



## DESCRIPTION

The ES933PMML 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 ES933PMML is furnished with a vinyl-coated steel hanger that allows it to be adjusted for correct positioning. An included foam windscreen effectively reduces noise from wind or ventilation air currents.

The ES933PMML is equipped with UniGuard® RFI-shielding technology, which offers outstanding rejection of radio frequency interference (RFI). The microphone is RoHS compliant – free from all substances specified in the EU directive on hazardous substances.

The microphone's MicroLine® polar pattern provides a 90° angle of acceptance. Additional interchangeable elements with omnidirectional (360°), 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 AT8534 wall/ceiling plate power module via TA3F-type connector. The power module features a white-finished standard electrical cover plate for easy, secure installation. The microphone can be powered from any external 11V to 52V DC phantom power supply. Switches in the power module permit a +10 dB gain setting for extra sensitive pickup as well as a choice of flat response or low-frequency roll-off (via integral 80 Hz high-pass UniSteep® filter) 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 ES933PMWML.

## INSTALLATION AND OPERATION

The combination of small size and excellent response makes the ES933PMML ideal for suspension over choirs, instrumental groups or theater stages. A uniform 90° 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 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 head of the microphone, effectively reducing noise from wind or ventilation air currents.

An integral 80 Hz high-pass UniSteep® 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 UniSteep® filter, slide the switch toward the "bent" line.

A 10 dB gain switch is provided for situations that demand extra sensitive pickup. The +10 position increases the microphone's

overall output by 10 dB. To engage the 10 dB gain, slide the switch toward the +10 position.

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

Screw-terminal output connections of the AT8534 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.

Connect the TA3F-type connector from the microphone's cable to the TA3M-type connector in the power module plate.

**NOTE:** Audio-Technica has developed a special RFI-shielding mechanism that is an integral part of the connectors in the Engineered Sound line. If you remove or incorrectly replace the connector, you may adversely affect the unit's RFI immunity. Audio-Technica offers a crimp tool (ATCT) and RFI shields for TA3F-type, TA5F-type and XLRM-type connectors that enable you to shorten the cable and correctly reinstall the connector while maintaining the highest level of RFI immunity.

If you need to shorten the cable between the microphone and power module, it can be done two ways:

- If RF integrity must be maintained, the TA3F-type connector can be removed from the cable end, the cable shortened and the connector replaced using Audio-Technica's available crimp tool and RFI shield for TA3F-type connector to maintain original RFI shielding. (See note above.)
- If RFI immunity is not required, the TA3M-type connector on the plate can be removed and discarded (save the back nut and washer). Assemble the included plastic ferrule into the hole left from the TA3M-type connector, using the washer and nut from the connector to secure the ferrule. Cut the cable to the desired length plus a few inches. Thread the cable through the ferrule and tie a knot in the cable behind the ferrule to secure it. Carefully strip the ends of the cable and connect the wires to the terminals formerly occupied by the TA3M-type connector. Maintain color coding (Shield - S, Yellow - Y, Red - R) and connect the microphone wires to the appropriate terminal screws. (Fig. 3) **NOTE:** The cable has two red wires and two yellow wires. Twist the two red wires together and the two yellow wires together. (Fig. 4)

(Continued on back)

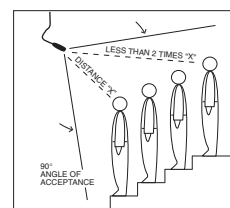


Figure 1

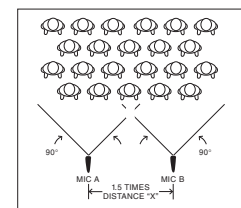


Figure 2

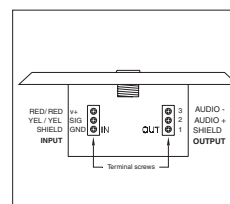


Figure 3

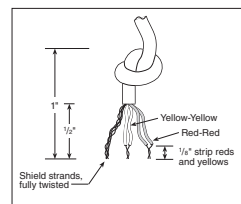


Figure 4

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 designed for suspended installation in permanent applications. It shall have 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 be capable of handling sound input levels up to 123 dB with a dynamic range of 102 dB. Nominal open-circuit output voltage shall be 17.7 mV at 1 kHz, 1 Pascal. Output shall be low impedance balanced (200 ohms).

The microphone shall operate from an external 11V to 52V DC phantom power source. It shall offer outstanding rejection of radio frequency interference (RFI). The microphone shall be RoHS compliant.

The microphone shall have a permanently attached 50' (15.2 m) miniature low-noise cable. Its free end shall connect to a provided plate power module via a TA3F-type connector. An optional crimping tool and crimp sleeves shall allow for shortening of the cable without loss of RFI immunity.

