330500 Velomitor Piezo-velocity Sensor

Datasheet

Cordant™

141632 Rev. V



Description

Bently Nevada™ Velomitor Piezo-velocity Sensors are designed to measure absolute (relative to free space) bearing housing, casing, or structural vibration. The 330500 is a specialized piezoelectric accelerometer that incorporates embedded integrated electronics in a solid-state design.

Because the 330500 incorporates solid-state electronics and has no moving parts, it does not suffer from mechanical degradation and wear, and can be mounted vertically, horizontally, or at any other angle of orientation

Most common machine malfunctions (unbalance, misalignment, etc.) occur on the rotor and originate as an increase (or at least a change) in rotor vibration. For any individual casing measurement to be effective for overall machine protection, the system must continually transmit a significant amount of rotor vibration to the machine casing, or mounting location of the transducer.

In addition, be careful to install the accelerometer transducer on the bearing housing or machine casing. Improper installation may decrease the transducer amplitude and frequency response and/or generate false signals that do not represent actual vibration. Refer to the appropriate instruction manuals and Application Notes.

Upon request, Bently Nevada provides engineering services that can identify the appropriate machine housing measurements and installation assistance if needed.

Baker Hughes

Specifications

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

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

Electrical

Sensitivity	3.94 mV/mm/s (100 mV/in/s) ±5%.
Frequency Response	4.5 Hz to 5 kHz (270 cpm to 300 kcpm) ±3.0 dB. 6.0 Hz to 2.5 kHz (360 cpm to 150 kcpm) ±0.9 dB.
Temperature Sensitivity	-14% to +7.5% typical over the operating temperature range.
Velocity Range	1270 mm/s (50 in/s) peak.
Transverse Sensitivity	Less than 5% of sensitivity.
Amplitude Linearity	±2% to 152 mm/s (6 in/s) peak.
Mounted Resonant Frequency	Greater than 12 kHz.
Output Bias Voltage	-12 ±3.0 V_{DC}, over temperature referenced to Pin A.
Dynamic Output Impedance	Less than 2400 Ω
Broadband Noise Floor (4.5 Hz to 5 kHz)	0.004 mm/s (160 µin/s) rms, nominal
Grounding	Case isolated
Maximum Cable Length	305 m (1,000 ft) of cable, part number 02173006, with no degradation of signal.

Environmental Limits

Operating Temperature Range	-55°C to 121°C (-67°F to 250°F)
Shock Survivability	5,000 g peak, maximum
Relative Humidity	To 100% non-submerged; case is hermetically-sealed.
Base Strain Sensitivity	0.005 in/s/mstrain.
Magnetic Field Susceptibility	<51 min/s/gauss (50 gauss, 50-60Hz).

Hazardous Area Approvals

For the detailed listing of country and product-specific approvals, refer to the *Approvals Quick Reference Guide (108M1756)*.

For additional technical documentation, please log in to bntechsupport.com and access the Bently Nevada Media Library.

CSA/NRTL/C

330400, 330425	Ex ia IIC T3 AEx ia IIC T3 Class I, Div 1 Groups A, B, C and D Class II, Groups E, F, and G Class III -55°C ≤ Tamb ≤ 121°C Install per dwg 167537

ATEX/IECEx

330400, 330425

330400, 330425	Ⓔx II 1 G Ex ia IIC T3 Ga Ⓔx II 3 D Ex ec IIC T3 Ex tc IIIC T200°C Dc -55°C ≤ Ta ≤ +121°C
Entity Parameters	

Zone 0/1	Zone 2
Ui= 28 V	Ui= 28 V
Ii= 100 mA	Ii= 100 mA
Pi= 0.84 W	Pi= 0.84 W
Ci-10.8 nF	
Li= 0	

Hazardous Area Conditions of Safe Use

ATEX/IECEx

Zone 0/1:

Equipment must be connected to equipment, which meets the abovelisted entity parameters.

The cables type A or B (in compliance with EN 60079-25) must respect the cable parameters listed with the entity parameters.

Zone 2:

The supply electrical parameters shall not exceed the values mentioned in the tables above.

Velomitor Piezo-velocity Sensor 330500-AA-BB

A: Mounting Thread Adaptor Option	
00	No adapter
01	1/2 - 20 UNF
02	M8 x 1
03	1/4 - 28 UNF
04	1/4 - 20 UNC
05	Unavailable for 330500.
Note: For 1/4-18 NPT mounting, order 330525.	
06	5/8 – 18 UNF
07	3/8 – 16 UNC
08	1/2 – 13 UNC
B: Agency Approval Option	
00	Not required
01	CSA/US/C
02	ATEX (European)
04	Multiple approvals (CSA, ATEX)

Interconnection Cables

Standard Cable Lengths

Feet	Meters (approximate)
6 ft	1.8 m
8 ft	2.4 m
10 ft	3.0 m
12 ft	3.6 m
15 ft	4.5 m
17 ft	5.0 m
20 ft	6.0 m
25 ft	7.6 m
30 ft	9.0 m
33 ft	10.0 m
50 ft	15.2 m
99 ft	30.0 m

Custom Cable Part Numbers

You can order custom cable lengths in increments of 1.0 ft (305 mm) at additional cost. Some cables have a minimum and maximum length.

Use 'NN' in these part numbers to specify the length (in feet) of the cable you want to order.

Accessories

Part number	Description
100076	330500 Velomitor Sensor and Velomitor XA Sensor User Guide
02173006	Bulk cable; 2 conductor 18 AWG twisted, shielded cable without connectors or terminal lugs. Specify number of feet.
46000-01	Magnetic Base for temporary mounting of Velomitor Sensors. Used with 1/4 - 28 UNF mounting thread adapters.
46122-01	Quick Connect for semi-permanent mounting of Velomitor Sensors. Used with 1/2 - 20 UNF mounting thread adapters.
89409-01	Individual 1/2 - 20 UNF mounting adapter.
89410-01	Individual M8 x 1 mounting adapter.
89411-01	Individual 1/4 - 28 UNF mounting adapter.
89412-01	Individual 1/4 - 20 UNC mounting adapter.
89413-01	Individual 1/4 - 18 NPT mounting adapter. Spares only. For new installations, order 330525 velometer.
04300015	Individual 5/8 - 18 UNF mounting adapter.
165025-01	Individual 3/8-16 UNC mounting adapter.
161191	Individual 1/2 - 13 UNC mounting adapter. The Velomitor Sensor is shipped with an adapter. Individual adapters are available as spares.