

SHURE®

MODEL 869 UNIDIRECTIONAL CONDENSER MICROPHONE



Shure's Model 869 is a unidirectional electret condenser microphone designed to fill the vocal requirements of singers and soundmen in a wide variety of miking applications. In addition, speakers such as announcers, clergymen and politicians will find the 869 an excellent choice for quality sound pickup. The microphone features a slight "presence peak" and a low-frequency rolloff that modify its otherwise flat frequency response. The 869's rugged grille of steel mesh and acoustic foam helps minimize wind noise and popping from explosive breath sounds, and its convenient on-off switch lets the performer control the microphone pickup.

The 869 can be powered by virtually any phantom power source, or by an internal 1.5-volt AA battery. The battery, which serves as a backup power source in the event of phantom power failure, can provide up to 10,000 hours of continuous microphone operation.

The 869 is supplied with a swivel adapter for use on a microphone stand, boom or gooseneck, and a zippered vinyl storage bag. Model 869-LC is supplied without cable. Optional accessories include a foam windscreen (A58WS Series), SHOCK-STOPPER™ isolation mount (A53HM), two-channel phantom power supply (PS1A), and 7.6m (25 ft) microphone cable (C25J).

Features

- Wide-range frequency response fitted to vocal miking needs
- Built-in wind and pop filter minimizes undesirable wind and breath sounds
- Controlled low-frequency rolloff to reduce low-frequency handling noise and compensate for proximity effect

- Long-life on-off switch for complete performer control
- Transducer element shock-mounted for reduced stand and handling noise
- Low distortion output and wide dynamic range characteristics for variety of load impedances
- Cardioid polar pattern, uniform with frequency and symmetrical about axis, to provide maximum rejection and minimum coloration of off-axis sounds
- Very low RF and magnetic hum susceptibility
- Wide-range phantom powering includes DIN 45 596 voltages of 12 and 48 Vdc
- Rugged construction for outstanding reliability
- Field-usable over wide range of temperature and humidity conditions
- Increased versatility through operation with easily obtainable battery—serves as backup in case of phantom power failure

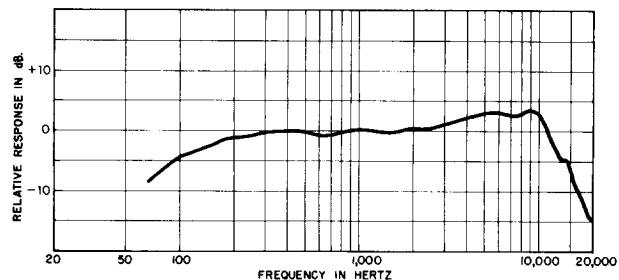
SPECIFICATIONS

Type

Cardioid condenser (electret bias)

Frequency Response

70 to 16,000 Hz (see Figure 1)



TYPICAL FREQUENCY RESPONSE
FIGURE 1

Polar Pattern

Cardioid (unidirectional) response—uniform with frequency, symmetrical about axis (see Figure 2)

Output Impedance

600 ohms

Recommended Minimum Load Impedance

800 ohms

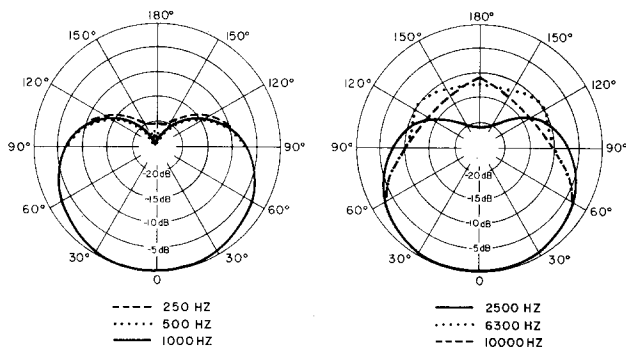
Output Level (at 1,000 Hz)

Open Circuit Voltage -78 dB (0.13 mV)
(0 dB = 1 volt per microbar)

Output Clipping Level (1 kHz, 3% THD)

2000-ohm Load -13 dBV (0.22V) (phantom);
-17 dBV (0.14V) (battery)
800-ohm Load -18 dBV (0.13V) (phantom);
-21 dBV (89 mV) (battery)

