without excessive accentuation of the bass.

Due to the „single polar pattern design", the polar patterns are very uniform over the entire frequency range, thus providing the basis for excellent resistance to feedback.

The capsules, and also of course the transmitter unit, are available in both nickel and black. Included with the capsule heads is a large nylon bag, which can hold not only the capsule but also the handheld transmitter, battery packs and additional accessories.

KK 204 and KK 205

The KK 204 and KK 205 capsule heads were developed especially for the Sennheiser SKM 2000 system.

Particular importance has been placed on further damping of pop sounds and handling noise, an extremely low level of self-noise, and ease of servicing. Both capsule heads have integrated foam pop protection. The foam pores have a greatly increased surface area and can keep extreme moisture away from the capsule.

KK 204

Directional characteristic: Cardioid

The capsule of the KMS 104 vocal microphone, exclusively for use with the Sennheiser SKM 2000 wireless system. The capsule head provides the best possible suppression of sound originating from 180° to the rear.

KK 205

Directional characteristic: Supercardioid

The capsule of the KMS 105 vocal microphone, exclusively for use with the Sennheiser SKM 2000 wireless system. The capsule head has greater directivity and maximizes incident sound from the front as opposed to sound from the rear.

KK 104 S, KK 105 S and KK 105 HD

The capsule heads KK 104 S, KK 105 S and KK 105 HD were developed especially for the Sennheiser systems SKM 5200/SKM 5000.

KK 104 S

Directional characteristic: Cardioid

The capsule of the KMS 104 plus vocal microphone, exclusively for use with the Sennheiser SKM 5200/5000 wireless systems. It provides the best possible suppression of sound originating from 180° to the rear, and has highly effective integrated pop protection.

KK 105 S / KK 105 HD

Directional characteristic: Supercardioid

The capsule of the KMS 105 vocal microphone, exclusively for use with the Sennheiser SKM 5200/5000 wireless systems. The capsule head has greater directivity and maximizes incident sound from the front as opposed to sound from the rear. The KK 105 S has a multi-level acoustic filter made of wire gauze. The „heavy-duty" variant, KK 105 HD, has integrated foam pop protection instead of the fine wire gauze screen of the KK 105 S, for even greater resistance to pop sounds. The foam pores also have a greatly increased surface area and can keep extreme moisture away from the capsule.

Application Hints

- *Vocals and speech on stage*
- *Especially suited for in-ear-monitoring*
- *Especially suitable with front-of-stage monitor systems*
- *For feedback-prone environment*

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Technical Data KK 204/205

Directional pattern	*Cardioid/Supercardioid*
Frequency range	*40 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohms	*2.8 mV/Pa ± 1 dB*
Equivalent noise level, CCIR[1)]	*35 dB*
Equivalent noise level, A-weighted[1)]	*24 dB-A*
Max. SPL for 0.5% THD[2)]	*150 dB*
Dynamic range (A-weighted)	*>126 dB-A*
Weight (incl. transmitter + power supply unit)	*approx. 500 g*
Dimensions (+ SKM 2000)	*length: 272 mm, Ø 55 mm*

Technical data for SKM 2000 can be found at: www.sennheiser.com

Technical Data KK 104 S/KK 105 S (HD) (incl. SKM 5200/SKM 5000)

Directional pattern	*Cardioid/Supercardioid*
Frequency range	*80 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohms	*1.7/1.3 mV/Pa ± 1 dB*
Equivalent noise level, CCIR[1)]	*42/44 dB*
Equivalent noise level, A-weighted[1)]	*31/33 dB-A*
Max. SPL for 0.5% THD[2)]	*148/150 dB*
Max. SPL for 3% THD[2)]	*153/155 dB*
Dynamic range (A-weighted)	*>117 dB-A*
Frequency range	*450–960 MHz*
Switching bandwidth	*24 MHz*
Transmitter frequencies	*16*
RF-output	*50 mW (–3 dB)*
Noise suppression system	*Sennheiser "HiDyn$_{plus}$"^{TM**}*
Weight (incl. transmitter + power supply unit)	*approx. 325 g*
Dimensions (+ transmitter)	*length: 257 mm, Ø 48 mm*

1) according to IEC 60268-1; CCIR-weighting according to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS 2) measured as equivalent el. input signal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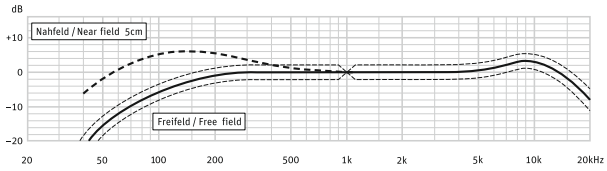
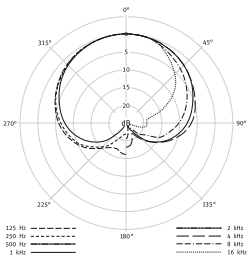
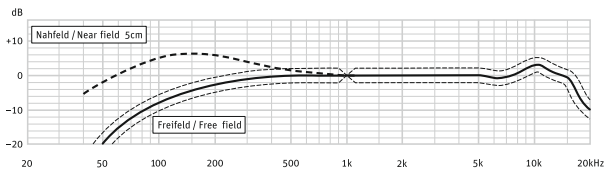
KK 204 + SKM 2000

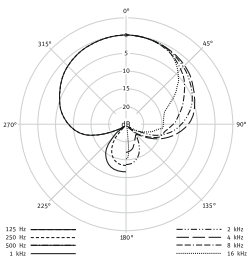


measured in free-field conditions (IEC 60268-4)

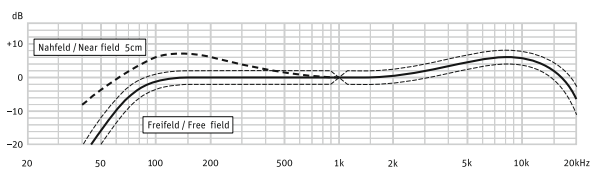


KK 205 + SKM 2000





KK 104 S + SKM 5200/SKM 5000



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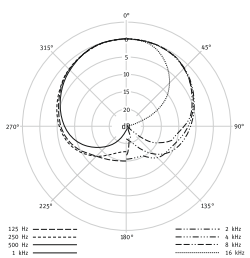
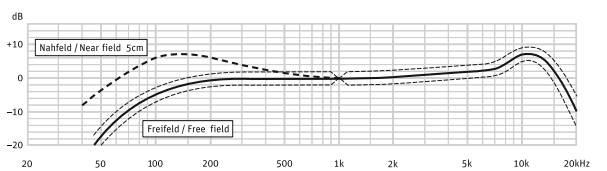
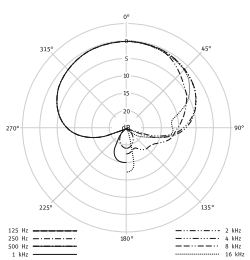


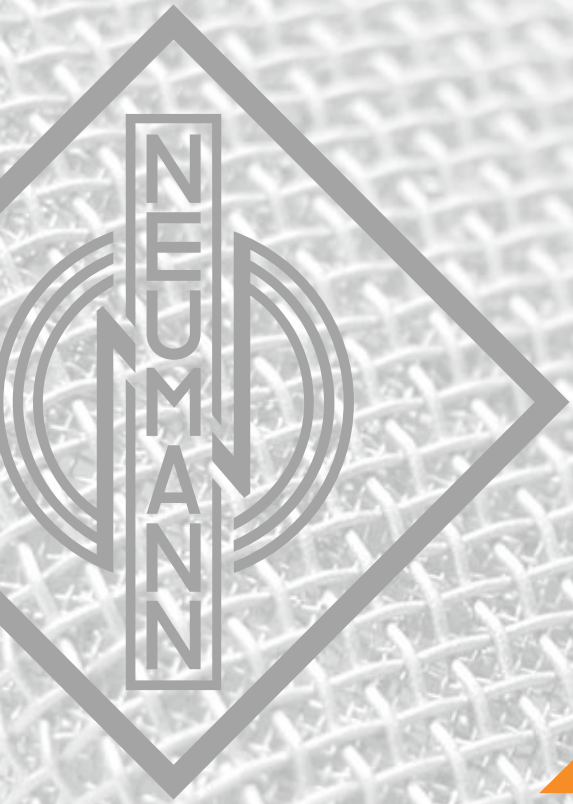
KK 105 S/KK 105 (HD) + SKM 5200/SKM 5000





KMS Series

Vocal Microphones



www.neumann.com

The KMS 104/104 plus and the KMS 105 microphones have been developed to optimally transmit the human voice with respect to the demanding conditions present on the live stage. The KMS series has become the internationally acknowledged standard for first-class stage microphones.

The high acoustic resolution and smooth frequency response of the microphones ensure that the musician has optimal control of the stage performance at all times.

Especially due to their low self-noise and crosstalk behavior which is free of coloration, the KMS microphones are ideal for use with in-ear monitoring systems.

The KMS 104 and the KMS 104 plus have a condenser microphone capsule with a cardioid directional characteristic which provides the best possible suppression of sounds originating from behind the microphone. In contrast, with its supercardioid characteristic the KMS 105 is particularly good at suppressing sounds originating from the entire 180° hemisphere behind the microphone. The KMS 104 plus features, compared to KMS 104, a more extended bass frequency response. In close cooperation with professional musicians, with the aid of extensive practical tests, the KMS 104 plus has been especially optimized for the requirements of female voices in the rock and pop field.

The user can thus select the version that is optimally suited to the specific application.

Acoustic features

The studio condenser capsules used in the microphone versions provide the basis for transmitting all the nuances of the human voice. In comparison with other handheld microphones, which operate mostly with dynamic capsules, the KMS series has a particularly high acoustic transparency, a wide frequency range and a fine resolution of transients.

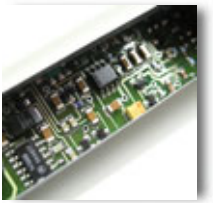
In KMS microphones, carefully adjusted acoustic filters and transformerless impedance converters that can handle very high sound pressure levels prevent the microphones from being overloaded even by strong plosive sounds.

In spite of excellent pop protection, sibilants and "S" sounds are transmitted with their natural accentuation, as is possible only with condenser microphones. Furthermore, the above-mentioned acoustic filters are designed so that the distinctive directional characteristics of the capsules are preserved even in the bass range. The filters thus ensure a very high level of feedback protection for the KMS 104/104 plus and KMS 105 vocal microphones when they are used with a stage sound system.

Electrical features

Since vocal microphones are typically addressed at close range, for the bass frequency response of the microphones, electronic compensation is used for the proximity effect in the respective capsules.

In addition, the microphone has an invariable, built-in high-pass filter with a cutoff frequency of 120 Hz (–3 dB, measured in a free sound field). The dynamic range of the KMS microphones is 132 dB, and the maximum sound pressure level is 150 dB.



The low self-noise level of only 18 dB-A permits the microphones to be used at high gain levels without the risk of additional noise. Even at large distances, the microphones thus operate with a high signal-to-noise ratio, facilitating the freedom of movement and creativity that are important to the artist.

Due to the transformerless output circuit, the microphone signals can be transmitted even through long cables without loss of sound.

Mechanical features

Microphones designed for use on stage require a particularly robust construction. The KMS 104/104 plus and KMS 105 therefore have thick-walled metal housings, which also provide effective protection against handling noise.

The microphone headgrilles are made of hardened steel. If required, they can easily be unscrewed to permit cleaning of the interior acoustic filters.

Delivery Range

The KMS 104/104 plus and KMS 105 microphones, with a matching stand clamp, are supplied in an attractive padded nylon bag that is sufficiently durable for touring.

Features

- Neumann sound on stage
- Excellent transparency for vocals/speech
- Cardioid/Supercardioid polar pattern with excellent feedback rejection
- Without off-axis coloration
- Transformerless output
- Effective pop shielding without any side effects
- Set includes stand clamp

Application Hints

- Vocals and speech on stage
- Announcer's mic for broadcasting/dubbing
- Especially suited for in-ear-monitoring
- For feedback-prone environment

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Delivery Range

KMS 104, KMS 104 plus or KMS 105 Microphone
SG 105 Stand clamp
Padded nylon bag

Catalog No.

KMS 104	ni	008548
KMS 104 bk	blk	008549
KMS 104 plus	ni	008624
KMS 104 plus bk	blk	008625
KMS 105	ni	008454
KMS 105 bk	blk	008455

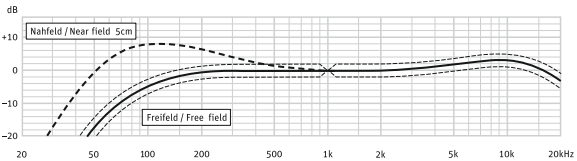
Selection of Accessories

Battery supply, BS 48 i	blk	006494
Battery supply, BS 48 i-2	blk	006496
Power supply, N 248	blk	008537
Microphone cable, IC 3 mt	blk	006543
Adapter cable, AC 25	blk	006600
Adapter cable, AC 27	blk	006602
Table stand, MF 3	blk	007321
Windscreen, WSS 100	blk	007352

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

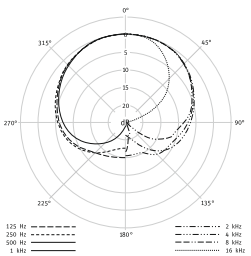
Meaning of color codes:
blk = black,
ni = nickel

KMS 104

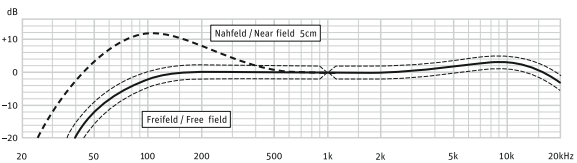


measured in free-field conditions (IEC 60268-4)

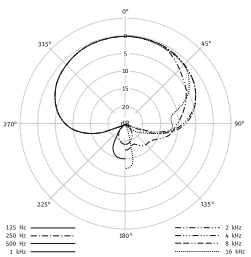
KMS 104 / KMS 104 plus



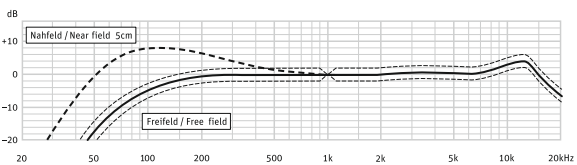
KMS 104 plus



KMS 105



KMS 105



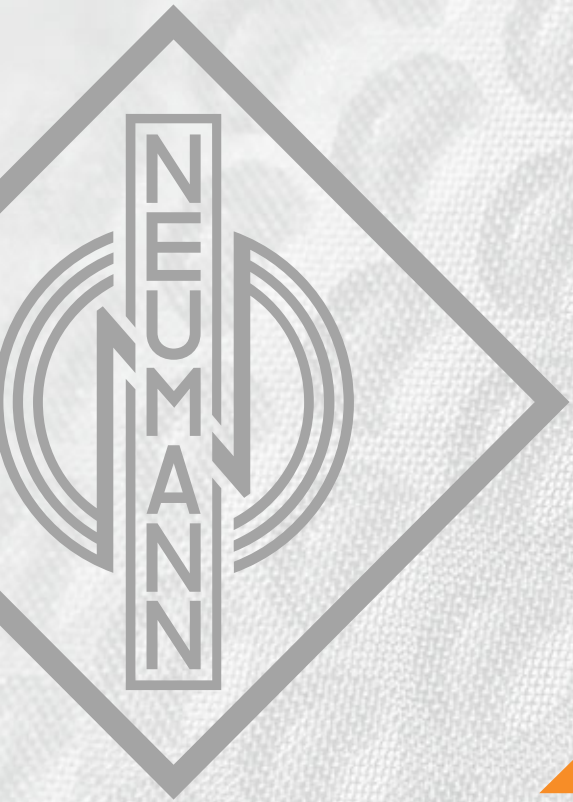
Technical Data KMS 104 / KMS 104 plus / KMS 105

Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*cardioid/cardioid/supercardioid*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*4.5 mV/Pa*
Rated impedance	*50 ohms*
Rated load impedance	*1000 ohms*
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	*66 dB*
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	*76 dB*
Equivalent noise level, CCIR[1]	*28 dB*
Equivalent noise level, A-weighted[1]	*18 dB-A*
Maximum SPL for THD 0.5%[2]	*150 dB*
Maximum output voltage	*12 dBu*
Dynamic range of the mic. amplifier (A-weighted)	*132 dB*
Supply voltage (P48, IEC 61938)	*48 V ± 4 V*
Current consumption (P48, IEC 61938)	*3.5 mA*
Matching connector	*XLR3F*
Weight	*approx. 300 g*
Diameter	*48 mm*
Length	*180 mm*

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal

Series 180

Miniature Microphones



www.neumann.com

The "Series 180" consists of three compact miniature microphones with patterns that satisfy the demands of all common studio applications. Because of its optimized mechanical construction and conscious omission of modularity, which is unnecessary in many cases, the "Series 180" is predestined for economy-minded production and home recording studios.

The KM 183 omnidirectional and KM 185 hypercardioid microphones are based on the tremendously successful KM 184 cardioid microphone, which has become a standard within the global studio community in just a very short time.

All "Series 180" microphones are available with either matte black or nickel finish. They come in a folding box with a windshield and two stand mounts that permit connection to the microphone body, or the XLR-connector.

Applications

Their slender shapes and the transmission characteristics described below make the "Series 180" especially suitable for a very wide range of tasks in the radio and television sector.

Acoustic features

The KM 183 and KM 184 microphones are the successors of the well proven KM 83 and KM 84, which have been used since the seventies worldwide with great success. The KM 185 rounds out the series with a hypercardioid microphone.

The KM 183 is a pressure transducer with a boost of approximately 7 dB at 10 kHz in the free field. In the diffuse sound field it has a flat frequency response.

Features

- *Three different miniature microphones for all typical studio applications*
- *Successor of the worldwide successful KM 83/84*
- *Transformerless circuitry*
- *Trouble-free operation also with unbalanced equipment (e.g., DAT recorders)*
- *Set includes windshield and microphone clamp*

The pressure gradient transducers KM 184 and KM 185 feature very smooth frequency responses not only for the 0° axis, but also for lateral (off-axis) sound incidence. In typical usage, there is no coloration of sound over a wide pickup angle.

Although the KM 184 has the same capsule as the KM 84, the microphone differs slightly on the 0° frequency response: The KM 184 has a gentle rise at about 9 kHz, a characteristic that was introduced very successfully with the KM 140. The result is a tonal balance that is fresher and livelier when compared to the KM 84 with its flat frequency response in that band.

This difference was achieved with just a slight change of the capsule's rear opening, and is not due to resonances.

The KM 185 with its hypercardioid characteristic features attenuation of sound incidence from the side or rear of about 10 dB, with minimum sensitivity at an angle of 120°.

Electrical features

The "Series 180" microphones have the same transformerless circuitry as is used in the KM 100 system, resulting in excellent technical specifications: Compared to the KM 84 the dynamic range of the KM 184 increased by 24 dB mainly through the reduction of self-noise level to only 22 dB (CCIR) and an increased sound pressure handling capability of up to 138 dB.

The microphones operate without any problems, even if the input of following equipment happens to be unbalanced, for example as in some DAT recorders.

The output of the "Series 180", as in all Neumann microphones, is balanced and phantom (48V) powered.

Economy

The "Series 180" is a good choice for all users who look for a high-quality miniature microphone, but do not need the complex, modular KM 100 system, which continues to be part of the Neumann product range.

The mechanical construction was simplified, for example, capsule and output stage cannot be separated from each other. For this reason the "Series 180" is an economical alternative without giving up the electroacoustic features the users expect from Neumann microphones.

Delivery Range

KM 183 (mt) ... 185 (mt) Microphone, WNS 100 Windscreen, SG 21 bk Stand mount

Stereo set: *2x KM 183 (mt) ... 185 (mt) Microphone, 2x WNS 100 Windscreen, 2x SG 21 bk Stand mount, Wooden box*

Catalog No.

