330525 Velomitor* XA Piezo-velocity Sensor

Product Datasheet

Bently Nevada* Asset Condition Monitoring

Description

The Velomitor* XA (eXtended Application) Sensor is a ruggedized version of Bently Nevada's 330500 Velomitor Sensor. Its 316L stainless steel case and unique, weatherproof connector and cable assembly permit mounting without a housing. The Velomitor XA Sensor cable assembly is suitable for use in moist environments, and the Velomitor XA Sensor design meets the requirements of IP-65 and NEMA 4X dust ratings when properly installed with a mating extension cable.

If you are monitoring rotor vibration using a transducer placed on a bearing housing or machine casing, carefully choose a location for each transducer.

Common machine malfunctions like imbalance and misalignment originate in the rotor, causing a change in rotor vibration.

To obtain meaningful measurements, install the transducer in a location that transmits significant rotor vibration.

The location must also conduct rotor amplitude and frequency response that accurately reflect actual machine vibration.

If needed, Bently Nevada provides engineering services that can help you identify the optimum locations for transducers on bearing housings or machine casings. To request assistance, visit GEMeasurement.com.

Specifications

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

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

Sensitivity	3.94mV/mm/s (100 mV/in/s) ±5%.
Frequency Response	4.5 to 2,000 Hz (270 to 120,000 cpm) ±3.0 dB, 6.0 to 1,000 Hz (360 to 60,000 cpm) ±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.
Broadband Noise Floor (4.5 Hz to 2 kHz)	0.004 mm/s (160 µin/s) rms, nominal.
Power Requirements	DC Voltage: -22 to -30 V_{DC} Bias Current: 2.5 to 6.0 mA
Output Bias Voltage	-12 ± 3.0 V_{DC}, Over Temperature Referenced to Pin A
Dynamic Output Impedance	Less than 2400 Ω
Broadband Noise Floor	Less than 0.004 mm/s (160 µin/s)
Grounding	Case isolated
Maximum cable length	305 metres (1,000 feet) of cable, BN part number 02173007 with no degradation of signal.

Compliance and Certifications

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

European Community Directives:

EMC Directive 2014/30/EU
LV Directive 2014/35/EU
ROHS Directive 2011/65/EU

and, where the applicable dash option has been ordered, also complies with

ATEX directive 2014/34/EU

Standards:

EN 61326-1

and, where the applicable dash option has been ordered, also complies with

EN 60079-0
EN 60079-11
EN 60079-15

Hazardous Area Approvals

Multiple approvals for hazardous areas certified by Canadian Standards Association (CSA/NRTL/C) in North America and by LCIE in Europe.

North America	Ex ia IIC T4 AEx ia IIC T4 Class I, Div 1 Groups A, B, C & D Class II, Groups E, F, and G Class III T4 @ -40°C ≤ Ta ≤ 100°C Ex nL IIC T4 AEx nA IIC T4 Class I, Div 2 Groups A, B, C & D T4 @ -40°C ≤ Ta ≤ 100°C Per DWG 167539
European/ ATEX	II 1 G Ex ia IIC T4 Ga II 3 G Ex nA IIC T4 Gc Ex tc IIIC T130C Dc T4 @ -55°C ≤ Ta ≤ 121°C
IECEx	Ex ia IIC T4 Ga Ex nA IIC T4 Gc Ex tc IIIC T130C Dc T4 @ -55°C ≤ Ta ≤ 121°C

For the detailed listing of country and product specific approvals, refer to the *Approvals Quick Reference Guide*, document 108M1756, at **www.GEmeasurement.com**.

Environmental Limits

Operating Temperature Range	-55 °C to +121 °C (-67°F to +250°F)
Shock Survivability	5000 g peak, maximum
Relative Humidity	To 100% non-submerged; case is hermetically-sealed.
Magnetic Field Susceptibility	<51 µin/s/gauss (50 gauss, 50-60 Hz)

Physical Description

Weight	156 g (5.5 oz), typical
Diameter	28 mm (1.1 in)
Height	73.1 mm (2.88 in)
Case Material	316L stainless steel
Connector	2-pin Mil-C-26482 hermetically-sealed, 316L stainless steel shell.
Mounting Torque	45 N-m (33 ft-lb) maximum
Polarity	Pin A goes positive with respect to pin B when the sensor case motion is toward the connector.
Cable Bend Radius	1.5-in minimum bend radius.

