



### Description

The SM31-EZ(-T) is a premium full-range 3" surface-mount speaker, with overall dimensions smaller than a 4" sphere. The SM31-EZ(-T) incorporates a proprietary attachment with indexed swivel-joint for complete hemispherical aiming. Components have been weatherized for indoor/outdoor applications.

The SM31-EZ is an 8  $\Omega$  speaker without transformer. The SM31-EZ-T is shipped with the AC-SM31-XFMR transformer module to add a 20 W transformer and 5-position tap switch that mounts into a single gang deep junction box.

### SM31-EZ(-T) PRODUCT SPECIFICATIONS

System Type	3" full-range, surface-mount, 8 $\Omega$ with optional 10 W transformer for 25/70.7/100 V applications
Impedance (Nominal) <sup>1</sup>	8 $\Omega$
Sensitivity dB @ 2.83 V / 1 M	85 dB
Sensitivity dB @ 1 W / 1 M <sup>2</sup>	85 dB
Frequency Response ( $\pm 3$ dB) <sup>3</sup>	170 Hz - 14 kHz
Frequency Response ( $\pm 10$ dB) <sup>3</sup>	120 Hz - 22 kHz
Max. Program Power <sup>4</sup>	40 W
Max. Continuous Power RMS <sup>5</sup>	20 W
Max. Power SPL @ 1 M <sup>6</sup>	98 dB
Coverage Angle ( $\pm 6$ dB @ 2 kHz)	70°
Coverage Angle ( $\pm 6$ dB @ 10 kHz)	45°
Coverage Angle (Avg. 2-10 kHz)	80°
Angle of Pointability	0° - 90° vertical   0° - 359° axial (full hemisphere)
Directivity Factor (Q)	4.9 (averaged 100 Hz - 10 kHz)   7.1 (2 kHz)
Directivity Index (DI) dB	5.1 (averaged 100 Hz - 10 kHz)   8.5 (2 kHz)
Tap Selector	Five-position tap switch (transformer accessory only)
Transducer: Full-Range Driver	76.1 mm (3") polypropylene driver with butyl rubber surround
Low-Frequency Voice Coil	19 mm   0.75"
Enclosure Material	ABS
Grille	Corrosion-resistant, powder-coated aluminum
Inputs	Screw terminal
Colors	Black or white
Height	110.4 mm   4.35"
Width	110.4 mm   4.35"
Depth (Including Mounting Bracket)	96.9 mm   3.81"
Weight	0.6 kg   1.4 lbs
Packaging	One per box
Included Accessories	N/A
Optional Accessories	10 W transformer (AC-SM31-XFMR), single gang junction box mounting plate (AC-SM31-MP)
IP-Rating	IP64
Certifications	CE, RoHS, UL 1480A

### Features

- Two models are available, the SM31-EZ and the SM31-EZ-T. The latter includes a 10 W transformer.
- One 3" (76.1 mm) polypropylene driver with butyl rubber surround.
- Weatherized components for indoor/outdoor applications.
- Theft and corrosion-resistant mounting mechanism with an indexed swivel-joint for precision aiming in any direction.
- Ultra low-profile ZeroReflection™ ABS enclosure (4" diameter by 3.5" deep, including mounting plate).
- Five-position selectable tap switch (SM31-EZ-T only).
- Corrosion-resistant, powder-coated aluminum grille.
- UL 1480A approved.
- IP65 Rated.
- High quality black or white paint finish.
- Optional accessories: the SM31-EZ-T includes a 10 W transformer (AC-SM31-XFMR) that incorporates a 5-position tap switch and a wall plate for installation in a single-gang deep junction box. This transformer kit is also available as an optional accessory.

<sup>1</sup> Impedance listed per IEC 60268-5 with a minimum less than 80% the nominal impedance

<sup>2</sup> 1 W/1 M sensitivity determined using nominal impedance

<sup>3</sup> Frequency response measured in half or full space as dictated by speaker mounting configuration

<sup>4</sup> Max program power is 3 dB above max continuous power

<sup>5</sup> Continuous power rating, EIA-426-B test

<sup>6</sup> Max output based on max continuous power

**Transformer Taps**

70.7 V	Output	100 V	Output	25 V	Output
10 W	95 dB	10 W	95 dB	1.3 W	86 dB
5 W	92 dB	5 W	92 dB	0.7 W	83.5 dB
2.5 W	89 dB	2.5 W	89 dB	0.4 W	81 dB
1.3 W	86 dB	1.3 W	86 dB	0.2 W	78 dB
0.7 W	83.5 dB			0.1 W	75 dB

**Applications**

Engineered for rapid installation and low-profile mounting for smaller venues, the SM31-EZ(-T) is ideal for retail, restaurants, conference rooms, patio areas, educational facilities or any setting where full-range intelligibility, unobtrusive design and installation ease are paramount.

