



# 4-130/4-137

## Vibration Transducer



### Applications

- Aircraft Engines
- Industrial Turbines
- Test Cells

### Features

- Ceramic bearings provide exceptional service life
- Self-generated, high level, low impedance output
- Operates to +700°F (+371°C)

Velocity Sensors

### Description

CEC's 4-130/4-137 Vibration Transducers offer a technology breakthrough in velocity output vibration transducer design. These transducers use a special advanced technology bearing system that extends their service life. Yet, this design preserves the simplicity and reliability that is typical of CEC's self-generating, low impedance vibration transducers.

We designed the 4-130/4-137 Vibration Transducers for turbine applications. Use them in hot sections where high temperatures cause problems with other instruments. They simplify your system because low impedance, high level output does not require special amplifiers or low-noise cables. They have low sensitivity to transverse accelerations, and you can mount them in any plane. Their rugged construction and new bearing system insure high reliability

and long service life.

These instruments are especially valuable where space is limited. They adapt easily to your installation because models are available in a variety of mounting configurations and sensitivities.

CEC 4-130/4-137 Vibration Transducers use a seismic mass magnet that moves on special ceramic bearings. A coil is attached to the case, and movement between the magnet and coil produces the output signal when the case vibrates. This air damped system operates above its natural frequency so the mV output is proportional to velocity.



# 4-130/4-137 Vibration Transducer

## Performance Specifications

<b>Sensitivity:</b> (See Table 1)	Measured at +77°F (+25°C) in the vertical position, with a sinusoidal driving force applied perpendicular to the base at 100 Hz, 1 in/sec RMS (25.4 mm/sec). Load impedance is 10,000 Ω ±2%
<b>Dynamic Range</b>	
<b>Frequency:</b>	45 Hz to 1500 Hz
<b>Amplitude:</b>	0.07 inch peak-to-peak max
<b>Acceleration:</b>	1.0 g to 50 g peak vertical 1.5 g to 50 g horizontal
<b>Acceleration Threshold:</b>	0.3 g peak vertical 1.0 g peak horizontal
<b>Frequency Response:</b>	±6% of measured reference
<b>Linearity:</b>	±5% of measured reference at 100 Hz, 1 g to 50 g's peak
<b>Position:</b>	±10% of measured reference at any position other than vertical
<b>Temperature Range</b>	
<b>4-130:</b>	-65°F to +500°F (-54°C to +260°C)
<b>4-137:</b>	-65°F to +700°F (-54°C to +371°C)
<b>Thermal Coefficient of Sensitivity:</b>	±0.02%/°F from reference +77°F (±0.036%/°C from reference +25°C)
<b>Damped Resonant Frequency:</b>	20 Hz
<b>Excitation:</b>	Self-generating
<b>Coil Resistance:</b>	450 Ω ±25%
<b>Insulation Resistance:</b>	0.1 megaohm minimum at +700°F (+371°C)
<b>Polarity:</b>	Pin 2 is positive when case is moved upward
<b>Shock:</b>	50g max in any direction
<b>Sealing:</b>	Hermetically sealed, all welded construction
<b>Weight</b>	
<b>Triangular base:</b>	2.5 oz. (70.9 g) maximum
<b>Square base:</b>	3.5 oz. (99.2 g) maximum

## Hazardous Approvals



**North America**  
CSA C/US Class I, Division I, Groups A, B, C and D  
Class I, Division 2, Groups A, B, C and D



**European**  
ATEX EEx ia IIB or IIC T6 - T1  
EEx nA II T6 - T1 X

## Optional Accessories

- P/N 169500-XXXX, High temperature cable and connector assembly (-XXXX = length in inches; e.g.: 60-inch cable is P/N 169500-0060)
- High temperature connector P/N 173960

## Ordering Information

When ordering, specify the full part number (i.e. 4-130-0001 or 4-137-0001). Refer to Table 1 and the outline drawings to identify the desired unit. Other configurations and sensitivities are available. Please contact CEC for details. Order mating connectors and cable assemblies separately. In keeping with CEC's policy of continuing product improvement, specifications may be changed without notice.

**Table 1**

Type	Sensitivity (mV/in/sec)	Configuration
4-130/4-137-0001	60 ±5%	Triangle Base, Connector
4-130/4-137-0002	105 ±5%	Triangle Base, Connector
4-130/4-137-0003	105 ±5%	Square Base, Connector
4-130/4-137-0004	135 ±5%	Square Base, Connector
4-130/4-137-0005 <sup>1</sup>	145 ±5%	Square Base, Connector

<sup>1</sup> Extended Frequency Range = 1501 Hz to 2000 Hz at ±8% of measured reference.