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

Before installing and using this product, read the *330500, 330525, and 330530 Velomitor* Sensors Operation Manual* (document 100076-01).

Ordering Information

Approvals

330525-AA

A: Agency Approval Option

0 0	None Required
0 1	CSA/NRTL/C
0 2	SIRA/CENELEC

Interconnect Cable

106765-AA

A: Length in metres

Minimum length: 1 metre (3.3 feet)
Maximum length: 25 metres (82 feet)
Order in increments of 3 metres.

Terminal Housing

Terminal Housing for terminating Velomitor XA Sensor cable to bulk cable listed above. The Terminal Housing provides local connection of the Velomitor XA Sensor signal wires to the monitor field wiring. Each Terminal Housing can accommodate up to 2 Velomitor XA Sensor Cables.

106769-AA

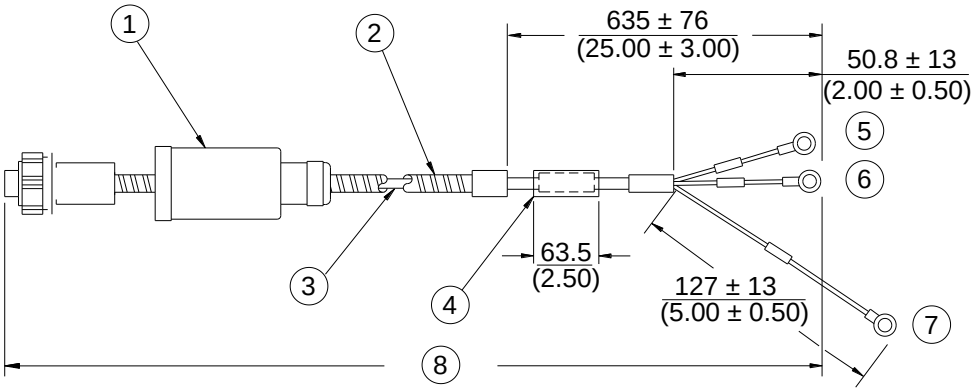
A: Conduit Fitting Option

0 0	No fittings supplied
0 1	One ¾ NPT fitting
0 2	Two ¾ NPT fittings

Accessories

100076-01	330500 Velomitor Sensor and Velomitor XA Sensor Manual.
02173007	Bulk cable; two-conductor twisted, shielded. 22 AWG cable without connectors or terminal lugs. Specify length in feet.
103537-01	Terminal Mounting Block. Provides simple field wiring connection and can be mounted inside any standard Proximitor® Sensor housing. One terminal mounting block is needed for each Velomitor XA Sensor connection.
03839144	Splash-resistant boot cover for interconnect cable assembly. The boot is made from fluorosilicone elastomer. Boot color is blue.
03839142	Bottom clamp used to secure the boot to the Velomitor XA Sensor case.
03839143	Top clamp used to secure the boot to the interconnect cable assembly.

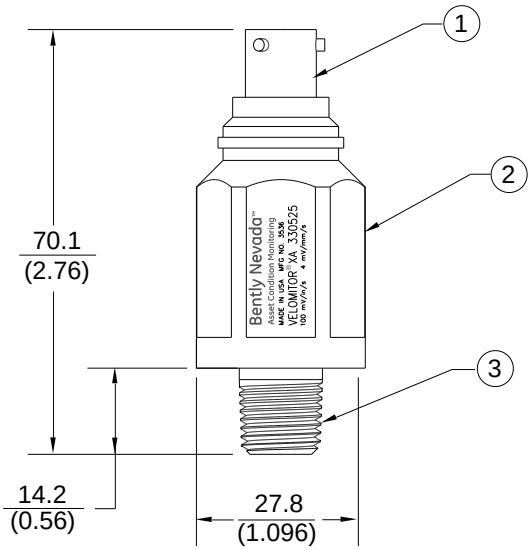
Graphs and Figures



1. Splash-resistant boot with clamps
2. Stainless steel armor over cable
3. 0.382 mm² (22 AWG)
4. Clear shrink tubing
5. "A" (white)
6. "B" (black)
7. "SHLD" (green)
8. Overall length ± 200 (7.8)

Figure 1: Dimensions for 106765 Cable

Dimensions are in millimeters (inches)



1. MIL-C-26482 receptacle
2. 25.4 (100) hexagonal
3. 1/4-18 NPT

Figure 2: Dimensions for 330525 Velomitor XA Piezo-Sensor

Dimensions are in millimeters (inches)

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