KM 183	*ni*	*008437*
KM 183 mt	*blk*	*008438*
KM 183 Stereo set	*ni*	*008522*
KM 183 mt Stereo set	*blk*	*008521*
KM 184	*ni*	*008439*
KM 184 mt	*blk*	*008389*
KM 184 Stereo set	*ni*	*008524*
KM 184 mt Stereo set	*blk*	*008523*
KM 185	*ni*	*008440*
KM 185 mt	*blk*	*008441*
KM 185 Stereo set	*ni*	*008526*
KM 185 mt Stereo set	*blk*	*008525*

Selection of Accessories

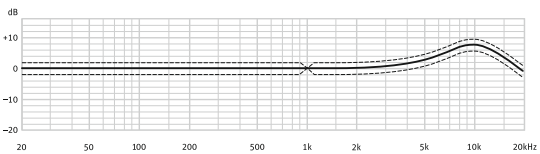
Elastic suspension, EA 2124 A mt	*blk*	*008433*
Auditorium hanger, MNV 21 mt	*blk*	*006802*
Popscreen, PS 15	*blk*	*008472*
Windscreen, WS 100	*blk*	*006751*

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

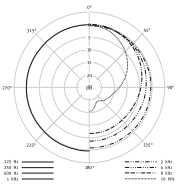
Meaning of color codes: blk = black, ni = nickel

Technical Data

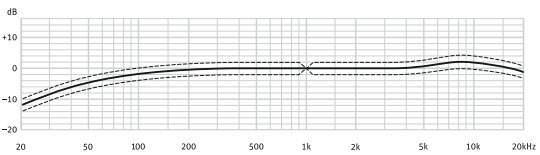
KM 183

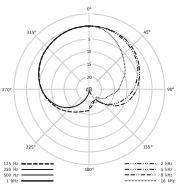


measured in free-field conditions (IEC 60268-4)

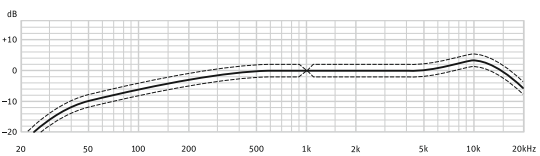


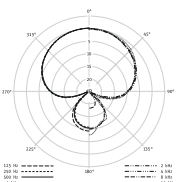
KM 184





KM 185





Technical Data KM 183 / KM 184 / KM 185

Acoustical operating principle	Pressure/Pressure gradient transducer
Directional pattern	omnidirectional/cardioid/hypercardioid
Frequency range	20 Hz...20 kHz
Sensitivity at 1 kHz into 1 kohm	12/15/10 mV/Pa
Rated impedance	50 ohms
Rated load impedance	1000 ohms
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	70/72/70 dB
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	81/81/79 dB
Equivalent noise level, CCIR[1]	24/22/24 dB
Equivalent noise level, A-weighted[1]	13/13/15 dB-A
Maximum SPL for THD 0.5%[2]	140/138/142 dB
Maximum output voltage	10 dBu
Supply voltage (P48, IEC 61938)	48 V ± 4 V
Current consumption (P48, IEC 61938)	3.2 mA
Matching connector	XLR3F
Weight	approx. 80 g
Diameter	22 mm
Length	107 mm

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal

Application Hints

KM 183

- For close miking of instruments when there is no need to attenuate extraneous noise, and in a balanced acoustic environment to record
  - acoustic guitar,
  - wind instruments,
  - strings,
  - percussion,
  - drums
- Ideal as AB stereo pair because of the flat frequency response in the diffuse sound field
- As a main mic, especially for capturing room acoustics
- For stereo recordings with a baffle plate
- As a spot mic for
  - piano,
  - wind instruments,
  - organ,
  - choir

KM 184

- For universal use, especially for recording situations when it is necessary to attenuate off-axis sound (mainly from the rear) from other nearby instruments.
- As XY and ORTF stereo pair
- Announcer's mic for broadcasting
- Spot mic, overhead
- Close miking of
  - strings,
  - wind instruments,
  - percussion,
  - piano,
  - Leslie speakers,
  - guitar amps

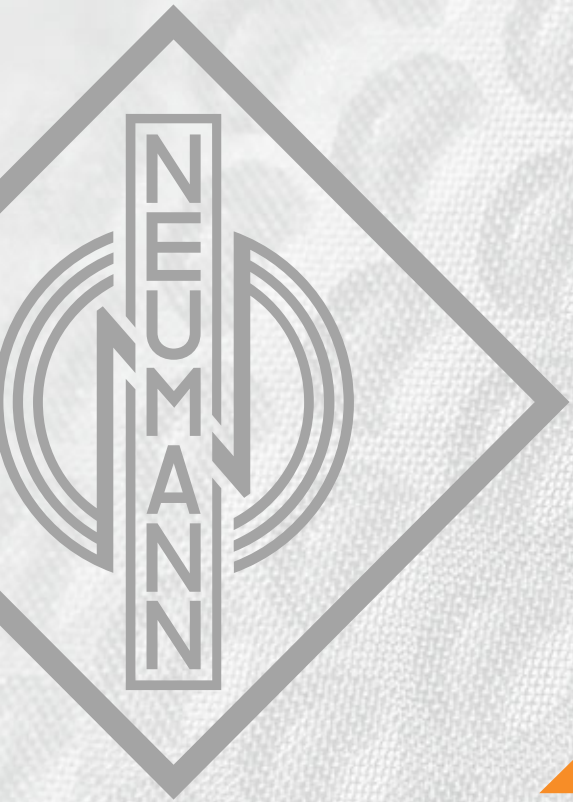
KM 185

- Especially for recording situations when it is necessary to attenuate off-axis sound (lateral and rear) from other nearby instruments.
- As XY stereo pair
- Overhead, toms
- In situations that are susceptible to acoustic feedback
- To attenuate unwanted sound of nearby instruments
- Recording of speech, as in
  - TV,
  - movie and video productions,
  - PA systems
- Produces especially warm and bass supporting sound for artists who perform in proximity effect range

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Series KM A

Miniature Microphone System



www.neumann.com

The KM A series is a modular small-diaphragm condenser microphone system. As a further development of the successful KM 100 series, it provides a number of electroacoustic and operational advantages through the use of state-of-the-art electronic components. The most modern electroacoustic circuit design is combined with the typical Neumann clean, neutral sound. This permits a multifaceted spectrum of applications. Preferred uses include the recording of acoustic stringed instruments, woodwinds, cymbals and speech, or also room acoustics. Due to their very good bass response, the pressure transducers KK 131, 133 and 183 are excellently suited to choral and orchestral recordings. The KK 133 capsule presents a special feature: Based on the technical design concept of the capsule of the legendary M 50 microphone, Neumann uses titanium for the capsule manufacture. For a miniature condenser microphone, the capsule achieves hitherto unprecedented impulse fidelity and resolution of transients.

The system components consist of a passive microphone capsule, the analog KM A output stage, and an extensive program of optional accessories. The impedance converter is now part of the analog KM A output stage, which permits a smaller capsule design. KK series capsules with eight different directional characteristics are available. The sound properties of the KM A microphone system are absolutely identical to those of the KM 100 system.

It should be emphasized that the capsules of the KM A series can also be combined with a digital output stage (KM D). These miniature microphones then operate in accordance with the AES42 standard, permitting an integrated digital workflow via direct conversion of the capsule signal in the digital output stage. The output signal is thus an AES/EBU signal with 24-bit resolution and a sample rate of 44.1 kHz to 192 kHz. The A/D converter principle patented by Neumann guarantees that a very large dynamic range of up to 122 dB-A is maintained over the entire digital production chain.

Construction

Depending upon the capsule used, the KM A microphone system is only 93 mm to 110 mm long, with a diameter of 22 mm. The capsule

KK 131 · KK 143 · KK 145

KK 183 · KK 184 · KK 185

KK 131 nx · KK 143 nx · KK 145 nx

KK 183 nx · KK 184 nx · KK 185 nx

KM 183 A nx · KM 184 A nx · KM 185 A nx

The KK... capsule heads can be used with the analog KM A (nx) as well as with the digital KM D (nx) output stage.

KK 120

KM A

KK 120 nx

KK 133 nx

KM A nx

and output stage can be used both modularly and as a compact design. For modular use, an extensive range of accessories is available, consisting of capsule extensions, connecting cables, stand mounts, swivel joints, auditorium hangers and various types of stands.

The microphone capsule KK... can be placed at a distance of up to 100 m from the KM A output stage. As a standard solution, the LC 4 microphone cable, with a diameter of 3.5 mm, is available in lengths of 5 m or 10 m.

Alternatively, a capsule KK... can be screwed directly into the KM A output stage, resulting in a compact miniature microphone (KM A series).

The dimensions of the analog KM A output stage are identical to those of the digital KM D output stage. This enables the same accessories to be used, permitting a problem-free changeover, or parallel digital and analog operation.

Acoustic features

The following eight passive microphone capsules are available for the KM A system:

KK 120:
Figure-eight directional characteristic, pressure gradient transducer

The directional characteristic is achieved with only a single diaphragm, having a diameter of 16 mm. All sound components act directly on this one diaphragm, which results in identical frequency responses and transmission levels at 0° and 180°. The KK 120 can be combined with other capsules or microphones, and can be used for MS stereo recording.

KK 131:
Omni directional characteristic, free-field equalized pressure transducer

The transmission level is flat up to 20 kHz in a free sound field, and decreases above 5 kHz in a diffuse sound field.

KK 133:
Omni directional characteristic, diffuse-field equalized pressure transducer

Recommended for recordings in the transition area between a free and diffuse sound field. The diaphragm is made of titanium for maximum impulse fidelity and reproduction of transients.

At 12 kHz, the high frequencies are boosted by 4 dB to 5 dB in a free sound field. Use with the SBK 130 A sound diffraction sphere is strongly recommended.

KK 183:
Omni directional characteristic, diffuse-field equalized pressure transducer

At 10 kHz, the high frequencies are boosted by approximately 7 dB in a free sound field. This compensates for the loss of high frequencies in a diffuse sound field, so that a flat frequency response is achieved.

KK 184:
Cardioid directional characteristic, pressure gradient transducer

Very uniform frequency response curves, which parallel the curve for incident sound at 0°.

KK 143:
Wide-angle cardioid directional characteristic, pressure gradient transducer

The attenuation amounts to 4 dB at 90°, 8 dB at 135°, and 11 dB at 180°. The frequency response curves for incident sound from the front (+/-90°) are parallel up to 12 kHz.

KK 145:
Cardioid directional characteristic with acoustic bass roll-off, pressure gradient transducer

The acoustic bass roll-off in a free sound field serves to suppress low-frequency interference (e.g. wind noise and structure-borne sound).

The proximity effect, physically determined by pressure gradient microphones, results in a flat frequency response ("speech cardioid") when the microphone is addressed from a distance of approximately 15 cm.

KK 185:
Hypercardioid directional characteristic, pressure gradient transducer

The attenuation of sound from the sides and rear amounts to 10 dB in each case. There is minimal sensitivity to incident sound at 120°.

Electrical features

The microphone circuitry of the KM A microphone system operates without a transformer, with a phantom power of 48 V.

The newly developed circuitry design reduces the self-noise of the KM A miniature condenser microphone series and increases the dynamic range by approximately 3 dB-A. The use of state-of-the-art electronic components improves the resistance of the microphones to electromagnetic interference (EMC), resulting in lower sensitivity to high-frequency interference signals.

Pre-attenuation

The KM A output stage has a switch for pre-attenuation of 10 dB. The attenuation is achieved by reducing the capsule voltage. The microphones can then handle sound pressure levels of up to 152 dB (KM 185 A) with no problem.

Application Hints

KK 120 + KM A

- *MS-Stereo microphone, in combination with the KM 184 A or KM 185 A or KMR 81 i*
- *Two crossed KK 120s in Blumlein technique*
- *Inconspicuous spot microphone with optimum attenuation of lateral sound sources*
- *Single microphone for two speakers facing each other*

KK 131 + KM A

- *For close miking of instruments when there is no need to attenuate extra-neous noise, and in a balanced acoustic environment to record acoustic guitar, wind instruments, strings, percussion, and drums*
- *Flat frequency response for close miking, spot mic*

KK 133 + KM A

- *Its special acoustic properties make this an ideal mic for most classical recordings*
- *Main mic, especially for capturing room acoustics*
- *A superb AB stereo pair for perfect balance of direct and reverberant sound*
- *Decca tree, setup with three microphones*
- *Spot mic for piano, wind instruments, organ, choir*

KK 143 + KM A

- *Polar response characteristic acts more like an omni. Therefore, it is an ideal tool to record larger instrument ensembles*
- *As AB stereo pair, especially in rooms with less than ideal acoustics*
- *As spot mic for strings, wind instruments, percussion, and Leslie speakers*
- *Acts very neutral when used close up to bass instruments, such as double bass, bass amps, guitar amps*

KK 145 + KM A

- *It naturally compensates for proximity effect*
- *Very neutral tonal balance during close miking of speech, as in TV, movie and video, PA*
- *Acts very neutral when used close up to bass instruments, such as double bass, bass amps, guitar amps, leslie speakers, toms*

KK 183 + KM A = KM 183 A

- *Ideal as AB stereo pair because of the flat frequency response in the diffuse sound field*
- *For close miking of instruments when there is no need to attenuate extraneous noise, and in a*

balanced acoustic environment to record acoustic guitar, wind instruments, strings, percussion, drums

- *Main mic, especially for capturing room acoustics*
- *For stereo recordings with a baffle plate*
- *Spot mic for piano, wind instruments, organ, choir*

KK 184 + KM A = KM 184 A

- *For universal use, especially for recording situations when it is necessary to attenuate off-axis sound (mainly from the rear) from other nearby instruments.*
- *As XY and ORTF stereo pair*
- *Broadcasting mic for announcers*
- *Spot mic and overhead*
- *Close miking of strings, wind instruments, percussion, piano, Leslie speakers and guitar amps*

KK 185 + KM A = KM 185 A

- *Especially for recording situations when it is necessary to attenuate off-axis (lateral and rear) sound from other nearby instruments.*
- *As XY stereo pair*
- *Overhead, toms*
- *In situations that are susceptible to acoustic feedback*
- *To attenuate unwanted sound of nearby instruments*
- *Recording of speech, as in TV, movie and video productions, PA systems*
- *Produces especially warm and bass supporting sound for artists who perform in proximity effect range*

These hints are intended to serve only as suggestions, and make no claim to completeness.

Use of a sound diffraction sphere

With the use of a sound diffraction sphere, a pressure transducer microphone is exposed to an earlier, gentler increase in pressure in the middle and higher frequency ranges. The increase in emphasis in the upper frequency range is similar to that for a pressure gradient transducer however, as a pressure transducer, the microphone provides a linear transmission level down to the lowest frequencies.

Delivery Range

KM 183 A nx ... KM 185 A nx Microphone
WNS 100 Windscreen
SG 21 bk Stand mount
Wooden box

Catalog No.

KM 183 A nx ..... nx 008631
KM 184 A nx ..... nx 008632
KM 185 A nx ..... nx 008633

Meaning of color codes:
nx = nextel black

Selection of Accessories

Output stage, KM A
Catalog No.: 008634
Output stage, KM A nx
Catalog No.: 008635

Digital output stage, KM D
(44.1 kHz) Catalog No.: 008578
Digital output stage, KM D nx
(44.1 kHz) Catalog No.: 008581

Digital output stage, KM D
(48 kHz) Catalog No.: 008579
Digital output stage, KM D nx
(48 kHz) Catalog No.: 008582

Digital output stage, KM D
(96 kHz) Catalog No.: 008580
Digital output stage, KM D nx
(96 kHz) Catalog No.: 008583

Capsule head, KK 120
Catalog No.: 008589
Capsule head, KK 120 nx
Catalog No.: 008590

Capsule head, KK 131
Catalog No.: 008591
Capsule head, KK 131 nx
Catalog No.: 008592

Capsule head, KK 133
Catalog No.: 008639
Capsule head, KK 133 nx
Catalog No.: 008640

Capsule head, KK 143
Catalog No.: 008593
Capsule head, KK 143 nx
Catalog No.: 008594

Capsule head, KK 145
Catalog No.: 008595
Capsule head, KK 145 nx
Catalog No.: 008596

Capsule head, KK 183
Catalog No.: 008566
Capsule head, KK 183 nx
Catalog No.: 008567

Capsule head, KK 184
Catalog No.: 008568
Capsule head, KK 184 nx
Catalog No.: 008569

Capsule head, KK 185
Catalog No.: 008570
Capsule head, KK 185 nx
Catalog No.: 008571

Elastic suspension, EA 2124 A mt
Catalog No.: 008433

Table stand, MF 2
Catalog No.: 007266

Table stand, MF 3
Catalog No.: 007321

Floor stand, MF 4
Catalog No.: 007337

Floor stand, MF 5
Catalog No.: 008489

Vertical bar, MZEF 8060
Catalog No.: 502318

Vertical bar, MZEF 8120
Catalog No.: 502319

Stand extensions
STV 4, Catalog No.: 006190
STV 20, Catalog No.: 006187
STV 40, Catalog No.: 006188
STV 60, Catalog No.: 006189

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog

Selection of Accessories

Auditorium hanger, MNV 21 mt
Catalog No.: 006802

Auditorium hanger, MNV 87
Catalog No.: 006804
Auditorium hanger, MNV 87 mt
Catalog No.: 006806

Auditorium hanger, MNV 100
Catalog No.: 006811

Double mount, DS 120
Catalog No.: 007343

Double mount, MZGE 8000
Catalog No.: 502324

Double mount, MZGE 8002
Catalog No.: 502325

Stand mount, SG 21 bk
Catalog No.: 008613

Stand mount, SG 109
Catalog No.: 008614

Swivel joint SG 110 nx
Catalog No.: 008611

Stand mount, SGE 100
Catalog No.: 006742

Stereo mount, STH100
Catalog No.: 007315

Stereo mount, STH120
Catalog No.: 008422

Capsule Extension, KVG 130 nx
Catalog No.: 008608

Capsule Extension, KVG 160 nx
Catalog No.: 008609

Capsule Extension, KVG 1120 nx
Catalog No.: 008610

Foam windscreen, WNS 100
Catalog No.: 007323

Foam windscreen, WNS 110
Catalog No.: 008535

Foam windscreen, WNS 120
Catalog No.: 008427

Foam windscreen, WS 100
Catalog No.: 006751

Popscreen, PS 15
Catalog No.: 008472

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog

Selection of Accessories

Sound Diffract. Sphere, SBK 130 A
Catalog No.: 008612

Microphone cable, LC 4 (5 m)
Catalog No.: 008606

Battery supply, BS 48 i
Catalog No.: 006494

Battery supply, BS 48 i-2
Catalog No.: 006496

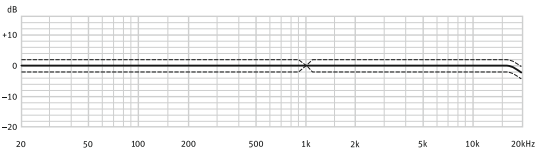
Power supply, N 248 EU
008537

Technical Data

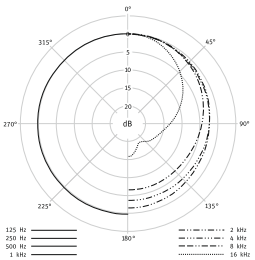
Typ	KK 131	KK 133	KK 183	KK 143	KK 184	KK 145	KK 185	KK 120
Acoustical operating principle	pressure transducer			pressure gradient transducer				
Directional pattern	omni free-field equalized	omni diffuse-field equalized	omni diffuse-field equalized	cardioid wide	cardioid	cardioid low frequency roll-off	hyper-cardioid	figure-8, side-fire
Frequency range	20 – 20000 Hz							
Sensitivity (KM A)1)	12 mV/Pa	15 mV/Pa	12 mV/Pa	15 mV/Pa	15 mV/Pa	14 mV/Pa	10 mV/Pa	12 mV/Pa
Sensitivity (KM D)1)2)	–41 dBFS	–40 dBFS	–41 dBFS	–39 dBFS	–39 dBFS	–40 dBFS	–42 dBFS	–41 dBFS
Signal-to-noise ratio[2], CCIR[3]	70 dB	66 dB	69 dB	70 dB	70 dB	70 dB	69 dB	69 dB
Signal-to-noise ratio[2], A-weighted[2]	81 dB	79 dB	81 dB	81 dB	81 dB	80 dB	78 dB	79 dB
Equivalent noise level, CCIR[3]	24 dB	28 dB	24 dB	22 dB	22 dB	22 dB	24 dB	25 dB
Equivalent noise level, A-weighted[2]	13 dB	15 dB	13 dB	13 dB	13 dB	14 dB	15 dB	15 dB
Max. SPL (KM A)[1] for THD <0.5% for THD <0.5% with preattenuation	 140 dB 150 dB	 138 dB 148 dB	 140 dB 150 dB	 138 dB 148 dB	 138 dB 148 dB	 138 dB 148 dB	 142 dB 152 dB	 140 dB 150 dB
Max. SPL (KM D) at 0 dBFS[1]	135 dB	134 dB	135 dB	133 dB	133 dB	134 dB	136 dB	135 dB
Max. SPL (KM D) with 18 dB preatt[1)3]	153 dB	152 dB	153 dB	151 dB	151 dB	152 dB	154 dB	153 dB
Current consumption (KM A)	max. 3.5 mA (P48)							
Current consumption (KM D)	max. 150 mA (DPP)							
Matching connector	XLR 3 M							
Weight (output stage)	70 g							
Dimensions (L x Ø)	108 mm x 22 mm	128 mm x 22 mm	108 mm x 22 mm	108 mm x 22 mm	108 mm x 22 mm	108 mm x 22 mm	108 mm x 22 mm	130 mm x 24 mm
Weight (capsule only)	11 g	49 g	11 g	15 g	15 g	15 g	19 g	37 g
Dimensions (L x Ø) (capsule only)	18 mm x 22 mm	38 mm x 22 mm	18 mm x 22 mm	18 mm x 22 mm	18 mm x 22 mm	18 mm x 22 mm	18 mm x 22 mm	40 mm x 24 mm

1) at 1 kHz
2) re 94 dB SL
3) according to IEC 60268-1; CCIR-weighting according to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS

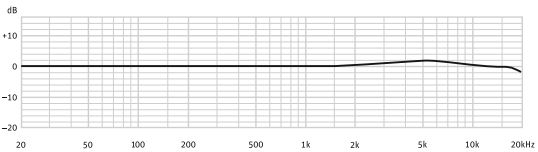
KM A + KK 131

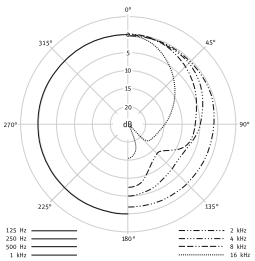


measured in free-field conditions (IEC 60268-4)

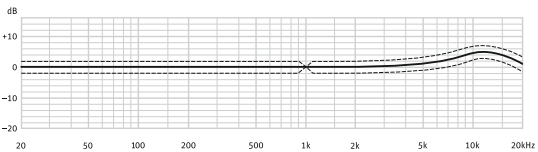


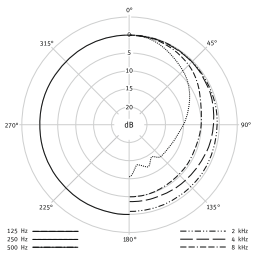
KM A + KK 131 + SBK 130 A



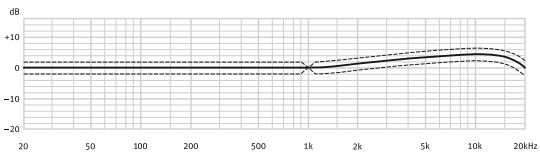


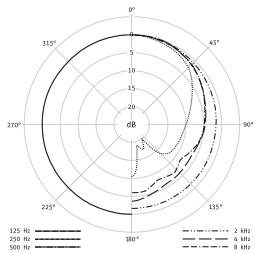
KM A + KK 133



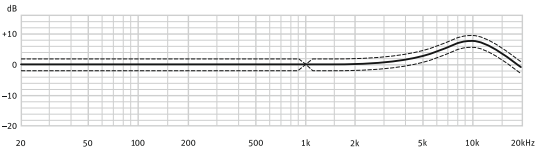


KM A + KK 133 + SBK

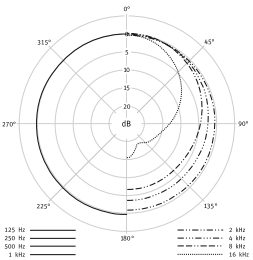




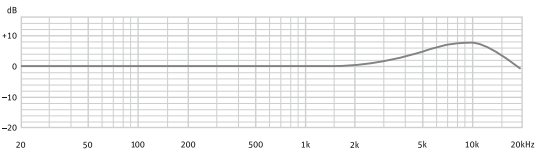
KM A + KK 183 (= KM 183 A)

