

# Piezoresistive Microphone

**ENDEVCO  
MODEL  
8507C-2**

## Model 8507C-2

- High Intensity Sound
- Rugged, Miniature
- 300 mV Full Scale
- Two Compensated Ranges Available

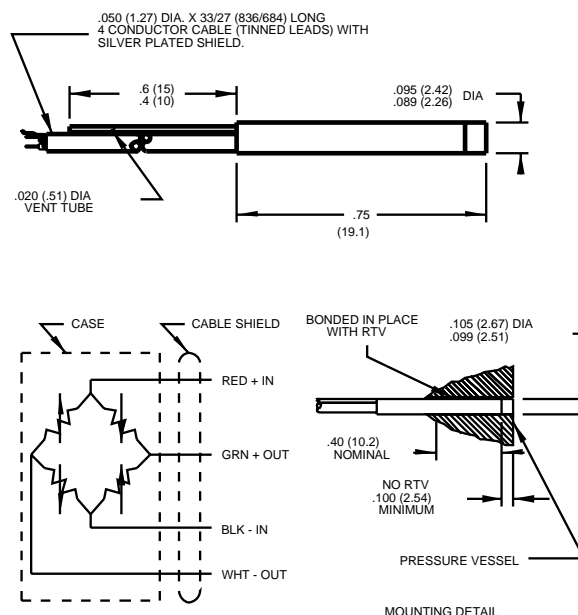
### DESCRIPTION

The ENDEVCO® Model 8507C-2 is a miniature piezoresistive pressure transducer frequently used for measuring high intensity sound. This transducer employs a four-active arm strain gage bridge diffused into a sculptured silicon diaphragm providing capability for measurement from dc to over 15 000 Hz. The diaphragm's unique design offers a wide dynamic pressure range.

Hybrid temperature compensation circuitry is contained within the 0.092 inch (2.34 mm) case, allowing sensitivity compensation over a range from 0°F to 200°F (-18°C to +93°C).★ The Model 8507C offers high shock and vibration resistance and excellent stability during thermal transients.

The Model 8507C is designed for installations which do not require threaded mounting and can be installed in locations which are difficult to reach. Its small size permits flush mounting on curved surfaces. Its high sensitivity combined with small size and high resonance frequency makes the Model 8507C ideal for use on small-scale models in wind tunnels.

ENDEVCO Model 136 Three-Channel System, Model 4430A Signal Conditioner, or OASIS 2000 Computer-Controlled System are recommended as signal conditioner and power supply.



STANDARD TOLERANCE  
INCHES (MILLIMETERS)  
.XX = +/- .03 (X = +/- .8)  
.XXX = +/- .010 (.XX = +/- .25)

\*Option X: 40°F to 140°F (5°C to 60°C)

### SPECIFICATIONS

**CERTIFIED PERFORMANCE:** All specifications assume +75°F (+24°C) and 10 Vdc excitation unless otherwise stated. The following parameters are 100% tested. Calibration data, traceable to the National Institute of Standards and Technology (NIST), is supplied.

	Units	8507C-2
RANGE [1]	dB SPL	At least 100 to 181
SENSITIVITY	dB	-97, ref 1V per Pa minimum, (-93 ref 1V per Pa typical, equivalent to 150 mV/psi)
AMPLITUDE LINEARITY	%	±1, 100 to 173 dB SPL ±2.5, 100 to 181 dB SPL
ZERO MEASURAND OUTPUT	mV Max	±10
SENSITIVITY CHANGE WITH TEMPERATURE From 0°F to 200°F (-18°C to +93°C)	dB	±0.5
From 40°F to 140°F (5°C to 60°C)	dB	±0.5 x-option

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## SPECIFICATIONS (continued)

**CERTIFIED PERFORMANCE:** All specifications assume +75°F (+24°C) and 10 Vdc excitation unless otherwise stated. The following parameters are 100% tested. Calibration data, traceable to the National Institute of Standards and Technology (NIST), is supplied.