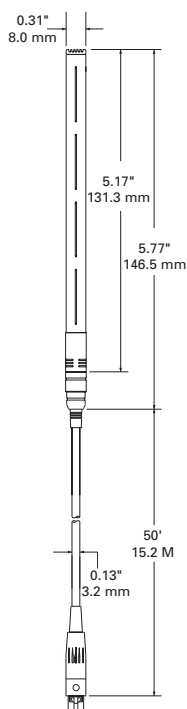
The plate power module shall be designed to mount over a standard single gang metal electrical box for ceiling or wall mounting. The power module shall be provided with a switch for low-frequency roll-off. The low-frequency roll-off shall be a tailored roll-off at 80 Hz to minimize pickup of unwanted mechanical noise. In addition, the power module shall incorporate a switchable +10 dB gain setting. The power module face plate shall be semi-gloss white and mounting screws shall be included.

Output connections on the power module shall be screw terminals.

For suspended installations, the microphone shall be provided with an adjustable steel wire hanger. The steel wire hanger shall attach to the microphone body and allow for the positioning of the microphone without the need for tools. Microphones using goosenecks or other methods for positioning shall be unacceptable. A foam windscreen shall be provided.

The microphone shall be 5.77" (146.5 mm) long with a head diameter of 0.31" (8.0 mm). The microphone weight shall be 0.3 oz (9.5 grams) without cable. The microphone case, cable and steel hanger shall be finished in black [white].

The Audio-Technica ES933PMML [ES933PMWML] is specified.



### ES933PMML SPECIFICATIONS<sup>1</sup>

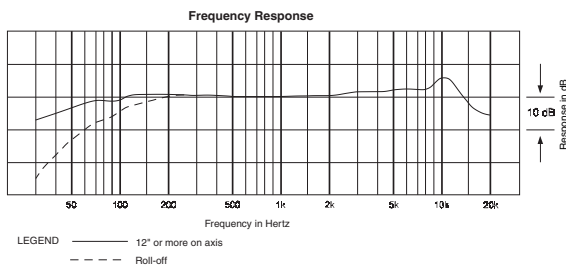
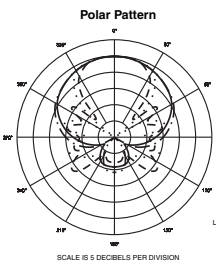
<b>ELEMENT</b>	Fixed-charge back plate permanently polarized condenser
<b>POLAR PATTERN</b>	MicroLine®
<b>FREQUENCY RESPONSE</b>	30-20,000 Hz
<b>LOW-FREQUENCY ROLL-OFF</b>	80 Hz, 18 dB/octave
<b>OPEN CIRCUIT SENSITIVITY</b>	-35 dB (17.7 mV) re 1V at 1 Pa*
<b>IMPEDANCE</b>	200 ohms
<b>MAXIMUM INPUT SOUND LEVEL</b>	123 dB SPL, 1 kHz at 1% T.H.D.
<b>DYNAMIC RANGE (typical)</b>	102 dB, 1 kHz at Max SPL
<b>SIGNAL-TO-NOISE RATIO<sup>1</sup></b>	73 dB, 1 kHz at 1 Pa*
<b>PHANTOM POWER REQUIREMENTS</b>	11-52V DC, 4 mA typical
<b>SWITCHES</b>	Flat, roll-off; 0 dB, +10 dB gain setting
<b>WEIGHT</b>	
<b>MICROPHONE</b>	9.5 g (0.3 oz)
<b>POWER MODULE</b>	97 g (3.4 oz)
<b>DIMENSIONS</b>	
<b>MICROPHONE</b>	146.5 mm (5.77") long, 8.0 mm (0.31") head diameter
<b>POWER MODULE</b>	71.0 mm (2.80") W x 115.5 mm (4.55") H x 36.0 mm (1.42") D
<b>OUTPUT CONNECTOR (power module)</b>	Screw terminals
<b>CABLE</b>	50' (15.2M) long (permanently attached to microphone), 0.13" (3.2 mm) diameter, 2-conductor shielded cable, terminated with TA3F-type connector
<b>OPTIONAL INTERCHANGEABLE ELEMENTS</b>	ESE-O omnidirectional (360°); ESE-C cardioid (120°); ESE-H hypercardioid (100°)
<b>ACCESSORIES FURNISHED</b>	
ES933PMML	AT8138 MicroLine foam windscreen; AT8452 steel hanger
ES933PMWML	AT8138(WH) MicroLine foam windscreen; AT8452(WH) steel hanger
Both	AT8534 power module

<sup>1</sup>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.



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