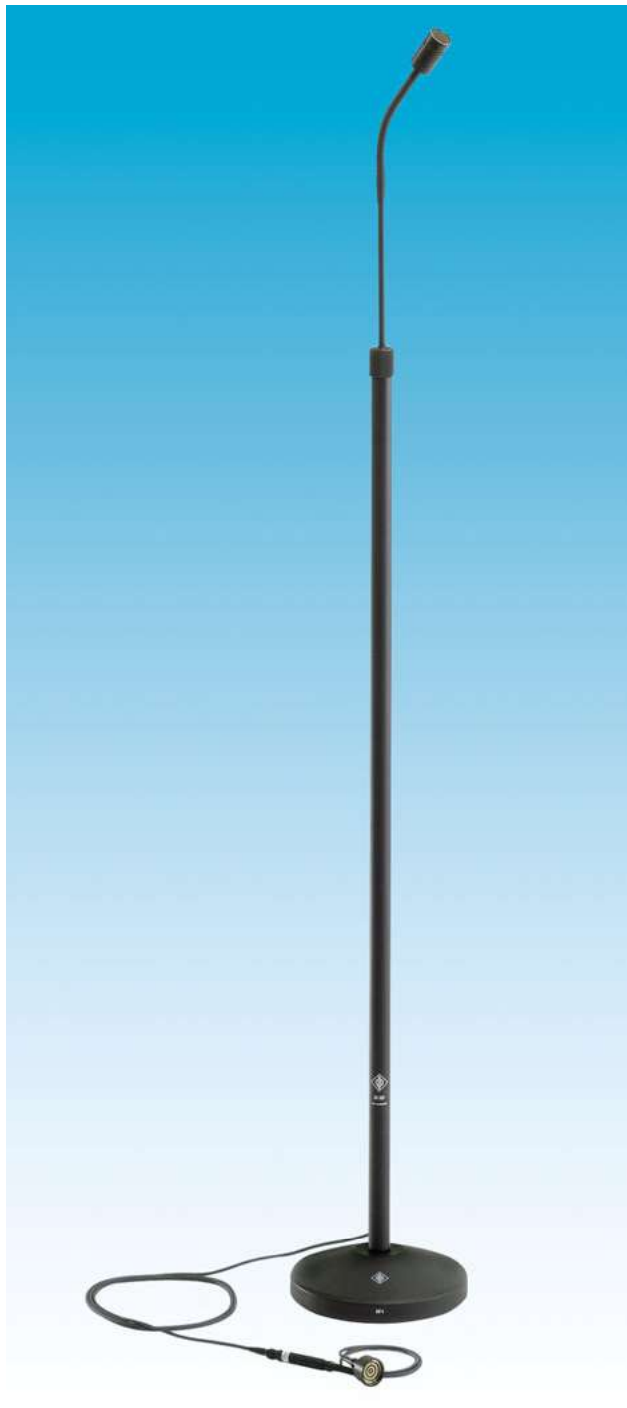


KM 100

► **Miniature
Microphone System**



www.neumann.com



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 clamp
- Transformerless circuitry
- Extensive accessories

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.



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 $\pm 135^\circ$ 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 $\pm 90^\circ$ 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 cm² 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 microphones 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



KVFF 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

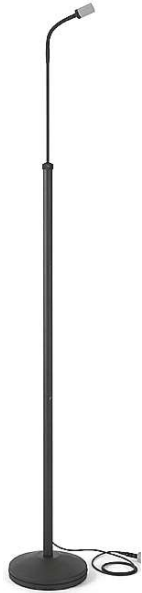


TF 221 c, Table flange
(with rubber mounted thread)
Catalog No.: 007278

*) 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, Windscreens, 45 mm
black, Cat. No.: 007323
red, Cat. No.: 007324
green, Cat. No.: 007325
yellow, Cat. No.: 007326
blue, Cat. No.: 007327



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



WS 100, Windscreens, 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, Windscreens
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 windscreen 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

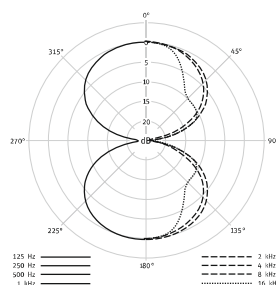
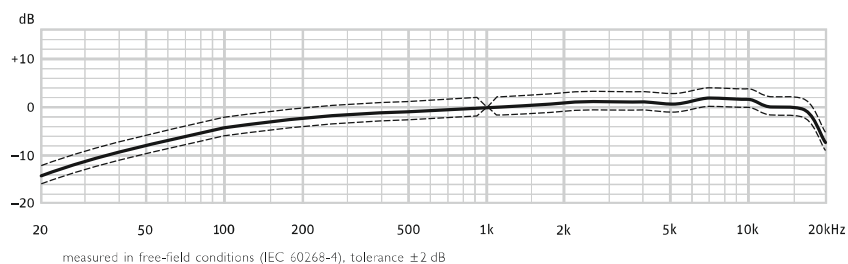
1x Microphone each KM 120 and KM 140
 2x Connecting cables LC 3 KA
 1x Stereo mount STH 120, Wooden box

Catalog No.

