

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Selected official pages for procurement and maintenance review

PRODUCT BRAND

Bently Nevada

PRODUCT MODEL

177230-02-01-05

177230-02-01-05 - Loop powered seismic transmitter
Selected manufacturer pages; verify exact configuration.

OFFICIAL SOURCE

Datasheet 177232 Rev. T

[Open current manufacturer source](#)

AMIKON PRODUCT SUPPORT

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AMIKONG.COM

Amikon Limited prepared this independent reference package. Selected manufacturer pages follow with their original content and pagination visible.

EHS Compliant

- Implements safe and ergonomic design.
- Supports access to hazardous areas.

Specifications

Electrical

Excitation Voltage	12 to 30 Vdc (Current limited to 40 mA)
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This product is for use with PLCs, DCS, and SCADA systems that have internal power supplies which are typically current limited in the range of 30 mA to 35 mA.

Settling Time	Less than 15 seconds within 2% of final value
Mounted Resonant Frequency	Greater than 12 kHz
Transverse Sensitivity	Less than 5% of sensitivity
Sensing Element Type	Ceramic / Shear

Connector Wiring Convention

Pin A	4-20 mA Positive Loop (Positive with reference to Pin B)
Pin B	4-20 mA Loop Return (Negative Loop Return for Pin A and common for Dynamic Signal)
Pin C	Dynamic Acceleration Signal (Unbuffered, referenced to Pin B)



The Dynamic Signal Negative (Pin B) requires isolation from any grounding. If this terminal is grounded, the 4-20 mA loop will short, resulting in no output.

Velocity Output

Output Signal	4 to 20 mA Current Loop from Pin A to Pin B
Full Scale Range (-AA)	00 - 12.7 mm/s (0.5 in/s) $\pm 10\%$ 01 - 25.4 mm/s (1.0 in/s) $\pm 10\%$ 02 - 50.8 mm/s (2.0 in/s) $\pm 10\%$ Full Scale, broadband RMS (Root Mean Square)
Sensitivity - Main Loop	4 $\pm$ 0.3 mA equals 0.0 mm/s 20 $\pm$ 2 mA equals Full Scale Range
Frequency Response (-BB)	01 - 10 Hz to 1 kHz $\pm 10\%$ (600 cpm to 60 kcpm $\pm 10\%$) Output signal is proportional to the RMS vibration levels. 02 - 3 Hz to 1 kHz $\pm 10\%$ (180 cpm to 60 kcpm $\pm 10\%$) Output signal is proportional to the peak vibration levels.

Acceleration Output

Output Signal	Unbuffered Voltage from Pin C to Pin B (Reference)
Sensitivity	10.2 mV/m/s ² (100 mV/g) $\pm 20\%$
Full Scale Range	147 m/s ² (15 g) peak
Frequency Response	2.5 Hz to 10 kHz $\pm 10\%$ (150 cpm to 600 kcpm $\pm 10\%$)
Linearity	$\pm 1\%$ of Full Scale
Output Bias	2.5 V $\pm$ 0.1 V (Referenced to Pin B)

Environmental Limits

Operating Temperature	-40°C to +85°C (-40°F to +185°F)
Electrical Isolation	Greater than 10 ⁸ ohms
Isolation Breakdown Voltage	600 V _{rms} with less than 1 mA leakage current
Shock Survivability	9.810 m/s ² (1.000 g peak), maximum drop test



This part typically mounts directly to the machine via a stud. Customers can use this device with a magnetic base, but must take care not to “snap” the unit onto the machine. This snapping action can create a very large spike signal that can damage the electronics. Rolling the magnetic-base onto the machine greatly reduces the spike signal so that the unit should not have any issues.

