

AT4051a

CARDIOID
CAPACITOR MICROPHONE



Description

The AT4051a is a transformerless, externally-polarized capacitor studio microphone. It has been specially engineered to meet the most critical acoustic requirements of professional recording and broadcast.

The AT4051a features a smooth frequency response over its extended 20-20,000 Hz range. The off-axis response is well controlled, yielding an unusually uniform cardioid polar pattern. The cardioid head capsule may be easily removed, stored and replaced with an optional omnidirectional or hypercardioid capsule to meet the needs of the widest range of miking applications.

The balanced output is direct-coupled, resulting in a clean signal even under high-output conditions. The microphone is totally free of the distortion associated with conventional transformer-coupled outputs. Its fast response to transients contributes to the open, transparent reproduction of even the most troublesome of instruments and sound effects.

The AT4051a combines the benefits of exceptionally low self-noise with very high output. Equally important, it handles very high sound pressure levels with ease—up to 146 dB SPL while producing no greater than 1% T.H.D. The AT4051a may be used with confidence in a wide variety of miking applications, even under the stringent demands of modern digital recording systems.

An integral 80 Hz hi-pass filter provides easy switching from a flat frequency response to a low-end roll-off. The hi-pass switch is recessed to prevent accidental activation. The hi-pass position reduces the microphone's sensitivity to "popping" in close vocal use and to handling noise. It also attenuates unwanted low-frequency ambient noise (from traffic, air-handling systems, etc.) and room reverberation. The hi-pass filter may be used to compensate for proximity effect in close-miking situations. Use of the supplied foam windscreen helps reduce wind and "popping" noise.

For increased ruggedness, the AT4051a housing is constructed of turned brass, rather than thin-wall aluminum. Its surface is plated in black chrome for durability and low reflectivity.

The AT4051a will operate in conjunction with any remote "phantom" or "simplex" power source supplying 48 volts DC. The phantom voltage not only powers the microphone's impedance converter, but is stepped-up to a higher voltage internally to polarize the capacitor element.

Modular Expansion Capability

The AT4051a consists of two modular subassemblies which are threaded together: the AT4900a-48 handle containing the microphone's electronics, and the AT4051a-EL capacitor head capsule.

The versatility of the AT4051a may be increased through the addition of optional accessory head capsules. The AT4049a-EL capsule provides the precision recording and audio measurement advantages of a flat, wide-response omnidirectional pattern. The AT4053a-EL hypercardioid element offers excellent side rejection for increased working distance, and a highly uniform polar pattern that virtually eliminates off-axis coloration.

A compartmentalized protective carrying case accommodates the microphone, stand adapter, windscreen and two optional head capsules.

Architects and Engineers Specifications

The microphone shall have a frequency response of 20 Hz to 20,000 Hz. Its capacitor element shall be of a DC bias design and shall obtain its polarizing voltage and impedance-converter power from an external 48V DC ($\pm 4V$) phantom power source. The microphone shall have a uniform cardioid polar pattern. The element shall be interchangeable with optional capsules offering omnidirectional or hypercardioid polar patterns.

Nominal open-circuit output voltage shall be 19.9 mV at 1 kHz, 1 Pascal. The microphone shall have an output impedance of 100 ohms and output shall be transformerless balanced. The microphone shall accept a 146 dB SPL at 1 kHz while producing no greater than 1% T.H.D.

The microphone shall have a length of 6.10" (155.0 mm), a diameter of 0.83" (21.0 mm), and a weight of 4.2 oz (120 g). The microphone housing shall be turned brass with a low-reflectance black chrome finish.

The Audio-Technica AT4051a is specified.

