

# Product Information

## **U 89 i**

**Large Diaphragm  
Microphone**



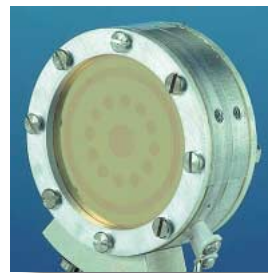


## Features

- 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 10 dB pre-attenuation
- Extended frequency range in comparison to U 87 Ai

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  $\pm 100^\circ$ .

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.

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This characteristic is achieved without resorting to corrective resonance effects.

The capsule 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 ..... 06449  
U 89 i mt ..... blk ..... 06450

### 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 89 A ..... ni ..... 07195  
Elastic suspension, EA 89 A mt ..... blk ..... 07196  
Stand mount swivel, SG 389 mt ..... blk ..... 06620  
Popscreen, PS 20 ..... blk ..... 07346  
Windscreen, WS 89 ..... blk ..... 07197  
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

### 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  
Equivalent SPL CCIR 468-3 ..... 28 dB  
Equivalent SPL DIN/IEC 651 ..... 17 dB-A  
S/N ratio CCIR 468-3 ..... 66 dB  
S/N ratio DIN/IEC 651 ..... 77 dB

Maximum SPL for THD 0.5% ..... 134 dB  
Maximum SPL for THD 0.5% with preattenuation ..... 140 dB  
Maximum output voltage ..... 800 mV  
Dynamic range of the microphone amplifier DIN/IEC 651 ..... 117 dB  
Supply voltage ..... 48 V  $\pm$  4 V  
Current consumption ..... 0.8 mA  
Matching connector ..... XLR 3F  
Weight ..... 400 g  
Diameter ..... 46 mm  
Length ..... 185 mm

