



MODEL BETA 91™
HALF-CARDIOID CONDENSER
INSTRUMENT MICROPHONE
GENERAL

The Shure BETA 91™ is a high performance condenser microphone with a tailored frequency response designed specifically for kick drums and other instruments. It provides superb attack and “punch,” and delivers studio quality sound, with minimal distortion even at extremely high sound pressure levels.

The BETA 91 features a half-cardioid pattern (cardioid in the hemisphere above the mounting surface) throughout its frequency range to insure high gain before feedback and excellent rejection of unwanted sound.

FEATURES

- Frequency response shaped specifically for kick drums and other instruments
- Wide dynamic range for use in high SPL environments
- Low-profile design requires no external mounting hardware
- Detachable cable for easy storage
- Legendary Shure quality, ruggedness, and reliability

GENERAL RULES FOR MICROPHONE USE

1. Aim the side of the microphone marked “Shure” toward the desired sound source and away from unwanted sources. This may not be obvious or intuitive, since cardioid microphones such as the BETA 91 have narrow pickup patterns.
2. Place the microphone as close as practical to the desired sound source (refer to the table below) to maximize signal-to-noise ratio.
3. Use only one microphone to pick up a single sound source.
4. Use the fewest number of microphones as practical.
5. Keep multiple microphones separated by a distance equal to at least 3 times the distance to the nearest sound source.

APPLICATIONS AND PLACEMENT

The most common BETA 91 application and placement technique is 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
Kick Drum	Inside drum, on a pillow or other cushioning surface, 25 to 152 mm (1 to 6 in.) from beater head.	Full, natural sound.

INTERCONNECTING CABLE

A 4.6 m (15 ft) heavy-duty cable is supplied for connecting the BETA 91 microphone to the preamplifier. It may be desirable for the components to be located a greater distance apart. Up to 23 m (75 ft) of additional cable can be used between the BETA 91 microphone and the preamplifier without signal loss.

SPECIFICATIONS

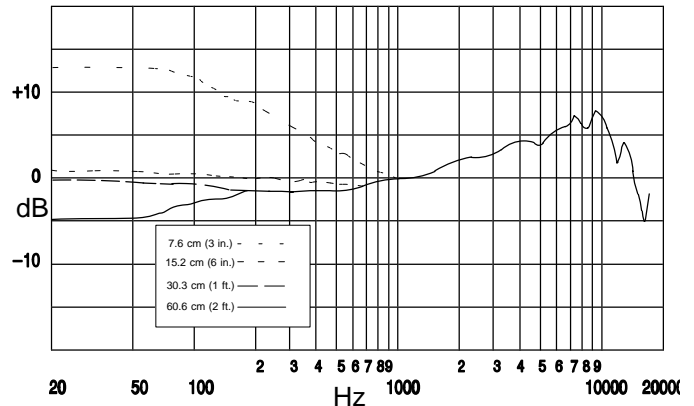
Type

Cardioid condenser (electret bias)

Frequency Response

20 to 20,000 Hz (see Figure 1)

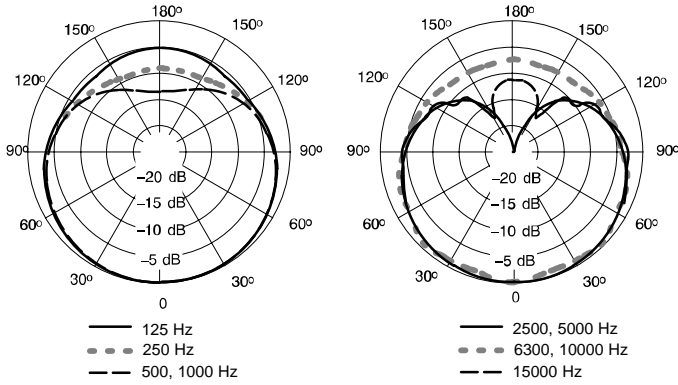
(measured at 304.8 mm [1 ft] from a spherical sound source, free field conditions)



TYPICAL FREQUENCY RESPONSE
FIGURE 1

Polar Pattern

Half-cardioid (cardioid in hemisphere above mounting surface), uniform with frequency, symmetrical around axis.



TYPICAL POLAR PATTERNS
FIGURE 2

Case

Matte-black , painted, die-cast, zinc-alloy case with matte-black steel grille.

Dimensions

95 mm x 129 mm x 19 mm (3.75 in. x 5.08 in. x 0.75 in.)

Net Weight

382 grams (13.5 oz) less cable

Output Level (at 1,000 Hz)

Open Circuit Voltage: -59 dBV/Pa* (1.1 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

(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 (typical), A-weighted

Signal-to-Noise Ratio

59 dB re 94 dB SPL

Output Impedance

150 Ω (actual)

Polarity

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

Power

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

Electromagnetic Hum Pickup

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

Cable

4.6 m (15 ft) heavy-duty, two-conductor shielded, TA4F to TA3F connectors

*THD of the microphone preamplifier when applied input signal is equivalent to the cartridge output at specified SPL.