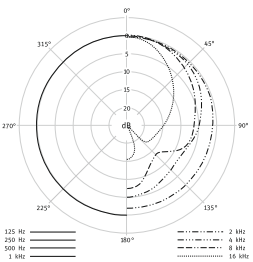


measured in free-field conditions (IEC 60268-4)

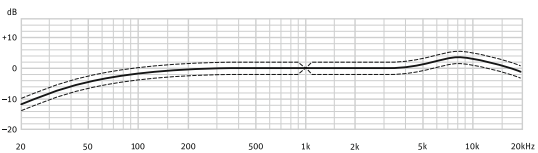


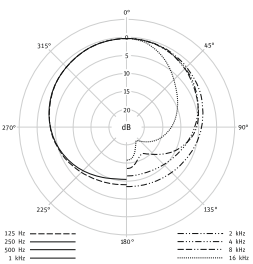
KM A + KK 183 + SBK 130 A



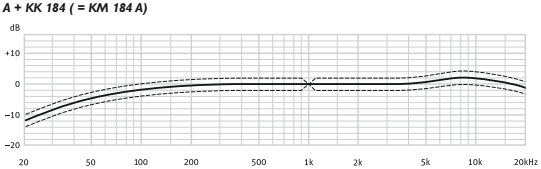


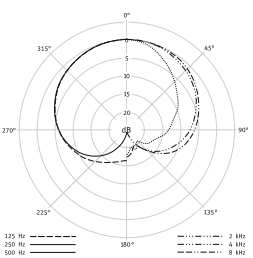
KM A + KK 143



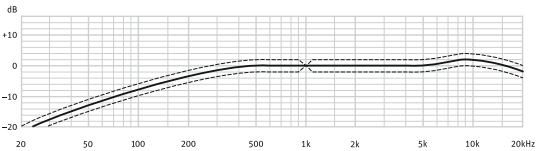


KM A + KK 184 (= KM 184 A)

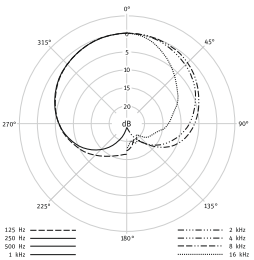




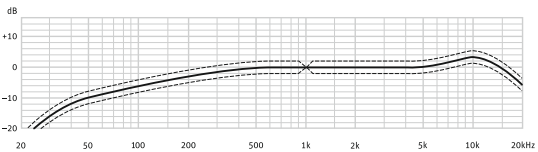
KM A + KK 145

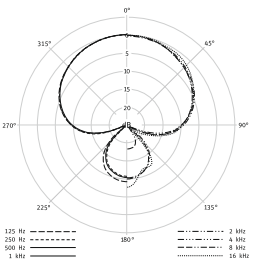


measured in free-field conditions (IEC 60268-4)

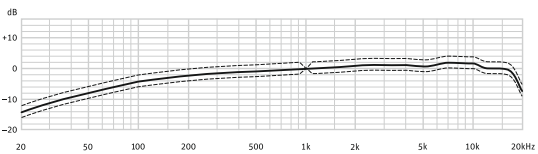


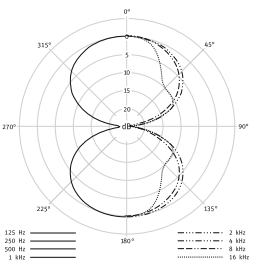
KM A + KK 185 (= KM 185 A)





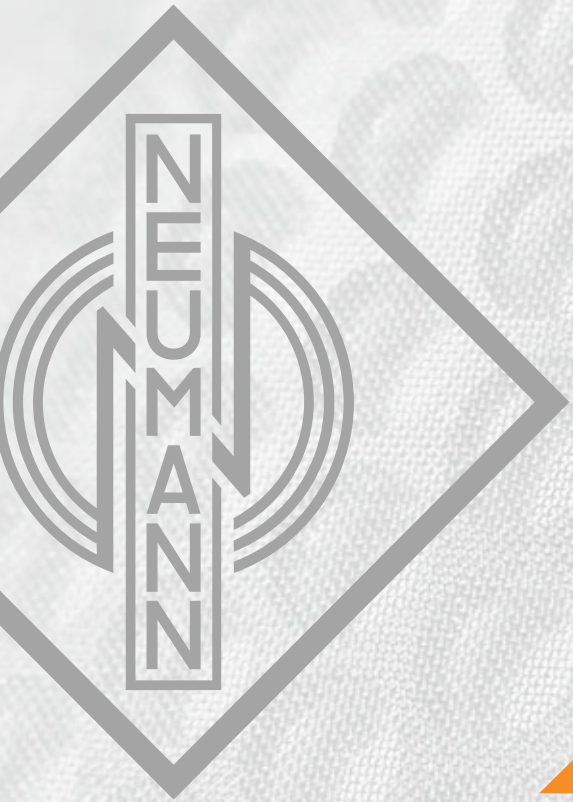
KM A + KK 120



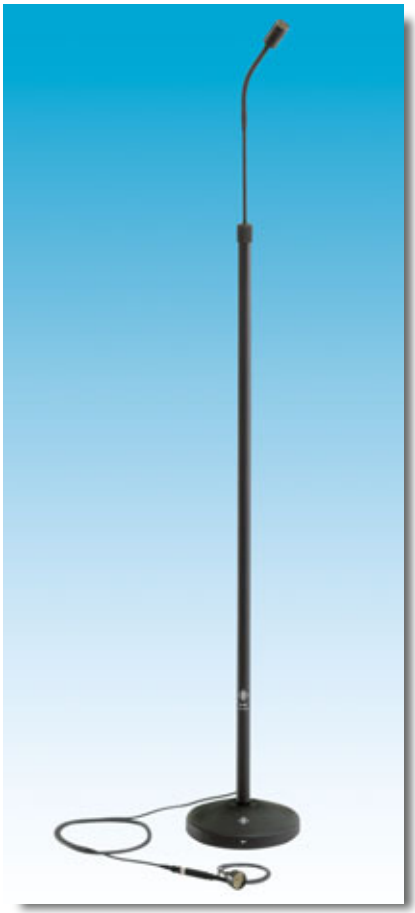


KM 100

Miniature Microphone System



www.neumann.com



The variable condenser miniature microphone system consists of several active microphone capsules with different directional characteristics, an output stage, and numerous accessories.

Currently there are seven active capsules available: omni diffuse-field equalized, omni free-field equalized, cardioid, wide-angle cardioid, cardioid with bass roll-off, hypercardioid, and figure-8.

Through the modular construction of mic capsules and the output stage it is very easy to adapt the system to a wide range of applications. The mic becomes nearly invisible during work with cameras (film, video), on stage, or suspended from the ceiling in a concert hall.

An active capsule can also be screwed directly onto the output stage. The result is a compact miniature microphone.

Features

- *Miniature microphones with 7 exchangeable capsules*
- *Active capsules, detachable up to 50 m from the output stage*
- *Great variability through capsule extensions and goosenecks*
- *Switchable 10 dB pre-attenuation*
- *Set includes windshield and two different clamps*
- *Transformerless circuitry*
- *Extensive accessories*

Construction

The microphones are only 92 or 110 mm resp. long and 22 mm in diameter. They consist of the condenser capsule and the output stage. Both parts can be unscrewed from each other. The system offers several condenser capsules with different directional characteristics.

Numerous accessories can be mounted between the capsules and the output stage. The capsules attach to cables, capsule extensions, swivel mounts, table stands, goosenecks, stereo mounts, and hangers. Therefore, it is very easy to adapt the system to a wide range of applications.

The active capsule itself is only 35 or 47 mm resp. long. The KM 100 output stage and the active microphone capsule may be separated by up to 50 m of interconnecting cable. These cables are 3 mm in diameter, and therefore very inconspicuous.

Acoustic features

AK 20 is a pressure gradient transducer with the figure-8 characteristic, realized with a single diaphragm. The diaphragm diameter is just 16 mm. All sound field components reach the diaphragm directly. This results in identical frequency response curves and output levels at 0° and 180° sound incidence. Corresponding accessories allow combining the AK 20 with other active capsules or microphones to obtain an MS-Stereo setup.

AK 30 is a diffuse-field equalized pressure transducer with a flat frequency response up to 10 kHz (in the diffuse field). In the free sound field this microphone has a boost of approximately 7 dB at 10 kHz.

AK 31 is a free-field equalized pressure transducer with a flat frequency response up to 20 kHz (in the free field). In the diffuse sound field this microphone has a high frequency roll-off above 5 kHz.

AK 40 is a pressure gradient transducer with cardioid characteristic. The frequency curves are very smooth and match 0° sound incidence. Sound from sources within a pickup angle of ± 135° is reproduced without any coloration.

AK 43 is a pressure gradient transducer with wide-angle cardioid characteristic. Attenuation at 90° is 4 dB, at 135° it is 8 dB and at 180° it is 11 dB. The frequency response curves for sound sources within an angle of ± 90° are parallel up to 12 kHz.

AK 45 is a pressure gradient transducer with cardioid characteristic, similar to the AK 40. However, it has an acoustic bass roll-off that is useful during applications when subsonic and low frequencies may cause difficulties. The AK 45 is optimized for a flat low frequency response at a recording distance of 15 cm ("speech cardioid").

AK 50 is a pressure gradient transducer with hypercardioid characteristic. Attenuation of sound incidence from the side or rear is about 10 dB, with minimum sensitivity at an angle of 120°.

Electrical features

The KM 100 is phantom powered (48 V) and uses transformerless output circuitry. This has several advantages. It features high output capability and extremely low self noise. It provides exceptionally clean sound, free of any coloration. As with traditional transformers, this circuit approach ensures good common mode rejection. The balanced output signal is protected against interference.

The construction is extremely compact. The entire microphone circuitry is on a single hybrid module measuring only 2 cm^2 in area. It is built into the microphone capsule, therefore the term "active capsules".

All sensitive components are protected within the capsule. As a result, the quality of the audio signal is never compromised through the use of accessories, for example, when the capsule is detached from the output stage and mounted on a cable or a gooseneck.

Even with a long cable between active capsule and output stage, the signal is immune to external interference.

Preattenuation

The output stage has a 10 dB switch. Attenuation is achieved by reducing the capsule voltage to one third.

When the switch is on, the microphone is capable of accepting sound pressure levels up to 150 dB without being overloaded.

Connectors

To diminish the number of connectors within the KM 100 System some accessories were modified. They can now be screwed directly onto the KM 100 output stage without using the KA 100 cable adapter. The new accessories which include the cable adapter, were renamed adding the suffix KA. For example: LC 3 is now LC 3 KA.

The separate KA 100 cable, needed for older accessories, will be available also in future.

The KM 100 output stage has a 3-pin XLR connector.

Sound diffraction sphere

The SBK 130 A sound diffraction sphere slips onto the front of the KM 130/KM 131 pressure microphones. The diaphragm becomes an integral part of the surface of the sphere. This affects the frequency response of the microphones.

While sounds coming from the front-half space are emphasized by up to 2.5 dB between 2 kHz and 10 kHz, sounds arriving from the rear-half space are attenuated by a maximum of 2.5 dB in the range above 5 kHz.

Since the sound diffraction sphere causes the pressure buildup of the KM 130/KM 131 pressure microphones to begin earlier, the frequency response rises smoothly in the middle

and upper range. This is similar to a typical pressure gradient microphone, where the directivity increases with rising frequencies. However, since the KM 130/KM 131 are pressure microphones, they maintain a linear sensitivity down to the lowest frequencies.

This changing directivity allows to record at a greater distance from the sound source, and makes the KM 130/KM 131 microphones especially suited as stereo main microphones in A-B configurations.

Stereo recordings

By means of the AC 30 adapter cable two active capsules, AK 20 and e.g. AK 40 can be connected as MS stereo pair directly with the MTX 191 (A) matrix amplifier. The XY or MS signal is then available at the 5-pin XLR output connector of the MTX 191 (A), and the recording angle can be electrically remote controlled. The output stages KM 100 are then not required.

Stereo set

The cardioid and hypercardioid microphones are also available as complete stereo sets, SKM 140 and SKM 150, including all accessories in a single jeweler's box.

A further SKM 100-MS Stereo Set containing the micro-phones KM 120 and KM 140 is available.

KM 100 Output stage

LC 3 KA Microphone cable

Accessories*

AK 20, Active capsule
Catalog No.: 071659

AK 30, Active capsule
Catalog No.: 069001

AK 31, Active capsule
Catalog No.: 069002

AK 40, Active capsule
Catalog No.: 069007

AK 43, Active capsule
Catalog No.: 069014

AK 45, Active capsule
Catalog No.: 069015

AK 50, Active capsule
Catalog No.: 069016

KA 100, Cable adapter
Catalog No.: 007330

KM 100, Output stage
Catalog No.: 007395

SBK 130 A, Sound diffraction sphere for dia. 22 mm,
Catalog No.: 008612

BS 48 i, Battery supply
Catalog No.: 006494

BS 48 i-2, Battery supply
Catalog No.: 006496

N 248, Power supply
Catalog No.: 008537

IC 3 mt, Microphone cable
Catalog No.: 006543

Extension cable
LC 2, 10 m, Catalog No.: 006690

Microphone cable
LC 3 KA, 5 m, Catalog No.: 008408
LC 3 KA, 10 m, Catalog No.: 008409

DS 100-1, Double swivel mount
(for KVF ... extension tubes)
Catalog No.: 008491

DS 120, Double mount
Catalog No.: 007343

EA 2124 A mt,
Elastic suspension
Catalog No.: 008433

KVF 118 KA, Capsule extension
(with gooseneck, 300 mm)
Catalog No.: 008410

*) Detailed descriptions of all accessories are contained in the accessories catalog.

AK .. Active capsule

KVF 158 KA, Capsule extension (with gooseneck, 700 mm)
Catalog No.: 008411

KVF 148 KA, Capsule extension (with double gooseneck, 700 mm)
Catalog No.: 008412

MF 2, Table stand (with rubber mounted thread)
Catalog No.: 007266

MF 3, Table stand
Catalog No.: 007321

MF 4, Table stand
Catalog No.: 007337

MF 5, Table stand
Catalog No.: 008489

MF-AK Table Stand (with Swivel Joint)
Catalog No.: 008453

MNV 21 mt
Auditorium hanger with clamp for KM ...
Catalog No.: 006802

MNV 87 mt, Auditorium hanger (with threaded adapter)
Catalog No.: 006806

MNV 100, Auditorium hanger (with clamp for AK ...)
Catalog No.: 006811

PS 15, Pop screen
Catalog No.: 008472

SG 21 bk Swivel mount
Catalog No.: 008613

SG 100, Swivel mount (for KVF ..)
Catalog No.: 006688

SG 100-1, Swivel mount
Catalog No.: 008490

SG-AK Swivel Mount
Catalog No.: 008452

SGE 100, Swivel mount for MF 2 (with rubber mounted thread for AK ...)
Catalog No.: 006742

SMK 100 KA, Gooseneck (with cable, 160 mm)
Catalog No.: 008413

STH 100, Stereo mount (for 2xAK ... with LC 3)
Catalog No.: 007315

Stand extension
STV 4, Catalog No.: 006190
STV 20 , Catalog No.: 006187
STV 40, Catalog No.: 006188
STV 60, Catalog No.: 006189

TF 221 c, Table flange (with rubber mounted thread)
Catalog No.: 007278

*) Detailed descriptions of all accessories are contained in the accessories catalog.

Accessories

SR 100, Stand tube
Catalog No.: 007336 and
KA 100, Catalog No.: 007330

WNS 100, Windscreen, 45 mm
black, Cat. No.: 007323
red, Cat. No.: 007324
green, Cat. No.: 007325
yellow, Cat. No.: 007326
blue, Cat. No.: 007327

WNS 110, Windscreen, 45 mm
Catalog No.: 008535

WS 100, Windscreen, 90 mm
Catalog No.: 006751

Special Accessories for AK 20 and Stereo-Applications

STH 120, Stereo mount
for AK 20 and e.g. AK 40
Catalog No.: 008422

WNS 120, Windscreen
for AK 20
Catalog No.: 008427

AC 30, Adapter cable for connection of 2 AK ... with MTX 191 (A),
Catalog No.: 008418

MTX 191 A,
Matrix amplifier
Catalog No.: 007331

Application Hints

For recording situations where the microphone must remain "invisible".

KM 120

- *MS-Stereo microphone (in combination with the KM 140)*
- *Two crossed AK 20s in Blumlein technique*
- *Inconspicuous spot microphone with optimum attenuation of lateral sound sources*
- *Single microphone for two speakers facing each other*

KM 130

- *Ideal as AB stereo pair in the diffuse sound field because of the flat frequency response*
- *As a main mic, especially for capturing room acoustics*
- *For stereo recordings with a baffle plate*
- *As a spot mic for piano, wind instruments, organ, and choir*

KM 131

- *For close miking of instruments when there is no need to attenuate extraneous noise, and in a balanced acoustic environment to record acoustic guitar, wind instruments, strings, percussion, and drums*
- *Flat frequency response for close miking, spot mic*

KM 140

- *Universal usage, especially in situations when it is necessary to attenuate sound coming from adjacent instruments*
- *As XY and ORTF stereo pair*
- *Announcer's mic for broadcasting*
- *Spot mic, overhead*
- *Close miking of strings, wind instruments, percussion, piano, Leslie speakers, guitar amps*
- *We recommend using an additional windscreen to minimize the effects of high wind velocity*

KM 143

- *Polar response characteristic acts more like an omni. Therefore, it is an ideal tool to record larger instrument ensembles*
- *As AB stereo pair, especially in rooms with less than ideal acoustics*
- *As spot mic for strings, wind instruments, percussion, and Leslie speakers*
- *Acts very neutral when used close up to bass instruments, such as double bass, bass amps, guitar amps*

KM 145

- *It naturally compensates for proximity effect*
- *Very neutral tonal balance during close miking of speech, as in TV, movie and video , PA*
- *Acts very neutral when used close up to bass instruments, such as double bass, bass amps, guitar amps, Leslie speakers, toms*

KM 150

- *As XY stereo pair*
- *Overhead, toms*
- *In situations that are susceptible to acoustic feedback*
- *To attenuate unwanted sound of nearby instruments*
- *Recording of speech, as in TV, movie and video productions, PA systems*
- *Produces especially warm and bass supporting sound for artists who perform in proximity effect range*
- *We recommend using an additional wind-screen to minimize the effects of high wind velocity, and plosive sounds*

These are just some of the most common applications. Detailed hints are described in the catalog "KM 100 Application Guide".

Delivery Range KM ...

Microphone KM 120 .. KM 150
Windscreen WNS 100 or WNS 120
Stand mount SG 21 bk
Wooden box

Delivery Range SKM 140 (150)

2x Microphones KM 140 (150)
2x Connecting cables LC 3 KA
1x Stereo mount STH 100
Wooden box

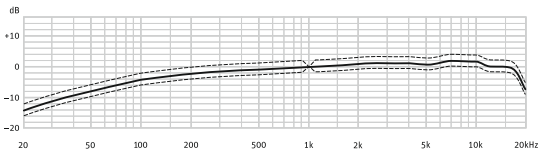
Delivery Range SKM 100-MS

1x Microphone each KM 120 and KM 140
2x Connecting cables LC 3 KA
1x Stereo mount STH 120, Wooden box

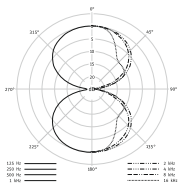
Catalog No.

