190501 Velomitor CT Transducer

Datasheet

Bently Nevada Machinery Condition Monitoring

141636 Rev. AC

Description

The Velomitor CT Velocity Transducer is a low-frequency version of our standard Velomitor Piezo-velocity Sensor. Its design specifically measures casing vibration velocity on cooling tower and air-cooled heat-exchanger fan assemblies that operate at or above 90 rpm (100 to 300 rpm typical).

The Velomitor CT Transducer can measure vibration amplitudes at these frequencies as well as the vibration frequencies generated by the fan motor and speed reducer.

If you are measuring a machine housing to determine where to install transducers, consider what kinds of data you need to obtain. Most common machine malfunctions (imbalance, misalignment, and so forth) originate at the rotor and cause a change in rotor vibration. The location you select on the housing must accurately conduct rotor vibration to the transducer.

Install the transducer carefully. If you don't, the transducer may not accurately detect vibrations and can transmit invalid data. Bently Nevada provides engineering services to accurately measure machine housings and to install transducers.

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Specifications

Parameters are specified from +20 °C to +30 °C (+68 °F to +86 °F) and 100 Hz unless otherwise indicated.

Operating the transducer outside the specified limits will result in false readings or loss of machine monitoring.

Electrical

Sensitivity	3.94 mV/mm/s (100 mV/in/s) ±5%.
Frequency Response	3.0 Hz to 900 Hz (180 to 54,000 cpm) ±1.0 dB 1.5 Hz to 1.0 kHz (90 to 60,000 cpm) ±3.0 dB
Temperature Sensitivity	-8% to +5% typical over the operating temperature range.
Velocity Range	63.5 mm/s pk (2.5 in/s pk) see Operating Range for Metric Units on page 14. See Operating Range for English Units on page 15.. Vibration components in excess of 10g pk above 1 kHz can significantly reduce this range.
Transverse Response	Less than 5% of the axial sensitivity.
Amplitude Linearity	±2% to 63.5 mm/s pk (2.5 in/s pk)
Mounted Resonant Frequency	9 kHz, minimum (stud mounted, except quick disconnect)
Output Bias Voltage	10.1 Vdc ± 1.0 Vdc, Pin A referenced to Pin B
Dynamic Output Impedance	<400 Ω typical
Broadband Noise Floor (1.5 Hz to 1 kHz)	0.229 mm/s (0.009 in/s) pk. For more information, see Typical Low Frequency Noise Floor on page 16.
Base Strain Sensitivity	0.43 mm/s/µstrain (0.017 in/s/µstrain).
Grounding	Internal electronics are isolated from case.
Maximum Cable Length	305 metres (1,000 ft.) of cable (part number 02173006) with no degradation of signal.

Maximum continuous length of cable available is 91.44 metres (300 ft.) If longer lengths are required they must be spliced or have a connector installed on them.

Environmental Limits

Operating Temperature	-40 °C to +85 °C (-40 °F to +185 °F).
Storage Temperature	-40 °C to +100 °C (-40 °F to +212 °F).
Shock Limit	5000 g pk, maximum.
Humidity Limit	100% condensing, non-submerged.
Magnetic Field Susceptibility	<0.0068 mm/s/gauss (0.268 mil/s/gauss) @ 50 gauss, 50-60Hz

Mechanical

Weight	<297 g (10.5 oz.), typical.
Mounting Surface	33 mm diameter (1.3 in diameter).
Height	82 mm (3.2 in).
Case Material	316L stainless steel
Connector	2-pin 316L stainless steel MIL-C-5015, top.
Mounting Torque	4.5 N-m ± 0.6 N-m (40 in–lbf ± 5 in-lbf).
Polarity	Pin A goes positive with respect to Pin B when velocity is from base to top of the transducer.
Mounting Angle	Any orientation.

For more information on this product, please refer to the Velomitor CT Piezo-Velocity Transducer User Guide (document 125389).