

## Description

The AT851a is a wide-range condenser microphone with a hemi-cardioid (half-space cardioid) polar pattern. It is useful in surface-mounted applications such as high-quality sound reinforcement, professional recording, television, and other demanding sound pickup situations. Its small size makes the AT851a ideal for use in applications where minimum visibility is required.

Supplied as a cardioid, the AT851a easily accepts interchangeable elements to permit selection of angle of acceptance from 100° to 360°. The following optional elements are available from an authorized Audio-Technica dealer or the A-T service department: AT853H-ELE hypercardioid, AT853O-ELE omnidirectional, AT853SC-ELE subcardioid.

Positioning a properly designed miniature cardioid microphone centrally on a large, flat, unobstructed surface yields several distinct advantages. Directionality is increased by 3 dB, promoting enhanced gain before feedback and further suppression of ambient noise. Sensitivity is increased for improved signal to noise ratio. Phase distortion due to reflected sound energy from the boundary itself is eliminated.

The microphone features a 25' (7.6 m) cable with TA3F-type connectors for use between the microphone and the AT8531 power module provided. It can be powered from an external 9V to 52V DC phantom power supply or from a 1.5V AA battery. Current demands are so low that a premium battery will provide about 1200 hours of continuous use. A built-in 3-position switch on the power module allows selection of off, on/flat response or on/low-roll-off.

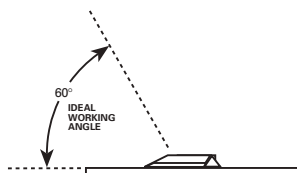
The microphone element is enclosed in a rugged die-cast case and protected by two layers of perforated steel. The combination of heavy die-cast case and rubber non-slip bottom pad minimizes mechanical coupling of surface vibrations to the microphone. The low-profile housing has a low-reflectance black finish. The microphone is also available in white as the AT851Wa, with a white-finished microphone housing and cable.

## Installation and Operation

To install the battery, remove the cap from the top of the power module. Insert the battery, being certain to observe battery polarity as marked (+ end toward the cap release button). For longest battery life, the switch should remain off except when the microphone is in use. While standard carbon-zinc AA batteries will operate the microphone satisfactorily, alkaline or mercury cells are preferred for longer service life. Only "leakproof" batteries should be used. The battery does not have to be in place to use in phantom power mode. Phantom power requires 9V to 52V DC.

The symmetry and area of the mounting surface directly affect the sensitivity of the boundary microphone at low frequencies. Ideally, the mounting surface should be circular; however, square or rectangular

surfaces are most often used. If the mounting surface is rectangular, the smaller dimension tends to determine low-frequency cutoff. The microphone should be centered on the surface and positioned with the front of the microphone facing the sound source along the longer dimension of the mounting surface. The sound source should not be below, or higher than 60° above, the plane of the mounting surface.



Output is low impedance balanced. The output connector of the power module mates with XLR-type cable connectors. The balanced signal appears across Pins 2 and 3, while the ground (shield) connection is Pin 1. Output is phased so that positive acoustic pressure produces positive voltage at Pin 2 in accordance with industry convention.

While a modern condenser microphone is not unduly sensitive to the environment, temperature extremes can be harmful. Avoid leaving the microphone in the open sun or in areas where temperatures exceed 110° F (43° C) for long periods of time. Extremely high humidity should also be avoided.

## Architects and Engineers Specifications

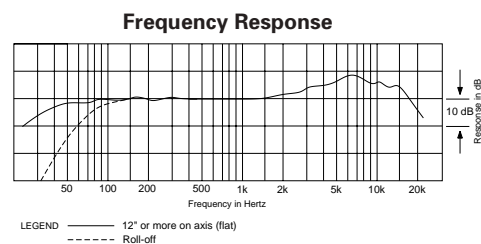
The microphone shall be a fixed-charge condenser with a hemi-cardioid polar pattern designed for use in surface-mount boundary applications. It shall be capable of accepting optional interchangeable elements for additional polar patterns. The frequency response shall be 30 Hz to 20,000 Hz. The microphone shall operate from an external 9V to 52V DC phantom power source, or alternatively, from a 1.5V AA/UM3 battery. Nominal open-circuit output voltage shall be 6.3 mV (phantom) or 5.6 mV (battery) at 1 kHz, 1 Pascal. Output shall be low impedance balanced (200 ohms-phantom, 270 ohms-battery).

A 25' (7.6 m) cable with TA3F connectors shall be supplied for connection between the microphone and the power module. The included power module shall house the battery and contain an off/on/low-roll-off switch. The power module shall terminate in a 3-pin XLRM-type connector.

The microphone shall have a maximum width of 2.52" (64.0 mm) and maximum length of 3.60" (91.5 mm). Weight shall be 4.2 oz (120 grams). The microphone housing shall be housed in a die-cast case with a two-layer perforated steel grille. Finish shall be low-reflectance black [white].

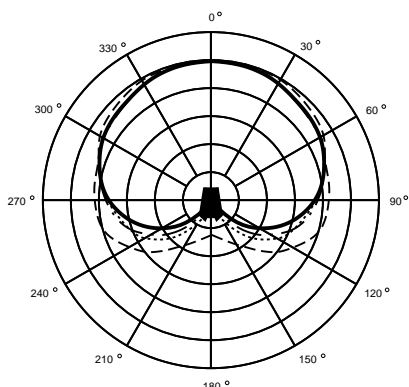
The Audio-Technica AT851a [AT851Wa] is specified.

