

# AT4050ST

Stereo Condenser Microphone

 audio-technica

40 series microphones



## Features

- **Innovative side-address Mid-Side stereo microphone engineered for professional recording, broadcast and sound reinforcement**
- **Independent cardioid and figure-of-eight condenser elements**
- **Switch selection of M-S mode and two internally matrixed stereo modes**
- **Dual-diaphragm capsules maintain precise polar pattern definition across the full frequency range of the microphone**
- **Transformerless circuitry virtually eliminates low-frequency distortion and provides superior correlation of high-speed transients**
- **The 2-micron-thick, vapor-deposited gold diaphragms undergo a five-step aging process so that the optimum characteristics remain constant over years of use**
- **Open acoustical environment of the symmetrical housing assembly minimizes unwanted internal reflections**
- **Custom shock mount provides superior isolation**
- **Integral 80 Hz high-pass filter switch and 10 dB pad switch**
- **State-of-the-art design and manufacturing techniques ensure compliance with A-T's stringent consistency and reliability standards**

## Description

The AT4050ST is a stereo side-address externally polarized (DC bias) condenser microphone with independent cardioid and figure-of-eight elements configured in a Mid-Side arrangement with switch-selectable internal matrixing. The microphone allows sound recordists the choice of selecting a left-right stereo output (wide 127° or narrow 90°) via the microphone's internal matrixing system or choosing discrete Mid-Side signals for later manipulation. It is designed to meet the most critical acoustic requirements of professional recording, broadcast and sound reinforcement.

The microphone requires 48V phantom power for operation.

The microphone includes a 5.0 m (16.5') dual output cable terminating in a 5-pin XLR-F-type to two standard 3-pin XLR-M-type connectors. The output of the microphone is a 5-pin XLR-M-type connector.

The microphone is equipped with a switchable 10 dB pad and a switch that permits choice of flat response or low-frequency roll-off (via integral 80 Hz high-pass filter).

The microphone is enclosed in a rugged housing. The included AT8449 shock mount provides superior isolation and permits mounting on any microphone stand with  $\frac{5}{8}$ "-27 threads. A dust cover and a protective carrying case are also included.

## Operation and Maintenance

The AT4050ST requires 48V phantom power on Pins 2 and 3 of both XLR3M-type connectors for operation. Wiring must be balanced throughout, and all mic cables in the system must be wired consistently: Pin 1-to-Pin 1, etc. If connecting to unbalanced inputs, good-quality balanced line transformers must be used.

**Mid-Side Operation:** In M-S mode, the microphone provides independent Mid and Side signals. This allows the width of the stereo image to be adjusted in post production or in the field with a matrix mixer.

**Matrixed Stereo:** The microphone offers two internally matrixed modes which provide traditional "left-right" stereo without the need for external mixers. To accommodate varying acoustic environments, the user may select between a wide pattern (127°) with increased ambient pickup, and a narrow pattern (90°) which offers more rejection and less ambience. Output phase is "Pin 2 hot."

For correct left-right stereo orientation, position the microphone so the raised Audio-Technica emblem is facing the sound source. In the internally matrixed modes, locating the microphone nearer the sound source enhances the apparent width of the stereo image, while decreasing room ambience. Moving away from the sound source will result in a narrower stereo image and more room sound.

M-S Output	Connector	Pin 1	Pin 2	Pin 3
Mid	<b>XLR3M-Gray</b>	Ground	Mid +	Mid -
	<i>XLR5M Mic Connector:</i>	<i>Pin 1</i>	<i>Pin 2</i>	<i>Pin 3</i>
Side	<b>XLR3M-Red</b>	Ground	Side +	Side -
	<i>XLR5M Mic Connector:</i>	<i>Pin 1</i>	<i>Pin 4</i>	<i>Pin 5</i>
Matrix Output	Connector	Pin 1	Pin 2	Pin 3
Left	<b>XLR3M-Gray</b>	Ground	L +	L -
	<i>XLR5M Mic Connector:</i>	<i>Pin 1</i>	<i>Pin 2</i>	<i>Pin 3</i>
Right	<b>XLR3M-Red</b>	Ground	R +	R -
	<i>XLR5M Mic Connector:</i>	<i>Pin 1</i>	<i>Pin 4</i>	<i>Pin 5</i>

An integral 80 Hz high-pass filter provides easy switching from a flat frequency response to a low-end roll-off. The roll-off position reduces the pickup of low-frequency ambient noise (such as traffic, air-handling systems, etc.), room reverberation and mechanically coupled vibrations. To engage the high-pass filter, slide the switch toward the "bent" line.

The microphone is also equipped with a switchable 10 dB pad that lowers the microphone's sensitivity, providing higher Max SPL capability for flexible use with a wide range of users and system configurations. To engage the 10 dB pad, slide the switch toward the -10 position.

In use, secure the cable to the mic stand or boom, leaving a slack loop at the mic. This will ensure the most effective shock isolation and reduce the possibility of accidentally pulling the microphone out of its mount.