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TYPICAL POLAR PATTERNS
FIGURE 2

Maximum SPL

2000-ohm Load . . . 139 dB (phantom), 135 dB (battery)
800-ohm Load . . . 137 dB (phantom), 134 dB (battery)

Hum Pickup

+ 4 dB equivalent SPL in a 1 millioersted field (60 Hz)

Output Noise (equivalent sound pressure levels; measured with true rms voltmeter)

28 dB typical, A-weighted
31 dB typical, weighted per DIN 45 405

Dynamic Range

111 dB (phantom); 107 dB (battery) (maximum SPL, 2000-ohm load, to A-weighted noise level)

Signal-to-Noise Ratio

66 dB (IEC 651)* at 94 dB SPL

Overvoltage Protection

Max. External Voltage Applied to Pins 2 and 3 with Respect to Pin 1 + 52 Vdc
Reverse polarity protected to greater than 100 Vdc

Phasing

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

Cartridge Capacitance

24 pF

Power

Phantom Operation

Supply Voltage 11 to 52 Vdc, (+) pins 2 and 3
Current Drain 2.0 mA max. at 52 Vdc

Battery Operation

Type 1.5V alkaline, AA size (NEDA 15A)
Life Up to 10,000 hours with fresh battery

Environmental Conditions

Relative Humidity 0 – 50% – 29° to 74°C
(– 20° to 165°F)
Relative Humidity 0 – 95% – 29° to 57°C
(– 20° to 135°F)

Connector

Three-pin professional audio**

Case

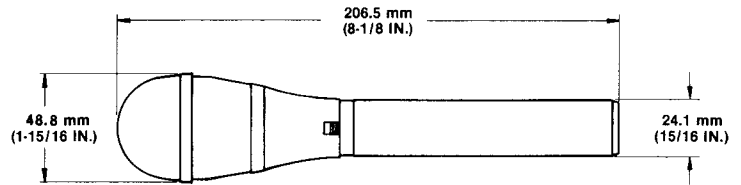
Steel and aluminum construction with platinum beige finish and platinum beige steel grille

Dimensions

See Figure 3

Weight

Net 262 grams (9.2 oz) less battery
Packaged 869-LC: 969 grams (2 lb 4 oz)



OVERALL DIMENSIONS
FIGURE 3

OPERATION

The 869 is designed for phantom powering by a Shure PS1A Power Supply, or by virtually any microphone power supply providing 12 to 48 Vdc phantom voltage, or by any microphone mixer (such as the Shure M267 and M268) with a phantom supply. In addition, the 869 can be powered by a single 1.5-volt AA alkaline battery (Duracell MN1500 or equivalent). The battery also serves as a backup in case of phantom power failure. A new alkaline battery will provide up to 10,000 hours of continuous microphone operation. Note that the microphone is powered at all times during battery operation—the on-off switch only affects the audio signal—but there is no battery drain during phantom-powered operation.

PS1A POWER SUPPLY

Connect the microphone cable to the 869 and the power supply MICROPHONE connector. The power supply uses the balanced audio cable pair to carry the supply current to the microphone, and the cable shield as a ground return.

Connect the power supply OUTPUT connector to a low-impedance microphone input of a mixer, audio console or tape recorder. A second 869 may be connected to the remaining power supply channel in a similar manner.

BATTERY OPERATION

Disconnect the microphone cable, and unscrew the 869 handle, turning counterclockwise (from top) until the handle is free of the microphone body. Slide the handle away from the grille, exposing the battery compartment. Insert a new battery (or replace the old battery), observing the polarity marking in the compartment.

Slide the handle toward the grille, and tighten the handle by turning it clockwise (from top).

