



# BETA87A

## Vocal Microphone

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

# Table of Contents

<b>BETA87AVocal Microphone</b>	<b>3</b>	<b>Avoiding Pickup of Unwanted Sound Sources</b>	<b>4</b>
<b>General Description</b>	<b>3</b>	<b>Power Requirements</b>	<b>4</b>
Features	3	<b>Specifications</b>	<b>5</b>
<b>Applications</b>	<b>3</b>	<b>Accessories</b>	<b>8</b>
General Rules for Use	3	Furnished Accessories	8
Applications And Placement	3	Optional Accessories	8
<b>Proximity Effect</b>	<b>4</b>	Replacement Parts	8
		<b>Certifications</b>	<b>8</b>

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# BETA87A

## Vocal Microphone

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### 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

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### 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.

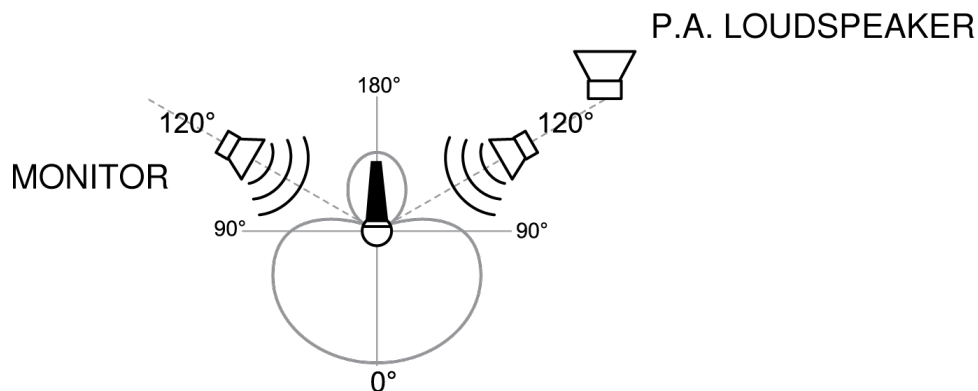
Application	Suggested Microphone Placement	Tone Quality
Vocals	Lips less than 15 cm (6 in.) away or touching the wind-screen, on axis to microphone.	Robust sound, emphasized bass, maximum isolation from other sources.
	<b>15 to 60 cm (6 in. to 2 ft.) away from mouth, just above nose height.</b>	Natural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

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## Specifications

### Type

Electret Condenser

### Frequency Response

50 to 20,000 Hz

### Polar Pattern

Supercardioid

### Output Impedance

EIA rated at 150  $\Omega$  (100  $\Omega$  actual)

### Sensitivity

*at 1 kHz, open circuit voltage*

-52.5 dBV/Pa (2 mV)<sup>[1]</sup>

### Maximum SPL

*1 kHz at 1% THD, 1 k $\Omega$  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 $\Omega$  load*

117 dB

### Clipping Level

*1 kHz at 0.25% THD, 1 k $\Omega$  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

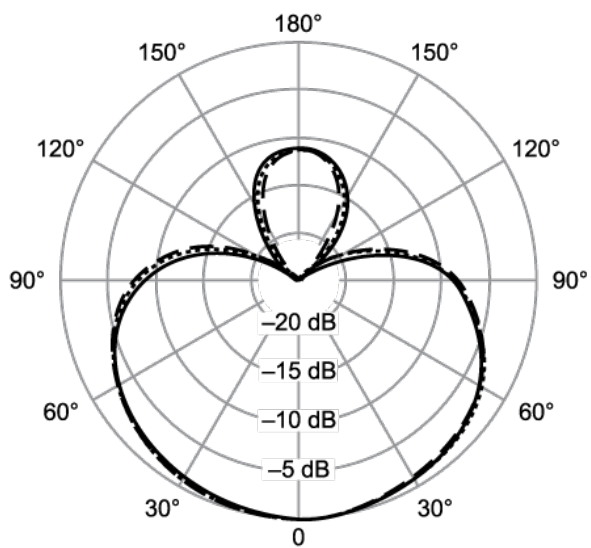
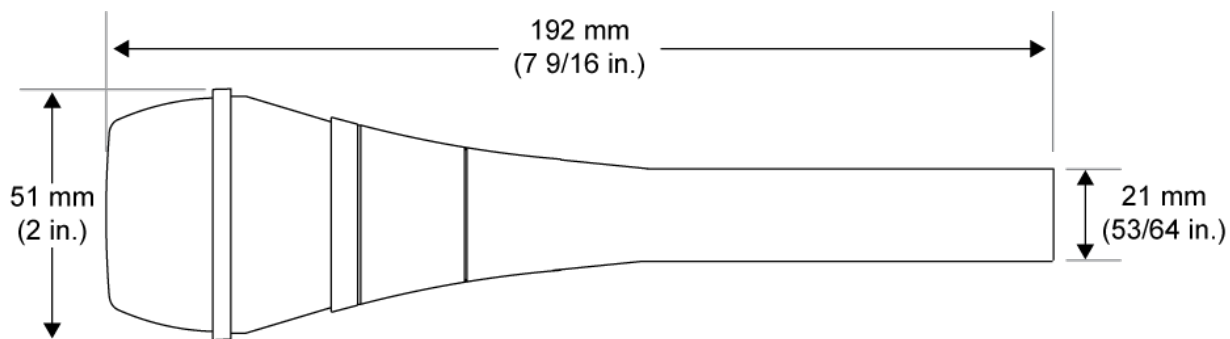
Aluminum construction with painted blue metallic finish, and hardened steel grille with nickel satin chrome plating