## AT851a AT851Wa MICRO CARDIOID CONDENSER BOUNDARY MICROPHONE

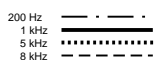


# AT851a AT851Wa

## Polar Pattern

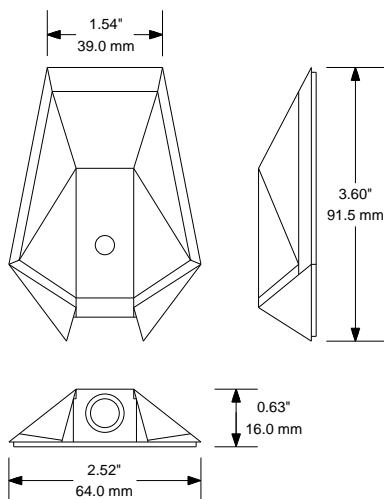


### LEGEND

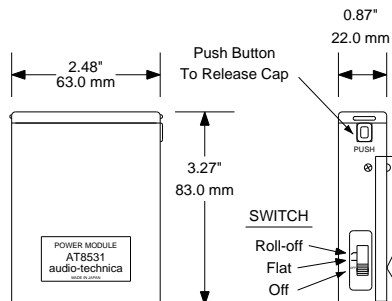


SCALE IS 5 DECIBELS PER DIVISION

## Dimensions



## AT8531 Power Module



## AT851a/AT851Wa SPECIFICATIONS†

<b>ELEMENT</b>	Fixed-charge back plate permanently polarized condenser	
<b>POLAR PATTERN</b>	Half-cardioid (cardioid in hemisphere above mounting surface)	
<b>FREQUENCY RESPONSE</b>	30-20,000 Hz	
<b>LOW-FREQUENCY ROLL-OFF</b>	80 Hz, 18 dB/octave	
<b>OPEN CIRCUIT SENSITIVITY</b>	PHANTOM BATTERY	-44 dB (6.3 mV) re 1V at 1 Pa*
	BATTERY	-45 dB (5.6 mV) re 1V at 1 Pa*
<b>IMPEDANCE</b>	PHANTOM BATTERY	200 ohms
	BATTERY	270 ohms
<b>MAXIMUM INPUT SOUND LEVEL</b>	PHANTOM BATTERY	135 dB SPL, 1 kHz at 1% T.H.D.
	BATTERY	121 dB SPL, 1 kHz at 1% T.H.D.
<b>DYNAMIC RANGE (TYPICAL)</b>	PHANTOM BATTERY	108 dB, 1 kHz at Max SPL
	BATTERY	94 dB, 1 kHz at Max SPL
<b>SIGNAL-TO-NOISE RATIO<sup>1</sup></b>	67 dB, 1 kHz at 1 Pa*	
<b>SWITCH</b>	Off, on-flat, on-roll-off	
<b>BATTERY TYPE</b>	Use only "leakproof" AA/UM3 1.5V battery	
<b>BATTERY CURRENT</b>	0.4 mA typical	
<b>BATTERY LIFE</b>	1200 hours (alkaline battery)	
<b>PHANTOM POWER REQUIREMENTS</b>	9-52V DC, 2 mA typical	
<b>WEIGHT</b>	<b>MICROPHONE</b>	4.2 oz (120 grams)
	<b>POWER MODULE</b>	5.2 oz (147 grams)
<b>DIMENSIONS</b>	<b>MICROPHONE</b>	2.52" (64.0 mm) max width, 3.60" (91.5 mm) max length, 0.63" (16.0 mm) height
	<b>POWER MODULE</b>	3.27" (83.0 mm) H x 2.48" (63.0 mm) W x 0.87" (22.0 mm) D
<b>OUTPUT CONNECTOR (POWER MODULE)</b>	Integral 3-pin XLRM-type	
<b>CABLE</b>	25' (7.6 m) long, 0.13" (3.2 mm) diameter, 2-conductor, shielded cable with TA3F connectors	
<b>ACCESSORIES FURNISHED</b>	AT8531 power module; battery; soft vinyl protective pouch	
<b>OPTIONAL INTERCHANGEABLE ELEMENTS</b>	AT853H-ELE hypercardioid (100°) AT853O-ELE omnidirectional (360°) AT853SC-ELE subcardioid (170°)	

† 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/cm<sup>2</sup> = 10 microbars = 94 dB SPL

<sup>1</sup> Typical, A-weighted, using Audio Precision System One.

## Optional Accessories:

- CP8201 line matching transformer (Lo-Z to 50,000 ohms).
- AT8202 adjustable in-line attenuator for use with low-impedance microphones.
- AT8314 2-conductor, shielded, vinyl-jacketed, broadcast-type cable with XLRM-type connector at microphone end, XLRM-type connector at equipment end. Available in 10', 20', 25', 30', 50' & 100' lengths.
- CP8506 four-channel 48V phantom power supply (AC powered).
- CP8508 single-channel 24V phantom power supply (AC powered).

## One-Year Limited Warranty

Audio-Technica microphones and accessories purchased in the U.S.A. are warranted for one year from date of purchase by Audio-Technica U.S., Inc. (A.T.U.S.) to be free of defects in materials and workmanship. In event of such defect, product will be repaired promptly without charge or, at our option, replaced with a new product of equal or superior value if delivered to A.T.U.S. or an Authorized Service Center, prepaid, together with the sales slip or other proof of purchase date. **Prior approval from A.T.U.S. is required for return.** This warranty excludes defects due to normal wear, abuse, shipping damage, or failure to use product in accordance with instructions. This warranty is void in the event of unauthorized repair or modification.

**For return approval and shipping information,** contact the Service Department, Audio-Technica U.S., Inc., 1221 Commerce Drive, Stow, Ohio 44224.

Except to the extent precluded by applicable state law, **A.T.U.S. will have no liability for any consequential, incidental, or special damages; any warranty of merchantability or fitness for particular purpose expires when this warranty expires.**

This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Outside the U.S.A., please contact your local dealer for warranty details.



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