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.

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.

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
- 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

SPECIFICATIONS

Type
Condenser (electret bias)

Frequency Response
20 to 20,000 Hz

Typical Frequency Response

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

Typical Polar Patterns
MODEL SM81 CONDENSER MICROPHONE

Output Impedance
Rated at 150 ohms (85 Ω actual)
Recommended minimum load impedance: 800 Ω (May be used with loads as low as 150 Ω 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 Ω Load ............... -4 dBV (0.63 V)
150 Ω Load ............... -15 dBV (0.18 V)

Total Harmonic Distortion
Less than 0.5% (131 dB SPL at 250 Hz into 800 Ω load)

Maximum SPL (at 1,000 Hz)
800 Ω load ............... 136 dB (attenuator at 0)
146 dB (attenuator at -10)
150 Ω 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

Stereo Microphone Adapter .......... A27M

OPTIONAL ACCESSORIES
Pop-Filter Grille .................. A81G
Heavy-Duty Windscreen .............. A81WS
Tripod Microphone Stand (4.3 m [14 ft]) .... S15A
Cable (7.6m [25ft]) .................. C25F
Phantom Power Supply ............... PS1A