WIND NOISE

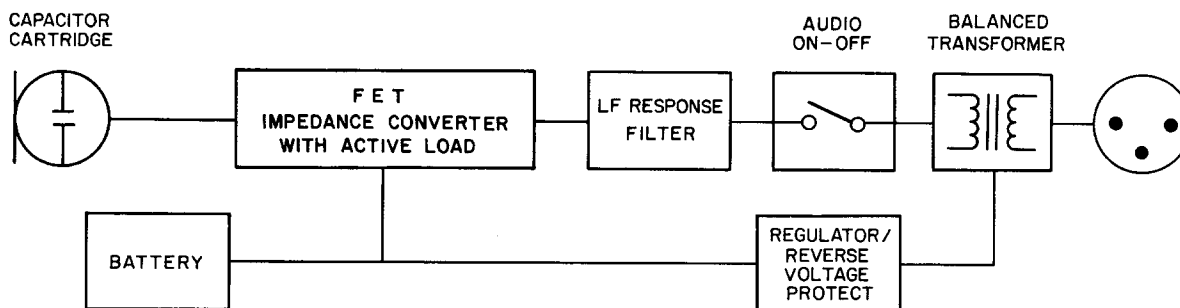
The 869 has an integral three-stage wind and pop filter which provides excellent protection against most wind and breath noise. Under adverse conditions, such as a windy day outdoors, or close proximity to a “problem” vocalist, the optional foam windscreen can be used.

CIRCUIT DESCRIPTION

A block diagram of the 869 is shown in Figure 4. The capacitor cartridge is followed by an impedance converter stage. This stage has an active load to obtain good load-driving capability with the low battery voltage of 1.5 volts.

*S/N ratio is difference between microphone output at 94 dB SPL and microphone self-noise A-weighted.

**Designed to mate with Cannon XL series, Switchcraft A3 (Q.G.) series or equivalent connectors.



BLOCK DIAGRAM
FIGURE 4

The converter stage output goes to the on-off switch, which affects the audio signal only (battery operation is continuous). The audio signal is then transformer-coupled for a balanced output to the RFI protection filter at the microphone connector. An active power supply circuit regulates the phantom voltage, allowing the 869 to operate over a wide voltage range. In addition, the 869's internal 1.5-volt battery provides instantaneous switchover in case of phantom power supply failure. The unit protects against miswired cables and equipment.

SERVICING

TROUBLESHOOTING

Due to the high packing density and circuit complexity of the 869, only basic servicing is recommended. The following steps should be taken if problems arise.

1. Check the power supply output voltage to the microphone. For the Shure PS1A, this should be 21.5 ± 1.5 Vdc open circuit.
2. Check the voltage on connector pins 2 and 3 (at back of connector; cable connector disassembled from shell, but connected to microphone). The voltage at pins 2 and 3 with reference to pin 1 should be between 10 and 48 Vdc.
3. If the microphone does not work on phantom power, battery operation may still be possible. Similarly, if battery operation is impaired (with a fresh battery installed), the 869 may still operate with phantom power. In either case, servicing by an Authorized Shure Service Center to restore full operation is recommended.

ARCHITECTS' SPECIFICATIONS

The microphone shall be a condenser microphone with a frequency response of 70 to 16,000 Hz. It shall have a cardioid directional characteristic, with cancellation at the sides of 6 dB and a minimum cancellation at the rear of 15 dB at 1 kHz. The microphone shall have a rated output impedance of 600 ohms for connection to microphone inputs of 600 ohms or higher. The open circuit voltage shall be -78 dB (0.13 mV) (0 dB equals 1 volt per microbar).

The overall dimensions shall be 206.5 mm (8-1/8 in.) in length by 48.8 mm (1-15/16 in.) in diameter. The handle diameter shall be 24.1 mm (15/16 in.) The weight shall be 262 grams (9.2 oz).

The microphone shall be capable of being powered by a phantom power supply with an output of 11 to 52 Vdc, or by a mixer, audio console or tape recorder capable of supplying 11 to 52 Vdc, or by an internal 1.5-volt battery.

The microphone shall be a Shure Model 869.

FURNISHED ACCESSORIES

Swivel Adapter	A25C
Carrying/Storage Bag	26A13

OPTIONAL ACCESSORIES

Phantom Power Supply	PS1A
Switch-Selectable Attenuator	A15AS
Isolation Mount	A53HM
Windscreen	A58WS Series
Cable (7.6m — 25 ft)	C25J

REPLACEMENT PARTS

Screen and Grille	RK256G
Cartridge and Shock Mount	90EY2600
Plug Element	90A1984