



BETA87A

Vocal Microphone

The Shure supercardioid electret condenser microphone, BETA87A, user guide.
Version: 3 (2019-G)

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BETA87A

Vocal Microphone

General Description

The Shure Beta 87A vocal microphone is precision-engineered to deliver an exceptionally smooth frequency response in a supercardioid condenser design. Built to withstand extreme sound pressure levels (SPL), the Beta 87A is ideal for professional sound reinforcement and studio recording applications.

The tailored frequency response, combined with a controlled low-frequency roll-off, makes this microphone ideal for close-up lead and background vocals—especially in high SPL environments. An advanced cartridge shock mount system, hardened steel-mesh grille, and superior build quality withstand the rigors of daily touring and sound reinforcement.

Features

- Premier live performance microphone with Shure quality, ruggedness, and reliability
- Uniform supercardioid pick-up pattern for maximum gain before feedback and superior rejection of off-axis sound
- Smooth, wide frequency response with gradual presence rise and controlled proximity effect tailored for vocals
- Advanced cartridge shock mount system absorbs mechanical shock and minimizes handling noise
- Dent-resistant steel mesh grille and enamel coated metal alloy construction resist wear and abuse
- Effective built-in pop filter reduces undesirable wind and breath noise
- Very low susceptibility to RF and electromagnetic hum

Applications

General Rules for Use

- Do not cover any part of the microphone grille with your hand, as this will adversely affect microphone performance.
- Aim the microphone toward the desired sound source (such as the talker, singer, or instrument) and away from unwanted sources.
- Place the microphone as close as practical to the desired sound source.
- Work close to the microphone for extra bass response.
- Use only one microphone to pick up a single sound source.
- For better gain before feedback, use fewer microphones.
- Keep the distance between microphones at least three times the distance from each microphone to its source (“three to one rule”).
- Place microphones as far as possible from reflective surfaces.
- Add a windscreen when using the microphone outdoors.
- Avoid excessive handling to minimize pickup of mechanical noise and vibration.

Applications And Placement

The following table lists the most common applications and placement techniques. Keep in mind that microphone technique is largely a matter of personal taste; there is no one “correct” microphone position.

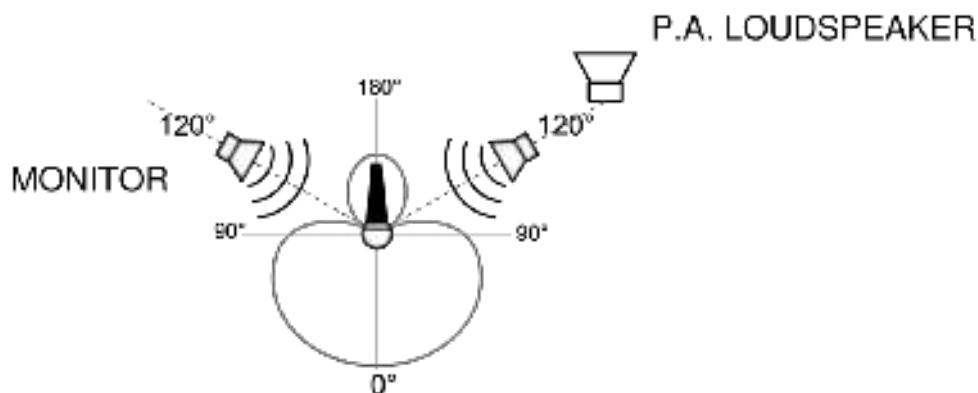
Application	Suggested Microphone Placement	Tone Quality
Vocals	Lips less than 15 cm (6 in.) away or touching the wind-screen, on axis to microphone.	Robust sound, emphasized bass, maximum isolation from other sources.
	15 to 60 cm (6 in. to 2 ft.) away from mouth, just above nose height.	Natural sound, reduced bass.
	20 to 60 cm (8 in. to 2 ft.) away from mouth, slightly off to one side.	Natural sound, reduced bass and minimal "s" sounds.
	90 cm to 1.8 m (3 to 6 ft.) away.	Thinner, distant sound; noticeable levels of ambient noise.

Proximity Effect

Unidirectional (cardioid) microphones progressively boost bass frequencies by 6 to 10 dB below 100 Hz when the microphone is at a distance of about 6 mm (1/4 in.) from the sound source. This phenomenon, known as proximity effect, can be used to create a warmer, more powerful sound. To prevent explosive low frequency sound during close-up use, the bass response gradually rolls off. This provides greater control and helps the user take advantage of proximity effect.

