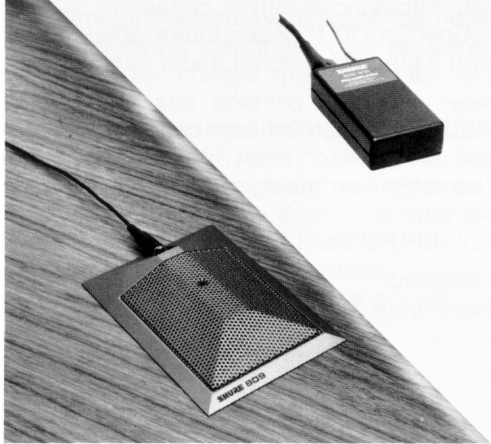


SHURE®

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Model 809 User Guide



MODEL 809 SURFACE-MOUNTED OMNIDIRECTIONAL CONDENSER MICROPHONE

The Model 809 Microphone is designed especially for surface-mounted applications. It is a superior quality, permanently-biased (electret) condenser microphone with a hemispherical pickup pattern (omnidirectional in the hemisphere above the mounting surface).

The 809 is particularly suited for sound-reinforcement and recording of speech, singing, or acoustic instruments—in locations like churches, schools, conference rooms, and theaters. Whenever an inconspicuous high-output, high-fidelity omnidirectional surface-mounted microphone is desirable, the 809 is a logical choice.

The microphone design relies on the fact that sound pressure doubles at a barrier or boundary compared to its value if the boundary is removed. When placed sufficiently near the boundary surface, a microphone has effectively 6 dB higher sensitivity and approximately 3 dB greater rejection of random background noise.

Because of its high sensitivity and extremely flat response, the 809 can be used for distant pickup in circumstances where close miking would not be practical. The fixed low-frequency rolloff permits using the 809 in some environments where low-frequency background noise (e.g., from fans or air conditioners) would otherwise make distant pickup unfeasible. The omnidirectional polar pattern of the 809 means sound is picked up equally in the full 360° hemisphere around the microphone; there is no off-axis sound coloration or variation.

The 809 can be used for close pickup of an individual instrument, mounted, for instance, inside the lid of a grand piano or on the floor next to a bass drum. Experimentation and critical listening will demonstrate, the best location for any particular purpose or effect desired.

The optimized design of the 809 includes a new cartridge, developed at Shure. The result is high output, and faithful sound reproduction over the audio frequency range. The 809 provides low distortion and high signal-to-noise ratio for distinguished performance even under difficult acoustic conditions.

The 809 is powered either by a single 9-volt alkaline battery (2500 hours continuous battery life) or by an 11-to-52 volt simplex (phantom) supply from sound-reinforcement or recording equipment. The system is designed so that the battery supply will automatically switch in should the simplex power fail. The output impedance is 600 ohms, compatible with balanced-line low-impedance microphone inputs.

The 809 consists of a small, rugged, surface-mounted microphone finished in durable platinum beige enamel, and a sturdy power supply with battery compartment and two 2-conductor shielded attached cables: one small-diameter 7.6 m (25 ft) with 3-socket Tini Q.G. connector to mate with the microphone, and one 3 m (10 ft) with 3-pin professional audio connector to mate with a mixer, amplifier, or tape recorder microphone input.

Features

- *Wide, flat frequency response for accurate sound reproduction across the audio spectrum*
- *Fixed low-frequency rolloff to minimize pickup of room noise from air conditioners, furnace fans, etc.*
- *Omnidirectional polar pattern picks up in full hemisphere around microphone mounting surface*
- *High sensitivity and high signal-to-noise ratio*
- *Battery or simplex powering: uses standard 9 volt battery; accepts wide range of simplex voltages*
- *Low susceptibility to RFI, electrostatic and electromagnetic hum*
- *Extremely rugged construction of microphone and power supply for outstanding reliability*
- *Low profile, platinum beige finished microphone for inconspicuous but handsome appearance onstage, on floor, table, ceiling, wall, or lectern*
- *Usable over very wide range of temperature and humidity*

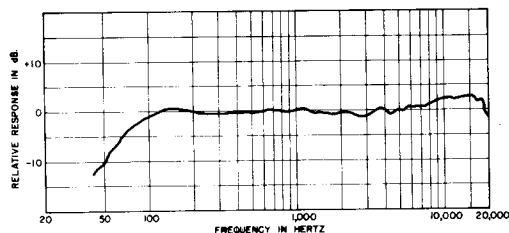
SPECIFICATIONS

Type

Condenser (electret bias) for surface mounting

Frequency Response

50 to 20,000 Hz at 30° incidence to infinite surface (see Figure 1)



TYPICAL FREQUENCY RESPONSE
FIGURE 1

Polar Pattern

Omnidirectional in hemisphere above mounting surface

Output Impedance

600 ohms

Recommended Minimum Load Impedance

800 Ohms

Output Level (at 1,000 Hz, measured with sound source at 30° incidence to flat surface)