**Patented Technologies**

SoundTube Entertainment and the MSE Audio Group constantly develop new technologies which enhance audio product performance. SoundTube Entertainment innovations are protected by multiple U.S. and international patents, which explicitly cover SoundTube dome, enclosure and dispersion technologies. The MSE Audio Group actively defends its patents in order to protect SoundTube resellers and end-users.

**Technical Data and Specification Tools**

SoundTube Entertainment strives to provide complete and effective technical information and data to dealers, engineers and designers. All data is available from SoundTube Entertainment or at [www.soundtube.com](http://www.soundtube.com).

Technical data and downloads include:

- EASE™ data - 3-D polar plots.
- EASE™ Address - 2-D modeling for distributed systems
- AutoDesk® Revit® software
- Tech Sheets - technical information and architectural specs for system engineers
- SoundTubeSPEC™ - Proprietary speaker placement software

**Independent Data Acquisition and Verification**

All data for SoundTube speakers is independently collected from and verified by NWAALabs ([www.nwaalabs.com](http://www.nwaalabs.com)) using their proprietary MACH testing system. All data is collected and analyzed according to ASTM, ISO and AES standards using EASERA, TEF and MLSSA. Full balloon data including both phase and magnitude is compiled into a variety of formats including EASE 4.x, GLL and CLF.

**Architectural Specifications**

The loudspeaker transducer shall consist of one full-range 76.2 mm (3")

polypropylene cone with butyl rubber surround. The low-frequency voice coil diameter shall be 19 mm (0.75").

Performance specifications for a typical production unit shall be as follows: usable frequency response shall extend from 120 Hz - 22 kHz ( $\pm 10$  dB). Measured sensitivity (2.83 V input, 1 M) shall be at least 85 dB. The speaker shall have a nominal impedance of 8  $\Omega$ , with an optional 10 W transformer (AC-SM31-XFMR) for distributed systems. The optional transformer shall have a five-position tap switch for 25, 70.7, and 100 V applications. Rated power capacity shall be at least 20 W continuous (RMS) and conform to EIA-426-B. Maximum continuous power output at 1 M shall be 98 dB.

Surface-mount installation for the unit is designed to mount to wall, ceiling or other rigid structure. When the optional 20 W transformer is incorporated, mounting shall be to a single-gang deep junction box. Vertical and horizontal pivoting shall be employed to offer unlimited aiming capability for indoor and outdoor applications. Installation for the speaker shall be by proprietary and corrosion-resistant ball mount with an indexed swivel-joint for precision aiming.

External wiring shall be by low-profile screw terminal and shall accept from 10 - 22-gauge wire. The system shall be for indoor/outdoor applications.

The enclosure shall be constructed of injection-molded, ABS. The grille shall be constructed of powder-coated aluminum for lasting performance and affix to the speaker baffle via pressure fit. Overall cabinet dimensions shall be no more than 110.4 mm (4.35") in height by 110.4 mm (4.35") in width by 96.9 mm (3.81") in depth including the mounting bracket.