Avoid leaving the microphone in the open sun or in areas where temperatures exceed 110° F (43° C) for extended periods. Extremely high humidity should also be avoided.

## Architect's and Engineer's Specifications

The microphone shall be a side-address Mid-Side stereo design with two independent externally polarized (DC bias) condenser elements. It shall have cardioid and figure-of-eight polar patterns and a frequency response of 20 Hz to 18,000 Hz. The microphone shall operate from an external 48V DC phantom power source. It shall be capable of handling sound input levels up to 149 dB (159 dB with 10 dB pad-mid and side) with a dynamic range of 134 dB (mid), 132 dB (side). Nominal open circuit output voltage shall be 15.8 mV (mid), 15.8 mV (side), 7.9 mV (stereo 90°), 8.9 mV (stereo 127°) at 1V, 1 Pascal. Output shall be low impedance balanced (50 ohms).

The output of the microphone shall be a 5-pin XLRM-type connector. A 5.0 m (16.5') cable with a 5-pin XLRF-type to two standard 3-pin XLRM-type connectors shall be included.

The microphone shall be equipped with a switchable 10 dB pad and a switch that permits choice of flat response or 80 Hz low-frequency roll-off. It shall also include switch selection of non-matrixed M-S mode and two internally matrixed left-right stereo modes. The M-S mode shall provide independent Mid and Side signals. The two internally matrixed modes shall provide traditional "left-right" stereo with the choice of wide (127°) and narrow (90°) pickup patterns.

The microphone shall be 193.0 mm (7.60") long and have a diameter of 53.4 mm (2.10"). Weight shall be 517 g (18.2 oz). The microphone shall include a shock mount, a dust cover, and a protective carrying case.

The Audio-Technica AT4050ST is specified.

## Specifications

<b>Elements</b>	Externally-polarized (DC bias) condenser
<b>Polar patterns</b>	Cardioid, Figure-of-eight
<b>Frequency response</b>	20-18,000 Hz
<b>Low frequency roll-off</b>	80 Hz, 12 dB/octave
<b>Open circuit sensitivity</b>	Stereo, 90°: -42 dB (7.9 mV), re 1V at 1 Pa Stereo, 127°: -41 dB (8.9 mV), re 1V at 1 Pa Mid: -36 dB (15.8 mV), re 1V at 1 Pa Side: -36 dB (15.8 mV), re 1V at 1 Pa
<b>Impedance</b>	50 ohms
<b>Maximum input sound level (Mid and Side)</b>	149 dB SPL, 1 kHz at 1% T.H.D.; 159 dB SPL, with 10 dB pad (nominal)
<b>Noise<sup>1</sup></b>	Stereo, 90°: 25 dB SPL; Stereo, 127°: 16 dB SPL; Mid: 15 dB SPL; Side: 17 dB SPL
<b>Dynamic range (typical)</b>	Mid: 134 dB, 1 kHz at Max SPL Side: 132 dB, 1 kHz at Max SPL
<b>Signal-to-noise ratio<sup>1</sup></b>	Stereo, 90°: 69 dB, 1 kHz at 1 Pa Stereo, 127°: 78 dB, 1 kHz at 1 Pa Mid: 79 dB, 1 kHz at 1 Pa Side: 77 dB, 1 kHz at 1 Pa
<b>Phantom power requirements</b>	48V DC, 6.4 mA typical—both channels total
<b>Switches</b>	90°, 127°, M-S; Flat, roll-off; 10 dB pad (nominal)
<b>Weight</b>	517 g (18.2 oz)
<b>Dimensions</b>	193.0 mm (7.60") long, 53.4 mm (2.10") maximum body diameter
<b>Output connector</b>	Integral 5-pin XLRM-type
<b>Cable</b>	5.0 m (16.5') long, 8-conductor, shielded, vinyl-jacketed stereo cable with 5-pin XLRF-type connector at microphone end and two 3-pin XLRM-type connectors at output end
<b>Audio-Technica case style</b>	R1
<b>Accessories furnished</b>	AT8449 shock mount for 5/8"-27 threaded stands; 5/8"-27 to 3/8"-16 threaded adapter; microphone dust cover; protective carrying case

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

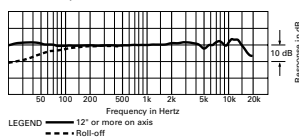
1 Pascal = 10 dynes/cm<sup>2</sup> = 10 microbars = 94 dB SPL

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

Specifications are subject to change without notice.



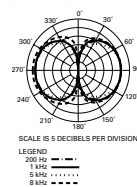
mid frequency response:  
20–18,000 Hz



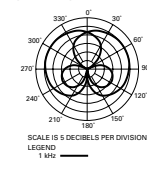
mid polar pattern



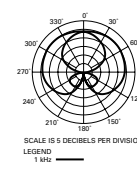
side polar pattern



127° polar pattern



90° polar pattern



**audio-technica**

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