Avoiding Pickup of Unwanted Sound Sources

A supercardioid microphone has the greatest sound rejection at points 120° toward the rear of the microphone. Place the microphone so that unwanted sound sources, such as monitors and loudspeakers, are at these angles, not directly behind it. To minimize feedback and ensure optimum rejection of unwanted sound, always test microphone placement before a performance.



Recommended Loudspeaker Locations for Supercardioid Microphones

Power Requirements

This microphone requires phantom power and performs best with a 48 Vdc supply (IEC-61938). However, it will operate with slightly decreased headroom and sensitivity with supplies as low as 11 Vdc.

Most modern mixers provide phantom power. You must use a **balanced** microphone cable: XLR-to-XLR or XLR-to-TRS.

Specifications

Type

Electret Condenser

Frequency Response

50 to 20,000 Hz

Polar Pattern

Supercardioid

Output Impedance

EIA rated at 150 Ω (100 Ω actual)

Sensitivity

at 1 kHz, open circuit voltage

-52.5 dBV/Pa (2 mV)^[1]

Maximum SPL

1 kHz at 1% THD, 1 k Ω load

140.5 dB

Signal-to-Noise Ratio

Ref. 94 dB SPL at 1 kHz

70.5 dB

Dynamic Range

at 1 kHz, 1 k Ω load

117 dB

Clipping Level

1 kHz at 0.25% THD, 1 k Ω load

-6 dBV (0.5 V)

Self Noise

typical, equivalent SPL, A-weighted

23.5 dB

Polarity

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

Weight

Net

0.207 kg(0.475 lbs)

Connector

Three-pin professional audio (XLR), male, balanced

Housing

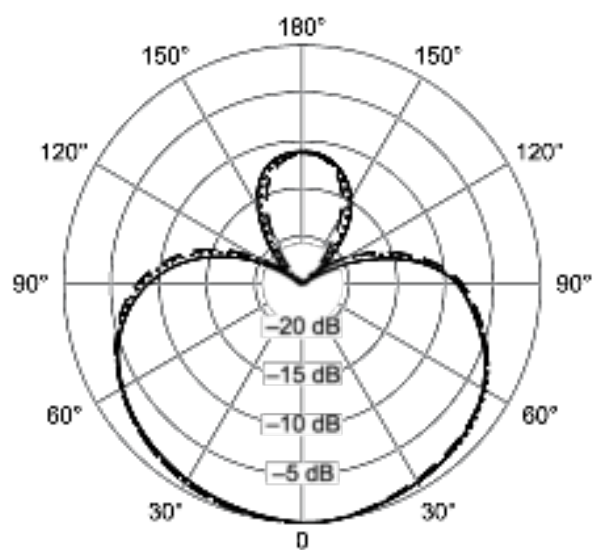
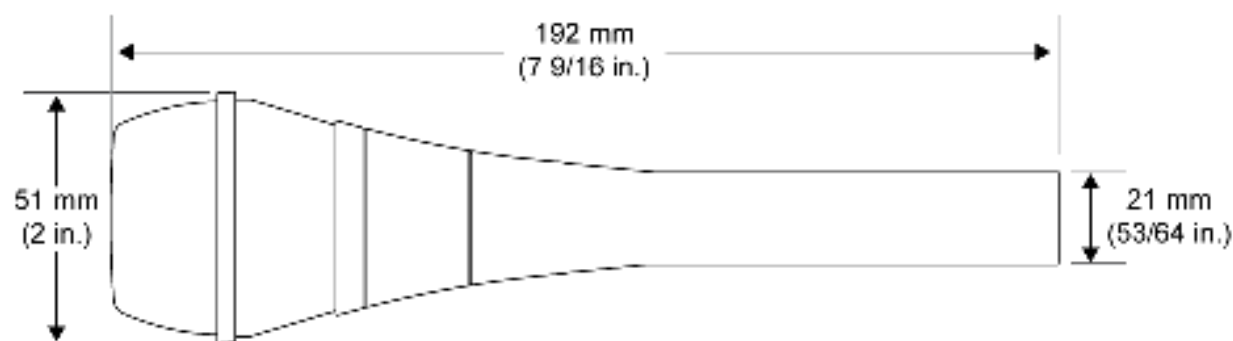
Aluminum construction with painted blue metallic finish, and hardened steel grille with nickel satin chrome plating

