

Product Information

U 87 Ai

**Large Diaphragm
Microphone**





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.



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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)
Wooden box

Catalog No.

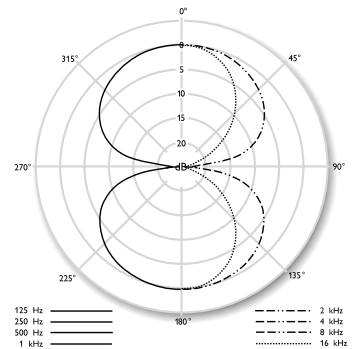
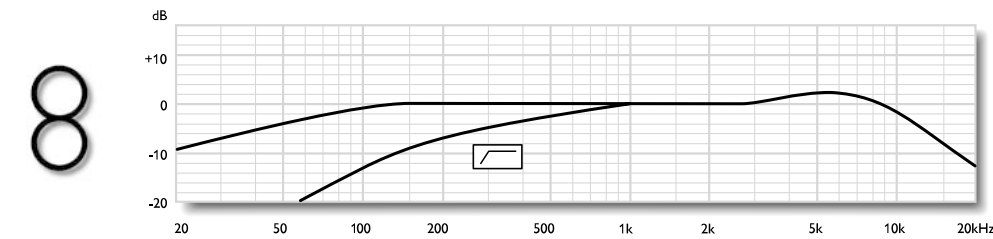
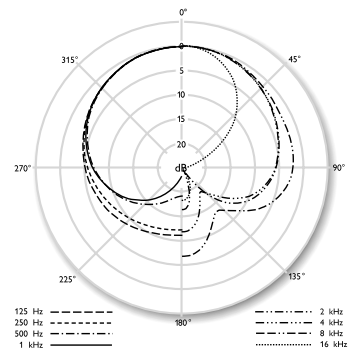
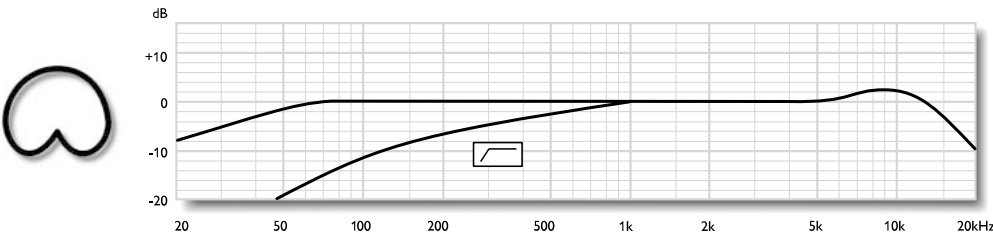
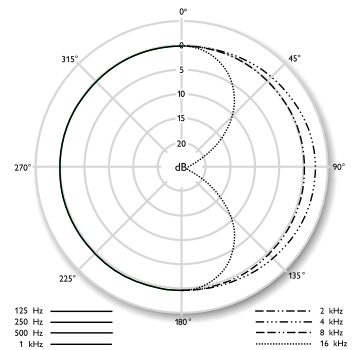
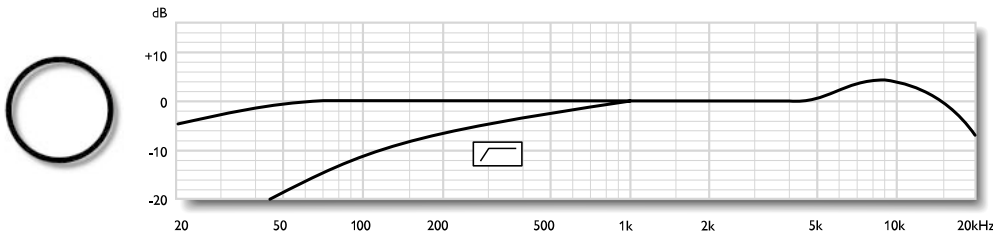
U 87 Ai ni 07022
U 87 Ai mt blk 07023

Selection of Accessories

Battery supply, BS 48 i blk 06494
Power supply, N 48 I-2 (230 V) blk 06500
Power supply, N 48 I-2 (117 V) blk 06502
Power supply, N 48 I-2
(without plug-in mains unit) blk 06504
Auditorium hanger, MNV 87 ni 06804
Auditorium hanger, MNV 87 mt blk 06806
Elastic suspension, EA 87 ni 07297
Elastic suspension, EA 87 mt blk 07298
Stand mount swivel, SG 367 mt blk 06145
Popscreen, PS 20 blk 07346
Windscreen, WS 87 blk 06753
Microphone cable, IC 4 mt
(with stand mount swivel) blk 06557

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

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*
 Rated impedance 200 ohms
 Rated load impedance 1000 ohms
 Equivalent SPL CCIR 486-3 26/23/25 dB*
 Equivalent SPL DIN/IEC 651 15/12/14 dB-A*
 S/N ratio CCIR 486-3 68/71/69 dB*
 S/N ratio DIN/IEC 651 79/82/80 dB*
 Maximum SPL for THD 0.5% 117 dB (cardioid)

Maximum SPL for THD 0.5% with preattenuation 127 dB
 Maximum output voltage 390 mV
 Dynamic range of the microphone amplifier DIN/IEC 651 105 dB
 Supply voltage 48 V ± 4 V
 Current consumption 0.8 mA
 Matching connector XLR3F
 Weight 500 g
 Diameter 56 mm
 Length 200 mm

* Omni-directional / cardioid / figure-8