Open Circuit Voltage -68.0 dB (0.4 mV)
0 ds = 1 V/μbar

Output Clipping Level (at 1,000 Hz, 3% THD)

2,000 ohm load -12 dBV (0.25V)
800 Ohm load -15 dBV (0.11V)

Maximum SPL (at 1,000 Hz, sound source at 30° incidence to flat surface)

2,000 ohm load 132 dB
800 Ohm load 127dB

Hum Pickup

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

Output Noise

21 dB SPL, A-weighted
26 dB SPL, weighted per DIN 45 405

Signal-to-Noise Ratio

73 dB re 94 dB SPL

Dynamic Range

111 dB

Phasing

Positive pressure on diaphragm produces positive voltage on pin 2 relative to pin 3 of power supply output connector.

Power

BATTERY: One 9 Vdc alkaline (NEMA 1604A), approximately 2500 hours continuous with fresh alkaline battery

SIMPLEX VOLTAGE: 11 to 52 Vdc, operational down to 5 Vdc; 0.2 mA current drain; permissible to use simplex power with batteries in place or removed

Cables

Attached to power supply:

One 7.6 m (25 ft) 2-conductor shielded, small diameter interconnecting cable with 3-socket miniature Switchcraft Tini Q.G. connector to mate with microphone output connector

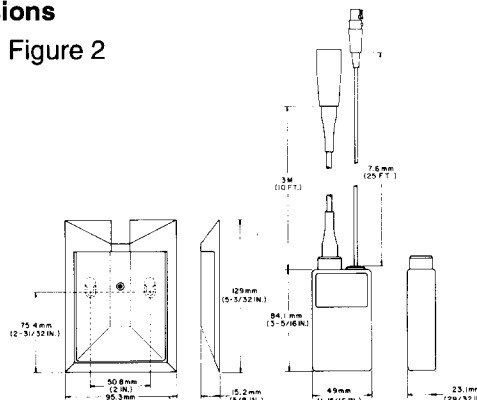
One 3 m (10 ft) 2-conductor shielded output cable with 3-pin professional audio connector

Case

MICROPHONE: Platinum beige enamel die-cast base and perforated steel grille with replaceable or cleanable fine mesh screen and foam pad wind/dirt barrier
POWER SUPPLY: Black molded high-impact plastic

Dimensions

See Figure 2



OVERALL DIMENSIONS
FIGURE 2

Environmental Conditions

OPERATING TEMPERATURE:
-18° to 57° C (0° to 135° F)

STORAGE TEMPERATURE:
-29° to 74° C (-20° to 168° F)

RELATIVE HUMIDITY (Operating or Storage):
0 to 95%

Net Weight

MICROPHONE: 280 grams (9.9 oz) less cable

POWER SUPPLY: 292 grams (10.3 oz) with battery and cables

POWERING THE 809

The 809 can be powered by a single internal 9-volt battery or by an external simplex supply of 11 to 52 volts dc

TO USE BATTERY POWER: Install a 9-volt alkaline battery. A fresh one will power the 809 for 2500 hours continuous use. A battery turns on as soon as it is correctly installed. The output of a battery-powered 809 can be con-

nected to any balanced-line low-impedance microphone input.

TO USE SIMPLEX POWER: Connect the power-supply output to a balanced-line microphone input supplying 11 to 52 Vdc simplex (phantom) power. The battery may be left in place as backup while the unit is simplex powered. There will be no battery drain as long as the simplex voltage exceeds 15 volts. If the simplex source should fail, the 809 will automatically switch to battery power.

BATTERY INSTALLATION

A 9-volt dc alkaline type (NEMA 1604A) is recommended. To install the battery, depress the ridged area of the case and swing the hinged door outward. Insert the battery in the compartment, battery terminals toward the hinge and positive terminal inward (the negative contact is marked inside the compartment). Depress the battery slightly and hook it under the ledge in the compartment. The ledge and spring contacts will retain the battery even if the door or hinges are damaged. Close and lock the door. Note that the door will lock if the battery is incorrectly inserted; the positive and negative contact areas accept only the corresponding battery terminals.

TO PREVENT BATTERY DRAIN

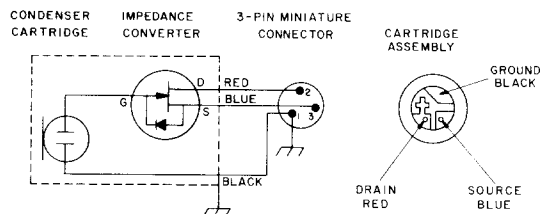
If a battery is installed in the 809 and simplex power is switched off, the battery will be activated. Therefore, when the unit is not in use, to prevent battery drain, either remove the battery or store it in the battery compartment upside down (contacts upward) and positive contact inward. If the 809 is not being used for a prolonged period, be sure to remove the battery to prevent the possibility of damage from leakage.