KM 120	blk	008417
KM 130	blk	007051
KM 131	blk	007061
KM 140	blk	007031
KM 143	blk	007109
KM 145	blk	007068
KM 150	blk	007077
SKM 140	blk	007094
SKM 150	blk	007099
SKM 100-MS	blk	008421

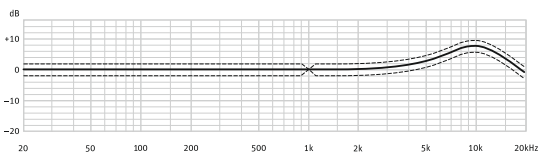
KM 120

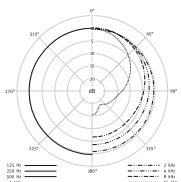


measured in free-field conditions (IEC 60268-4), tolerance ±2 dB

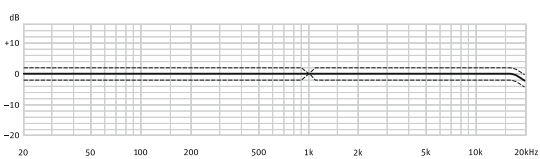


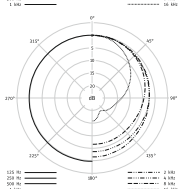
KM 130





KM 131





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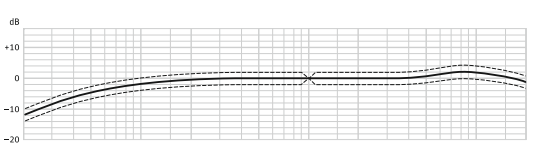
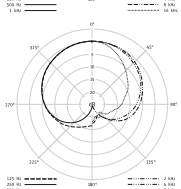
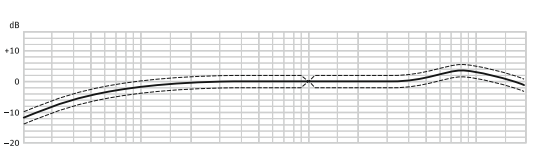
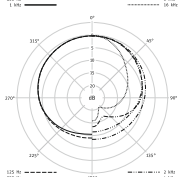


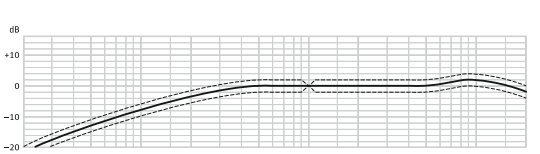


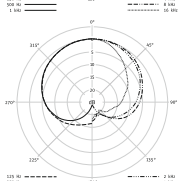
KM 143



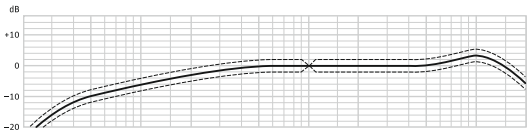


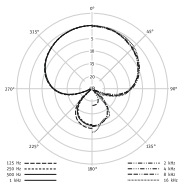
KM 145





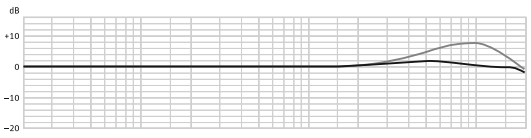
KM 150

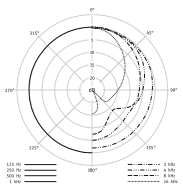




KM 130 with SBK 130 A

KM 131 with SBK 130 A



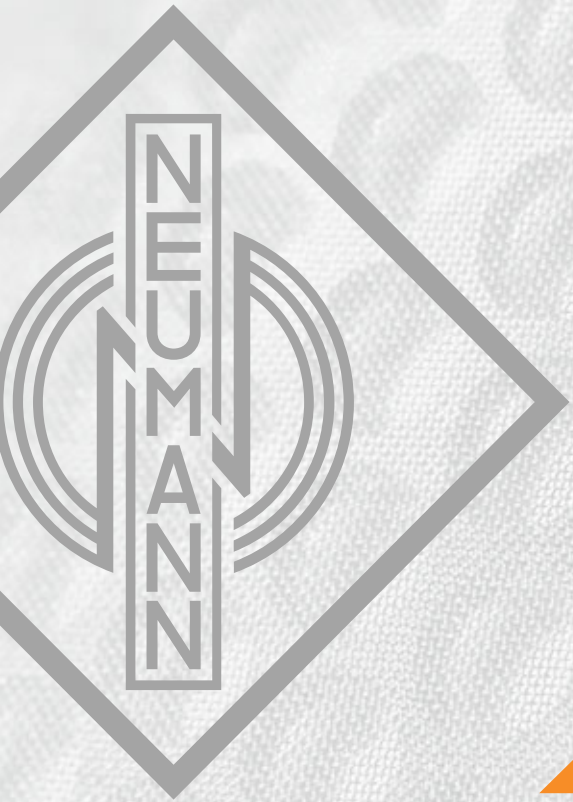


Technical Data	KM 120	KM 130	KM 131	KM 140	KM 143	KM 145	KM 150
Acoustical operating principle	Press. grad. transducer	Pressure transducer	Pressure transducer	Press. grad. transducer	Press. grad. transducer	Press. grad. transducer	Press. grad. transducer
Directional pattern	Side-fire figure-8	Omni diffuse field equalized	Omni free field equalized	Cardioid	Cardioid wide angle	Cardioid low frequency roll-off	Hyper-cardioid
Frequency range	20 Hz to 20 kHz	20 Hz to 20 kHz	20 Hz to 20 kHz	20 Hz to 20 kHz	20 Hz to 20 kHz	20 Hz to 20 kHz	20 Hz to 20 kHz
Sensitivity at 1 kHz into 1 kohm	12 mV/Pa	12 mV/Pa	12 mV/Pa	15 mV/Pa	15 mV/Pa	14 mV/Pa	10 mV/Pa
Rated impedance	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms
Rated load impedance	1000 ohms	1000 ohms	1000 ohms	1000 ohms	1000 ohms	1000 ohms	1000 ohms
Signal-to-noise ratio							
CCIR[1] (rel. 94 dB SPL)	68 dB	67 dB	69 dB	69 dB	69 dB	68 dB	67 dB
A-weighted[1] (rel. 94 dB SPL)	76.5 dB	78 dB	78 dB	78 dB	78 dB	77 dB	76 dB
Equivalent noise level, CCIR[1]	26 dB	27 dB	25 dB	25 dB	25 dB	26 dB	27 dB
Equivalent noise level, A-weighted[1]	17.5 dB-A	16 dB-A	16 dB-A	16 dB-A	16 dB-A	17 dB-A	18 dB-A
Maximum SPL							
for THD 0.5%[2]	140 dB	140 dB	140 dB	138 dB	138 dB	138 dB	142 dB
for THD 0.5% with preatt[2]	150 dB	150 dB	150 dB	148 dB	148 dB	148 dB	152 dB
Maximum output voltage	10 dBu	10 dBu	10 dBu	10 dBu	10 dBu	10 dBu	10 dBu
Dynamic range of the mic amp (A-weighted)	122.5 dB	124 dB	124 dB	122 dB	122 dB	121 dB	124 dB
Supply voltage (P48, IEC 61938)	48 V ± 4 V	48 V ± 4 V	48 V ± 4 V	48 V ± 4 V	48 V ± 4 V	48 V ± 4 V	48 V ± 4 V
Current consumption (P48, IEC 61938)	2 mA	2 mA	2 mA	2 mA	2 mA	2 mA	2 mA
Matching connector	XLR3F	XLR3F	XLR3F	XLR3F	XLR3F	XLR3F	XLR3F
Weight	102 g	80 g	80 g	80 g	80 g	80 g	80 g
Diameter	24/22 mm	22 mm	22 mm	22 mm	22 mm	22 mm	22 mm
Length	110 mm	92 mm	92 mm	92 mm	92 mm	92 mm	92 mm

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal

KU 100

Dummy Head



www.neumann.com

The KU 100 dummy head is a binaural stereo microphone. It resembles the human head and has two microphone capsules built into the ears. When listening through high-quality headphones it gives the illusion of being right at the scene of the acoustic events.

When using the KU 100 dummy head, the binaural stereo experience moves the listener into the scene of the original performance, in contrast to other space-related recording techniques, where the acoustic event is moved to the listener.

The dummy head is also used in many industrial applications as a measuring device, for example in acoustic research.

The KU 100 can be operated with typical 48 V phantom powering, or from an external power supply unit, or from the built-in battery.

At the bottom of the unit is a switch for the different power supply modes, as well as connectors for balanced and unbalanced output signals.

Inside the head are additional switches for 10 dB attenuation and the high-pass filter.

Features

- *Dummy head for head-related stereophony*
- *Pressure transducer with flat diffuse-field frequency response*
- *Loudspeaker compatible*
- *Transformerless circuitry*
- *Two-stage switchable low frequency roll-off*
- *Switchable 10 dB preattenuation*
- *Balanced and unbalanced outputs (XLR and BNC)*

The Idea

The KU 100 dummy head is a replica of the human head with a microphone built into each ear.

When the recorded audio signal is reproduced through high-quality headphones the listener perceives a sound image almost identical to the one he would have heard at the recording location of the dummy head (head-related stereophony).

When played back through loudspeakers, the sound matches to a high degree that of conventional stereo microphones, placed in the same position. However, a superior quality is added, that of a distinct spatial depth perception.

The KU 100 dummy head is just as easy to use during creative radio drama productions, and music recordings where the room acoustics should be recorded at the same time.

The dummy head is also contributed essentially as an important tool to preserve natural sounds of all kinds.

In addition, the dummy head is frequently used to examine and document the influence of noise in industrial applications at various working places under realistic conditions.

Electrical features

The KU 100 uses transformerless circuitry with the advantage of high output capability, fast transient response, and extremely low self noise. The usual output transformers are replaced by electronic circuits. As with traditional transformers, this technique ensures good common mode rejection, and prevents RF interference, that may influence the balanced audio signals.

The dummy head provides balanced (XLR) and unbalanced (BNC) outputs. It can be powered in three different modes:

from an external P48 phantom power supply,

with batteries as part of the internal battery supply,

or from an external AC mains supply (included with the system).

Filter and attenuation

A 10 dB switch inside the head attenuates the sensitivity. A second switch selects the cutoff frequency of the high-pass filter to be either linear, 40 Hz, or 150 Hz.

Delivery range

The KU 100 comes in a robust aluminum carrying case, together with an external power supply unit, a 5-pin XLR cable, and an adapter cable that splits the 5-pin XLR output into two 3-pin XLR connectors.

Technical Data

Acoustical operating principle	Pressure transducer
Directional pattern	Ear
Frequency range	20 Hz...20 kHz
Sensitivity at 1 kHz into 1 kohm	20 mV/Pa
Rated impedance	50 ohms balanced 200 ohms unbalanced
Rated load impedance	1000 ohms
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	65 dB
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	78 dB
Equivalent noise level, CCIR[1]	29 dB
Equivalent noise level, A-weighted[1]	16 dB-A
Maximum SPL for THD 0.5%[2]	135 dB
Maximum SPL for THD 0.5% with preattenuation[2]	145 dB
Maximum output voltage	1950 mV
Dynamic range of the microphone amplifier (A-weighted)	119 dB
Supply voltage	200...240 V / 48 V ± 4 V / 6 x 1.5 V
Current consumption	2 x 2 mA
Matching connector	XLR3F / XLR5F
Weight	3500 g
Height	280 mm
Width	180 mm
Depth	220 mm

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal [3] P48, IEC 61938

Application Hints

- Radio drama productions
- Live concert recordings in complex acoustic environments
- Documentation of
  - nature's sound,
  - theater,
  - round table discussions
- Documentation and measurement of
  - room acoustics,
  - PA systems,
  - stereo sound inside an automobile,
  - musical instruments
- Analysis of
  - noise,
  - speech intelligibility,
  - headphone performance

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Delivery Range

Dummy head KU 100
Microphone cable IC 5
Adapter cable AC 20
Plug-in mains unit
Aluminium case

Catalog No.

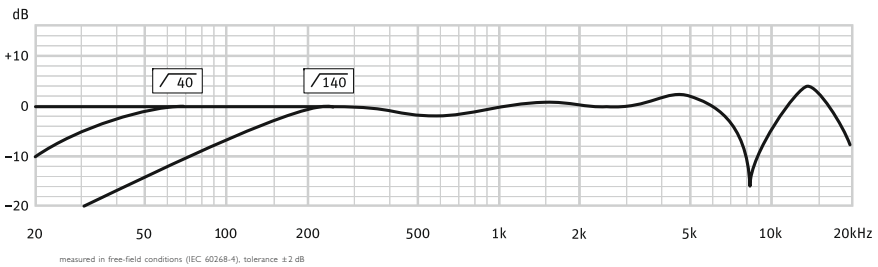
KU 100 (230 V) ..... blk 007130
KU 100 (117 V) ..... blk 007132

Selection of Accessories

Windscreen, WSB ..... blk 007372

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

Meaning of color codes:
blk = black
ni = nickel

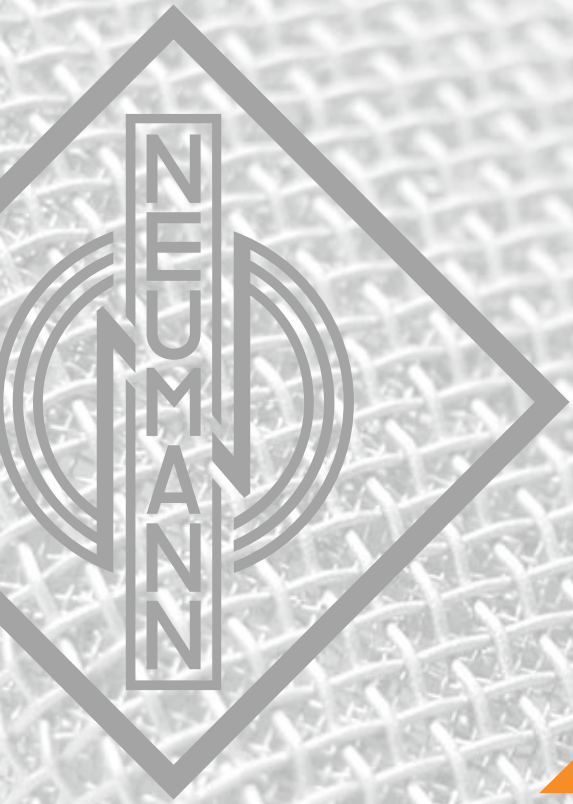


measured in free-field conditions (IEC 60268-4), tolerance ±2 dB

Product Information

USM 69 i

Stereo Microphone



www.neumann.com

The USM 69 i stereo microphone has two separate dual-diaphragm capsules. These are mounted vertically and rotate against each other. The directional polar patterns can be selected separately for each capsule. The capsules operate independently from each other.

Applications

The USM 69 i condenser stereo microphone is a studio microphone for intensity stereo recording. It is suitable for XY and MS recordings.

Construction

The microphone consists of the amplifier section and the capsule head. The amplifier section contains two microphone amplifiers operating independently from each other. They have an extremely low self noise.

Two completely separate microphone capsules are positioned closely above each other within the capsule head. Their diaphragms are made out of gold-sputtered polyester film. The upper capsule rotates against the lower one over a range of 270°. Color markings on the lower capsule system help to identify the angle by which the upper capsule has been rotated.

When sound waves reach the microphone capsules from different directions they will generate audio signals with different intensity only, but not with time differences, since the capsules are in close proximity and the sound arrives at both capsules simultaneously. The result is an intensity stereo signal that can be summed together for excellent mono compatibility without causing interference.

Polar patterns

The USM 69 i has two built-in rotary switches. The five polar patterns of both capsules can be selected at the microphone itself. Therefore, no special AC power supply units or powering adapters are necessary.

The two outputs attach directly to any 48 V phantom powered connectors.

In addition to the usual polar patterns: omnidirectional, cardioid, and figure-8, we have added a hypercardioid and a wide-angle cardioid pattern.

A built-in DC converter generates the required capsule polarizing voltages.

Features

- *Switchable stereo microphone*
- *Two pressure-gradient transducers with double membrane capsules*
- *MS- or XY-stereophony*
- *Capsules rotary by 270°*
- *Very low noise*
- *Aperture and pick-up angles freely choosable*
- *Directional characteristics reproducably switchable, omni, wide angle cardioid, cardioid, hypercardioid, figure-8*

Electrical features

The amplifiers feature high output capability and extremely low self noise. Distant sound sources, as well as very loud sound sources at close range can therefore be recorded without any problem.

Each amplifier has an active filter. It effectively suppresses subsonic interference as caused by wind or structure borne noise. At the same time, the filter prevents the output transformers from overloading through very low frequency energy.

Use as a mono microphone

The microphones may also be used as completely independent mono microphones. There are many applications when it is important to have a second mono microphone as a back-up, or when the outputs of microphones with different polar response characteristics must be available simultaneously.

The outputs of the two microphone channels can be linked (cascaded). In addition to the individual directional patterns, other characteristics are available through the combination of both channels.

Operational safety

Both microphone systems operate completely independent from each other.

The second amplifier will be unaffected, even in case of a faulty ground of the supply voltage for one of the channels, or a short circuit in one of the outputs.

The microphone is reliable in mono usage, even if only one of the systems is operated and connected. Its simple and redundant circuitry guarantees a low failure rate.

Should the DC converter ever fail, a diode circuit within the microphone ensures that both systems will remain operational. The cardioid pattern is automatically chosen. The sensitivity is reduced by 3 dB.

Application Hints

- *As XY stereo mic*
- *As MS stereo mic*
- *Overall stereo main mic (overhead)*
- *Announcer's mic for broadcasting, drama, features...*

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Delivery Range

Microphone USM 69 i (mt)

Catalog No.

USM 69 i	*ni*	*006974*
USM 69 i mt	*blk*	*006976*

Selection of Accessories

Auditorium hanger, MNV 87	*ni*	*006804*
Auditorium hanger, MNV 87 mt	*blk*	*006806*
Windscreen, WS 69	*blk*	*006750*
Battery supply, BS 48 i-2	*blk*	*006496*
Power supply, N 248	*blk*	*008537*
Microphone cable, IC 5	*blk*	*006623*
Microphone cable, IC 5 mt	*blk*	*006624*
Microphone cable, IC 6 (with stand mount swivel)	*ni*	*006621*
Adapter Cable, AC 20 (1m)		*006595*

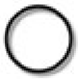
A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

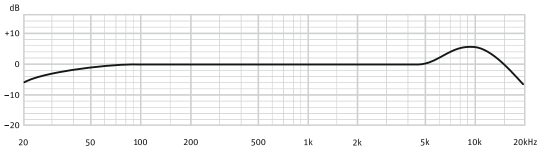
Meaning of color codes:
blk = black,
ni = nickel,
gr = gray

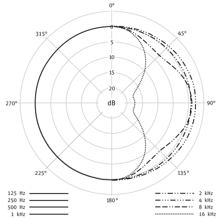
Technical Data

Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Omnidirectional, wide angle cardioid, cardioid, hypercardioid, figure-8*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*13 mV/Pa*
Rated impedance	*150 ohms*
Rated load impedance	*1000 ohms*
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	*70 dB*
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	*81 dB*
Equivalent noise level, CCIR[1]	*24 dB*
Equivalent noise level, A-weighted[1]	*13 dB-A*
Maximum SPL for THD 0.5%[2]	*132 dB*
Maximum output voltage	*3 dBu*
Dynamic range of the microphone amplifier (A-weighted)	*119 dB*
Supply voltage (P48, IEC 61938)	*48 V ± 4 V*
Current consumption (P48, IEC 61938)	*2 x 0.7 mA*
Matching connector	*XLR 5F*
Weight	*510 g*
Diameter	*30 + 48 mm*
Length	*293 mm*

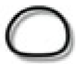
[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal

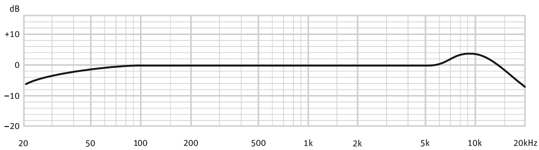


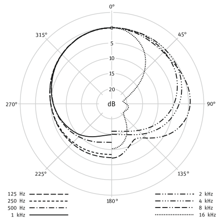


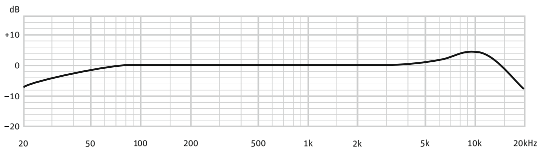


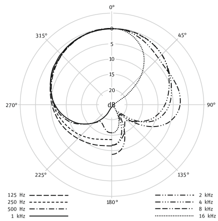
measured in free-field conditions (IEC 60268-4), tolerance ±2 dB

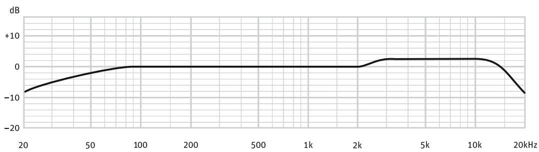


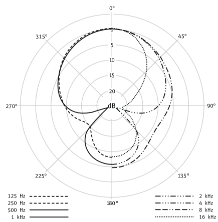


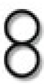


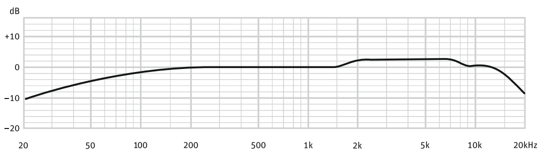


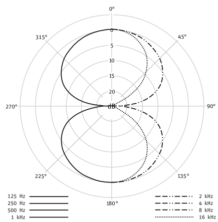












KMR 81/82 i

Shotgun Microphones

www.neumann.com

The KMR 81 and KMR 82 are shotgun microphones with a high directivity that remains within the acceptance angle independent of the frequency.

The advantage is that a sound source, for example an actor on stage, will not change its apparent tonal balance when moving within this area.

Applications

Shotgun microphones are particularly useful in recording situations where a microphone cannot be positioned within the desired distance of the sound source to produce a sufficiently loud signal level.

Typical applications are film and video recordings, where the microphone should not appear in the picture.

The KMR 82 is very often used on stage. The KMR 81 has been specifically designed for electronic news gathering.

Acoustic features

In principle, Neumann shotgun microphones use a combination of a pressure gradient transducer and an interference tube. If the wavelength of the frequency is longer than the tube length, the microphones work as pressure gradient transducers. At higher frequencies they operate as interference transducers for lateral sound. Off-axis sound sources are picked up with reduced level, but without coloration.

Therefore, the microphones are well suited to record individual instruments of an orchestra. The pickup areas of several shotgun microphones may even overlap as, for example, during recordings on a large stage, without causing any problem.

The KMR 81 and KMR 82 are less sensitive to wind and pop noise when compared to the KM 150 miniature microphone with a similar high directivity. Both shotgun microphones feature extremely low self noise, good impulse response, and high output level.

Features

- *Interference tube microphones with shotgun directional characteristic*
- *Interference/pressure-gradient transducer*
- *High lateral and back attenuation*
- *90°/45°-recording angle*
- *Switchable filter or preattenuation features*
- *Extensive accessories for outdoor use*
- *Light weight: 145 g/250 g*

Polar pattern

KMR 81 and KMR 82 are shotgun microphones with a very directional characteristic.

The microphone capsule is positioned inside a housing tube that is acoustically open but has a high flow resistance.

The directional patterns of the microphones are lobe shaped. The attenuation of lateral sound is practically independent of the frequency.

The KMR 82 has a frequency independent directivity within a pickup angle of 45° for audio signals that determine the tonal balance of the program material. For the KMR 81, this angle is 90°.

Filter and attenuation KMR 81 i

The microphone has a 10 dB attenuation switch to prevent the input of the following unit from overloading.

A second switch activates a 200 Hz high-pass filter. Toward the lower frequencies the sensitivity of the microphone is attenuated by approximately 15 dB at 50 Hz. The frequency range above 200 Hz is unaffected.

Filter KMR 82 i

Between 2 kHz and 15 kHz the KMR 82 has a boost to compensate for HF transmission losses in air when recording distant sound sources.

This may overemphasize any sibilance if the microphone is used close-up.

Therefore, a two-position slide switch allows to select the setting that is best for balanced upper frequencies.

The KMR 82 has a high-pass filter to suppress subsonic interference. The cutoff frequency may be raised to 120 Hz (–3 dB) with a built-in two-position slide switch.

