4-138 Vibration Transducer

Applications

- Industrial Turbines
- Turbine Driven Machinery
- Power Generation
- Gas Pumping Stations

Features

- Friction-free design for long life
- Self Generated, High Level, Low Impedance Output.
- Operates to 371°C (700°F)

Description

The friction-free moving elements in CEC's 4-138 Vibration Transducers assure long life and reliability. Designed for industrial applications on fixed turbines, you can use this instrument in turbine hot sections where high temperatures cause problems with other transducers. The system is simplified due to the low impedance, high level output that can drive AC meters, recorders, and control electronics without using special amplifiers.

The frictionless design also allows measurement of extremely low vibration levels, critical when monitoring precision balanced turbine systems. The low level is limited only by system noise.

The 4-138 is a seismic mass type velocity transducer designed for measuring vertical vibrations at low frequencies and high temperatures up to +371°C (+700°F).

A coil is suspended by springs around a stationary magnet which is attached to the case.

The output signal results from relative movement between the coil and magnet when the case vibrates. This magnetic damped system operates above its natural frequency. The self-generated sensor output is proportional to velocity.

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Performance Specifications

Sensitivity:	(refer to Table 1) measured at 80Hz and +77°F (+25°C) ±4% at 1.0 in/sec (ips) peak, load impedance is 100,000 Ω ±2%
Dynamic Range	
Frequency:	15 Hz to 2000 Hz
Amplitude:	0.07 inch peak-to-peak, max
Acceleration:	0.02 g to 50 g
Acceleration Threshold:	0.01 g peak
Linearity:	±3% along straight line between 0.1 & 1.0 ips peak at 80 Hz & 77°F
Temperature Range:	-54°C to +371°C (-65°F to +500°F)
Thermal Coefficient of Sensitivity:	< ±0.02%/°F
Sensitivity Shift with Position:	10% maximum
Damped Resonant Frequency:	< 15 Hz
Excitation:	Self-generating
Insulation Resistance:	> 10 megaohms at +77°F > 0.5 megaohms at +500°F
Polarity:	Pin 1 is positive when the case is moved upward.
Shock:	50 g's peak in sensitive axis, 2 g's peak in cross axis.
Weight:	7.0 to 7.5 oz
Cross Axis:	< ±5% of specified sensitivity

Approvals

CSA C/US Certified:
Intrinsically Safe Class I, Division 1, Groups A, B, C & D
Hazardous Locations (without barrier)
Class I, Division 2, Groups A, B, C, & D

KEMA 05ATEX1245
II 1 G Ex ia IIB / IIC T1...T6

Optional Accessories

1. Cable and connector assembly P/N 169500-XXXX (length is identified in inches; e.g.: 60-inch cable is P/N 169500-0060)

2. Connector P/N 173960

Ordering Information

When ordering, specify Type 4-138-XXXX (See Table below). In keeping with CEC's policy of continuing product improvement, specifications may be changed without notice.

Table 1

Part Number	*Cable Length	Output Sensitivity
4-138-0001		135 mV/ips, Peak
4-138-0002		145 mV/ips, Peak
4-138-0003		150 mV/ips, Peak
4-138-0004		200 mV/ips, Peak
4-138-1001	-XXX	135 mV/ips, Peak
4-138-1002	-XXX	145 mV/ips, Peak
4-138-1003	-XXX	150 mV/ips, Peak
4-138-1004	-XXX	200 mV/ips, Peak

Table 2

***Standard Cable Lengths available:**

-010	10 ft. (3m)
-015	15 ft.
-017	17 ft. (5 m)
-020	20 ft.
-030	30 ft.
-033	33 ft (10m)
-044	40 ft.
-050	50 ft.