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## Model BETA 98/S User Guide

### GENERAL RULES FOR MICROPHONE USE

1. Aim the microphone toward the desired sound source and away from unwanted sources. This may not be obvious or intuitive, since supercardioid microphones such as the BETA 98/S have narrow pickup patterns and can pick up sounds from the rear.
2. Place the microphone as close as practical to the desired sound source (refer to the table below).
3. Work close to the microphone for extra bass response.
4. Use only one microphone to pick up a single sound source.
5. Use the fewest number of microphones as practical.
6. Keep multiple microphones separated by a distance equal to at least 3 times the distance to the nearest sound source.
7. Place mics as far as possible from reflective surfaces.
8. Use a windscreen when using the microphone outdoors.

### APPLICATIONS AND PLACEMENT

The most common BETA 98/S applications and placement techniques are listed in the following table. Keep in mind that microphone technique is largely a matter of personal taste; there is no one "correct" microphone position.

APPLICATION	SUGGESTED MICROPHONE PLACEMENT	TONE QUALITY
<b>Tom-Toms</b>	Using the A98D drum mount, place one on each tom, or between each pair of toms, 1 to 3 inches (2.5 to 7.6 cm) above drum heads. Aim each mic at top drum heads.	Medium attack; full, balanced sound.
	On double head toms, remove bottom head and place mic inside pointing up toward top drum head.	Medium attack; full, balanced sound.
<b>Snare Drum</b>	1 to 3 inches (2.5 to 7.5 cm) above rim of top head of drum. Aim mic at drum head. If desired, place a second mic just below rim of bottom head.	More "snap" from drumstick. More "snare" sound.
<b>Hi-Hat. Cymbals</b>	Using the A98D drum mount, place the microphone close to the cymbal, but far away enough that they do not touch when the cymbal is struck.	Bright, with plenty of attack.
<b>Reed Instruments</b>	Place microphone a few inches from and aiming into bell.	Bright, minimizes feedback and leakage.
<b>Guitar Amplifier</b>	Place microphone 4 inches from grille at center of speaker cone.	Natural, well-balanced.

### INTERCONNECTING CABLE

The supplied cable connects the BETA 98/S microphone to the preamplifier. If necessary, up to 23 m (75 ft) of cable can be used between the microphone and preamplifier without signal loss.



## MODEL BETA 98/S SUPERCARDIOID CONDENSER MICROPHONE

### GENERAL

The Shure BETA 98/S is a compact, high-output, supercardioid condenser microphone for professional sound reinforcement and studio recording. Its extremely uniform supercardioid pickup pattern provides high gain before feedback and excellent rejection of unwanted noise. Its high maximum sound pressure level (SPL) makes it useful for a variety of acoustic instruments, including drums, percussion, piano, reed, wind, and string instruments. The BETA 98/S can also be used for amplified guitars.

The BETA 98/S includes either a shockmount swivel adapter (BETA 98/S) or the A98D drum mount (BETA 98D/S). The A98D drum mount has a specially designed gooseneck that allows the microphone to be positioned freely yet holds it securely in place once the ideal placement has been found.

The BETA 98/S is supplied with a windscreen, storage bag, preamplifier, and an interconnect cable. The preamplifier can be powered by any 48 Vdc phantom power supply.

### FEATURES

- Tailored frequency response for studio quality performance
- Wide dynamic range for use in high SPL environments
- Uniform supercardioid pattern for high gain before feedback and superior rejection of off-axis sound
- Optional A98D drum mount is unobtrusive and versatile—allows precise positioning of the microphone while holding it firmly in place
- Compact design reduces stage clutter
- Detachable cable for easy storage
- Interchangeable microphone cartridges with different polar patterns are available
- Legendary Shure quality, ruggedness, and reliability

### MODEL VARIATIONS

**BETA 98D/S** includes microphone, 4.6 m (15 ft) heavy-duty interconnect cable, preamplifier, and A98D microphone drum mount.

**BETA 98/S** includes microphone, 7.6 m (25 ft) light-weight interconnect cable, preamplifier, and shockmount swivel adapter.