AT4051a

Specifications†

ELEMENT	Externally polarized (DC bias) capacitor
POLAR PATTERN	Cardioid (Unidirectional)
FREQUENCY RESPONSE	20-20,000 Hz
OPEN CIRCUIT SENSITIVITY (1 kHz)	-34 dB (19.9 mV) ± 2 dB, re 1V at 1 Pa* ¹
IMPEDANCE	100 ohms
MAXIMUM INPUT SOUND LEVEL	146 dB SPL, 1 kHz at 1% T.H.D.
NOISE, TYPICAL (A-WEIGHTED) ²	19 dB SPL
DYNAMIC RANGE, TYPICAL	127 dB, 1 kHz at Max SPL
SIGNAL-TO-NOISE RATIO, TYPICAL	75 dB, 1 kHz at 1 Pa*
HI-PASS FILTER (LOW-END ROLL-OFF)	80 Hz, 6 dB/octave
POWER REQUIREMENTS	48V DC phantom (±4V)
CURRENT CONSUMPTION, TYPICAL	3.2 mA
WEIGHT (LESS CABLE AND CLAMP)	4.2 oz (120 g)
DIMENSIONS	6.10" (155.0 mm) long, 0.83" (21.0 mm) body diameter
ACCESSORIES FURNISHED	AT8405 snap-in clamp for 5/8"-27 threaded stands; protective carrying case; reticulated, open-cell foam windscreen

† In the interest of standards development, A.T.U.S. offers full details on its test methods to other industry professionals on request.

* 1 Pascal = 10 dynes/cm² = 10 microbars = 94 dB Pa*

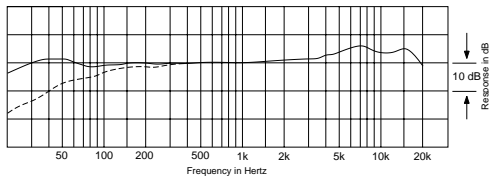
¹ Measured at diaphragm

² Using Audio Precision System One

Optional Accessories:

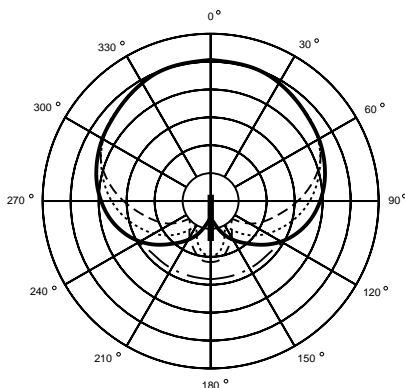
- AT4049a-EL omnidirectional microphone capsule.
- AT4053a-EL hypercardioid microphone capsule.
- AT8106 metal-frame pop filter.
- AT8114 foam windscreen for AT8106 pop filter.
- AT8314 2-conductor, shielded, vinyl-jacketed, broadcast-type cable with XLR-type connector at microphone end, XLRM-type connector at equipment end. Available in 10', 20', 25', 30', 50' & 100' lengths.
- AT8407 universal "clothes-pin" stand clamp fits both tapered and cylindrical microphones.
- AT8410a shock mount for boom or stand operation. Universal "clothes-pin" clamp fits tapered and cylindrical microphones.
- AT8415 shock mount for boom or stand operation.
- CP8506 four-channel 48V phantom power supply (AC powered).
- AT8801 single-channel 48V phantom power supply (AC powered).

Frequency Response



LEGEND
 ——— 12° or more on axis (flat)
 - - - - - Roll-off

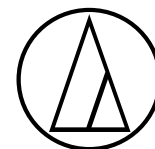
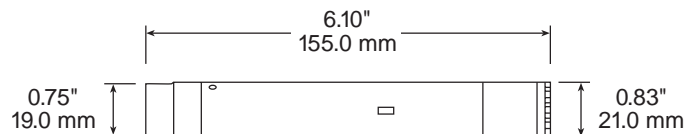
Polar Pattern



SCALE IS 5 DECIBELS PER DIVISION

LEGEND
 ——— 200 Hz
 ——— 1 kHz
 - - - - - 5 kHz
 - - - - - 8 kHz

Dimensions



audio-technica®

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