**TYPICAL PERFORMANCE CHARACTERISTICS:** The following parameters are established from testing of sample units.

RESONANCE FREQUENCY	Hz	70 000
FREQUENCY RESPONSE	dB	±0.5 to 5000 Hz, ±5 to more than 20 000 Hz
DIRECTIVITY		Essentially omnidirectional within frequency range
VIBRATION SENSITIVITY	dB SPL	97 at 1 g rms
WARM-UP TIME	ms	1
DIAPHRAGM BURST PRESSURE	dB SPL	> 197
SENSITIVITY CHANGE WITH PRESSURE		Not detectable beyond basic non-linearity error

### ELECTRICAL

SUPPLY VOLTAGE [2]	10 Vdc recommended, 18 Vdc maximum	
ELECTRICAL CONFIGURATION	Active four-arm piezoresistive bridge	
POLARITY	Positive output for increasing pressure into (+) port	
RESISTANCE		
Input	2000 ±800 ohms	
Output	1600 ±500 ohms	
Isolation	100 megohms minimum at 50 Volts; leads to case, leads to shield, shield to case	
NOISE	< 80 dB SPL	

### MECHANICAL

CASE, MATERIAL	Nickel - iron alloy	
CABLE, INTEGRAL	Four connector No. 36 AWG, Teflon® insulated leads, braided shield, PVC jacket, 30 ±3 inches (760 ±76 mm)	
DEAD VOLUME	0.00005 cubic inches (0.0008 cc)	
MOUNTING/TORQUE	Bond into #38 drill hole (2.6 mm) using RTV such as Dow Corning Silastic® 738; RTV not permitted within 0.10 inch (2.5 mm) of unit's face	
WEIGHT	0.3 gram (cable weighs 3.6 grams/meter)	

### ENVIRONMENTAL

MEDIA	Internal seals are epoxy and are compatible with clean dry gas media. Media in (+) measurand port is exposed to case material, silicon, ceramic, Parylene C, and epoxy. Media in (-) measurand port is exposed to the above and RTV silicone coating. For use in water or corrosive media, contact the factory for modifications and installation precautions which may be taken to extend service life	
TEMPERATURE	-65°F to +225°F (-54°C to +107°C)	
VIBRATION	1000 g pk	
ACCELERATION	1000 g	
SHOCK	10 000 g, 100 microsecond haversine pulse	
HUMIDITY	Isolation resistance greater than 100 megohms at 50 volts when tested per MIL-STD-202E, Method 103B, Test Condition B	

### CALIBRATION DATA

Data supplied for all parameters in Certified Performance section. Optional calibrations available for all parameters in Typical Performance section. [3]

### OPTIONAL ACCESSORY

25034 FOUR CONDUCTOR SHIELDED CABLE

### NOTES

1. Reference 0 dB = .0002 rms µbar (rms dynes/cm<sup>2</sup>) = 20 x 10<sup>-6</sup> N/m<sup>2</sup> rms = 20 µ Pa rms.

2. Operation of the transducer at voltages other than 10.0 Vdc requires that it be manufactured and calibrated at that voltage, since thermal errors increase with high excitation voltages.
3. Data supplied for all parameters in the Certified Performance section is reported in psi, % FSO and % reading.
4. Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco's inside sales force at 800-982-6732 for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.

Note: Tighter specifications are available on special order.

Continued product improvement necessitates that Endevco reserve the right to modify these specifications without notice. Endevco maintains a program of constant surveillance over all products to ensure a high level of reliability. This program includes attention to reliability factors during product design, the support of stringent Quality Control requirements, and compulsory corrective action procedures. These measures, together with conservative specifications have made the name Endevco synonymous with reliability.

ENDEVCO CORPORATION, 30700 RANCHO VIEJO ROAD, SAN JUAN CAPISTRANO, CA 92675 USA (800) 982-6732 (949) 493-8181 fax (949) 661-7231  
www.endevco.com Email:applications@endevco.com  
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