Sensor Seal	Hermetically sealed
Relative Humidity of Transmitter	To 100% non-submerged
Magnetic Field Sensitivity	Less than 20 μm/s/gauss (790 μin/s/gauss) peak Less than 14.7 mm/s ² /gauss (150 μg/gauss) peak [based on 50 gauss, 50 - 60 Hz]

Physical

Weight	131 g (4.62 oz), typical
Diameter	25.4 mm (1.00 in)
Height	66.0 mm (2.60 in)
Case Material	316L stainless steel
Connector	3-pin MIL-C-5015, 316L stainless steel
Mounting Hole	¼-28 UNF
Mounting Threads	M6 X 1 SI M8 x 1.25 SI ¼-28 UNF



These stud adapters are provided with each device. For additional adapters, [see Ordering Information on page 7](#). Or contact [Benty Nevada Tech Support](#).

Mounting Torque	4 to 7 N-m (35.4 to 62.0 in-lbf)
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Compliance and Certifications

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

EMC

EMC Directive 2014/30/EU

RoHS

RoHS Directive 2011/65/EU

Maritime

DNV rules for classification – Ships

DNV rules for classification – High speed and light craft

DNV offshore standards

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.

cNRTLus

Ex nL IIC T4:
AEx nA IIC T4:
Class I, Div 2, Groups A, B, C, D.

Ex ia IIC T4:
AEx ia IIC T4:
Class I, Div 1, Groups A, B, C, D;
Class II, Div 1, Groups E, F, G;
Class III, Div 1

Install per drawing 177234

T4 @ Ta ≤ 80°C

ATEX/IECEx

177230	Ex II 1 G Ex ia IIC T4 Ga													
	Ex II 3 G Ex na IIC T4 Gc T4@ Ta = -40°C to 80°C													
Entity Parameters	<table><tr><th>Zone 0/1</th><th>Zone 2</th></tr><tr><td>Ui= 28 V</td><td>Ui= 28 V</td></tr><tr><td>Ii= 120 mA</td><td>Ii= 120 mA</td></tr><tr><td>Pi= 1 W</td><td>Pi= 1 W</td></tr><tr><td>Ci=0</td><td></td></tr><tr><td>Li=121.06 μh</td><td></td></tr></table>	Zone 0/1	Zone 2	Ui= 28 V	Ui= 28 V	Ii= 120 mA	Ii= 120 mA	Pi= 1 W	Pi= 1 W	Ci=0		Li=121.06 μh		
	Zone 0/1	Zone 2												
	Ui= 28 V	Ui= 28 V												
	Ii= 120 mA	Ii= 120 mA												
	Pi= 1 W	Pi= 1 W												
	Ci=0													
Li=121.06 μh														

Hazardous Area Conditions of Safe Use

ATEX/IECEx

Zone 0/1:

Equipment must be connected to equipment, which meets the above listed 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.

Ordering Information



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.

Seismic Transmitter

177230-AA-BB-CC

A: Measurement Range

00	0 – 12.7 mm/s (0 – 0.5 in/s)
01	0 – 25.4 mm/s (0 – 1.0 in/s)
02	0 – 50.8 mm/s (0 – 2.0 in/s)

B: Frequency

01	10 Hz to 1 kHz (600 to 60 kcps) RMS (Root Mean Square)
02	3 Hz to 1 kHz (180 to 60 kcps) peak

C: Approvals

05	Multiple Approvals (CSA/NRTL/C, ATEX/IECEX)
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Only standard or common AA-BB-CC configurations are available.

Interconnect Cable without Armor

16925-AA

A: Length in feet

Order in increments of 1 foot (0.3 m)

Minimum length: 3 feet (0.91 m)
Maximum length: 99 feet (30.2 m)
Example: **25** = 25 feet

These standard lengths are available. You can order custom lengths at additional cost.

Feet	Meters (approx.)
10	3.1
12	3.6
15	4.5
17	5.0
20	6.0
25	7.6
30	9.0
99	30.0

Interconnect Cable with Armor

16710-AA

A: Length in feet

Order in increments of 1 foot (0.3 m)

Minimum length: 3 feet (0.91 m)
Maximum length: 99 feet (30.2 m)
Example: **25** = 25 feet

These standard lengths are available. You can order custom lengths at additional cost.

