



## DESCRIPTION

The ES933H is a wide-range miniature condenser microphone with a hypercardioid polar pattern. It is designed for quality sound reinforcement, professional recording, television and other demanding sound pickup applications. The ES933H is furnished with a vinyl-coated steel hanger that allows it to be adjusted for correct positioning. An included snap-on foam windscreen effectively reduces noise from wind or ventilation air currents.

The ES933H 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 hypercardioid polar pattern provides a 100° angle of

acceptance. Additional interchangeable elements with omnidirectional (360°), cardioid (120°) and MicroLine® (90°) pickup patterns are available.

The microphone features a 50' (15.2 m) permanently attached miniature cable. Its free end connects to the provided AT8538 power module via TA3F-type connector. It can be powered from any external 11V to 52V DC phantom power supply. A recessed switch in the power module permits 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 ES933WH. The AT8538 power module is finished in black.

## INSTALLATION AND OPERATION

The ES933H requires 11V to 52V phantom power for operation.

The combination of small size and excellent response makes the ES933H 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 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 2.5 times the distance to the closest performer. If additional mics are needed for wide sources, they should be positioned apart laterally at least 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 snaps over the head of the microphone, 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.

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, use the end tip of a paperclip or other small pointed instrument to slide the switch toward the "bent" line.

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.

**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.

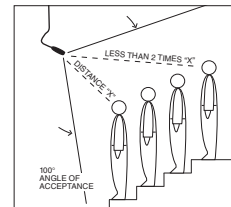


Figure 1

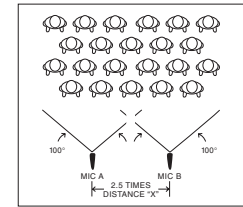


Figure 2

## ARCHITECTS AND ENGINEERS SPECIFICATIONS

The microphone shall be a fixed-charge condenser designed for suspended installation in permanent or portable applications. It shall have a frequency response of 80 Hz to 20,000 Hz and a hypercardioid polar pattern with uniform 100° 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 138 dB with a dynamic range of 109 dB. Nominal open-circuit output voltage shall be 10.0 mV at 1 kHz, 1 Pascal. Output shall be low impedance balanced (250 ohms).

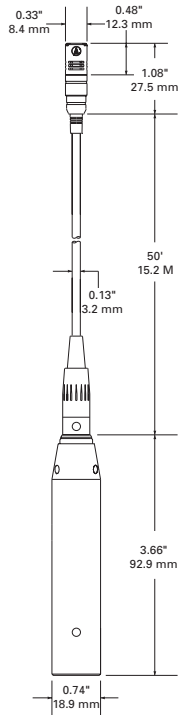
The microphone shall operate from an external 11V to 52V DC phantom power source. It shall offer outstanding rejection of radio frequency interference (RFI). The microphone shall be RoHS compliant.

The microphone shall have a permanently attached 50' (15.2 m) miniature low-noise cable. Its free end shall connect to a provided power module via TA3F-type connector. An optional crimping tool and crimp sleeves shall allow for shortening of the cable without loss of RFI immunity. The power module shall include a recessed 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. Output from the power module shall terminate in a 3-pin XLRM-type output connector.

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 snap-on foam windscreen shall be provided.

The microphone shall be 1.08" (27.5 mm) long with a head diameter of 0.33" (8.4 mm). The microphone weight shall be 0.2 oz (5.5 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 ES933H [ES933WH] is specified.



## ES933H SPECIFICATIONS†

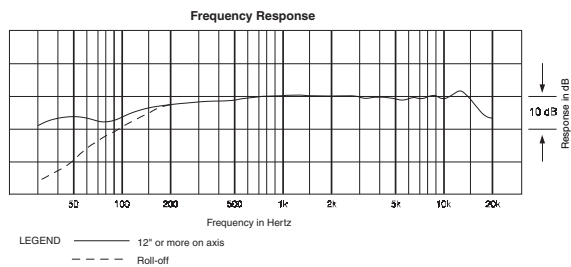
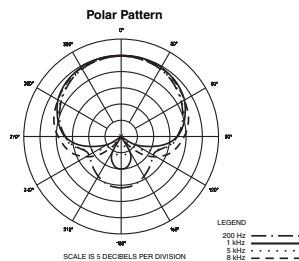
<b>ELEMENT</b>	Fixed-charge back plate permanently polarized condenser
<b>POLAR PATTERN</b>	Hypercardioid
<b>FREQUENCY RESPONSE</b>	80-20,000 Hz
<b>LOW-FREQUENCY ROLL-OFF</b>	80 Hz, 18 dB/octave
<b>OPEN CIRCUIT SENSITIVITY</b>	-40 dB (10.0 mV) re 1V at 1 Pa*
<b>IMPEDANCE</b>	250 ohms
<b>MAXIMUM INPUT SOUND LEVEL</b>	138 dB SPL, 1 kHz at 1% T.H.D.
<b>DYNAMIC RANGE (typical)</b>	109 dB, 1 kHz at Max SPL
<b>SIGNAL-TO-NOISE RATIO†</b>	65 dB, 1 kHz at 1 Pa*
<b>SWITCH</b>	Flat, roll-off
<b>PHANTOM POWER REQUIREMENTS</b>	11-52V DC, 2 mA typical
<b>WEIGHT</b>	
<b>MICROPHONE</b>	5.5 g (0.2 oz)
<b>POWER MODULE</b>	81 g (2.9 oz)
<b>DIMENSIONS</b>	
<b>MICROPHONE</b>	27.5 mm (1.08") long, 8.4 mm (0.33") head diameter
<b>POWER MODULE</b>	92.9 mm (3.66") long, 18.9 mm (0.74") diameter
<b>OUTPUT CONNECTOR (power module)</b>	Integral 3-pin XLRM-type
<b>CABLE</b>	15.2 m (50') long (permanently attached to microphone), 3.2 mm (0.13") diameter, 2-conductor shielded cable, terminated with TA3F-type connector
<b>OPTIONAL INTERCHANGEABLE ELEMENTS</b>	ESE-O omnidirectional (360°); ESE-C cardioid (120°); ESE-ML MicroLine® (90°)
<b>ACCESSORIES FURNISHED</b>	
ES933H	AT8109 two-stage foam windscreen; AT8452 steel hanger
ES933WH	AT8109(WH) two-stage foam windscreen; AT8452(WH) steel hanger
Both	AT8538 power module

†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

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

Specifications are subject to change without notice.



 **audio-technica**®

**Audio-Technica U.S., Inc.**, 1221 Commerce Drive, Stow, Ohio 44224  
**Audio-Technica Limited**, Old Lane, Leeds LS11 8AG England  
[www.audio-technica.com](http://www.audio-technica.com)

P51926 ©2007 Audio-Technica U.S., Inc. Printed in U.S.A.