Use on location

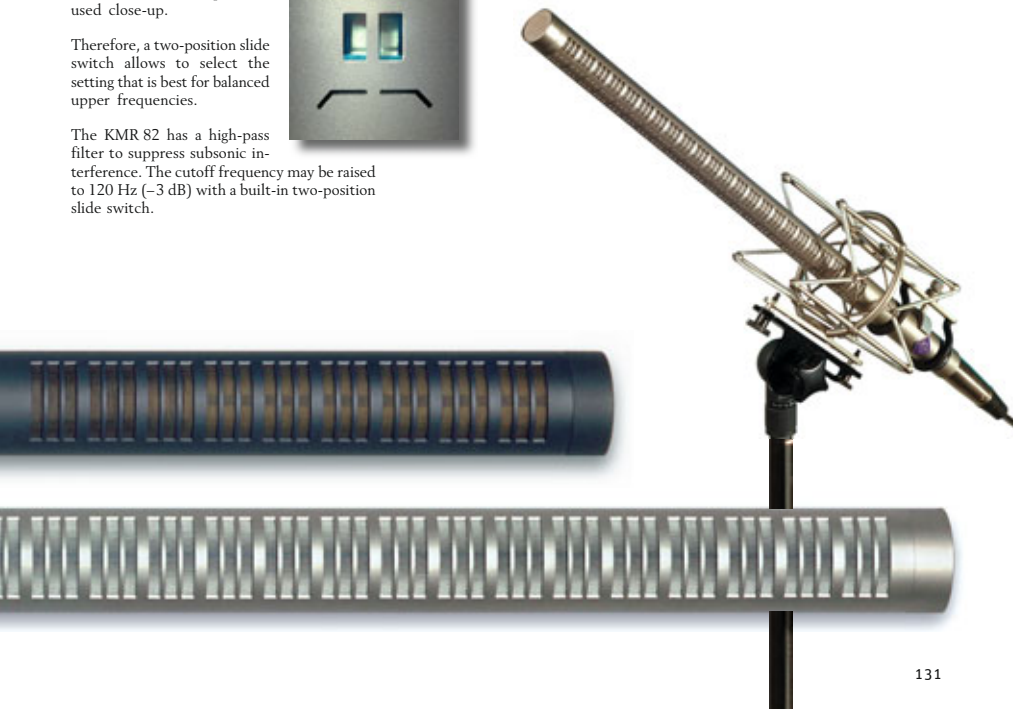
The shotgun microphones feature very high output capability and a remarkably low self-noise level.

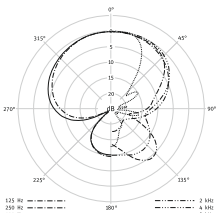
Their low power consumption, light weight, and low sensitivity to wind and handling noise, make them ideal tools for news gathering on location.

Small dimensions, together with a balanced center of gravity, make handling easy without any whiplash effect.

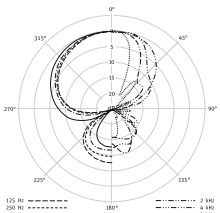
However, when on location and during strong wind conditions, we recommend using an additional wind screen (included as standard accessory). The wind screen is made of polyurethane foam.

For mobile use a handle and an elastic suspension are available.

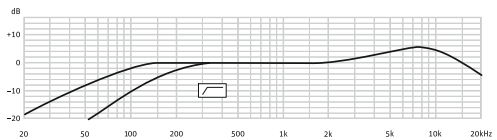




KMR 81 i

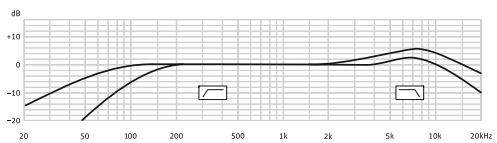


KMR 82 i



KMR 81 i

measured in free-field conditions (IEC 60268-4), tolerance ±2 dB



KMR 82 i

Technical Data

	KMR 81 i	KMR 82 i
Acoustical operating principle	Interference transd.	Interference transd.
Directional pattern	Supercard./lobe	Supercard./lobe
Frequency range	20 Hz...20 kHz	20 Hz...20 kHz
Sensitivity at 1 kHz into 1 kohm	18 mV/Pa	21 mV/Pa
Rated impedance	150 ohms	150 ohms
Rated load impedance	1000 ohms	1000 ohms
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	71 dB	71 dB
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	82 dB	82 dB
Equivalent noise level, CCIR[1]	23 dB	23 dB
Equivalent noise level, A-weighted[1]	12 dB-A	12 dB-A
Maximum SPL for THD 0.5%[2]	128 dB	128 dB
Maximum SPL for THD 0.5% with preattenuation[2]	138 dB	-
Maximum output voltage	900 mV	1050 mV
Dyn. range of the mic. amplifier (A-weighted)	116 dB	116 dB
Supply voltage (P48, IEC 61938)	48 V ± 4 V	48 V ± 4 V
Current consumption (P48, IEC 61938)	0.8 mA	0.7 mA
Matching connector	XLR3F	XLR3F
Weight	145 g	250 g
Diameter	21 mm	21 mm
Length	226 mm	395 mm

[1] according to IEC 60268-1; CCIR-weighting according to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS
[2] measured as equivalent el. input signal

Application Hints

- *Recordings for*
  - broadcasting/ENG,
  - film and video productions
- *Medium length shotgun spot mic in noisy surroundings*
- *Balanced weight during handheld and boom/ fishpole operation*

These are just some of the most common applications. We recommend additional experimentation to gain maximum use from this microphone.

Delivery Range KMR 81 i

Microphone KMR 81 i (mt),
Windscreen WS 81

Delivery Range KMR 82 i

Microphone KMR 82 i (mt),
Windscreen WS 82

Catalog No.

KMR 81 i	ni	006961
KMR 81 i mt	blk	006962
KMR 82 i	ni	006878
KMR 82 i mt	blk	006879

Selection of Accessories

Battery supply, BS 48 i	blk	006494
Power supply, N 248	blk	008537
Auditorium hanger, MNV 21 mt	blk	006802
Microphone cable, IC 3 mt	blk	006547

for KMR 81 i only:

Windscreen set, WKE 81 Set	gr	539381
Elastic suspension, EA 2124 A mt	blk	008433

for KMR 82 i only:

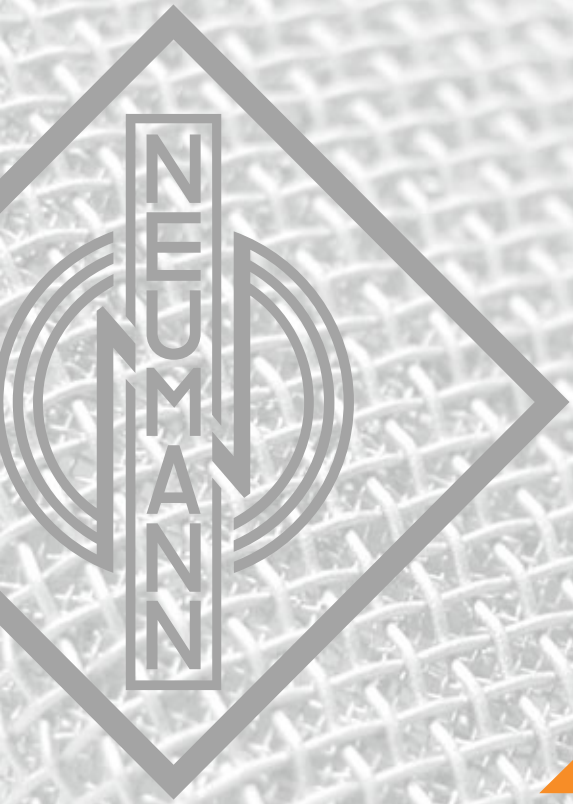
Windscreen set, WKE 82 Set	gr	539382

A complete survey and detailed descriptions of all accessories are contained in the accessories catalog.

Meaning of color codes:
blk= black,
ni = nickel,
gr = gray

BCM 104

Broadcast Line



www.neumann.com

Emotion conveyed with technical perfection. This is the ideal which the Neumann microphones in the Broadcast Line have been designed to fulfill. The fine-tuning to the requirements of professional broadcast studios and the individual, functionally optimized design* ensure that these are microphones of character.

With its large-diaphragm condenser capsule and cardioid directional characteristic, the BCM 104 is ideal for the faithful reproduction of speech and music. This is due, for instance, to the frequency response that is flat up to 3 kHz and then gradually boosted in the higher frequencies. If required, internal switches can be used to compensate for the proximity effect and to reduce the sensitivity by 14 dB. The versatility of the BCM 104 can be seen in its wide range of applications, from news, to round-table discussions, to radio plays, to musical recordings.

Mechanical Features

The microphone headgrille twists off easily for quick cleaning. Neumann offers optional color-coded headgrilles so that, for reasons of hygiene, each announcer can use his or her individual headgrille. In front of the capsule, mounted on a frame holder, a fine gauze serves as a built-in popscreen.

The microphones of the Broadcast Line have an elastic mount against structure-borne noise, that is compatible with standard broadcast-segment microphone arms.

Acoustic Features

The microphone headgrille houses the K 04 large-diaphragm capsule, which has a flat frequency response up to 3 kHz. Higher frequencies have an increased presence up to 2 dB.

Since the above-mentioned microphone characteristics are obtained without the use of resonance effects, the microphone features excellent transient response and transmits all transient phenomena of music and speech without any coloration.

The integrated Pop Screen

A pop screen not only prevents the occurrence of plosive pop noises in vocal recordings, but also efficiently prevents unwanted particles, from respiratory moisture, nicotine, to food remnants, from settling on the diaphragm. The pop screen can be removed for cleaning without the use of tools.

* The design of the microphone is a registered design of the Georg Neumann GmbH in certain countries.

Electrical features

Instead of a transformer to couple the microphone output to the supply voltage, the BCM 104 has an electronic circuit which, like a transformer, provides for good common mode rejection. Interference induced in the balanced modulation line is thus suppressed effectively.

With a very low self-noise of 7 dB(A), and an overload capability extending to 138 dB SPL, the BCM 104 has a dynamic range of 131 dB (A-weighted).

Filter and Preattenuation

The BCM 104 amplifier has a linear operation down to 20 Hz. An active filter efficiently suppresses signals below this frequency. In order to compensate for the proximity effect, an electronic high-pass filter, activated by a switch, is built into the microphone. This filter reduces frequencies below 100 Hz by 12 dB/octave.

A 14-dB preattenuation switch is provided in order to adjust the sensitivity, if necessary, to circuits designed for dynamic microphones. This will increase the self noise level accordingly.

Both switches are located inside the microphone housing, since they will normally be operated only once, when the broadcasting facility is set up.

Mounting

The preferred mode of operation is to suspend the microphones in the Broadcast Line from a standard studio boom arm. A thread adapter to fit different connector threads is included. In order to provide protection from structure-borne noise, both the capsule and the microphone in its mount are elastically suspended.

The optional SG 5 swivel mount allows additional angling of the microphone by ±90 degrees.

Delivery Range

BCM 104 Microphone

Catalog No.

BCM 104 ..... ni 008483

Selection of Accessories

Power supply, N 248 ..... blk 008537

Headgrille, BCK ..... ni 008520
(incl. Assortment of colored rings)

Swivel Mount, SG 5 008529

Popscreen, PS 15 ..... blk 008472
Popscreen, PS 20 a ..... blk 008488

Windscreen, WS 47 ..... blk 006826

Microphone cable, IC 3 mt ..... blk 006543

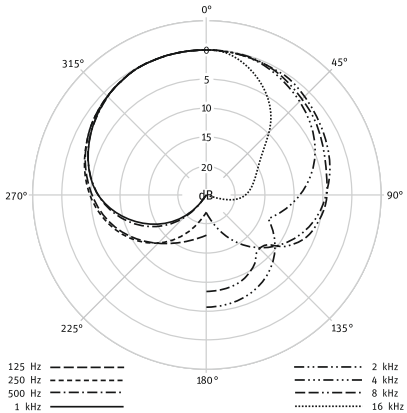
A complete survey and detailed descriptions of all accessories are contained in the accessories catalog

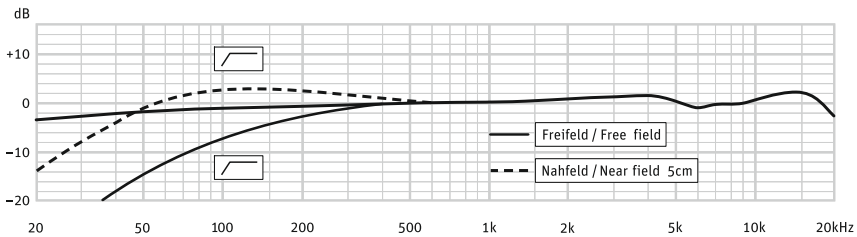
Meaning of color codes:

blk = black,
ni = nickel

Features

- *Large-diaphragm condenser capsule*
- *Cardioid directional characteristic*
- *Characteristic, functionally optimized design*
- *Integrated, neutral pop protection*
- *Integrated elastic suspension*
- *Individual headgrilles for different users*
- *Colored rings to identify the replacement headgrilles*
- *Easy removal and cleaning of microphone headgrille (with bayonet mount)*
- *Mechanical compatibility with standard studio boom arms*
- *Internal switches: high-pass and pre-attenuation*





measured in free-field conditions (IEC 60268-4), tolerance ±2 dB

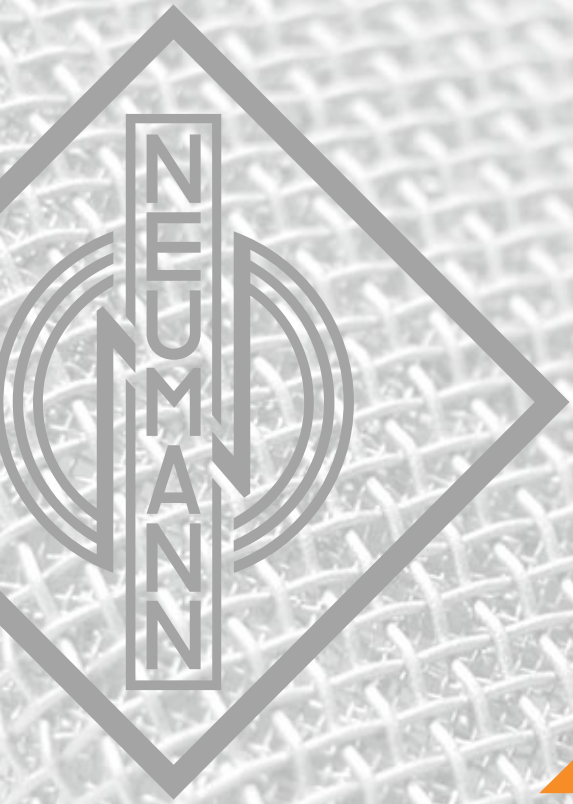
Technical Data

Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Cardioid*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 1 kohm	*22 mV/Pa*
Sensitivity at –14 dB attenuation	*4.4 mV/Pa*
Rated impedance	*50 ohms*
Rated load impedance	*1 kohms*
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	*76 dB*
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	*87 dB*
Equivalent noise level, CCIR[1]	*18 dB*
Equivalent noise level, A-weighted[1]	*7 dB-A*
Maximum SPL for THD 0.5%[2]	*138 dB*
Maximum SPL for THD 0.5% with preattenuation[2]	*152 dB*
Maximum output voltage	*10 dBu*
Dynamic range of the microphone amplifier (A-weighted)	*131 dB*
Supply voltage (P48, IEC 61938)	*48 V ± 4 V*
Current consumption (P48, IEC 61938)	*3.2 mA*
Matching connector	*XLR3F*
Weight	*500 g*
Diameter	*64 mm*
Length	*85 mm*
Height (without suspension)	*110 mm*

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal

BCM 705

Broadcast Line



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Emotion conveyed with technical perfection. This is the ideal which the Neumann microphones in the Broadcast Line have been designed to fulfill. The fine-tuning to the requirements of professional broadcast studios and the individual, functionally optimized design* ensure that these are microphones of character.

The BCM 705 is Neumann's first dynamic microphone. The housing and headgrille are identical to those of the BCM 104; only the green logo indicates that this is something new from Neumann. The principle of reduction to the essentials can be seen in the dynamic capsule with a hypercardioid directional characteristic, specifically designed for speech reproduction at close range. Multi-level isolation from structure-borne noise ensures operation free of interference, even in a lively studio environment.

Mechanical Features

The microphone headgrille twists off easily for quick cleaning. Neumann offers optional, color-coded headgrilles so that, for reasons of hygiene, each announcer can use his or her individual headgrille.

The microphones of the Broadcast Line have an elastic mount against structure-borne noise, that is compatible with standard broadcast-segment microphone arms.

Acoustic Features

The frequency response has a light treble boost, in the region from 2 kHz to 9 kHz, aiding the speech intelligibility. The bass frequency response is designed to compensate for the overemphasis of the bass caused by the proximity effect.

* The design of the microphone is a registered design of the Georg Neumann GmbH in certain countries.

The integrated Pop Screen

A pop screen not only prevents the occurrence of plosive pop noises in vocal recordings, but also efficiently prevents unwanted particles, from respiratory moisture, nicotine, to food remnants, from settling on the diaphragm.

Mounting

The preferred mode of operation is to suspend the microphones in the Broadcast Line from a standard studio boom arm. A thread adapter to fit different connector threads is included. In order to provide protection from structure-borne noise, both the capsule and the microphone in its mount are elastically suspended.

The optional SG 5 swivel mount allows additional angling of the microphone by ±90 degrees.

Delivery Range

BCM 705 Microphone

Catalog No.

BCM 705 ..... ni 008507

Selection of Accessories

Headgrille, BCK ..... ni 008520
(incl. assortment of colored rings)

Swivel Mount, SG 5 008529

Popscreen, PS 15 ..... blk 008472
Popscreen, PS 20 a ..... blk 008488

Windscreen, WS 47 ..... blk 006826

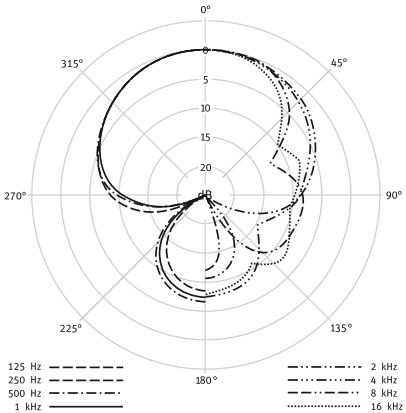
Microphone cable, IC 3 mt ..... blk 006543

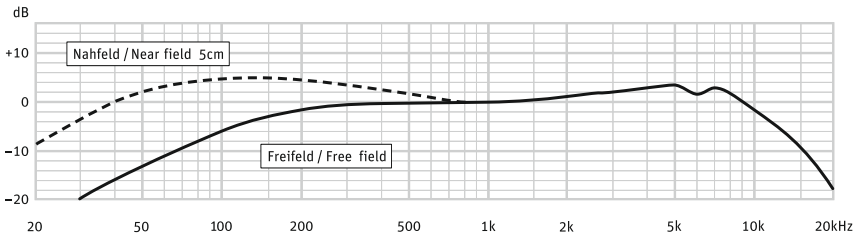
A complete survey and detailed descriptions of all accessories are contained in the accessories catalog

Meaning of color codes:
blk = black,
ni = nickel

Features

- *Dynamic capsule*
- *Hypercardioid directional characteristic*
- *Characteristic, functionally optimized design*
- *Integrated protection*
- *Integrated elastic suspension*
- *Individual headgrilles for different users*
- *Colored rings to identify the replacement headgrilles*
- *Easy removal and cleaning of microphone headgrille (with bayonet mount)*
- *Mechanical compatibility with standard studio boom arms*
- *Multi-level isolation from structure-borne noise*
- *No power supply required*





measured in free-field conditions (IEC 60268-4) into 10 kohms rated load impedance, tolerance ±2 dB

Technical Data

Acoustical operating principle	*Pressure gradient transducer*
Directional pattern	*Hypercardioid*
Frequency range	*20 Hz...20 kHz*
Sensitivity at 1 kHz into 10 kohm	*1.7 mV/Pa*
Rated impedance	*200 ohms*
Rated load impedance	*10 kohms*
Signal-to-noise ratio, CCIR[1] (rel. 94 dB SPL)	*62 dB*
Signal-to-noise ratio, A-weighted[1] (rel. 94 dB SPL)	*76 dB*
Equivalent noise level, CCIR[1]	*32 dB*
Equivalent noise level, A-weighted[1]	*18 dB-A*
Weight	*500 g*
Diameter	*64 mm*
Length	*85 mm*
Height (without suspension)	*110 mm*

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS

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Accessories

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List of contents (Arranged according to product lines)