Power Requirements

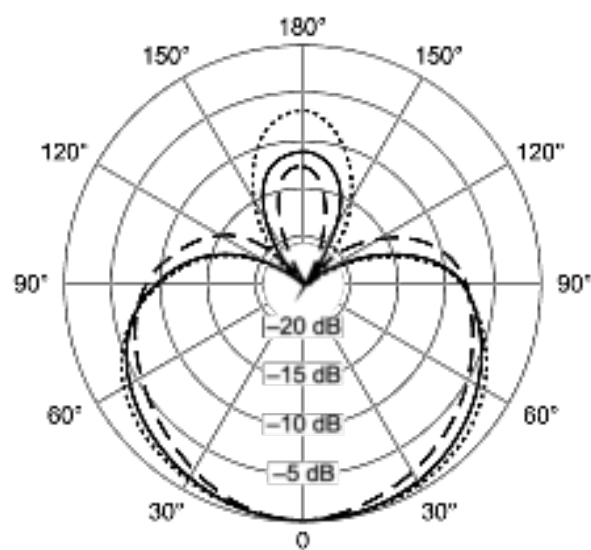
11 to 52 V DC phantom power (1.2 mA)

^[1]1 Pa=94 dB SPL

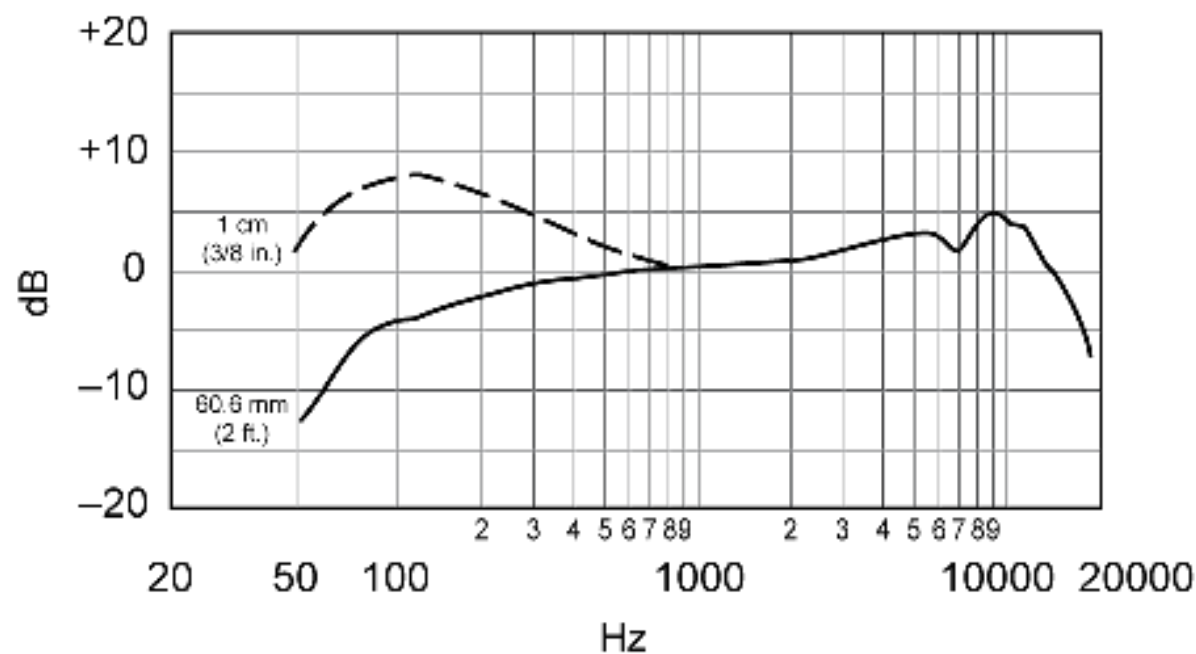
^[2]S/N ratio is difference between 94 dB SPL and equivalent SPL of self noise, A-weighted



— 250 Hz
..... 500 Hz
- - - 1000 Hz



— 2500 Hz
..... 6300 Hz
- - - 10000 Hz



Accessories

Furnished Accessories

Zippered Carrying Bag	95A2314
Microphone Clip for SM58, SM57, SM87A, BETA87A, BETA87C, PGA57, PGA58, PGA48, PGA81	A25D

Optional Accessories

Shock Stopper® Isolation Mount	A55HM
Black Foam Windscreen for KSM8, SM85, SM86, SM87A, BETA87A, and BETA87C	A85WS
25 foot (7.5m) Triple-Flex® Microphone XLR Cable with chrome connectors	C25F

Replacement Parts

Grille for Wired and Wireless BETA87, BETA87A and BETA87C	RK312
Cartridge for BETA87 and BETA87A	R193
Plug (Connector) Assembly	90J1984

Certifications

This product meets the Essential Requirements of all relevant European directives and is eligible for CE marking.

The CE Declaration of Conformity can be obtained from: www.shure.com/europe/compliance

Authorized European representative:

Shure Europe GmbH

Headquarters Europe, Middle East & Africa

Department: EMEA Approval

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