

Engineered Sound[®]

[Description]

The ES933/ML is a wide-range miniature condenser microphone with a MicroLine[®] polar pattern. It is designed for quality sound reinforcement, professional recording, television and other demanding sound pickup applications. The ES933/ML is furnished with a vinyl-coated steel hanger that allows it to be adjusted for correct positioning. An included custom foam windscreen effectively reduces noise from wind or ventilation air currents.

The MicroLine[®] polar pattern provides a 90° angle of acceptance. Additional interchangeable elements with cardioid (120°) and hypercardioid (100°) pickup patterns are available.

The microphone features a 50' (15.2 m) permanently-attached miniature cable. Its free end connects to the provided AT8536 power module via internal solderless screw terminals for simple cable-length adjustment in the field. It can be powered from any external IIV to 52V DC phantom power supply. A recessed switch in the power module permits choice of flat response or low-frequency roll-off to help control undesired ambient noise.

The microphone is enclosed in a rugged housing with a low-reflectance black finish. It is also available with white housing, cable and hanger as the ES933VW/ML.

[Installation and Operation]

The combination of small size and excellent response makes the ES933/ML ideal for suspension over choirs, instrumental groups or theater stages. A uniform 90° angle of acceptance provides well-balanced pickup over a narrow area. 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 pickup of background or reverberant sound. Whenever possible, the distance from the mic to the rear-most source 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 1.5 times the distance to the closest performer. If additional mics are needed for wide sources, they should be positioned apart laterally at least 1.5 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 MicroLine element, effectively reducing noise from wind or ventilation air currents.

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.

The cable length may be shortened at the power module. To disassemble the power module, turn the **silver screw counter-clockwise** (left-handed thread) until it is down in the connector base and clear of the case. Use a screwdriver with $\frac{3}{32}$ " (2.5 mm) blade. Then slide the outer case up the cable to reveal the circuit board and screw terminals. Loosen the three terminal screws and remove the cable from the module. Next, slide the case off the cable, cut the cable to the desired length (allowing a few extra inches) and slide the case back onto the cable. Tie a single knot in the cable about two inches from the cut end. Following Figure 3, cut the cable off 1" down from the top of the knot and carefully remove $\frac{1}{2}$ " of the outer jacket. Strip the mic cable wires and attach them to their respective terminals (Fig. 4). Make certain that the terminals are clamped on the conductors, not on the insulation, and that there are no loose strands of wire which might touch other terminals. Replace the case, being certain that the roll-off switch is accessible and the silver screw is aligned with its hole in the case. Finish by turning the screw **clockwise** until the case is firmly secured. Test the microphone for proper operation.

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.

[ES933/ML] MicroLine[®] Condenser Hanging Microphone

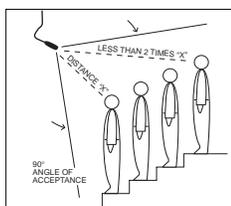
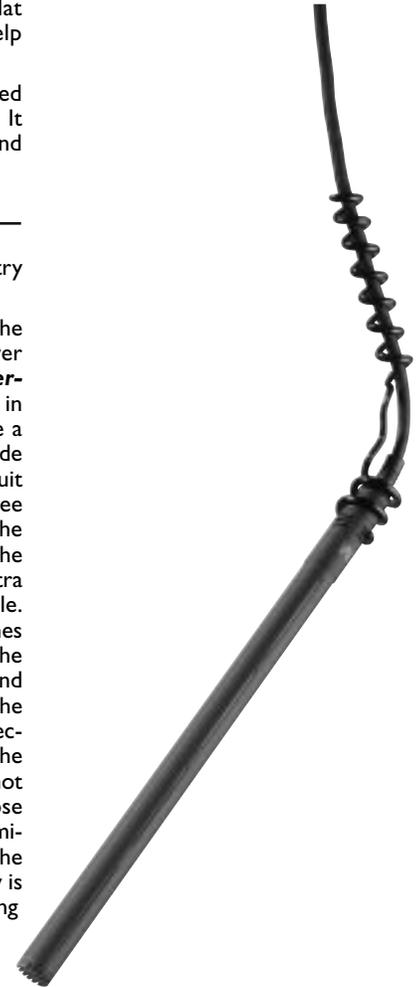


Figure 1

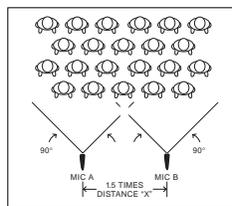


Figure 2

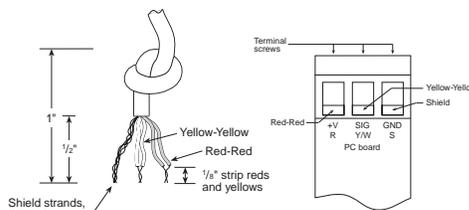


Figure 3

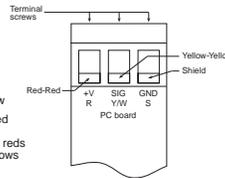


Figure 4



audio-technica[®]