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Elastic Suspension	EA 87 (mt)	❍	❍	❍	❍	❍	●	❍	❍	❍	❍	❍	●	❍	❍	Page 148
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Table Stand with Swivel Joint	MF-AK	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 149
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Stative, Fußbodenständer und Schwinggummi																
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Windschutz-Sets für Richtrohrmikrofone																
Windscreen	WKE 81 Set	○	○	○	○	○	○	○	○	○	●	●	○	○	○	Page 154
Windscreen	WKE 82 Set	○	○	○	○	○	○	○	○	○	○	○	●	○	○	Page 154
Windscreen	WKE 191 Set	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 154
Popscreens																
Popscreen	PS 15	●	●	●	○	○	●	●	●	●	○	○	○	○	○	Page 154
Popscreen	PS 20 a	●	●	●	○	○	○	○	○	○	○	○	○	○	○	Page 154
Foam Windscreens																
Windscreen	WNS 100	○	○	○	○	○	●	●	●	●	○	○	○	○	○	Page 155
Windscreen	WNS 110	○	○	○	○	○	●	●	●	●	○	○	○	○	○	Page 155
Windscreen	WNS 120	○	○	○	○	○	●	○	●	●	○	○	○	○	○	Page 155
Windscreen	WS 2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 155
Windscreen	WS 47	●	●	●	○	○	○	○	○	○	○	○	○	○	○	Page 155
Windscreen	WS 69	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 155
Windscreen	WS 81	○	○	○	○	○	○	○	○	○	●	●	○	○	○	Page 155
Windscreen	WS 82	○	○	○	○	○	○	○	○	○	○	○	●	○	○	Page 155
Windscreen	WS 87	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 156
Windscreen	WS 89	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 156
Windscreen	WS 100	○	○	○	○	○	●	●	●	●	○	○	○	○	○	Page 156
Windscreen	WS 191	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 156
Windscreen	WSB	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 156
Windscreen	WSS 100	○	○	○	●	○	○	○	○	○	○	○	○	●	●	Page 156
Speisegeräte und Matrixverstärker																
Battery Supply	BS 48 i	●	○	○	○	○	●	●	●	○	●	○	●	●	○	Page 157
Battery Supply	BS 48 i-2	●	○	○	○	○	●	●	●	○	●	○	●	●	○	Page 157
Matrix Amplifier	MTX 191 A	○	○	○	○	○	●	○	○	○	○	○	○	○	○	Page 157
Power Supply	N 149 A	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 158
Power Supply	N 248	●	○	○	○	○	●	●	●	○	●	○	●	●	○	Page 158
Connecting Cables																
Microphone Cable	IC 3 mt	●	●	●	○	○	●	●	●	●	●	●	●	●	●	Page 159
Microphone Cable	IC 4 (mt)	○	○	●	○	○	○	○	○	○	○	○	○	○	○	Page 159
Microphone Cable	IC 5 (mt)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 159
Microphone Cable	IC 6 (mt)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 159
Microphone Cable	IC 7	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 159
Microphone Cable	KT 5	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 159
Microphone Cable	KT 6	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 159
Microphone Cable	KT 8	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 159
Microphone Cable	LC 2	○	○	○	○	○	●	○	○	○	○	○	○	○	○	Page 160
Microphone Cable	LC 3 KA	○	○	○	○	○	●	○	○	○	○	○	○	○	○	Page 160
Microphone Cable	LC 4	○	○	○	○	○	○	○	●	●	○	○	○	○	○	Page 160
Adapter Cables																
Adapter Cable	AC 20	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 160
Adapter Cable	AC 21	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Page 160

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Swivel Joint	SG-AK	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 153
Stereo Mount	STH 100	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 153
Stereo Mount	STH 120	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 153
Windschutz-Sets für Richtrohrmikrofone																
Windscreen	WKE 81 Set	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 154
Windscreen	WKE 82 Set	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 154
Windscreen	WKE 191 Set	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 154
Popscreens																
Popscreen	PS 15	❍	●	●	●	●	●	●	●	●	●	●	●	●	●	Page 154
Popscreen	PS 20 a	❍	●	●	●	●	●	❍	●	●	●	●	●	●	●	Page 154
Foam Windscreens																
Windscreen	WNS 100	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 155
Windscreen	WNS 110	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 155
Windscreen	WNS 120	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 155
Windscreen	WS 2	❍	❍	❍	❍	❍	❍	●	❍	❍	❍	❍	❍	❍	❍	Page 155
Windscreen	WS 47	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 155
Windscreen	WS 69	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	●	Page 155
Windscreen	WS 81	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 155
Windscreen	WS 82	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 155
Windscreen	WS 87	❍	●	❍	❍	❍	●	❍	●	●	●	❍	●	❍	❍	Page 156
Windscreen	WS 89	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	●	❍	●	❍	Page 156
Windscreen	WS 100	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 156
Windscreen	WS 191	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 156
Windscreen	WSB	●	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 156
Windscreen	WSS 100	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 156
Speisegeräte und Matrixverstärker																
Battery Supply	BS 48 i	❍	❍	❍	❍	●	●	●	●	❍	●	●	●	●	❍	Page 157
Battery Supply	BS 48 i-2	❍	❍	❍	❍	●	●	●	●	❍	●	●	●	●	●	Page 157
Matrix Amplifier	MTX 191 A	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 157
Power Supply	N 149 A	❍	●	●	●	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 158
Power Supply	N 248	❍	❍	❍	❍	●	●	●	●	❍	●	●	●	●	●	Page 158
Connecting Cables																
Microphone Cable	IC 3 mt	❍	●	●	●	●	●	●	●	●	●	●	●	●	❍	Page 159
Microphone Cable	IC 4 (mt)	❍	❍	❍	❍	●	●	●	●	●	●	●	●	●	❍	Page 159
Microphone Cable	IC 5 (mt)	●	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	●	Page 159
Microphone Cable	IC 6 (mt)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	●	Page 159
Microphone Cable	IC 7	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 159
Microphone Cable	KT 5	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 159
Microphone Cable	KT 6	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 159
Microphone Cable	KT 8	❍	●	●	●	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 159
Microphone Cable	LC 2	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 160
Microphone Cable	LC 3 KA	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 160
Microphone Cable	LC 4	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 160
Adapter Cables																
Adapter Cable	AC 20	●	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	●	Page 160
Adapter Cable	AC 21	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 160

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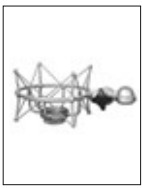
List of contents (Arranged according to product lines)

		KU 100	M 147 Tube	M 149 Tube	M 150 Tube	TLM 49	TLM 67	TLM 102	TLM 103	TLM 103 D	TLM 170 R	TLM 193	U 87 Ai	U 89 i	USM 69 i	
Adapter Cable	AC 22	❍	❍	❍	❍	●	●	●	●	❍	●	●	●	●	●	Page 160
Adapter Cable	AC 23	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 160
Adapter Cable	AC 25	❍	●	●	●	●	●	●	●	❍	●	●	●	●	●	Page 161
Adapter Cable	AC 26	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 161
Adapter Cable	AC 27	❍	❍	❍	❍	●	●	●	●	❍	●	●	●	●	●	Page 161
Adapter Cable	AC 28	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 161
Adapter Cable	AC 29	●	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 161
Adapter Cable	AC 30	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 161
Kabelmaterial für allgemeinen Gebrauch (K...)																Page 161
Aktive Kapseln für das Kleinmikrofon-System KM 100																
Active Capsule	AK 20	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 163
Active Capsule	AK 30	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 163
Active Capsule	AK 31	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 163
Active Capsule	AK 40	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 163
Active Capsule	AK 43	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 163
Active Capsule	AK 45	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 163
Active Capsule	AK 50	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 163
Kapselköpfe für das Kleinmikrofon-System KM D/KM A																
Capsule Head	KK 120 (nx)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 164
Capsule Head	KK 131 (nx)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 164
Capsule Head	KK 133 (nx)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 164
Capsule Head	KK 143 (nx)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 164
Capsule Head	KK 145 (nx)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 164
Capsule Head	KK 183 (nx)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 164
Capsule Head	KK 184 (nx)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 164
Capsule Head	KK 185 (nx)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 164
Digitales Mikrofon-Interface und Speisegeräte																
Digital Microphone Interface	DMI-2	❍	❍	❍	❍	❍	❍	❍	❍	●	❍	❍	❍	❍	❍	Page 165
Digital Microphone Interface	DMI-2 portable	❍	❍	❍	❍	❍	❍	❍	❍	●	❍	❍	❍	❍	❍	Page 165
Digital Microphone Interface	DMI-8	❍	❍	❍	❍	❍	❍	❍	❍	●	❍	❍	❍	❍	❍	Page 166
Connection Kit AES/EBU		❍	❍	❍	❍	❍	❍	❍	❍	●	❍	❍	❍	❍	❍	Page 167
Connection Kit S/PDIF		❍	❍	❍	❍	❍	❍	❍	❍	●	❍	❍	❍	❍	❍	Page 167
Kapselverlängerungen für KM 100-Serie (KVF...)		❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 167
Kapselverlängerungen für KM D/KM A-Serie (KVG...)		❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 168
Weiteres Zubehör für KM 100-Serie																
Cable Adapter	KA 100	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 168
Output Stage	KM 100	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 168
Weiteres Zubehör für KM D/KM A-Serie																
Output Stage	KM A (nx)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 169
Output Stage	KM D (nx)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 169
Sound Diffraction Sphere	SBK 130 A	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 169
Miscellaneous																
Headgrille	BCK	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 169
Pistonphone Adapter	PA 100	●	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	Page 169

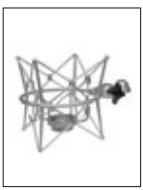
Elastic Suspensions



Elastic Suspension EA 1 (mt)

It has a swivel mount with a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

EA 1 ..... ni ..... Cat. No. 008449
EA 1 mt ..... blk ..... Cat. No. 008450



Elastic Suspension EA 2 (mt)

It has a swivel mount with a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

EA 2 ..... ni ..... Cat. No. 008432
EA 2 mt ..... blk ..... Cat. No. 008428

Elastic Suspension EA 4 (bk)

It has a swivel mount with a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

EA 4 ..... ni ..... Cat. No. 008641
EA 4 bk ..... blk ..... Cat. No. 008642

Elastic Suspension EA 87 (mt)

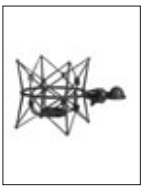
It has a swivel mount with a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

EA 87 ..... ni ..... Cat. No. 007297
EA 87 mt ..... blk ..... Cat. No. 007298

Elastic Suspension EA 89 A (mt)

It has a swivel mount with a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

EA 89 A ..... ni ..... Cat. No. 007195
EA 89 A mt ..... blk ..... Cat. No. 007196



Elastic Suspension EA 170 (mt)

It has a swivel mount with a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

EA 170 ..... ni ..... Cat. No. 007271
EA 170 mt ..... blk ..... Cat. No. 007273

Elastic Suspension EA 2124 A mt

The EA 2124 A mt is able to accept microphones from 21 to 24 mm in diameter. It has a swivel mount with a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

EA 2124 A mt ..... blk ..... Cat. No. 008433

Meaning of the color codes on the following pages: blk - black, ni - nickel, gr - gray, nx - nextel black

Table Stands, Table Flange

Table Stand MF 2

Small table stand with brass base, very sturdy. It has a black matte finish. The bottom is fitted with a non-slip rubber disk. The stand has a 1/2" threaded stud for mounting the SG 21 bk, for example. The rubber shock mount between the stud and the base serves to suppress structure-borne noise.
Ø 60 mm, Weight 340 g.

MF 2 ..... blk ..... Cat. No. 007266

Table Stand MF 3

The MF 3 is a table stand with iron base, 1.6 kg in weight, 110 mm in diameter. It has a black matte finish. The bottom is fitted with a non-slip rubber disk. The stand comes with a reversible stud and an adapter for 1/2" and 3/8" threads.

Stand extensions STV see page 5.

MF 3 ..... blk ..... Cat. No. 007321

MF-AK Table Stand with Swivel Joint

Small table stand with swivel joint, with 2.4 m cable, connecting directly to the active capsules of the KM 100 system. It is inserted between active capsule and KM 100 output stage. Cable outlets are sideways and on the underside. The MF-AK is fitted with a nonslip rubber disk.
Ø 60 mm, Weight 285 g.

MF-AK ..... blk ..... Cat. No. 008453

Table Flange TF 221 c

Table flange to mount components of the KM 100 system inconspicuously. It can be fastened under a tabletop or vertically to the edge of a stage allowing to hide other attachments, for example the SG 100 swivel mount. A KVF.. capsule extension, when clipped into the SG 100 is the only visible part above the hole in the table. The table flange comes with a connecting rubber piece for acoustic decoupling of the microphone from the mounting surface. 1/2" threaded stud. Flange-Ø 73 mm. 3 mounting holes, Ø 5.2 mm each.

TF 221 c ..... blk ..... Cat. No. 007278

Stands, Floor Stands and Shock Mount

Stand M 210/1

M 210/1 is a floor stand with boom attachment, weight 3.5 kg, nickel-plated. The height is adjustable between 0.9 m and 1.6 m, boom extends to 0.84 m. Stand and boom have a 3/8" threaded stud.

M 210/1 ..... ni ..... Cat. No. 007250

Boom Attachment M 212 c

M 212 c is a boom attachment designed for the floor stand M 214/1. Weight 4.3 kg. Boom extension is adjustable between 1.1 m and 1.8 m. Counterbalanced for heavy microphones; 3/8" threaded stud, 1/2" female thread. The boom is partly nickel-plated, partly black lacquered.

M 212 c ..... blk ..... Cat. No. 007251

Stand M 214/1

M 214/1 is a folding floor stand, weight 6 kg, heavy duty. The height is adjustable between 1.3 and 2.2 m, when folded 1.2 m. The stand is partly nickel-plated, partly black lacquered. It has a 1/2" threaded stud for mounting microphones or M 212 c boom attachment.

M 214/1 ..... blk ..... Cat. No. 007248

Stand M 252

M 252 is a folding floor stand with boom attachment. Weight 3.2 kg. The height is adjustable between 0.61 m and 1.55 m, when folded 0.56 m. The boom attachment extends from 0.46 m to 0.765 m. The floor stand and the boom attachment have a 3/8" threaded stud. Partly nickel-plated, partly black lacquered.

M 252 ..... blk/ni ... Cat. No. 007253

Stands, Floor Stands and Shock Mount

Floor Stand MF 4

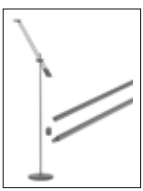
Floor stand with grey cast iron base. The floor stand has a matte black finish and rests on a non-skid rubber disk attached to the bottom. A reversible stud and a reducer for 1/2" and 3/8" threads are also supplied. Weight 2.6 kg, Ø 160 mm.

MF 4 ..... blk ..... Cat. No. 007337

Floor Stand MF 5

Floor stand with gray soft-touch powder coating. It has a non-skid sound-absorbing rubber disk attached to the bottom. The stand connection has a 3/8" thread. Weight 2.7 kg, Ø 250 mm.

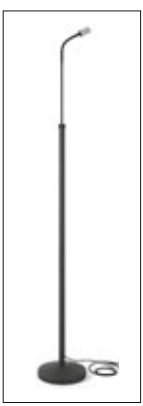
MF 5 ..... gr ..... Cat. No. 008489



Vertical Bar MZEF 8060/8120 (Sennheiser)

The MZEF ... vertical bars are screwed onto microphone stands (e.g. MF 4, MF 5). They have a length of 600 or 1200 mm, with 3/8" threads. Ø 12 mm.

MZEF 8060 ..... nx ..... Cat. No. 502318
MZEF 8120 ..... nx ..... Cat. No. 502319



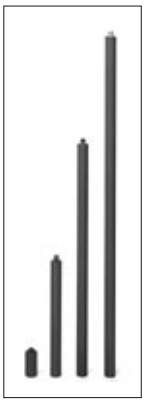
Stand Tube SR 100

The SR 100 is part of a floor stand designed for the KM 100 system, for example using a KM 140.

For connecting with the KM 100 output stage, a KA 100 cable adapter is necessary.

The stand consists of an MF 4 stand and a guide tube in which an inserted KVF 158 capsule extension (included in the supply schedule) glides and can be locked. The guide tube is 20 mm in diameter and 0.8 m in height. The height of the capsule can be adjusted between 0.95 and 1.45 m.

SR 100 ..... blk ..... Cat. No. 007336



Stand Extensions STV 4/20/40/60

The STV... stand extensions are screwed between microphone stands (for example MF 4, MF 5) and swivel mounts (for example SG 21 bk).

Length 40, 200, 400 or 600 mm.
Ø 19 mm.

STV 4 ..... blk ..... Cat. No. 006190
STV 20 ..... blk ..... Cat. No. 006187
STV 40 ..... blk ..... Cat. No. 006188
STV 60 ..... blk ..... Cat. No. 006189

Shock Mount Z 26 mt

The Z 26 rubber shock mount is inserted between the stand and the swivel mount to avoid the transmission of structure-borne noise. It has a 3/8" threaded stud and a 5/8"-27 female thread to attach to tripods. Included is a thread adapter for 1/2" and 3/8" studs.

Z 26 mt ..... blk ..... Cat. No. 006207

Goosenecks

Gooseneck SMK 100 KA

The SMK 100 KA for the KM 100 system is used to assemble particularly small table microphones, for example on an MF 2 table stand. The gooseneck is only 8 mm in diameter. It has a 5/8"-27 female thread, plus a thread adapter to connect to 1/2" and 3/8" stands. The cable is incorporated in the gooseneck and emerges at the rear. It terminates with a ring contact adapter fitting onto the KM 100 output stage. Gooseneck length 160 mm. Cable length 2.5 m.

SMK 100 KA ..... blk ..... Cat. No. 008413

Auditorium Hangers

Auditorium Hanger MNV 21 mt

The auditorium hanger adjusts the tilting angle of a microphone suspended by its own cable. The MNV 21 consists of the tilting clamp, suitable to hold a microphone, and a locking cable strain relief. Suitable for cables with 4–5 mm diameter.

MNV 21 mt ..... blk ..... Cat. No. 006802

Auditorium Hanger MNV 87 (mt)

The auditorium hanger consists of a cable suspension and a rotating 1/2" threaded stud, to connect to e. g. swivel mounts. The stud is screwed into the threaded coupling of the swivel mount. Then the microphone can be tilted while it is suspended from its own cable. Suitable for cables with 4–8 mm diameter.

MNV 87 ..... ni ..... Cat. No. 006804
MNV 87 mt ..... blk ..... Cat. No. 006806

Auditorium Hanger MNV 100

The MNV 100 auditorium hanger is used to suspend a detached miniature microphone capsule freely from its interconnecting cable. The assembly can be rotated and tilted to any desired angle. Suitable for cables with 3–3.5 mm diameter.

MNV 100 ..... blk ..... Cat. No. 006811

Stand Mounts and Miscellaneous Mechanical Adapters

Double Mount DS 100-1

Mount to attach two KVF.. capsule extensions of the KM 100 system onto a tripod. Especially suited for holding long KVF.. It is easy to arrange the capsule extensions in parallel or facing each other. The double mount has a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

DS 100-1 ..... blk ..... Cat. No. 008491

Double Mount DS 120

The DS 120 has a 150 mm long support bar with two movable 1/2" threaded studs. Two microphones in their mounts can be attached. Any space or angle between the microphones is freely adjustable. The DS 120 has a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

DS 120 ..... blk ..... Cat. No. 007343

Stand Mount MZGE 8000 (Sennheiser)

Stand mount to attach one KVG ... capsule extension to MZEF ... vertical bars.

MZGE 8000 ..... nx ..... Cat. No. 502324

Stand Mount MZGE 8002 (Sennheiser)

Stand mount to attach two KVG ... capsule extensions to MZEF ... vertical bars.

MZGE 8002 ..... nx ..... Cat. No. 502325

Stand Mount SG 2

The microphone mount of the SG 2 is made of metal. The SG 2 has a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

SG 2 ..... blk ..... Cat. No. 008636

Stand Mount SG 5

Swivel mount for microphones. On the microphone side it has a 3/8" male thread, on the stand side a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

SG 5 ..... blk ..... Cat. No. 008529

Stand Mount SG 21 bk

Swivel mount with a plastic clamp for miniature microphones. It has a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

SG 21 bk ..... blk ..... Cat. No. 008613

Stand Mount SG 100

Swivel mount to attach capsule extensions KVF ... of the variable KM 100 miniature microphone system to tripods. It has a 5/8"-27 thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

SG 100 ..... blk ..... Cat. No. 006688

Stand Mount SG 100-1

Mount to attach a KVF.. capsule extensions of the KM 100 system onto a tripod. Especially suited for holding long KVF.. It has a 5/8"-27 thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

SG 100-1 ..... blk ..... Cat. No. 008490

Stand Mount SG 105

Stand clamp for KMS vocalist microphones. The clamp can be swivelled and has a 5/8"-27 thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

SG 105 ..... blk ..... Cat. No. 008460

Stand Mounts and Miscellaneous Mechanical Adapters

Stand Mount SG 109

Swivel mount for detached miniature microphone capsules. It has a 3/8" thread.

SG 109 ..... blk ..... Cat. No. 008614

Swivel Joint SG 110 nx

The SG 110 nx swivel mount can be inserted between KK 1... capsules and the KM D output stage. The capsule can then be swiveled and orientated through ± 110°. In combination with an elastic suspension and a table flange, a mechanically decoupled, unobtrusive setup can be realised, e.g. for TV news announcers. Length 60 mm, Ø 22 mm.

SG 110 nx ..... nx ..... Cat. No. 008611

Stand Mount SG 287

The microphone mount of the SG 287 is made of metal. It has a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

SG 287 ..... blk ..... Cat. No. 008658

Stand Mount SG 289

The microphone mount of the SG 289 is made of metal. It has a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

SG 289 ..... blk ..... Cat. No. 008659

Stand Mount SGE 100

Swivel mount for detached miniature microphone capsules. A rubber shock mount suppresses structure-borne noise. The swivel mount has an M 6 thread (6 mm). Attaching the swivel mount to the MF 2 table stand, the SGE 100 replaces the rubber shock mount of the table stand.

SGE 100 ..... blk ..... Cat. No. 006742

Swivel Joint SG-AK

The SG-AK swivel mount can be inserted between active capsules and the output stage of the KM 100 system. The capsule can then be swiveled and orientated through 90°. In combination with an elastic suspension and a table flange, a mechanically decoupled, unobtrusive setup can be realised, e.g. for TV news announcers. Length 45 mm, Ø 22 mm.

SG-AK ..... blk ..... Cat. No. 008452

Stereo Mount STH 100

Stereo mount with a swivel mount and two holders, for two detached miniature microphone capsules. Two stereo recording methods are then possible.

One holder enables the microphone setup according to the “ORTF Method”: Two detached capsules are snapped into the clamps at the end of the holder. The distance between diaphragms is then 170 mm, with an angle of 110°.

The other pair of holders allows stereo setups according to the “Coincidence Method”: Capsules are installed acoustically at one point in space, however, freely adjustable to any angle between 30° and 180°.

The swivel mount has a 5/8"-27 thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

STH 100 ..... blk ..... Cat. No. 007315

Stereo Mount STH 120

The STH 120 stereo mount accepts two detached miniature microphone capsules, parallel and one above the other for MS stereo recordings. It is rotatable and swivelable. The swivel mount has a 5/8"-27 thread, plus a thread adapter to connect to 1/2"- and 3/8" stands.

