

Product Information

USM 69 i **SM 69 fet**

Stereo Microphones





The SM 69 fet and USM 69 stereo microphones each have 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 SM 69 fet and USM 69 condenser stereo microphones are studio microphones for intensity stereo recording. The microphones are suitable for XY and MS recordings. The construction of the capsules is the same in both microphones. Therefore, the acoustic features of the transducers are identical. The only difference is the method of switching the polar patterns and the way the microphones are connected to the system.

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.

Features

- Switchable stereo microphones
- 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 reproducibly switchable, omni, wide angle cardioid, cardioid, hypercardioid, figure-8

USM 69 i SM 69 fet

Stereo Microphones

Polar patterns SM 69 fet

In addition to the usual directional polar patterns: omnidirectional, cardioid, and figure-8, we have added six intermediate positions.

The narrower characteristics suppress sound from the side more efficiently, while the wide-angle polar patterns are especially useful to record large sound sources.

The directional patterns are selected remotely from the power supply unit. Two rotary switches are used to switch between nine different polar patterns for each system.

The rotary switches are marked in color and numbered corresponding to the respective microphone capsule.

The NS 69 i power supply unit is available for AC mains supply.

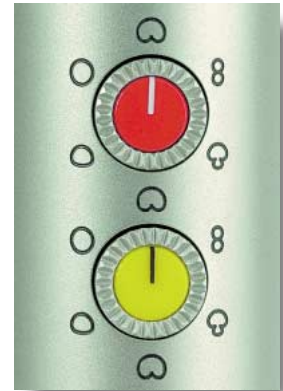


capsules can be selected at the microphone itself. Therefore, no special AC power supply units or powering adapters are necessary.

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.



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.

Polar patterns USM 69 i

As a major difference, when compared with the SM 69 fet, the USM 69 has two built-in rotary switches. The five polar patterns of both

Technical Data

SM 69 fet

USM 69 i

Acoustical operating principle	Pressure gradient transducer	Pressure gradient transducer
Directional pattern	Omnidirectional, cardioid, figure-8 with 6 intermediary positions	Omnidirectional, wide angle cardioid, cardioid, hypercardioid, figure-8
Frequency range	20 Hz..20 kHz	20 Hz..20 kHz
Sensitivity at 1 kHz into 1 kohm	19 mV/Pa	13 mV/Pa
Rated impedance	200 ohms	150 ohms
Rated load impedance	1000 ohms	1000 ohms
Equivalent SPL CCIR 468-3	24 dB	24 dB
Equivalent SPL DIN/IEC 651	13 dB-A	13 dB-A
S/N ratio CCIR 468-3	70 dB	70 dB
S/N ratio DIN/IEC 651	81 dB	81 dB
Maximum SPL for THD 0.5%	123 dB	132 dB
Maximum output voltage	532 mV	1100 mV
Dynamic range of the microphone amplifier DIN/IEC 651	110 dB	119 dB
Supply voltage	48 V ± 4 V	48 V ± 4 V
Current consumption	2 x 0.6 mA	2 x 0.7 mA
Matching connector	DIN 12 F	XLR 5F
Weight	465 g	510 g
Diameter	30 + 48 mm	30 + 48 mm
Length	260 mm	293 mm

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 backup, 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,
 - interviews,
 - features

only for SM 69 fet:

- During recordings when the mic is in a location where it is difficult to change polar patterns, for example, suspended from a ceiling.

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

Delivery Range SM 69 fet

Microphone SM 69 fet (mt)

Delivery Range USM 69 i

Microphone USM 69 i (mt)

Catalog No.

SM 69 fet	ni	06410
SM 69 fet mt.....	blk	06412
USM 69 i	ni	06974
USM 69 i mt.....	blk	06976

Selection of Accessories

Battery supply, BS 48 i-2	blk	06496
Auditorium hanger, MNV 87	ni	06804
Auditorium hanger, MNV 87 mt	blk	06806
Elastic suspension, EA 30 A	ni	06346
Elastic suspension, EA 30 A mt	blk	06347
Windscreen, WS 69	blk	06750

only for SM 69 fet:

Power supply, NS 69 i (230 V)	gr	06464
Power supply, NS 69 i (117 V)	gr	06465
Microphone cable, SC 1 mt	blk	06512
Microphone cable, SC 6 (with stand mount swivel)	ni	06507
Microphone cable, SC 6 mt (with stand mount swivel)	blk	06508

only for USM 69 i:

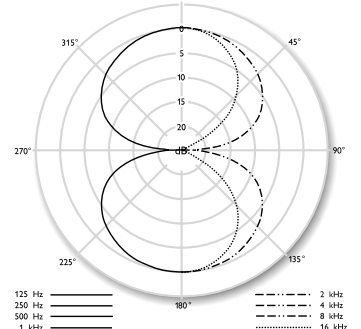
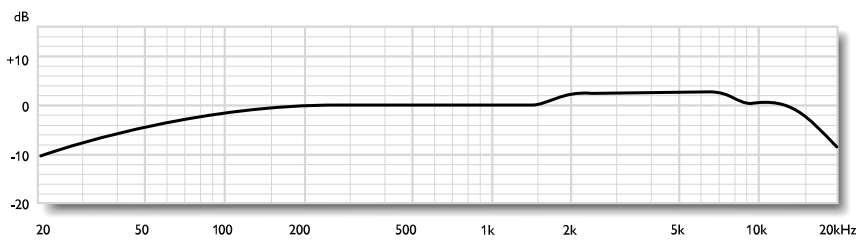
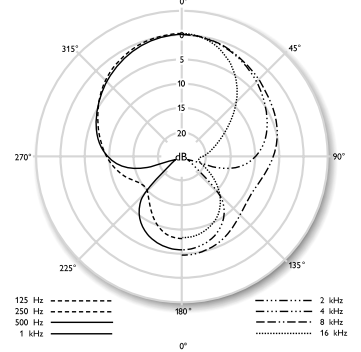
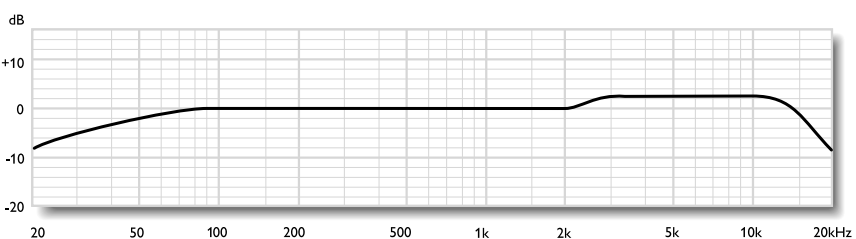
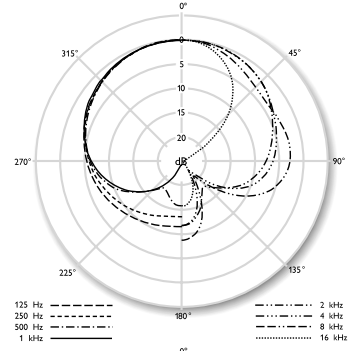
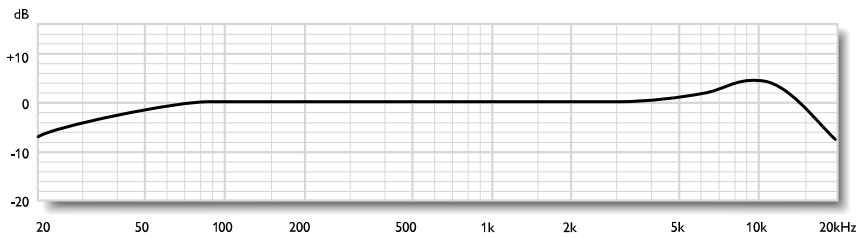
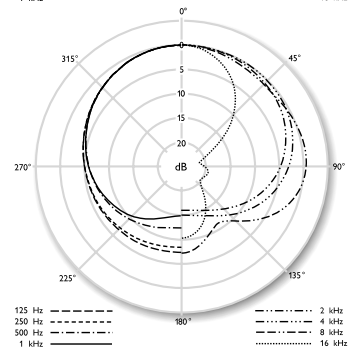
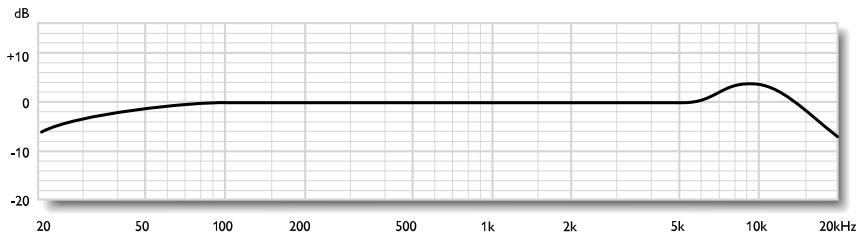
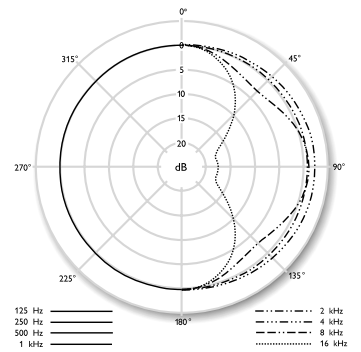
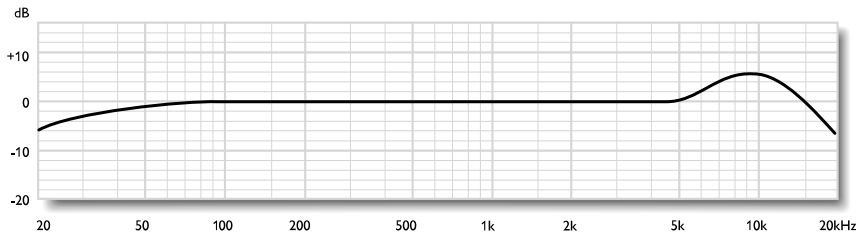
Power supply, N 48 I-2 (230 V)	blk	06500
Power supply, N 48 I-2 (117 V)	blk	06502
Power supply, N 48 I-2 (without plug-in mains unit)	blk	06504
Microphone cable, IC 5	blk	06623
Microphone cable, IC 5 mt	blk	06624
Microphone cable, IC 6 (with stand mount swivel)	ni	06621
Microphone cable, IC 6 mt (with stand mount swivel)	blk	06622

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

Meaning of color codes:
blk = black
ni = nickel
gr = grey

USM 69 i SM 69 fet

Stereo Microphones



125 Hz ————
250 Hz - - - - -
500 Hz - · - · -
1 kHz ————

2 kHz - · - · -
4 kHz - - - - -
8 kHz - · - · -
16 kHz - · - · -

125 Hz - - - - -
250 Hz - · - · -
500 Hz - - - - -
1 kHz ————

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