## Power Requirements

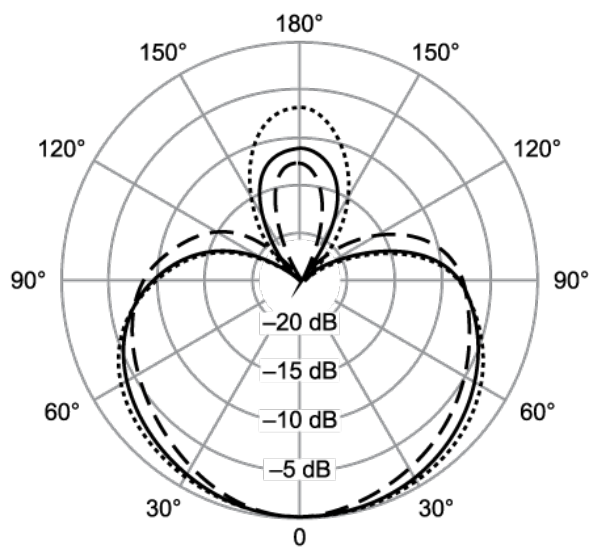
11 to 52 V DC phantom power (1.2 mA)

<sup>[1]</sup>1 Pa=94 dB SPL

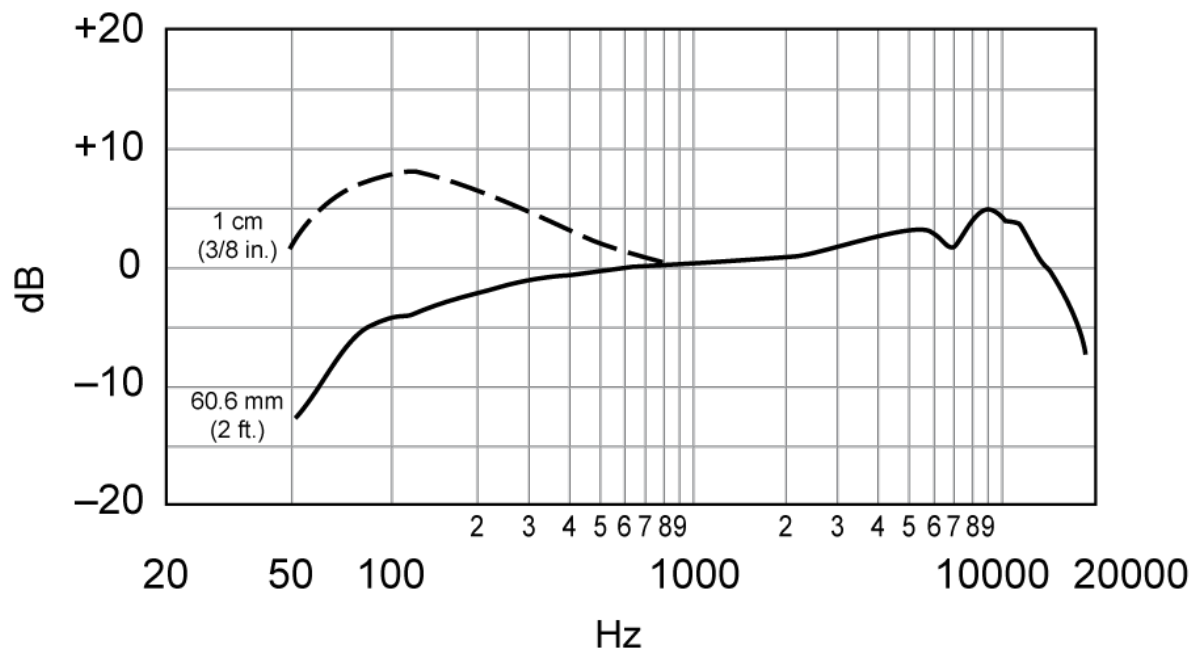
<sup>[2]</sup>S/N ratio is difference between 94 dB SPL and equivalent SPL of self noise, A-weighted



— 250 Hz  
 ..... 500 Hz  
 - - - 1000 Hz



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



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## Accessories

### Furnished Accessories

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

### Optional Accessories

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

### Replacement Parts

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

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## 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](http://www.shure.com/europe/compliance)

Authorized European representative:

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