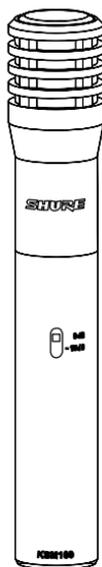


# User Guide

## KSM109



**SHURE INCORPORATED**  
**KSM109 CARDIOID CONDENSER MICROPHONE**



**Thank you for selecting the KSM109**

Over 75 years of audio experience has contributed to making the KSM109 one of the finest microphones available.

If you have any questions not answered in this booklet, please contact Shure Applications Engineering at 847-866-2525, Monday through Friday, from 8:00 am to 4:30 pm, CST. In Europe, call 49-7131-72140. Our web address is [www.shure.com](http://www.shure.com).

0/15 dB  
Attenuation Switch



FIGURE 1. THE KSM109

## GENERAL DESCRIPTION

The Shure® KSM109 is an end-address condenser microphone with a cardioid polar pattern. Designed for studio use, yet rugged enough for live applications, the KSM109 delivers a clear reproduction of the original sound source. Its extended frequency response makes it ideal for recording musical instruments.

## FEATURES

- *Cardioid polar pattern to reduce the pickup of unwanted sounds*
- *Ultra-thin, 2.5  $\mu\text{m}$ , 24 karat gold-layered, low mass Mylar® diaphragm for superior transient response*
- *Class A, discrete, transformerless preamplifier for transparency, extremely fast transient response, no crossover distortion, and minimal harmonic and intermodulation distortion*
- *Premium electronic components, including gold-plated internal and external connectors*
- *Two-position switchable pad (0 dB and 15 dB) for handling extremely high sound pressure levels (SPLs)*

## PERFORMANCE CHARACTERISTICS

- *Extended frequency response*
- *Low self-noise*
- *Can withstand high sound pressure levels (SPLs)*
- *High output level*
- *No crossover distortion*
- *Uniform polar response*
- *Superior common mode rejection and suppression of RFI (radio frequency interference)*

## APPLICATIONS

The KSM109 will produce superior results in any application requiring a high quality microphone. Typical applications include:

- *Close miking of acoustic instruments such as piano, guitar, violins, drums, and percussion*
- *Overhead miking of drums and percussion instruments*
- *Electric guitar amplifiers*
- *Brass and woodwind instruments*
- *Orchestras, choirs, and wind ensembles*

**Note:** Sound quality is strongly affected by microphone location and room acoustics. To achieve the best overall sound for a particular application, it may be necessary to experiment with microphone placement and room treatments .

## USING THE KSM109

### Mounting the Microphone

To secure the KSM109 to a floor stand or boom, thread the mount onto the microphone stand and insert the microphone into the mount.

### Power Requirements

The KSM109 requires phantom power and performs best with a 48 Vdc supply (IEC-268-15/DIN 45 596). It can operate on voltages as low as 11 Vdc, but headroom and sensitivity will be decreased slightly.

**Note:** Most modern mixers provide phantom power.

### Cable Connections

Use a cable with XLR connectors at each end.

### Load Impedance

Shure recommends a load impedance of at least 1000  $\Omega$ . When used with modern microphone preamplifiers rated at about 2500  $\Omega$ , the KSM109 provides higher maximum SPL capability and output clipping level. When the attenuation switch is set to the -15 dB position, the KSM109 can handle up to 165 dB SPL, and can output +15 dBV into a load of 5000  $\Omega$  or greater.

### Setting Attenuation

The attenuation switch on the KSM109 lets you reduce the signal level by up to 15 dB without altering frequency response. This can prevent extremely loud sounds from overloading the microphone. Set the switch to the desired attenuation levels as follows:

**0 dB** – Move the switch to this position for “quiet” to “normal” sound levels.

**-15 dB** – Move the switch to this position when the microphone is approximately 0.75 meters (2 feet) from sound sources such as a snare drum, or electric guitar cabinet.