[ES933/ML Specifications†]

Element	Fixed-charge back plate permanently polarized condenser
Polar Pattern	MicroLine®
Frequency Response	30-20,000 Hz
Low-frequency Roll-off	80 Hz, 12 dB/octave
Open Circuit Sensitivity	-35 dB (17.7 mV) re 1V at 1 Pa*
Impedance	250 ohms (1000 ohms without power module)
Maximum Input Sound Level	133 dB SPL, 1 kHz at 1% T.H.D.
Dynamic Range (Typical)	107 dB, 1 kHz at Max SPL
Signal-to-noise Ratio¹	68 dB, 1 kHz at 1 Pa*
Switch	Flat response, low-roll-off (recessed)
Phantom Power Requirements	11-52V DC, 4 mA typical
Weight	
Microphone	0.5 oz (14 grams)
Power Module	2.0 oz (56 grams)
Dimensions	
Microphone	5.60" (142.3 mm) long, 0.31" (8.0 mm) head diameter
Power Module	3.86" (98.0 mm) long, 0.74" (18.9 mm) diameter

Output Connector (Power Module)	Integral 3-pin XLRM-type
Cable	50' (15.2 m) long (permanently attached to microphone), 0.13" (3.2 mm) diameter, low-noise shielded cable; free end attached to screw terminals in power module

Accessories Furnished (ES933/ML)	AT8138 foam windscreen; AT8452 steel hanger
(ES933W/ML)	AT8138(WH) foam windscreen; AT8452(WH) steel hanger
(Both)	AT8536 power module

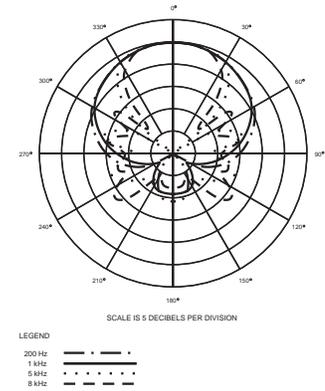
Optional Interchangeable Elements	ESE-C cardioid (120°) ESE-H hypercardioid (100°)
--	---

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

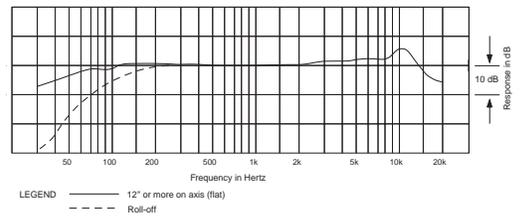
* 1 Pascal = 10 dynes/cm² = 10 microbars = 94 dB SPL

¹ Typical, A-weighted, using Audio Precision System One. Specifications are subject to change without notice.

[Polar Pattern]



[Frequency Response]



[Architects and Engineers Specifications]

The microphone shall be a fixed-charge condenser with a frequency response of 30 Hz to 20,000 Hz and a MicroLine® polar pattern with uniform 90° angle of acceptance. It shall be capable of accepting optional interchangeable elements for additional polar patterns. It shall operate from an external 11V to 52V DC phantom power source. It shall be capable of handling sound input levels up to 133 dB with a dynamic range of 107 dB. Nominal open-circuit output voltage shall be 17.7 mV at 1 kHz, 1 Pascal. Output shall be low impedance balanced (250 ohms).

The microphone shall have a permanently-attached 50' (15.2 m) miniature low-noise cable, connected to an included in-line power module containing the microphone electronics. Screw terminal input connections in the power module shall permit shortening of the cable without soldering. The power module shall include a switch for low-frequency roll-off and shall terminate in a 3-pin XLRM-type output connector.

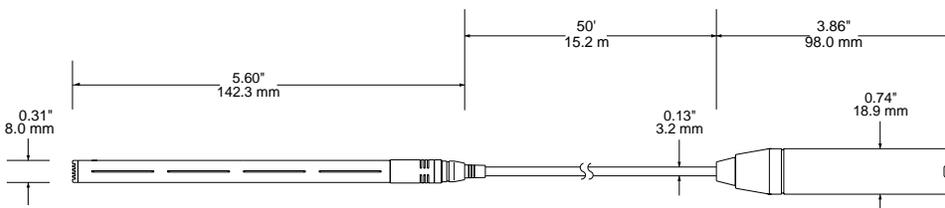
The microphone shall be mountable in an included adjustable steel wire hanger that allows permanent overhead installation for pickup of dialogue, orchestras and choirs. A custom foam windscreen shall be provided. The microphone shall be 5.60" (142.3 mm) long with a head diameter of 0.31" (8.0 mm). The microphone weight shall be 0.5 oz (14 grams) without cable. The microphone case, cable and steel hanger shall be finished in black [white]. The power module shall be finished in black.

The Audio-Technica ES933/ML [ES933W/ML] is specified.



Audio-Technica U.S., Inc.
1221 Commerce Drive, Stow, Ohio 44224

[Dimensions]



[Visit our Web site at www.audio-technica.com]

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.