STH 120 ..... blk ..... Cat. No. 008422

Windscreens Sets for Shotgun Microphones

When microphones are used in outdoor applications, with strong winds and vibrations, WKE... windscreen sets should be used for best performance. The windscreens will attenuate sound only in the uppermost frequency range. Wind noise attenuation was measured without electrical filtering in a turbulent air stream traveling at 20 km/h, generated by a noiseless wind machine.

Windscreen WKE 81 Set

For KMR 81 i and KMR 81 D. The elastic suspension, with pistol grip and boom pole connectors, can be used separately, or mounted inside the windscreen. For high winds the use of the textile cover, or the Windjammer™ fur is recommended. Clips for mic diameters 19-25 mm are included.

Wind noise attenuation (with Windjammer™) 24 (32) dB approx.
Attenuation at 15 kHz 2 (5) dB approx.
Ø 100 mm, length 450 mm.

WKE 81 Set ..... gr ..... **Cat. No. 539381**

Windscreen WKE 82 Set

For KMR 82i. The elastic suspension, with pistol grip and boom pole connectors, can be used separately, or mounted inside the windscreen. For high winds the use of the textile cover, or the Windjammer™ fur is recommended. Clips for mic diameters 19-25 mm are included.

Wind noise attenuation (with Windjammer™) 25 (33) dB approx.
Attenuation at 15 kHz 3 (9) dB approx.
Ø 100 mm, length 570 mm.

WKE 82 Set ..... gr ..... **Cat. No. 539382**

Image not yet available

Windscreen WKE 191 Set

For RSM 191. The elastic suspension, with pistol grip and boom pole connectors, can be used separately, or mounted inside the windscreen. For high winds the use of the textile cover, or the Windjammer™ fur is recommended. Clips for mic diameter 30 mm.

Wind noise attenuation (with Windjammer™) 24 (34) dB approx.
Attenuation at 15 kHz 2 (7) dB approx.
Ø 140 mm, length 390 mm.

WKE 191 Set ..... gr ..... **Cat. No. 539383**

Popscreens

Pop screens provide excellent suppression of so-called pop noise, such as “p” or “t”. They consist of a round, thin frame covered with black gauze on both sides. A gooseneck of about 30 cm (12") in length is mounted at the popshield. It will be attached to microphone stands by means of a clamp with a knurled screw.

Popscreen PS 15

The frame is 15 cm in diameter.

PS 15 ..... **blk** ..... **Cat. No. 008472**

Popscreen PS 20 a

The frame is 20 cm in diameter.

PS 20 a ..... **blk** ..... **Cat. No. 008488**

Foam Windscreens

Close range sounds, wind, and fast movements of the microphone boom, all may cause interfering noises. To avoid these unwanted sounds, windscreen accessories are available. Typically, they are made out of open-cell polyurethane foam. These windscreens do not cause interfering resonances and do not influence the directional pattern. Only in the upper frequency range is the output level slightly attenuated. The wind noise attenuation was measured without electrical filtering in a turbulent air stream traveling at 20 km/h, generated by a noiseless wind machine.

Windscreen WNS 100

Wind noise attenuation 18 dB.
Attenuation at 15 kHz 2 dB. Ø 45 mm.

WNS 100 ..... black ..... Cat. No. 007323
WNS 100 ..... red ..... Cat. No. 007324
WNS 100 ..... green ..... Cat. No. 007325
WNS 100 ..... yellow ... Cat. No. 007326
WNS 100 ..... blue ..... Cat. No. 007327
WNS 100 ..... white ..... Cat. No. 007328

Windscreen WNS 110

Acoustically transparent wind and pop protection with improved efficiency. Wind noise attenuation 21 dB. Attenuation at 15 kHz 1 dB. Ø 45 mm, length 70 mm. Color black.

WNS 110 ..... blk ..... Cat. No. 008535

Windscreen WNS 120

Wind noise attenuation 15 dB. Attenuation at 15 kHz 2 dB. Ø 48 mm, length 65 mm. Color black.

WNS 120 ..... blk ..... Cat. No. 008427

Windscreen WS 2

Wind noise attenuation 24 dB. Attenuation at 15 kHz approx. 2 dB. Ø 80 mm. Color black.

WS 2 ..... blk ..... Cat. No. 008637

Windscreen WS 47

Wind noise attenuation 22 dB. Attenuation at 15 kHz 3 dB. Ø 120 mm. Color black.

WS 47 ..... blk ..... Cat. No. 006826

Windscreen WS 69

Wind noise attenuation 20 dB. Attenuation at 15 kHz 3 dB. Ø 45 mm, length 70 mm. Color black.

WS 69 ..... blk ..... Cat. No. 006750

Windscreen WS 81

Wind noise attenuation 15 dB. Attenuation at 15 kHz 2 dB. Ø 50 mm, length 195 mm. Color black.

WS 81 ..... blk ..... Cat. No. 007268

Windscreen WS 82

Wind noise attenuation 15 dB. Attenuation at 15 kHz 2 dB. Ø 50 mm, length 350 mm. Color black.

WS 82 ..... blk ..... Cat. No. 007264

Foam Windscreens

Windscreen WS 87

Wind noise attenuation 26 dB. Attenuation at 15 kHz 3 dB. Ø 90 mm. Color black.

WS 87 ..... blk ..... Cat. No. 006753

Windscreen WSB

Wind noise attenuation 15 dB. Attenuation at 15 kHz approx. 3 dB. Ø 90 mm each. Color black.

WSB ..... blk ..... Cat. No. 007372

Windscreen WS 89

Wind noise attenuation 27 dB. Attenuation at 15 kHz approx. 3 dB. Ø 90 mm. Color black.

WS 89 ..... blk ..... Cat. No. 007197

Windscreen WSS 100

Wind noise attenuation 27 dB. Attenuation at 15 kHz 3 dB. Ø 90 mm.

WSS 100 ..... black ..... Cat. No. 007352
WSS 100 ..... red ..... Cat. No. 007353
WSS 100 ..... green ..... Cat. No. 007354
WSS 100 ..... yellow ... Cat. No. 007355
WSS 100 ..... blue ..... Cat. No. 007356
WSS 100 ..... white ..... Cat. No. 007357

Windscreen WS 100

Wind noise attenuation 23 dB. Attenuation at 15 kHz approx. 4 dB. Ø 90 mm. Color black.

WS 100 ..... blk ..... Cat. No. 006751

Windscreen WS 191

Wind noise attenuation 10 dB. Attenuation at 15 kHz 2 dB. Ø 58 mm, length 165 mm. Color black.

WS 191 ..... blk ..... Cat. No. 007292

Power Supplies and Matrix Amplifier

Battery Supply BS 48 i

The battery unit supplies one microphone with 48 V phantom powering (P48). The maximum supply current is 5 mA.

The audio output is dc-free. Therefore, no transformer is needed when connecting to unbalanced inputs. The cables couple to the BS 48 i through XLR 3 connectors.

Maximum length of operation depends on the type of battery and the current drain of the microphone. A microphone requiring e.g. 2 mA can be operated at least 20 hours with one alkaline battery.

Output voltage ..... 48 ± 1 Vdc
Maximum current output ..... 5 mA
Battery ..... IEC 6 F 22, 9 V
Weight ..... 270 g (without battery)
H x W x D ..... 37 x 80 x 102 mm

BS 48 i ..... blk ..... Cat. No. 006494

Battery Supply BS 48 i-2

The battery unit supplies one or two microphones with 48 V phantom powering (P48). The maximum current drain is 5 mA for each microphone. The audio outputs are dc-free. Therefore, no transformer is needed to connect to unbalanced inputs. The unit has two XLR 5 connections which can be split to XLR 3 connectors with AC 20 and AC 21 adapter cables.

Maximum length of operation depends on the type of battery and the current drain of the microphone. A microphone requiring e.g. 2 mA can be operated at least 20 hours with one alkaline battery.

Output voltage ..... 48 ± 1 Vdc
Maximum current output ..... 2 x 5 mA
Battery ..... IEC 6 F 22, 9 V
Weight ..... 310 g (without battery)
H x W x D ..... 37 x 80 x 102 mm

BS 48 i-2 ..... blk ..... Cat. No. 006496

Matrix Amplifier MTX 191 A (for RSM 191 and AK 20/40)

The MTX 191 A matrix amplifier is used for processing the MS microphone signals of the RSM 191 shotgun stereo microphone, or the active capsules AK 20 and AK 40. The level of the side signal is variable, independent of which output mode is selected (MS or XY). It is adjusted through a rotary switch in 3 dB steps from -9 dB to +6 dB, relative to the level of the middle signal. Consequently the pickup angle is varied in steps between 60° and 170°.

Depending on the position of the rotary switch on the front of the matrix amplifier the output provides either an MS- or XY-signal. The XY-signal is obtained from the MS-signal by summation (X = M + S) or subtraction (Y = M – S). In both modes an electric left-right-inversion is alternatively possible if during the recording the microphone is turned upside-down.

To suppress low frequent interfering noise the matrix amplifier has a switchable high-pass filter at 40(LIN)/80/200 Hz. The power for both matrix amplifier and microphone, is either supplied by a 9 V battery (IEC 6 F 22), or through external 48 V phantom powering.

The RSM 191 is connected with the 7-pin KT 5/KT 6 cables. Two AK... active capsules can be connected with an AC 30 cable. The audio is passed through a XLR 5 M connector. The output signal is DC-free. Use AC ... adapter cables to connect the audio to unbalanced inputs.

Operating voltage ..... 9 V or P48
Battery ..... IEC 6 F 22, 9 V
Side signal ..... variable –9 dB...+6 dB in 3 dB steps (pick-up angle 60°...170°)
Output ..... switchable MS or XY
High-pass filter ..... 40(LIN)/80/200 Hz
Weight ..... 390 g (without battery)
H x W x D ..... 37 x 80 x 145 mm

MTX 191 A ..... blk ..... Cat. No. 007331

Power Supplies and Matrix Amplifier

Power Supply N 149 A (for tube microphones)

The N 149 A power supply generates the necessary operating voltages for one tube microphone. It operates with all mains voltages from 100 V to 240 V, 50 or 60 Hz. Mains power is connected through a standard IEC 320 socket. The microphone connects via an DIN-8 connector. The microphone signal is fed to a XLR 3 M connector. The modulation output is balanced. The N 149 A supplies the bias voltages for the microphone capsule, the filament voltage controlled by a sensor circuit, and a further voltage to generate the plate voltage and other necessary operating voltages within the microphone itself. The unit produces constant current effecting a soft start of the tube. The KT 8 cable between microphone and power supply can be up to 100 m long. Modulation cable lengths up to approx. 300 m are allowed.

The three available versions of the N 149 A just differ in their enclosed mains power cable.

Mains voltage Euro ..... 230V/50 Hz
Mains voltage US ..... 117V/60 Hz
Mains voltage UK ..... 240V/50 Hz
Output voltages ..... for M 149 Tube
Power plug ..... Euro/US/UK
H x W x D ..... 90 x 100 x 145 mm
Weight approx. ..... 1.5 kg

N 149 A EU ..... blk ..... Cat. No. 008447
N 149 A US ..... blk ..... Cat. No. 008446
N 149 A UK ..... blk ..... Cat. No. 008448

(Remote Control) Power Supply N 248

The N 248 supplies one stereo microphone, or two mono condenser microphones with 48 V phantom power (P48). All connectors are of XLR 3 type. The audio signal outputs are DC-free. The 5 directional patterns of the TLM 170 R can be remote controlled with rotary switches. The remote control operates by varying the nominal phantom voltage of 48 V over a range of ± 3 V (patented). As in standard operation, cable lengths up to 300 m are permissible. Set to P48, all conventional microphones can be used as well. Even mixed operation is possible, with one channel remote controlling a TLM 170 R, while the second output supplies a conventional microphone.

Mains voltage Euro ..... 230V/50 Hz
Mains voltage US ..... 117V/60 Hz
Mains voltage UK ..... 240V/50 Hz
DC voltage input ..... 5...15 V
Power consumption ..... max. 3 VA
DC voltage output ..... 48 V ± 3 V each
Current output ..... max. 5 mA each
H x W x D ..... 38 x 143 x 103 mm
Weight ..... 415 g

N 248 ..... blk ..... Cat. No. 008537

Connecting Cables

Other cable lengths are available upon request! Cable material without connectors see corresponding section on the following pages. Even if very long (Neumann) cables are used, the electroacoustic characteristics of the microphone are not affected.Only with cable lengths well over 300 m a high-frequency roll-off is noticeable.

Microphone Cable IC 3 mt

Microphone cable with double twist (double helix) braiding as shield. Ø 5 mm, length 10 m. XLR 3 connectors, matte black.

IC 3 mt (10 m) ..... blk ..... Cat. No. 006543

Microphone Cable IC 7

Microphone cable with double twist (double helix) braiding as shield. Ø 5 mm, length 10 m. XLR 7 connectors. Extends KT 5/KT 6.

IC 7 (10 m) ..... ni ..... Cat.No. 006740

Microphone Cable IC 4 (mt)

Microphone cable with rotatable swivel mount for microphones with a thread, and double twist braiding as shield. It has a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands. Ø 5 mm, length 10 m. XLR 3 connectors.

IC 4 (10 m) ..... ni ..... Cat. No. 006547
IC 4 mt (10m) ..... blk ..... Cat. No. 006557

Microphone Cable KT 5

Cable with double twist (double helix) braiding as shield. Ø 5 mm, length 5 m. DIN 7 F and XLR 7 M connectors.

KT 5 (5 m) ..... blk ..... Cat. No. 006719

Microphone Cable IC 5 (mt)

Microphone cable with double twist (double helix) braiding as shield. Ø 5 mm, length 10 m. XLR 5 connectors.

IC 5 (10 m) ..... ni ..... Cat. No. 006623
IC 5 mt (10 m) ..... blk ..... Cat. No. 006624

Microphone Cable KT 6

Cable with rotatable swivel mount, and double twist braiding as shield. It has a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands. Ø 5 mm, length 10 m. DIN 7 F and XLR 7 M connectors.

KT 6 (10 m) ..... blk ..... Cat. No. 006725

Microphone Cable IC 6 (mt)

Microphone cable with rotatable swivel mount for microphones with a thread, and double twist braiding as shield. It has a 5/8"-27 female thread, plus a thread adapter to connect to 1/2"- and 3/8" stands. Ø 5 mm, length 10 m. XLR 5 connectors.

IC 6 (10 m) ..... ni ..... Cat. No. 006621
IC 6 mt (10 m) ..... blk ..... Cat. No. 006622

Microphone Cable KT 8

Cable with double twist (double helix) braiding as shield. Ø 5 mm, length 10 m. DIN 8 connectors.

KT 8 (10 m) ..... ni ..... Cat. No. 008407

Other cable lengths are available upon request!

Connecting Cables

Microphone Cable LC 2

Extension cable for older KM 100 accessories, with double twist braiding as shield. Extension for LC 3 microphone cable. Ø 3.5 mm, length 10 m. 3-pin Lemo connectors, matte black.

LC 2 (10 m) ..... blk ..... Cat. No. 006690

Microphone Cable LC 4

The LC 4 connects detached capsules KK 1.. with the KM D and KM A output stage. Ø 3.5 mm, length 5 or 10 m.

LC 4 (5 m) ..... nx ..... Cat. No. 008606
LC 4 (10 m) ..... nx ..... Cat. No. 008607

Microphone Cable LC 3 KA

The LC 3 KA connects active capsules AK... with the KM 100 output stage. Ø 3.5 mm, length 5 or 10 m.

LC 3 KA (5 m) ..... blk ..... Cat. No. 008408
LC 3 KA (10 m) ..... blk ..... Cat. No. 008409

Adapter Cables

Adapter Cable AC 20

Y-cable with one XLR 5 F connector and two XLR 3 Mconnectors. It is used to split two-channel signals into two mono channels, when using, for example, the BS 48 i-2 power supply.

AC 20 (1 m) ..... Cat. No. 006595

Adapter Cable AC 22

Adapter cable with XLR 5 F connector and unbalanced 3.5 mm stereo jack. It is used to connect the 5-pin XLR output of the BS 48 i-2 power supply or the MTX 191 A matrix amplifier to units with a 3.5 mm stereo input. It is designed for all microphones of the fet 80/100 series and KM 100 F, excluding the KM 100 and the GFM 132.

AC 22 (0.3 m) ..... Cat. No. 006598

Adapter Cable AC 21

Y-cable with one XLR 5 M connector and two XLR 3 F connectors. It is used to connect two mono microphones to power supplies with 5-pin connectors, when using, for example, BS 48 i-2 power supply.

AC 21 (1 m) ..... Cat. No. 006597

Adapter Cable AC 23

Adapter cable with XLR 5 F connector and unbalanced 3.5 mm stereo jack. It is used to connect 5-pin XLR outputs of the BS 48 i-2 power supplies to units with a 3.5 mm stereojack input. Designed only for the KM 100 output stage and the GFM 132 boundary-layer microphone.

AC 23 (0.3 m) ..... Cat. No. 006599

Other cable lengths are available upon request!

Adapter Cables

Adapter Cable AC 25

Adapter cable with XLR 3 F connector and unbalanced 6.3 mm mono jack. It is used to connect 3-pin XLR outputs of power supplies to units with a 6.3 mm monojack input. Designed for all microphones, excluding KM 100 System and GFM 132.

AC 25 (0.3 m) ..... Cat. No. 006600

Adapter Cable AC 26

Adapter cable with XLR 3 F connector and unbalanced 6.3 mm mono jack. It is used to connect XLR 3 outputs of power supplies to units with a 6.3 mm monojack input. Designed only for KM 100 System and GFM 132.

AC 26 (0.3 m) ..... Cat. No. 006601

Adapter Cable AC 27

Y-cable with XLR 5 F connector and two unbalanced 6.3 mm mono jacks. It is used to connect XLR 5 outputs of the BS 48 i-2 power supply or the MTX 191 A matrix amplifier to units with 6.3 mm monojack inputs. Designed for all microphones, excluding KM 100 System and GFM 132.

AC 27 (0.3 m) ..... Cat. No. 006602

Adapter Cable AC 28

Y-cable with XLR 5 F connector and two unbalanced 6.3 mm mono jacks. It is used to connect the XLR 5 output of the BS 48 i-2 power supply to units with 6.3 mm monojack inputs. Designed only for KM 100 System GFM 132.

AC 28 (0.3 m) ..... Cat. No. 006603

Adapter Cable AC 29

Y-cable with XLR 5 F connector and two unbalanced 6.3 mm mono jacks, with blocking condensers. It is used to connect the XLR 5 output of the MTX 191 (MTX 191 A see AC 27) matrix amplifier and KU 100 microphone to units with 6.3 mm monojack inputs.

AC 29 (0.3 m) ..... Cat. No. 006604

Adapter Cable AC 30

Y-cable, 5 m long, to connect two active capsules, e.g. AK 20 and AK 40 as MS stereo couple directly to the MTX 191(A) matrix amplifier. XY or MS signals are then available at the XLR 5 output connector of the MTX 191 (A). The recording angle is electrically remote controlled. KM 100 output stages are not required. Markings: yellow for channel 1 (cardioid), red for channel 2 (figure-8).

AC 30 (5 m) ..... Cat. No. 008418

Cable Material for General Use

Our cable material has been developed by Neumann and is exclusively produced for Neumann by highly qualified manufacturers. All microphone cables have a counter wound double helix copper shielding, assuring a particularly high degree of coverage (95%). HF rejection is exceptionally good, flexibility of the cable excellent. All prices on request.

Cable Material K 3 x 0,08

- 3 conductors 0.08 mm² copper wire 41 x 0.05 mm
- Insulation: special thermoplastic
- Shielding: 2 layers of counter wound bare copper wire
- Jacket: special PVC matte charcoal-gray and round
- Printing “Georg Neumann GmbH Berlin - Made in Germany”
- Overall diameter: 3.4 mm

Conductor resistance ..... < 240 ohm/km
Insulation resistance ..... > 20 Mohm x km
Capacitance core/core ..... 105 nF/km (1kHz)
Test voltage core/core ..... 1.2 kV
Test voltage core/shield ..... 0.6 kV
Temperature range ..... –20° to +70°C

K 3 x 0,08 ..... blk ..... Cat. No. 062728

Other cable lengths are available upon request!

Cable Material for General Use

Cable Material K 3 x 0,2

- 3 conductors 0.2 mm² copper wire 102 x 0.05 mm
- Insulation: special thermoplastic
- Shielding: 2 layers of counterwound bare copper wire
- Jacket: special pvc matte charcoal-gray and round
- Printing “Georg Neumann GmbH Berlin - Made in Germany”
- Overall diameter: 5.0 mm

Conductor resistance ..... < 96 ohms/km
Insulation resistance ..... > 20 Mohms x km
Capacitance core/core ..... 135 nF/km (1kHz)
Test voltage core/core ..... 1.2 kV
Test voltage core/shield ..... 0.6 kV
Temperature range ..... –20° to +70°C

K 3 x 0,2 ..... blk ..... Cat. No. 062700

Cable Material K 5 x 0,14

- 5 conductors 0.14 mm² copper wire 72 x 0.05 mm
- Insulation: special thermoplastic
- Shielding: 2 layers of counterwound bare copper wire
- Jacket: special pvc matte charcoal-gray and round
- Printing “Georg Neumann GmbH Berlin - Made in Germany”
- Overall diameter: 5.0 mm

Conductor resistance ..... < 138 ohms/km
Insulation resistance ..... > 20 Mohms x km
Capacitance core/core ..... 40 nF/km (1kHz)
Test voltage core/core ..... 1.2 kV
Test voltage core/shield ..... 0.6 kV
Temperature range ..... –20° to +70°C

K 5 x 0,14 ..... blk ..... Cat. No. 062707

Cable Material K 7 x 0,14

- 7 conductors 0.14 mm² copper wire 72 x 0.05 mm
- Insulation: special thermoplastic
- Shielding: 2 layers of counterwound bare copper wire
- Jacket: special pvc matte charcoal-gray and round
- Printing “Georg Neumann GmbH Berlin - Made in Germany”
- Overall diameter: 5.0 mm

Conductor resistance ..... < 138 ohms/km
Insulation resistance ..... > 20 Mohms x km
Capacitance core/core ..... 110 nF/km (1kHz)
Test voltage core/core ..... 1.2 kV
Test voltage core/shield ..... 0.6 kV
Temperature range ..... –20° to +70°C

K 7 x 0,14 ..... blk ..... Cat. No. 062729

Cable Material K 11

- 3 conductors 0.5 mm² copper wire 256 x 0.05 mm
- 8 conductors 0.14 mm² copper wire 72 x 0.05 mm
- Insulation: special thermoplastic
- Shielding: 2 layers of counterwound bare copper wire
- Jacket: special pvc matte charcoal-gray and round
- Printing “Georg Neumann GmbH Berlin - Made in Germany”
- Overall diameter: 7.5 mm

Conductor resistance
0.14 mm² ..... < 138 ohms/km
0.5 mm² ..... < 38 ohms/km
Insulation resistance ..... > 20 Mohms x km
Capacitance core/core ..... 95 nF/km (1kHz)
Test voltage core/core ..... 1.2 kV
Test voltage core/shield ..... 0.6 kV
Temperature range ..... –20° to +70°C

K 11 ..... blk ..... Cat. No. 062699

Material used for Individual Cables

IC 3 mt	K 3 x 0,2	IC 7	K 7 x 0,14	LC 2	K 3 x 0,08	AC 22	K 3 x 0,08	AC 27	K 3 x 0,2
IC 4 (mt)	K 3 x 0,2	KT 5	K 7 x 0,14	LC 3 KA	K 3 x 0,08	AC 23	K 3 x 0,08	AC 28	K 3 x 0,2
IC 5 (mt)	K 5 x 0,14	KT 6	K 7 x 0,14	AC 20	K 3 x 0,2	AC 25	K 3 x 0,2	AC 29	K 3 x 0,2
IC 6 (mt)	K 5 x 0,14	KT 8	K 7 x 0,14	AC 21	K 3 x 0,2	AC 26	K 3 x 0,2	AC 30	K 3 x 0,08 + K 7 x 0,14

Active Capsules for Miniature Microphone System KM 100

AK... active capsules are part of the variable miniature microphone system. Together with the KM 100 output stage, AK... active capsules form a complete microphone. AK 30 and KM 100, for example, make up the KM 130.

