



# 4-102/4-103

## Vibration Transducer



### Applications

- **Vibration Analysis and Monitoring**
- **Dynamic Balancing Equipment**
- **Engineering Test and Research**
- **Production & Quality Testing**
- **Compressors**

### Features

- **Friction-free design for large dynamic range and long life**
- **Self-generated, high level, low impedance output simplifies your system**

### Description

The fluid-damped moving elements in CEC's 4-102 and 4-103 Vibration Transducers are free of friction, assuring long life and reliability. This frictionless design also features outstanding dynamic range. It can be used to measure displacement to 0.5 inches, with low-levels limited only by system noise.

These transducers are used to measure vibration in many applications, such as fans, high speed motors, rotating machinery, in test cells and on dynamic balancing equipment. The output signal is proportional to velocity, often considered the best measurement for machine health monitoring. The low impedance, high level output can drive AC meters and recorders without using special amplifiers, simplifying your system.

These transducers use a seismic mass magnet suspended by springs, and a coil fixed to the case. The output signal results from relative movement between the magnet and coil when the case vibrates. The system is fluid-damped, and operates above its natural frequency. The special "C" springs, which support the mass, withstand high transverse accelerations and rough handling. Positive hermetic sealing prevents damage to the instrument when used in severe environments.

Velocity Sensors



# 4-102/4-103 Vibration Transducer

## 4-102 Specifications

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| <b>Sensitivity:</b>                        | 110 mV ±2 mV/in/sec at 100Hz<br>1 in/sec rms velocity at +77°F (+25°C) |
| <b>Dynamic Range</b>                       |  |
| <b>Frequency Range:</b>                    | 8 to 700 Hz  |
| <b>Amplitude:</b>                          | 0.5" peak-to-peak, maximum   |
| <b>Acceleration:</b>                       | 50 g's peak  |
| <b>Frequency Response:</b>                 | ±5% of mean sensitivity, between 8 and 700 Hz at +77°F (+25°C)         |
| <b>Linearity:</b>                          | ±5% at 100 Hz within the dynamic range                                 |
| <b>Transverse Response:</b>                | 2% minimum   |
| <b>Temperature Range:</b>                  | +32°F to +150°F (0°C to +66°C)   |
| <b>Thermal Coefficient of Sensitivity:</b> | +0.06%/°F  |
| <b>Damped Resonant Frequency:</b>          | 6 Hz nominal   |
| <b>Excitation:</b>                         | Self-generating  |
| <b>Insulation Resistance:</b>              | 50 megaohm minimum over temperature range at 45 VDC                    |
| <b>Polarity:</b>                           | Pin B to be positive with an upward velocity of the case               |
| <b>Shock:</b>                              | 100 g's peak maximum in the sensitive axis                             |
| <b>Weight:</b>                             | 1lb maximum, including cable   |
| <b>Static Acceleration:</b>                | 2.2 g's along sensitive axis produces full travel of moving mass       |
| <b>Electrical Connection:</b>              | 18" cable with connector type MS3451W10SL-3P (CEC P/N 700775-00-0002)  |

## Ordering Information

When ordering, specify Type 4-102-0001 or 4-103-0001. Mating connectors and cable assemblies are not furnished and must be ordered separately. In keeping with CEC's policy of continuing product improvement, specifications may be changed without notice.

## 4-103 Specifications

*Note - Specifications match that of the model 4-102 except as follows:*

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|--|---|
| <b>Sensitivity:</b>                        | 110 mV ±2 mV/in/sec at 100 Hz,<br>1 in/sec rms velocity at +225°F (+107°C) into a 10,000 Ω resistive load |
| <b>Frequency Response:</b>                 | ±7% of mean sensitivity between 8 and 700 Hz at +225°F (+107°C)   |
| <b>Temperature Range:</b>                  | +150°F to +250°F (+66°C to +121°C)  |
| <b>Thermal Coefficient of Sensitivity:</b> | +0.05%/°F   |