## SPECIFICATIONS

<b>Cartridge Type</b>	Permanently Biased Condenser
<b>Frequency Response</b>	20–20,000 Hz (see Figure 2)
<b>Directional Polar Pattern</b>	Cardioid (see Figure 3)
<b>Output Impedance</b>	150 $\Omega$ (actual)
<b>Attenuation Switch</b>	0 dB or 15 dB attenuation
<b>Phantom Power</b>	48 Vdc $\pm$ 4 Vdc (IEC–268–15/DIN 45 596), positive pins 2 and 3
<b>Current Drain</b>	5.2 mA typical at 48 Vdc
<b>Common Mode Rejection</b>	$\geq$ 50 dB, 20 Hz to 20 kHz
<b>Polarity</b>	Positive pressure on diaphragm produces positive voltage on output pin 2 relative to pin 3
<b>Dimensions and Weight</b>	24 mm (0.950 in.) diameter, 162 mm (6.375 in.) long; 195 grams (6.9 oz.) (see Figure 4)
<b>Sensitivity (typical, at 1000 Hz; 1 Pa = 94 dB SPL)</b>	–41 dBV/Pa
<b>Self-noise (typical, equivalent SPL; A-weighted (IEC 651))</b>	19 dB
<b>Maximum SPL@ 1000 Hz</b>	
<b>5000 <math>\Omega</math> load (Attenuator on)</b>	150 (165) dB
<b>2500 <math>\Omega</math> load (Attenuator on)</b>	144 (159) dB
<b>1000 <math>\Omega</math> load (Attenuator on)</b>	139 (154) dB
<b>Output Clipping Level*</b>	
<b>5000 <math>\Omega</math> load</b>	15 dBV
<b>2500 <math>\Omega</math> load</b>	9 dBV
<b>1000 <math>\Omega</math> load</b>	3 dBV
<b>Dynamic Range (Attenuator on)</b>	
<b>5000 <math>\Omega</math> load</b>	133 (136) dB
<b>2500 <math>\Omega</math> load</b>	128 (130) dB
<b>1000 <math>\Omega</math> load</b>	122 (125) dB
<b>Signal to Noise Ratio**</b>	75 dB

\*20 Hz to 20 kHz; THD < 1%. THD of the microphone preamplifier when applied input signal is equivalent to the cartridge output at specified SPL.

\*\*S/N ratio is the difference between 94 dB SPL and equivalent SPL of self-noise A-weighted.

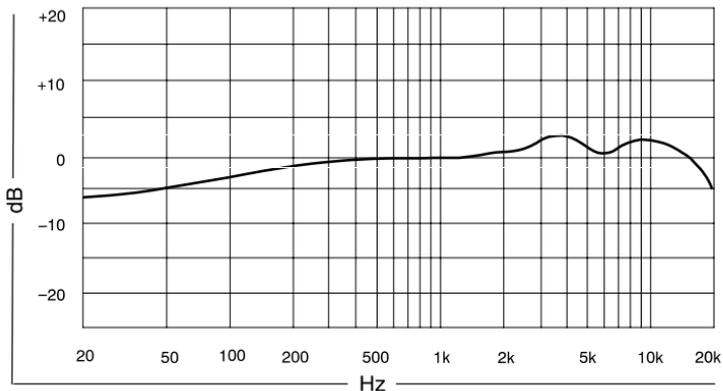


FIGURE 2. TYPICAL FREQUENCY RESPONSE

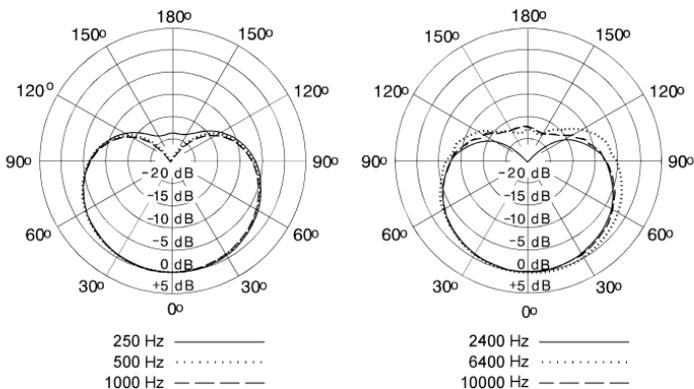


FIGURE 3. TYPICAL POLAR PATTERNS

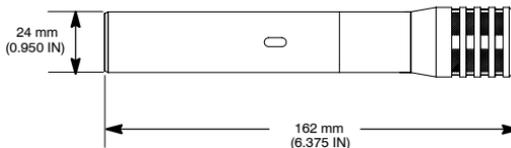


FIGURE 4. DIMENSIONS

## CERTIFICATION

Eligible to bear CE Marking; Conforms to European EMC directive 89/336/EEC. Meets applicable tests and performance criteria found in European Professional Audio Products EMC Standard EN 55103 (1996); Part 1 (Emissions) and Part 2 (Immunity). The KSM109 is intended for use in environments E1 (residential) and E2 (Light Industrial) as defined in European standard EN 55103. EMC conformance is based on the use of shielded interconnecting cable.

## FURNISHED ACCESSORIES

Vinyl Pouch .....	A109ZB
Windscreen .....	A3WS
Microphone Clip .....	A25D

## OPTIONAL ACCESSORIES

SHOCKSTOPPER™ Shock Mount .....	A55M, A55HM
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## SERVICE

For additional microphone service or parts information, please contact the Shure Service Department at 1-800-516-2525. Outside the United States, please contact your Authorized Shure Service Center.