INTERCONNECTING CABLE

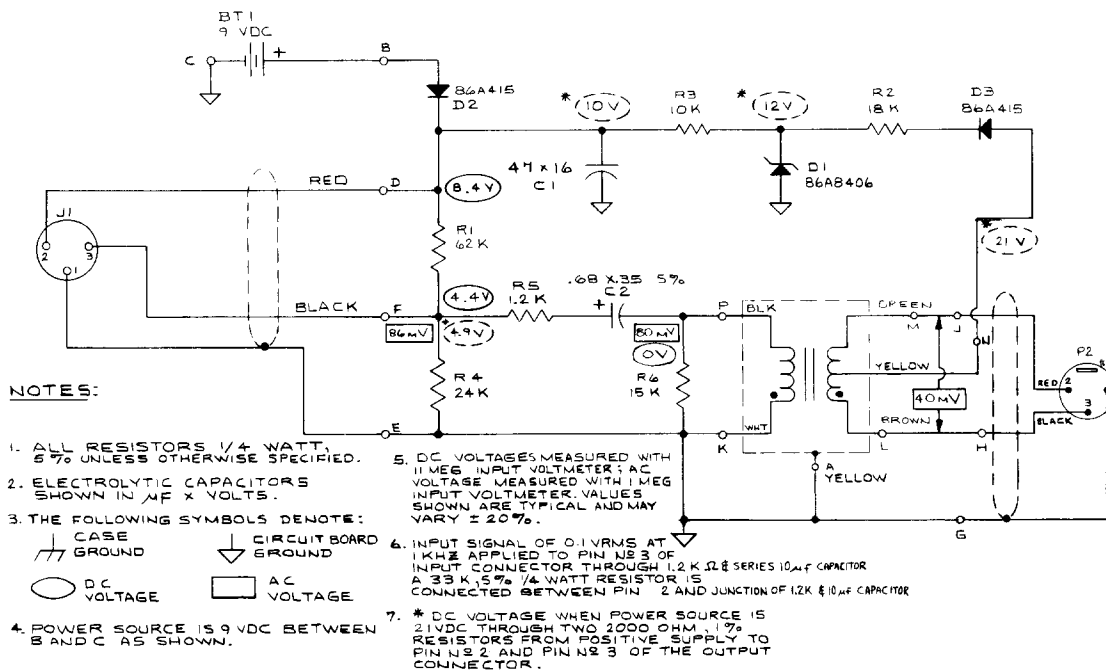
One 7.6 m (25 ft) cable is supplied, attached to the power supply, for connection to the microphone. It is sometimes desirable for the units to be located a greater distance apart. Up to 15 m (50 ft) of additional cable can be used between the microphone and power supply with no loss in response or output.

CLEANING

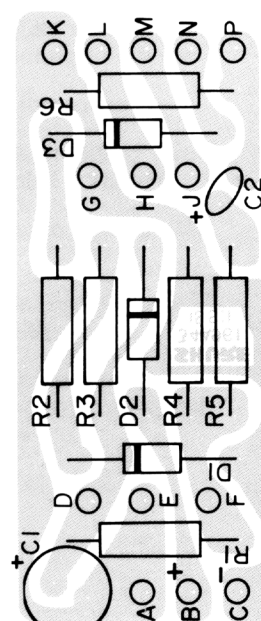
When the microphone is located in a dusty environment, periodic cleaning may be desirable. This can be easily accomplished by removing the Phillips-head screw on the grille, and lifting off the grille, the fine mesh screen, and the foam pad. Clean the fine stainless steel mesh screen by washing it in soapy water. Dry it thoroughly, and replace the foam pad, screen, and grille. Fasten firmly with the Phillips screw.



MICROPHONE CIRCUIT DIAGRAM
FIGURE 3



POWER SUPPLY CIRCUIT DIAGRAM
FIGURE 4



POWER SUPPLY PC BOARD
FIGURE 5

Reference Designation	Part Number	Description	Commercial Alternate
A1	90A3870	Printed Circuit Board Assembly	None
A2	R130	Microphone Cartridge & Impedance Converter	None
C1	86AF629	Capacitor, Electrolytic, 47 μ F, 16 WVdc	None
C2	86C651	Capacitor, Tantalum Electrolytic, 0.68 μ F, 35 WVdc, 5%	None
J1	95R, V, W, X, Y973	Connector, Cable 3-socket, Miniature	Switchcraft TA3F
MP1	53A1879C	Grille (Microphone)	None
MP2	37A147	Inner Screen (Microphone)	None
P1	95A8077	Connector, Receptacle, 3-pin, Miniature	Switchcraft TB3M
P2	95BA994A	Connector, Output Cable, 3-pin	Cannon XLB3-12C, Switchcraft A3M
T1	51A288	Transformer	None
W1	90A3877	Interconnecting Cable & Connector Assembly, 7.6 m (25 ft.)	None
W2	90A3873	Output Cable & Connector Assembly, 3 m (10 ft)	None