Active Capsule AK 20

AK 20 is a pressure gradient transducer with the figure-8 characteristic, realized with a single diaphragm. The diaphragm diameter is just 16 mm. All sound field components reach the diaphragm directly. This results in identical frequency response curves and output levels at 0° and 180° sound incidence. Corresponding accessories allow combining the AK 20 with other active capsules or microphones to obtain an MS-Stereo setup.

AK 20 ..... blk ..... Cat. No. 071659

Active Capsule AK 30

AK 30 is a diffuse-field equalized pressure transducer with a free-field treble boost (approx. 7 dB at 10 kHz). The frequency response in the diffuse sound field is flat up to 10 kHz.

AK 30 ..... blk ..... Cat. No. 069001

Active Capsule AK 31

AK 31 is a free-field equalized pressure transducer. The sensitivity in the free sound field is flat up to 20 kHz. In the diffuse sound field there is a roll-off above 5 kHz.

AK 31 ..... blk ..... Cat. No. 069002

Active Capsule AK 40

AK 40 is a pressure gradient transducer with cardioid characteristic. The frequency curves are very even and parallel to 0° sound incidence. Sound sources within a pickup angle of ± 135° are transmitted without coloration.

AK 40 ..... blk ..... Cat. No. 069007

Active Capsule AK 43

The AK 43 is a pressure gradient transducer with wide-angle cardioid characteristic. Attenuation: 4 dB at 90°, 8 dB at 135°, and 11 dB at 180°. The frequency response for sound sources within an angle of ± 90° (off axis) is parallel up to 12 kHz.

AK 43 ..... blk ..... Cat. No. 069014

Active Capsule AK 45

AK 45 is a pressure gradient transducer with cardioid characteristic just like the AK 40. However, it has an acoustic bass roll-off characteristic in the free field and therefore suppresses interfering LF noise (wind, structure-borne noise). Since proximity effect is a natural feature of pressure gradient microphones, the AK 45 appears to be optimized for a flat frequency response at a recording distance of approximately 15 cm (speech cardioid).

AK 45 ..... blk ..... Cat. No. 069015

Active Capsule AK 50

AK 50 is a pressure gradient transducer with a hypercardioid characteristic. Attenuation of sound incidence from the side or rear is approximately 10 dB. Minimum sensitivity occurs at an angle of about 120°.

AK 50 ..... blk ..... Cat. No. 069016

Capsule Heads for Miniature Microphone System KM D / KM A

KK... capsule heads are part of the variable miniature microphone system. Together with the KM D (nx) or KM A (nx) output stages, the KK... capsule heads form a complete microphone. KK 184 (nx) + KM D (nx) = KM 184 D (nx) or KK 184 (nx) + KM A (nx) = KM 184 A (nx).

Capsule Head KK 120 (nx)

KK 120 is a pressure gradient transducer with figure-8 characteristic, side-fire, realized with a single diaphragm. The diaphragm diameter is just 16 mm. All sound field components reach the diaphragm directly. This results in identical frequency response curves and output levels at 0° and 180° sound incidence. Corresponding accessories allow combining the KK 120 with other active capsules or microphones to obtain an MS-Stereo setup.

KK 120 ..... ni ..... Cat. No. 008589
KK 120 nx ..... nx ..... Cat. No. 008590

Capsule Head KK 145 (nx)

KK 145 is a pressure gradient transducer with cardioid characteristic just like the KK 184. However, it has an acoustic bass roll-off characteristic in the free field and therefore suppresses interfering LF noise (wind, structure-borne noise).
Since proximity effect is a natural feature of pressure gradient microphones, the KK 145 is optimized for a flat frequency response at a recording distance of approximately 15 cm (speech cardioid).

KK 145 ..... ni ..... Cat. No.008595
KK 145 nx ..... nx ..... Cat. No.008596

Capsule Head KK 131 (nx)

KK 131 is a free-field equalized pressure transducer. The sensitivity in the free sound field is flat up to 20 kHz. In the diffuse sound field there is a roll-off above 5 kHz.

KK 131 ..... ni ..... Cat. No. 008591
KK 131 nx ..... nx ..... Cat. No. 008592

Capsule Head KK 183 (nx)

KK 183 is a diffuse-field equalized pressure transducer with a free-field treble boost (approx. 7 dB at 10 kHz). The frequency response in the diffuse sound field is flat up to 10 kHz.

KK 183 ..... ni ..... Cat. No. 008566
KK 183 nx ..... nx ..... Cat. No. 008567

Capsule Head KK 133 (nx)

KK 133 is a diffuse-field equalized pressure transducer with a free-field treble boost (4–5 dB at 12 kHz). The detachable sound diffraction sphere provides a very smooth treble rise, associated with increasing directivity. The frequency response in the diffuse sound field is flat up to 12 kHz. The capsule is made of titanium.

KK 133 ..... ni ..... Cat. No. 8639
KK 133 nx ..... nx ..... Cat. No. 8640

Capsule Head KK 184 (nx)

KK 184 is a pressure gradient transducer with cardioid characteristic. The frequency curves are very even and parallel to 0° sound incidence. In typical usage, there is no coloration of sound over a wide pickup angle.

KK 184 ..... ni ..... Cat. No. 008568
KK 184 nx ..... nx ..... Cat. No. 008569

Capsule Head KK 143 (nx)

KK 143 is a pressure gradient transducer with wide-angle cardioid characteristic. Attenuation: 4 dB at 90°, 8 dB at 135°, and 11 dB at 180°. The frequency response for sound sources within an angle of ± 90° (off axis) is parallel up to 12 kHz.

KK 143 ..... ni ..... Cat. No. 008593
KK 143 nx ..... nx ..... Cat. No. 008594

Capsule Head KK 185 (nx)

KK 185 is a pressure gradient transducer with a hypercardioid characteristic. Attenuation of sound incidence from the side or rear is approximately 10 dB. Minimum sensitivity occurs at an angle of about 120°.

KK 185 ..... ni ..... Cat. No. 008570
KK 185 nx ..... nx ..... Cat. No. 008571

Digital Microphone Interfaces and Power Supplies

Digital Microphone Interface DMI-2

Equipment that supports the AES42 standard can process the output signals of Solution-D microphones directly. In all other cases, the DMI-2 or DMI-8 digital microphone interface is used. The DMIs convert the AES42 data format supplied by the microphone into an AES/EBU signal.

The Interface is operated via the Neumann RCS remote control software, which is installed on a desktop or laptop computer. The computer is connected to the DMI via a USB port and a USB to RS 485 interface converter. If a large number of microphones is used, several DMIs can be cascaded. In this case, each digital microphone interface can be addressed individually.

In addition to a word clock input and output, the DMIs also have an internal word clock generator. If no master word clock signal (e.g. from a mixing console) is present at the input, the DMI internal word clock is used automatically to synchronize the microphone channels, and the signal is switched to the word clock output.

External commands such as „On Air“ (red light) can be controlled via a 9-pin user port.

2 channels,
Inputs: XLR3F, AES42
Outputs: ..... XLR3M, AES/EBU, 24 bit

Control Bus: ..... RS 485 via RJ 45 jack, second RJ 45 jack for cascading purposes (up to 4 DMI devices today, 16 devices in future), connection to the computer's USB port via Neumann USB 485 interface converter (included)

User Port: ..... 9-pin sub-D, 3 functions per channel

Synchronization: ..... AES42 - Mode 2 (PLL system using an external Word Clock and remote controlling the VCXO in the microphone, default mode), AES42 - Mode 1, (asynchronous, needs a sample rate converter (SRC) at the receiver side)

Word clock input: ..... BNC, 75 ohms.
Word clock output: ..... BNC, 75 ohms, automatically set to the internal word clock master when no external word clock received. Selectable internal sampling rates: 44.1, 48, 88.2, 96, 176.4, 192 kHz.

External Word clock: ..... 44.1, 48, 88.2, 96, 176.4, 192 kHz or AES 11 format.

Indicators: ..... Data Valid (AES42) and Sync Locked (Mode 2) for each channel, Power On and Ext. Word Clock

Power supply: ..... 90-240 V, 50/60 Hz.

Storage of the last microphone settings and reloading to the microphones after power on automatically without the need of the computer/RCS.

DMI-2 EU ..... Cat. No. 008561
DMI-2 UK ..... Cat. No. 008587
DMI-2 US ..... Cat. No. 008588

Digital Microphone Interface DMI-2 portable

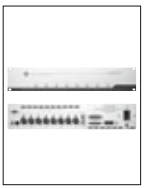
The DMI-2 portable is the ideal digital microphone interface solution for ENG and other field recording applications.

It supports two digital microphones and allows adjustment of the Gain, Pre Attenuation and Low Cut filter settings at the device The front panel display shows the selected gain and, by means of bar graphs, shows the current signal level and any gain reduction. Of course, these functions can also be operated via the RCS software. Microphone presets can be stored inside the DMI-2 portable and recalled for use in the field.

Dimensions: ..... 186 x 44 x 126 mm
Indicators: ..... Monochrome display, bargraphs for gain, level and gain reduction, LEDs for Power, Battery status, Synchronization and Valid
Power supply: ..... 2x DC 10...18 V (Hirose), External mains
Ports: ..... 2x AES42 IN (XLR 3F), 1x AES/EBU OUT (XLR3M), 2x Word Clock IN/OUT (BNC), 1x Remote Control (USB)

DMI-2 portable ..... Cat. No. 542400

Digital Microphone Interfaces and Power Supplies



Digital Microphone Interface DMI-8

Equipment that supports the AES42 standard can process the output signals of Solution-D microphones directly. In all other cases, the DMI-2 or DMI-8 digital microphone interface is used. The DMIs convert the AES42 data format supplied by the microphone into an AES/EBU signal.

The Interface is operated via the Neumann RCS remote control software, which is installed on a desktop or laptop computer. The computer is connected to the DMI via a USB port and a USB to RS 485 interface converter. If a large number of microphones is used, several DMIs can be cascaded. In this case, each digital microphone interface can be addressed individually.

In addition to a word clock input and output, the DMIs also have an internal word clock generator. If no master word clock signal (e.g. from a mixing console) is present at the input, the DMI internal word clock is used automatically to synchronize the microphone channels, and the signal is switched to the word clock output.

External commands such as „On Air“ (red light) can be controlled via a 9-pin user port.

The DMI-8 offers several possibilities for easy integration into audio networks. The ES100 module permits integration into EtherSound networks.

8 channels,
AES42 Inputs: ..... XLR3F (Audio data in accordance with AES/EBU (AES3) data format), Digital phantom power (DPP), Remote control data

Outputs: ..... AES/EBU (AES3) data format (2x SUB-D25, Yamaha® and Tascam® pinout), ADAT® (1x Toslink, up to 48 kHz), GN format (1x RJ 45), Word Clock (AES11), 2x BNC, CTL Bus (RS 485), 2x RJ 45 ports, User Port (9-pin SUB-D)

Microphone synchronization: ..... AES42 – Mode 2 (synchronous mode) Microphone clock control via PLL

DMI-8 synchronization ..... automatically to an external word clock or AES11 signal, if present, otherwise the internal word clock generator is activated

Word clock (or AES11) input ..... BNC, Vin ..... >100 mV at 75 ohms
Word clock (or AES11) output ..... BNC, Vout = Vin (external synchronization) Vout ..... approx. 1.5 V at 75 ohms (internal word clock generator)

Internal word clock generator: ..... 44.1 / 48 / 88.2 / 96 / 176.4 / 192 kHz

Control Bus: ..... 2 x RJ 45 ports; connection to computer USB port via the Neumann USB 485 interface converter; connected in parallel for the purpose of cascading. RS 485 with additional power-out pin (approx. +11.3 V, max. 500 mA)

User Port: ..... 9-pin SUB-D, 1 switch function per channel (Mute and/or Light 1/ Light 2 selectable)

Control elements: ..... 8x CHANNEL SELECT, GAIN +/–

Indicators: ..... Power, Ext Word Clock, Valid, Level (microphone)

Power supply: ..... 90 V to 240 V, 50/60 Hz.

Storage of the last microphone settings and reloading to the microphones after power on automatically without the need of the computer/RCS.

DMI-8 EU ..... Cat. No. 533130
DMI-8 UK ..... Cat. No. 533132
DMI-8 US ..... Cat. No. 533131
ES100 (DMI-8) ..... Cat. No. 539398
DMI-8 Connection set ..... Cat. No. 533126
(USB cable, RJ 45 patch cable, USB 485 converter)

Digital Microphone Interfaces and Power Supplies

Connection Kit AES/EBU

The Connection Kits serve to supply power to digital microphones, which are in accordance with the AES42 standard. The microphone audio signal is made available at the Connection Kit output in S/PDIF or AES/EBU format, depending upon the model.

The remote control and synchronization capabilities of the AES42 standard cannot be used with the Connection Kit; they are operable only with the DMI-2 or DMI-8 digital microphone interface.

Connection Kit AES/EBU ..... Cat. No. 008584

Connection Kit S/PDIF

The Connection Kits serve to supply power to digital microphones, which are in accordance with the AES42 standard. The microphone audio signal is made available at the Connection Kit output in S/PDIF or AES/EBU format, depending upon the model.

The remote control and synchronization capabilities of the AES42 standard cannot be used with the Connection Kit; they are operable only with the DMI-2 or DMI-8 digital microphone interface.

Connection Kit S/PDIF ..... Cat. No. 008585

Capsule Extensions for Miniature Microphone System KM 100

Any KVF... capsule extension allows to use the active capsules separated from the output stage without the need for additional cables. The rigid part of the capsule extension is 6.5 mm in diameter, the flexible gooseneck has a diameter of 8 mm. Special length on request.

Capsule Extension KVF 118 KA

The extended length of the KVF 118 KA is approximately 300 mm. Cable length: 2.2 m.

Mounted on SG 100(-1)/DS 100.

KVF 118 KA ..... blk ..... Cat. No. 008410

Capsule Extension KVFF 148 KA

The extended length of the KVFF 148 KA is approximately 570 mm. It differs from the KVF 118/158 KA by providing a second flexible section of approximately 100 mm at about the middle of the rigid section. Cable length: 1.9 m.

Mounted on SG 100(-1)/DS 100.

KVFF 148 KA ..... blk ..... Cat. No. 008412

Capsule Extension KVF 158 KA

The extended length of the KVF 158 KA is approx. 700 mm. Cable length: 1.8 m.

Mounted on SG 100(-1)/DS 100.

KVF 158 KA ..... blk ..... Cat. No. 008411

Capsule Extensions for Miniature Microphone System KM D / KM A

Any KVG ... capsule extension allows to use the KK 1... capsules separated from the output stage without the need for additional cables. The rigid part of the capsule extension is 8 mm in diameter.

At the capsule end, the swivel can be set through ± 110°. The KVG ... are mounted with MZGE 8000 or 8002 on MZEF ... vertical bars. Special lengths on request.

Capsule Extension KVG 130 nx

The extended length of the KVG 130 nx is approximately 300 mm.

KVG 130 nx ..... nx ..... Cat. No. 008608

Capsule Extension KVG 1120 nx

The extended length of the KVG 1120 nx is approximately 1200 mm.

KVG 1120 nx ..... nx ..... Cat. No. 008610

Capsule Extension KVG 160 nx

The extended length of the KVG 160 nx is approximately 600 mm.

KVG 160 nx ..... nx ..... Cat. No. 008609

Further Accessories for Miniature Microphone System KM 100

Cable Adapter KA 100

The current KM 100 system accessories connect directly to the output stages. For older accessories, ending with a 3-pin LEMO plug, the redesigned KA 100 cable adapter connects these accessories to the KM 100 (F) output stages. Length: 0.5 m.

KA 100 ..... blk ..... Cat. No. 007330

Output Stage KM 100

The KM 100 output stage is part of the variable KM 100 miniature microphone system. Together with an AK ... active capsule it constitutes a complete microphone of the KM 100 system. Ø 22 mm, length 63 mm.

KM 100 ..... blk ..... Cat. No. 007395

Further Accessories for Miniature Microphone System KM D / KM A

Output Stage KM A (nx)

The analog KM A (nx) microphone output stage is part of the modular KM A miniature microphone system. Together with a KK 1.. capsule head it constitutes a complete microphone of the KM A system.
Ø 22 mm, length 93 mm.

KM A ..... ni ..... Cat. No. 008634
KM A nx ..... nx ..... Cat. No. 008635

Sound Diffraction Sphere SBK 130 A

The SBK 130 A sound diffraction sphere slips onto the KM 130, KM 131 (A/D) and KM 183 (A/D) pressure microphones. While sounds coming from the front-half space are emphasized by up to 2.5 dB between 2 kHz and 10 kHz, sounds arriving from the rear-half space are attenuated by 2.5 dB max in the range above 5 kHz. Inner Ø 22 mm.

SBK 130 A, 22 mm blk ..... Cat. No. 008612

Output Stage KM D (nx)

The digital KM D (nx) microphone output stage is part of the modular KM D miniature microphone system. Together with a KK 1.. capsule head it constitutes a complete microphone of the KM D system. Preset frequencies 44.1, 48 and 96 kHz, other frequencies on demand.
Ø 22 mm, length 93 mm.

KM D (44.1 kHz) ..... ni ..... Cat. No. 008578
KM D nx (44.1 kHz) .. nx .... Cat. No. 008581
KM D (48 kHz) ..... ni .... Cat. No. 008579
KM D nx (48 kHz) ..... nx .... Cat. No. 008582
KM D (96 kHz) ..... ni ..... Cat. No. 008580
KM D nx (96 kHz) ..... nx .... Cat. No. 008583

Miscellaneous

Headgrille BCK

Replacement Headgrille with 5 rings of different colors. Additional headgrilles enable each microphone user at the broadcasting facility to use his or her own individual headgrille. The improved hygiene ensures a more comfortable working environment at the studio.

BCK ..... ni ..... Cat. No. 008520

Pistonphone Adapter PA 100

The pistonphone adapter allows to attach a calibration tool for any 1" measuring microphone (for example a Brüel & Kjaer 4228 or 4230) to each ear channel stud of the KU 100 dummy head. Each ear system can be calibrated separately.

PA 100 ..... blk ..... Cat. No. 006199

List of contents (In alphabetical order)

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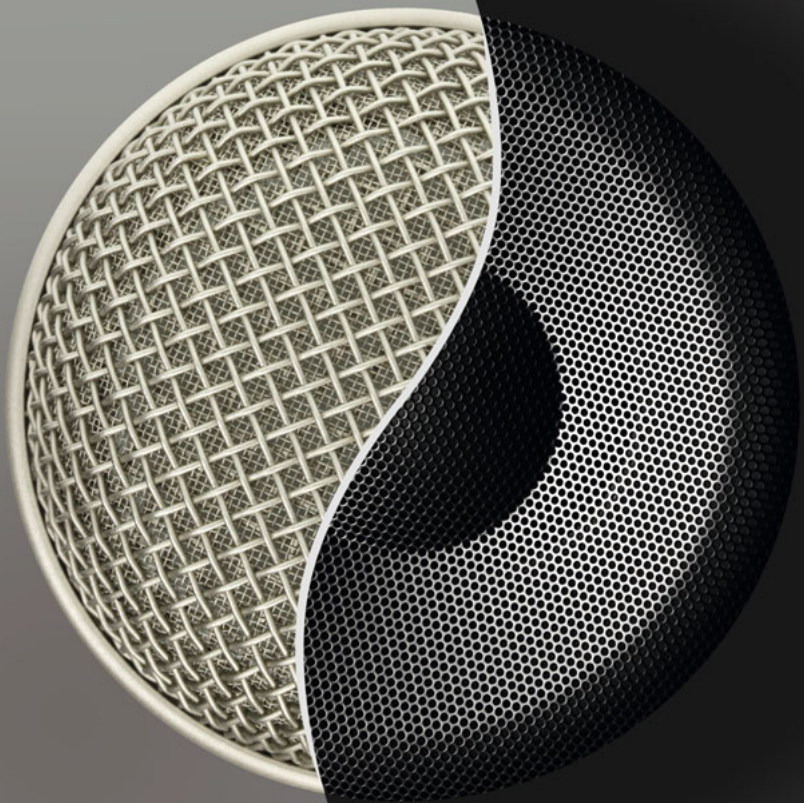

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