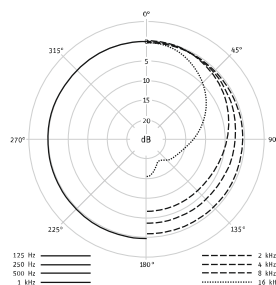
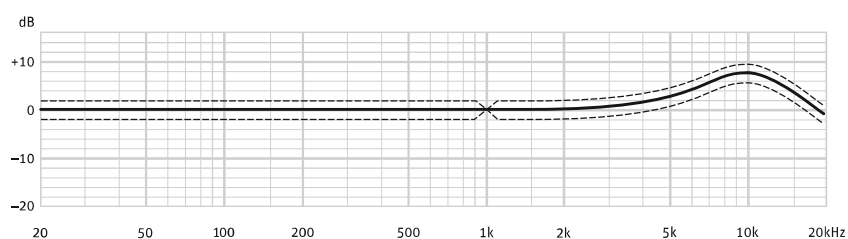
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KM 143	 blk	007109
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KM 150	 blk	007077
SKM 140	 blk	007094
SKM 150	 blk	007099
SKM 100-MS	 blk	008421



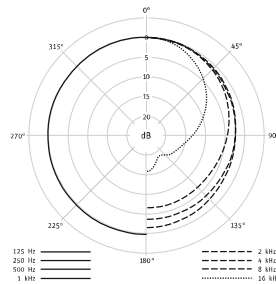
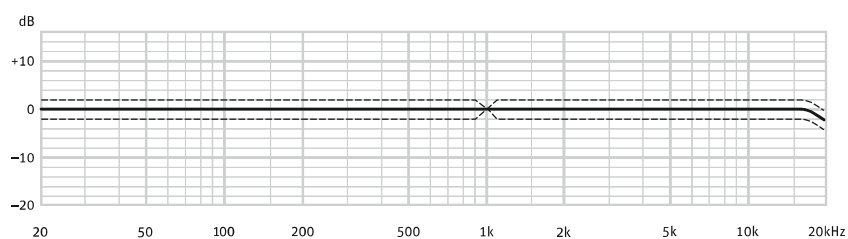
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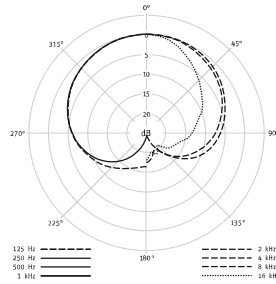
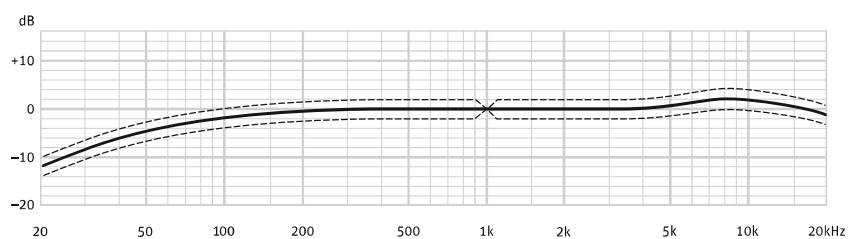
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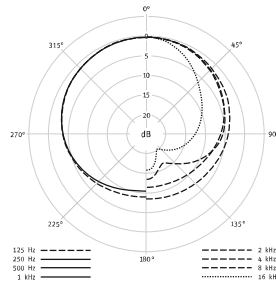
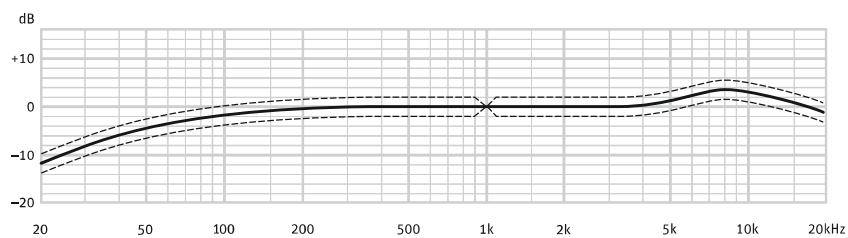
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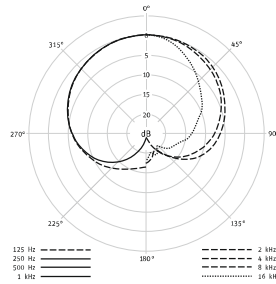
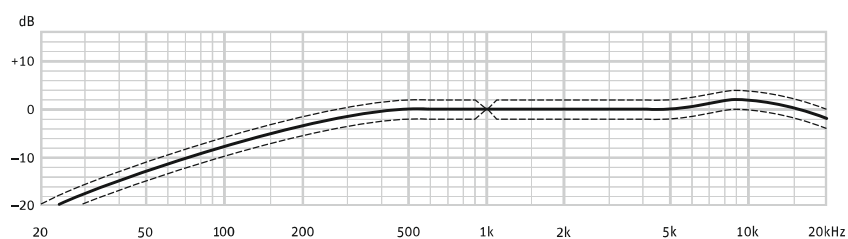
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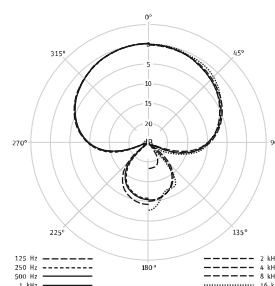
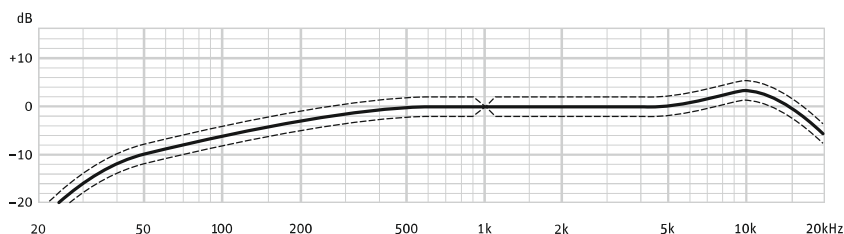
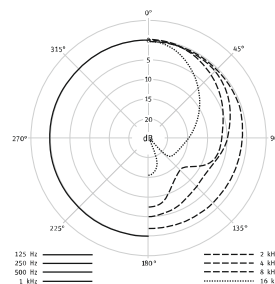
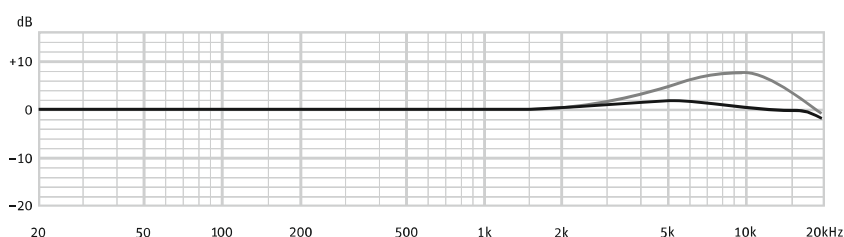


KM 143



KM 145



KM 150**KM 130 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. Pressure Pressure Press. grad. Press. grad. Press. grad. Press. grad.
transducer transducer transducer transducer transducer transducer transducer transducer

Directional pattern Side-fire Omni Omni Cardioid Cardioid Cardioid Hyper-
figure-8 diffuse field free field wide angle low frequency cardioid
equalized equalized roll-off

Frequency range 20 Hz to 20 Hz to 20 Hz to 20 Hz to 20 Hz to 20 Hz to 20 Hz to 20 Hz to
20 kHz 20 kHz 20 kHz 20 kHz 20 kHz 20 kHz 20 kHz 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

CCIR¹⁾ (rel. 94 dB SPL) 68 dB 67 dB 69 dB 69 dB 69 dB 68 dB 67 dB

A-weighted¹⁾ (rel. 94 dB SPL) 76.5 dB 78 dB 78 dB 78 dB 78 dB 77 dB 76 dB

Equivalent noise level, CCIR¹⁾ 26 dB 27 dB 25 dB 25 dB 25 dB 26 dB 27 dB

Equivalent noise level, A-weighted¹⁾ 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 preatt²⁾ 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 according to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS

²⁾ measured as equivalent el. input signal