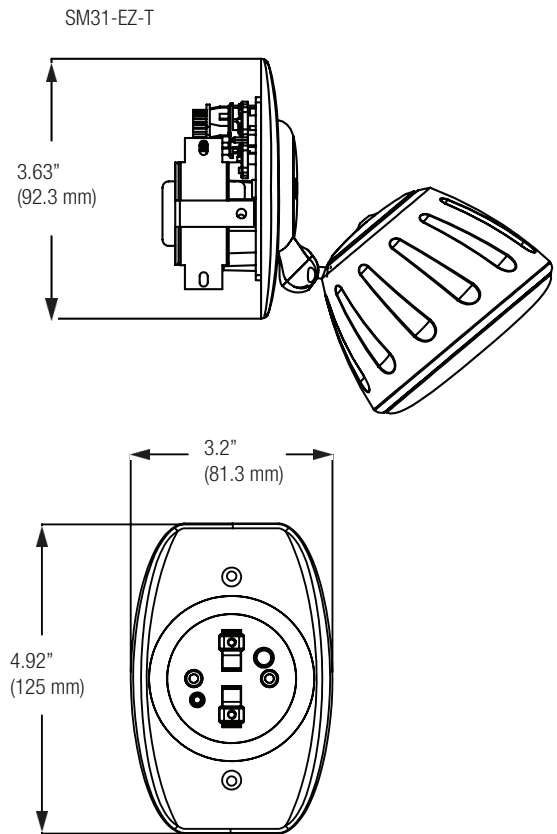
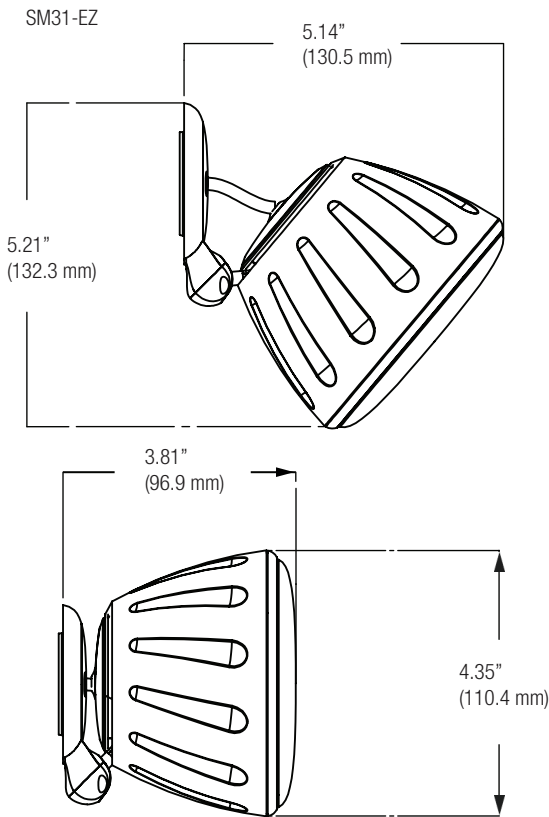
The system shall be the SM31-EZ for low impedance applications or the SM31-EZ-T for high impedance applications.

**SoundTube®**

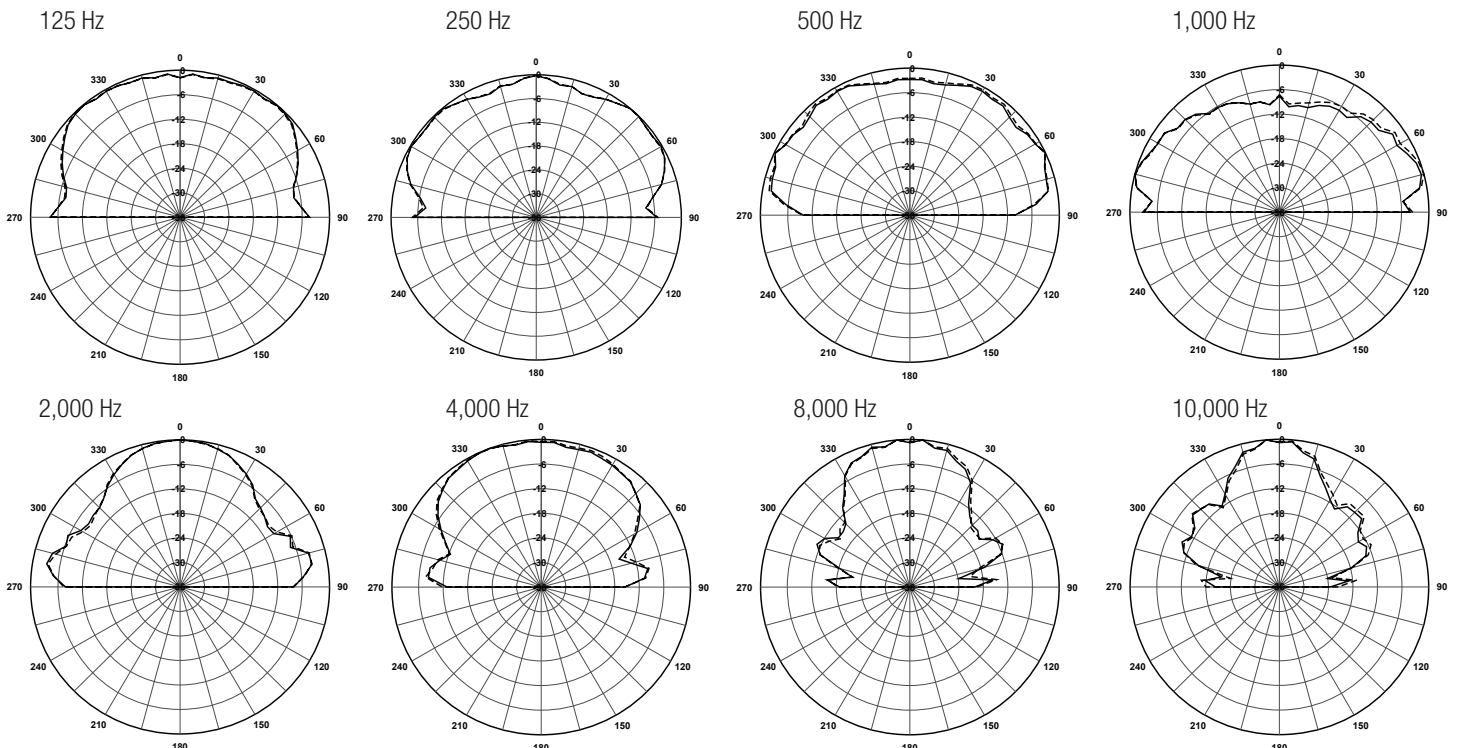
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All SoundTube speakers come with a 5-year limited warranty and 3-year warranty on all electronics.