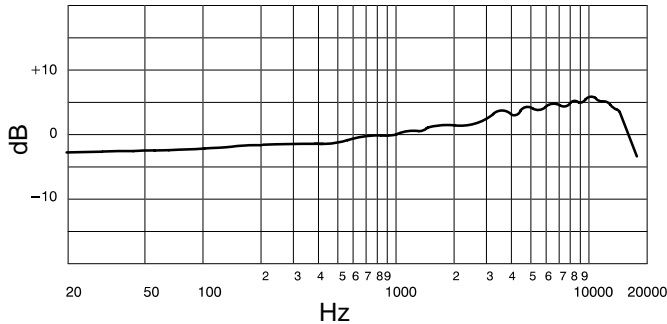
**SPECIFICATIONS**

**Type**

Condenser (electret bias)

**Frequency Response**

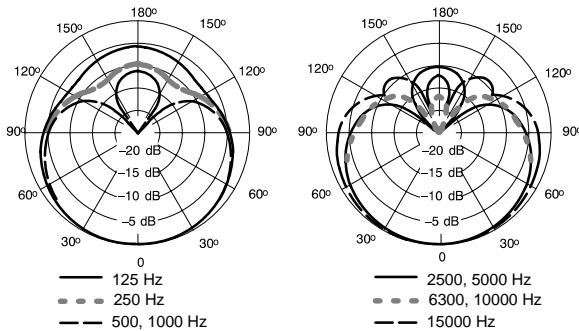
20 to 20,000 Hz  
(measured at 304.8 mm [1 ft] from a spherical sound source, free field conditions)



TYPICAL FREQUENCY RESPONSE  
**FIGURE 1**

**Polar Pattern**

Supercardioid (as supplied), uniform with frequency, symmetrical about axis. Cartridge for cardioid polar pattern also available.



TYPICAL POLAR PATTERN  
**FIGURE 2**

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

Open Circuit Voltage: -59 dBV/Pa\* (1 mV) typical  
\*1 Pa = 94 dB SPL

**Maximum SPL**

(20 Hz to 20 kHz, less than 1% THD)  
2.5 kΩ load ..... 160 dB  
1 kΩ load ..... 156 dB

**Preamplifier Output Clipping Level**

(20 Hz to 20 kHz, less than 1% THD)  
2.5 kΩ load ..... + 6 dBV (2.0 V)  
1 kΩ load ..... + 2 dBV (1.26 V)

**Dynamic Range**

(at 20 Hz to 20 kHz, less than 1% THD, 2.5 kΩ load)  
125 dB (max SPL minus A-weighted noise)

**Output Noise**

35 dB SPL, A-weighted

**Signal-to-Noise Ratio**

59 dB re 94 dB SPL

**Output Impedance**

Rated at 150 Ω (actual)  
Recommended minimum load impedance: 1 kΩ

**Hum Pickup**

-7.5 dB equivalent SPL in 1 mOe field (60Hz)

**Polarity**

Positive pressure on diaphragm produces positive voltage on pin 2 with respect to pin 3

**Phantom Power**

48 Vdc ±4 Vdc(IEC-268-15/DIN 45 596), positive pins 2 and 3.

**Cable**

BETA 98/S: 7.6 m (25 ft) light-weight, two-conductor shielded, TA4F to TA3F Tini Q-G® connectors  
BETA 98D/S: 4.6 m (15 ft) heavy-duty, two-conductor shielded, TA4F to TA3F Tini Q-G® connectors.

**Case**

Microphone: Matte black enamel brass case and stainless steel inner grille  
Preamplifier: Matte black enamel finished steel

**Dimensions**

Microphone: 11.7 mm X 135.5 mm (0.46 in. X 1.40 in.)  
Preamplifier: 20 mm X 99 mm (0.79 in. X 3.89 in.)

**Net Weight**

Microphone: 12 g (0.4 oz) less cable  
Preamplifier: 96 g (3.4 oz)

**Certification**

Conforms to European Union directives, eligible to bear CE marking; meets European Union EMC Emissions and Immunity Requirements (EN 50081-1: 1992, EN 50082-1: 1992).

**FURNISHED ACCESSORIES**

- Storage Bag ..... 26B21
- Preamplifier ..... RPM626
- Gooseneck Drum Mount (BETA 98D/S) ..... A98D
- Shock-Mount Swivel Adapter (BETA 98/S) ..... RK282
- 4.6 m (15 ft) heavy-duty cable (BETA 98D/S) ..... C98D
- 7.6 m (25 ft) light-weight cable (BETA 98/S) ..... 90A4679

**ADDITIONAL ACCESSORIES**

- Cardioid cartridge ..... RPM108

**REPLACEMENT PARTS**

- Windscreen (4 per package) ..... RK183WS
- Supercardioid cartridge ..... RPM110
- Gooseneck Assembly (A98D) ..... RPM616
- Clamp Assembly (A98D) ..... RPM618
- Case Assembly with Interface Board ..... RPM624