

### MODEL SM81 UNIDIRECTIONAL CONDENSER MICROPHONE



#### OVERVIEW

The Shure Model SM81 is a high-quality, unidirectional condenser microphone designed for studio recording, broadcasting, and sound reinforcement. Its wide frequency response, low noise characteristics, and low RF susceptibility have made it a standard for applications involving acoustic instruments, especially guitar, piano, and cymbals.

#### FEATURES

- 20 Hz to 20 kHz frequency response
- Flat response curve for accurate reproduction of sound sources
- Low noise and high output clipping level
- Low distortion over a wide range of load impedances
- Cardioid polar pattern, uniform with frequency and symmetric about axis, providing maximum rejection and minimum coloration of off-axis sounds

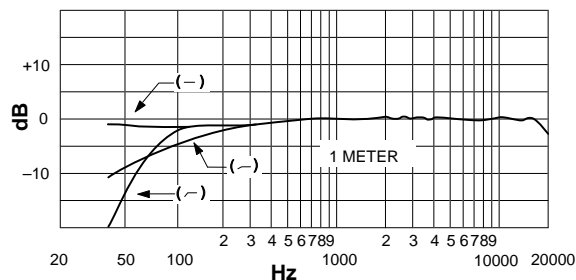
#### SPECIFICATIONS

##### Type

Condenser (electret bias)

##### Frequency Response

20 to 20,000 Hz



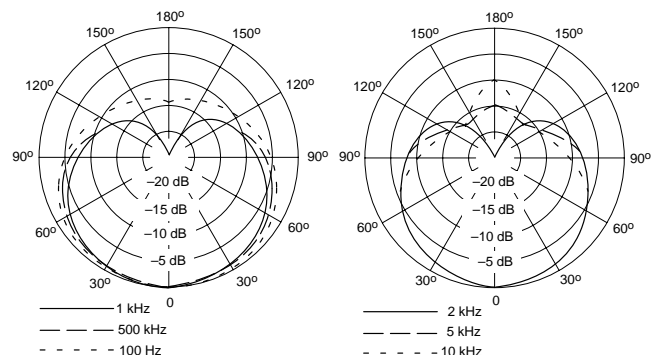
TYPICAL FREQUENCY RESPONSE

The SM81 is ruggedly constructed. It operates on phantom power and performs over a wide range of temperatures and humidity conditions. It is furnished with a swivel adapter, attenuator-switch lock, foam windscreen, and case for carrying and storage. Other accessories are available.

- Low RF susceptibility
- Selectable low-frequency response: flat, 6 or 18 dB/octave rolloff
- 0 dB/10 dB lockable attenuator switch
- Phantom powering (DIN 45 596 voltages of 12 to 48 Vdc)
- Rugged steel construction for durability
- Field-usable over wide range of temperature and humidity conditions

##### Polar Pattern

Cardioid (unidirectional) response—uniform with frequency, symmetrical about axis (see Figure NO TAG)



TYPICAL POLAR PATTERNS

**Output Impedance**

Rated at 150 ohms (85  $\Omega$  actual)  
 Recommended minimum load impedance: 800  $\Omega$  (May be used with loads as low as 150  $\Omega$  with reduced clipping level)

**Output Configuration and Connector**

Balanced, transformer-coupled output; male XLR connector

**Sensitivity (at 1,000 Hz)**

Open Circuit Voltage ..... -45 dBV/Pascal (5.6 mV)  
 (1 Pascal = 94 dB SPL)

**Clipping Level (at 1,000 Hz)**

800  $\Omega$  Load ..... -4 dBV (0.63 V)  
 150  $\Omega$  Load ..... -15 dBV (0.18 V)

**Total Harmonic Distortion**

Less than 0.5% (131 dB SPL at 250 Hz into 800  $\Omega$  load)

**Maximum SPL (at 1,000 Hz)**

800  $\Omega$  load ..... 136 dB (attenuator at 0)  
 ..... 146 dB (attenuator at -10)  
 150  $\Omega$  load ..... 128 dB (attenuator at 0)  
 ..... 138 dB (attenuator at -10)

**Hum Pickup**

-3 dB equivalent SPL in a 1 mOe field (60 Hz)

**Self-Noise** (equivalent sound pressure levels; measured with true rms voltmeter)

16 dB typical, A-weighted  
 19 dB typical, weighted per DIN 45 405

**Signal-to-Noise Ratio**

78 dB (IEC 651)\* at 94 dB SPL  
 \*S/N ratio is difference between microphone output at 94 dB SPL and microphone self-noise A-weighted.

**Overvoltage and Reverse Polarity Protection**

Max. external voltage applied to pins 2 and 3 with respect to pin 1 ..... + 52 Vdc

Reverse polarity protection ..... 200 mA max.  
 (diode-clamped)

**Polarity**

Positive pressure on diaphragm produces positive voltage on pin 2 relative to pin 3

**Cartridge Capacitance**

54 pF

**Low Frequency Response Switch Positions**

Flat; -6 dB/octave below 100 Hz; -18 dB/octave below 80 Hz

**Attenuator Switch Positions (Lockable)**

0 or -10 dB

**Power**

Supply Voltage .. 11 to 52 Vdc, positive, pins 2 and 3  
 Current Drain ..... 1.2 mA max.

**Environmental Conditions**

Temperature:

Storage ..... -29° to 74° C  
 (-20° to 165° F)

Operating ..... -6.7° to 49° C  
 (20° to 120° F)

Humidity:

Storage ..... 0-95% relative humidity at room temperature (72° to 80° F, 22° to 27° C)

**Case**

Steel construction with vinyl metallic paint finish and stainless steel screens

**Dimensions**

See Figure NO TAG

**Weight**

Net ..... 230 grams (8 oz)  
 Packaged ..... 740 grams (1 lb 10 oz)

**FURNISHED ACCESSORIES**

Swivel Adapter ..... A57F  
 10 dB Attenuator Lock ..... 34A830

Carrying/Storage Case ..... 65A1797  
 Windscreen ..... 49A111

**REPLACEMENT PARTS**

Cartridge and Grille Assembly ..... R104

**OPTIONAL ACCESSORIES**

Pop-Filter Grille ..... A81G  
 Heavy-Duty Windscreen ..... A81WS  
 Tripod Microphone Stand (4.3 m [14 ft]) ..... S15A

Stereo Microphone Adapter ..... A27M  
 Cable (7.6m [25ft]) ..... C25F  
 Phantom Power Supply ..... PS1A