

Engineered Sound®

AT933PM/H
Hypercardioid

Description

The AT933PM/H is a wide-range miniature condenser microphone with a hypercardioid polar pattern. It is designed for quality sound reinforcement and other demanding sound pickup applications. The AT933PM/H is furnished with a vinyl-coated steel hanger that allows it to be positioned inconspicuously over a choir, orchestra, stage, etc., for very low-profile situations.

The microphone features a 50' (15.2 m) permanently-attached miniature cable. The cable may be cut to any length and connected to screw terminals on the AT8534(A) wall/ceiling plate power module provided. The AT8534(A) power module features a white-finished standard electrical cover plate for easy, secure installation. It can be powered from any external 9V to 52V DC phantom power supply. Output is low impedance balanced.

Four additional interchangeable elements are available to permit selection of angle of acceptance from 90° to 360°.

Audio-Technica design engineers have utilized the newest low-mass diaphragm technology in the quest for superior performance. The permanent charge is now on the fixed back plate, rather than the moving element. With A-T fixed-charge "back plate" construction, a gold-vaporized diaphragm just 2 microns thick (about .000079") can be used. This considerably reduces moving mass, thus improving frequency response and transient response while reducing distortion.

The microphone is enclosed in a rugged housing with a low-reflectance black finish. It is also available in white as the AT933PMW/H, with a white-finished microphone housing, cable and steel hanger, for applications where the microphone must be hung against a light background.

Installation and Operation

The combination of small size and excellent response makes the AT933PM/H ideal for suspension over choirs, instrumental groups or theater stages. A uniform 100° angle of acceptance provides well-balanced audio pickup. The microphone should be located forward of the front-most source, above the rear-most source, and "aimed" between them (Fig. 1). Increasing the height of the mic above the sources will tend to equalize sound levels between them, but may also increase background/reverberant sound pickup. Whenever possible, the distance from the mic to the rear-most pickup should be no more than twice the distance to the front source, to maintain front-to-rear balance (Fig. 1).

Width of pickup is approximately 2.5 times the distance to the closest performer. If additional mics are needed for wide sources, they should not be closer together laterally than 2.5 times the distance to the front source, to avoid phase cancellation (Fig. 2).

To orient the microphone in the proper direction, twist the housing slightly in its wire holder (clockwise rotation moves the microphone to the right; counterclockwise rotation moves it to the left).

The provided foam windscreen simply slips over the head of the microphone, effectively reducing noise from wind or ventilation air currents.

The AT933PM/H offers a low-roll-off filter. As supplied, the AT8534(A) power module is wired for flat response. To enable the low-roll-off filter, clip the jumper wire "JW" on the AT8534(A) circuit board. Low roll-off is useful in reducing room rumble, low-frequency air movement noise, and low-frequency vibration.

The AT8534(A) wall/ceiling plate power module is designed to be mounted in a standard single-gang electrical box. For safety and best performance, use the electrical box *only* for the AT8534(A); do not include any AC power conductors. (Also route the mic cable as far away from AC power cables as possible.)

Feed the small cable from the mic through the strain relief on the power module plate. Tie a loose knot in the cable at the desired length and push it down gently into the recess in the back of the strain relief to secure the microphone. Cut excess cable, strip the mic cable wires and attach them to their respective input terminals. Screw-terminal output connections of the AT8534(A) are the same as those of an XLR-type plug: shield to Terminal 1, balanced signal and phantom power to Terminals 2 and 3. Output is phased so that positive acoustic pressure produces positive voltage at Terminal 2, in accordance with industry convention. *Do not connect the output cable shield to the box.* Double-check to make certain that all input and output leads have no bare wires or loose strands that could touch each other, the circuit board or the electrical box. Then attach the power module plate to the electrical box.

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.

Miniature
Condenser
Hanging
Microphone
with
Wall/Ceiling Plate
Power Module

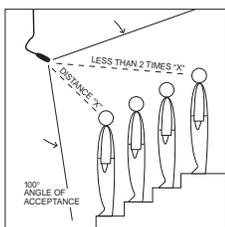


Figure 1

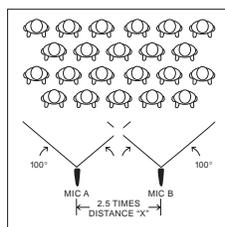
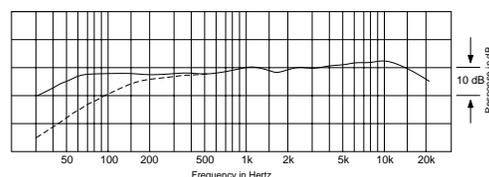


Figure 2

Frequency Response (Typical)