## Mechanical Drawings

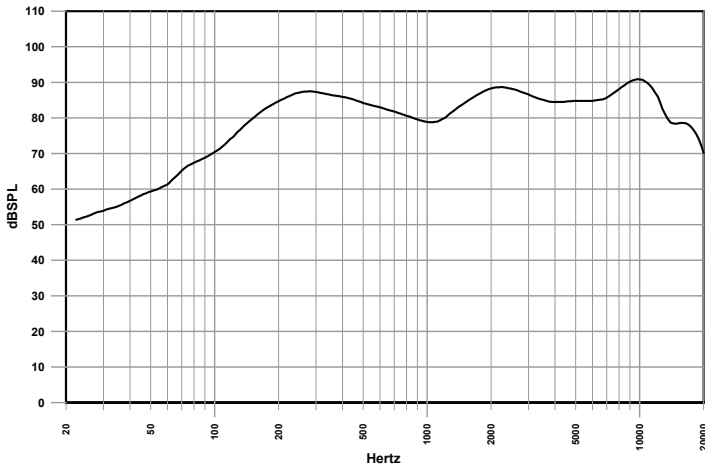


## Plots

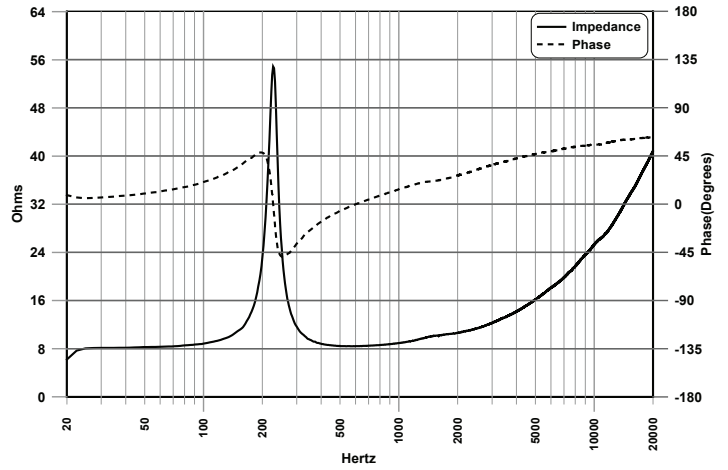


## Graphs

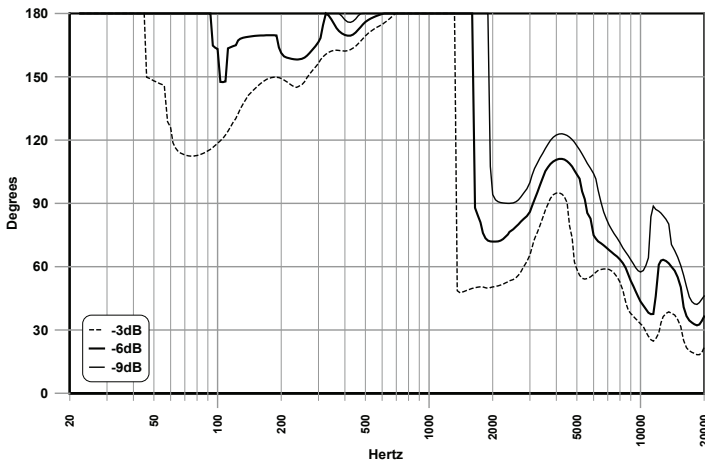
Frequency Response



Phase/Impedance Response



Vertical Beamwidth ( $\pm 6$  dB)



Directivity Index (DI)