Feet	Meters (approx.)
08	2.4
10	3.1
12	3.6
15	4.5
17	5.0
20	6.0
30	9.0
99	30.0

Graphs and Figures



Dimensions shown in mm (inches) except as noted.

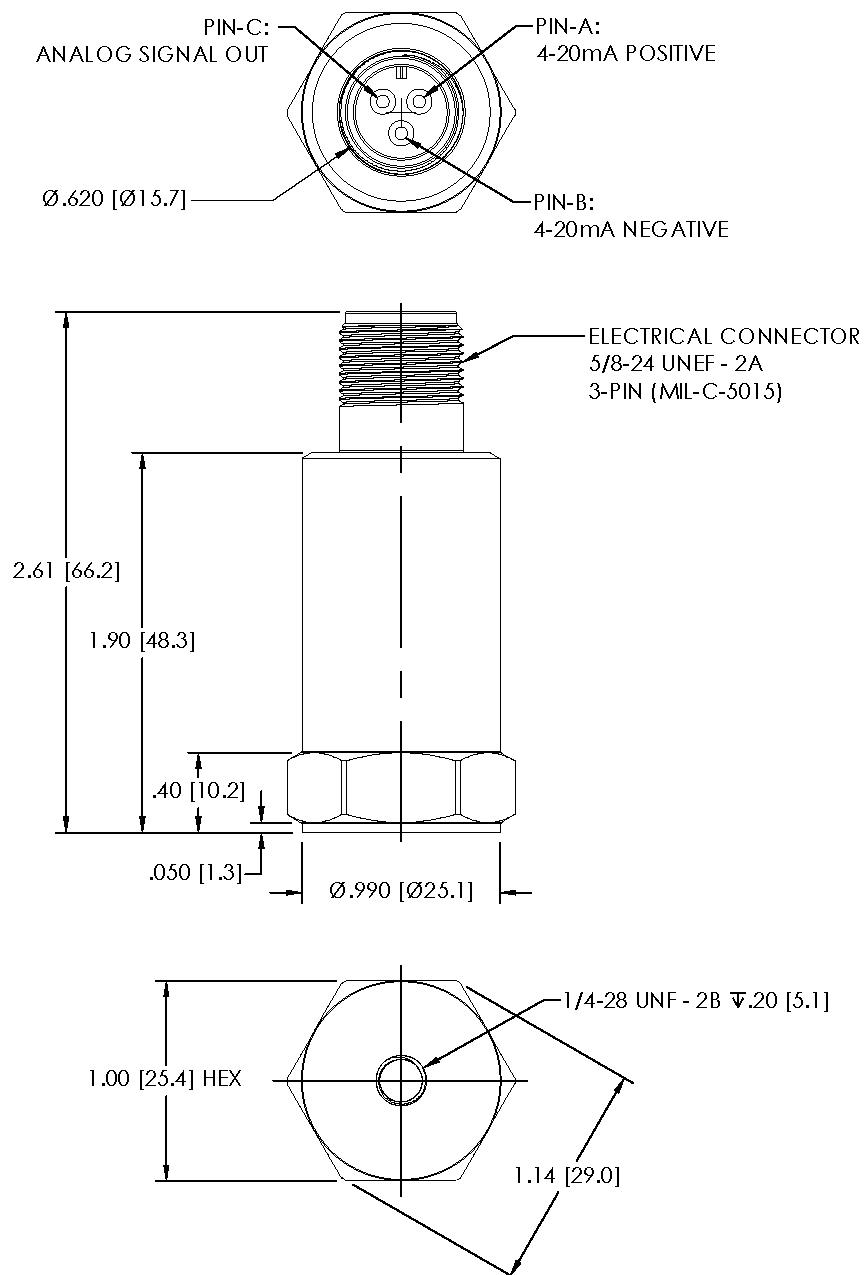


Figure 1: Transducer Mechanical Outline and Dimensions

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