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



audio-technica®

AT933PM/H

AT933PM/H Specifications†

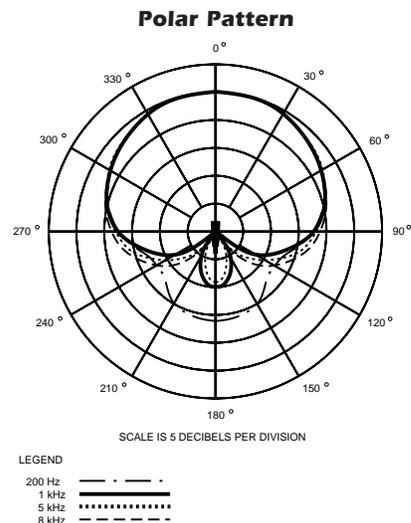
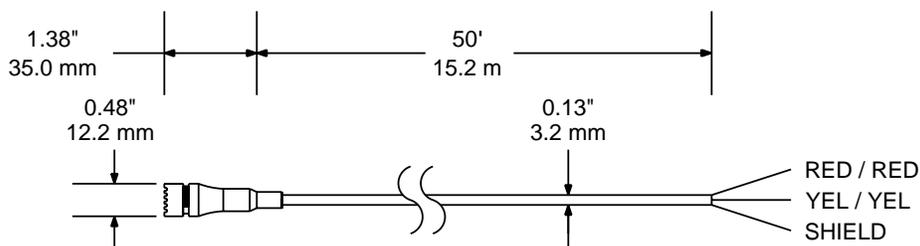
Element	Fixed-charge back plate permanently polarized condenser
Polar Pattern	Hypercardioid
Frequency Response	40-20,000 Hz
Low-frequency Roll-off	150 Hz, 6 dB/octave
Open Circuit Sensitivity	-33 dB (22.4 mV) re 1V at 1 Pa*
Impedance	200 ohms (1000 ohms without power module)
Maximum Input Sound Level	130 dB SPL, 1 kHz at 1% T.H.D.
Dynamic Range (Typical)	103 dB, 1 kHz at Max SPL
Signal-to-noise Ratio†	67 dB, 1 kHz at 1 Pa*
Phantom Power Requirements	9-52V DC, 2 mA typical
Weight	
Microphone	0.4 oz (10 grams)
Power Module	3.4 oz (96 grams)
Dimensions	
Microphone	1.38" (35.0 mm) long, 0.48" (12.2 mm) head diameter
Power Module	2.80" (71.0 mm) W x 4.55" (115.5 mm) H x 1.42" (36.0 mm) D
Power Module Connectors	Screw terminals
Cable	50' (15.2 m) long (permanently attached to microphone), 0.13" (3.2 mm) diameter, 2-conductor, shielded cable with pigtail output
Accessories Furnished	(AT933PM/H) AT8102 two-stage foam windscreen; AT8451 steel hanger (AT933PMW/H) AT8102WH two-stage foam windscreen; AT8451WH steel hanger (Both) AT8534(A) power module; element adapter (for C/H/O/SC elements)
Optional Interchangeable Elements	AT853C-ELE cardioid (120°) AT853ML-ELE MicroLine® (90°) 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/cm² = 10 microbars = 94 dB SPL

† Typical, A-weighted, using Audio Precision System One.

Dimensions



Architects and Engineers Specifications

The microphone shall be a fixed-charge condenser with a hypercardioid polar pattern and a frequency response of 40 Hz to 20,000 Hz. It shall be capable of accepting optional interchangeable elements for additional polar patterns. It shall operate from an external 9V to 52V DC phantom power source. Nominal open-circuit output voltage with the included wall/ceiling plate power module shall be 22.4 mV at 1 kHz, 1 Pascal. Output shall be low impedance balanced (200 ohms).

The microphone shall have a permanently-attached 50' (15.2 m) miniature cable with a pigtail output. The pigtail output shall connect to screw terminals on the power module. Output connections on the power module shall be screw terminals.

The microphone shall be mountable in an included steel hanger that allows permanent overhead installation for pickup of dialogue, orchestras and choirs. The microphone shall be 1.38" (35.0 mm) long with a head diameter of 0.48" (12.2 mm). The microphone weight shall be 0.4 oz (10 grams) without cable. The microphone case, cable and steel hanger shall be black [white].

The Audio-Technica AT933PM/H [AT933PMW/H] is specified.

One-Year Limited Warranty

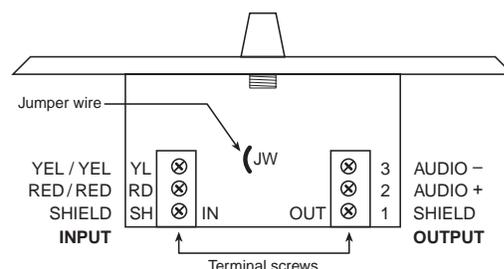
Audio-Technica microphones and accessories purchased in the U.S.A. are warranted for one year from date of purchase by Audio-Technica U.S., Inc. (A.T.U.S.) to be free of defects in materials and workmanship. In event of such defect, product will be repaired promptly without charge or, at our option, 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.

Power Module



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