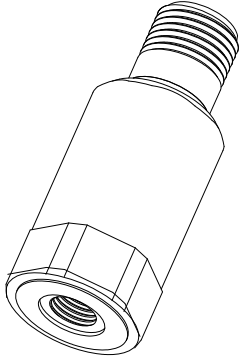


Seismic Transmitter

Bently Nevada* Asset Condition Monitoring



Description

The 177230 Seismic Transmitter combines a reliable basic protection solution with the support and service of GE products. The transducer is a simple, loop-powered device whose ease of installation and maintenance may reduce training and service costs. When integrated into the PLC or controls system of an overall plant asset condition monitoring solution, the transducer will help you better manage downtime, optimize maintenance planning, and avoid unforeseen catastrophic failures of machinery assets.

Features of the 177230 Seismic Transducer include:

- Ease of implementation and use
 - Interfaces with PLCs and control systems (like DCS and SCADA)
 - Provides a quick learning curve for operations and maintenance –through a familiar interface similar to that for connecting other PLC or control system inputs
 - Requires no field configuration or adjustments
 - Needs few additional parts for a complete system
 - Includes technical support for customers on how to monitor their equipment
 - Includes self-test
 - Incorporates protected interface
 - Supports a variety of interface cables
- Data Quality
 - Provides accurate and repeatable data
 - Uses simple data format
 - Provides raw vibration signal for verification and analysis
- EHS Compliant
 - Implements safe and ergonomic design
 - Supports access to hazardous areas
- Incorporates robust CM design for reliability
- Implements Industry standard 4 to 20mA loop-powered transmitter

Specifications

Electrical

Sensitivity – Main loop (Signal One)

0.0 to 25.4 mm/s (0 to 1.0 in/s)
± 10%, broadband rms (root
mean square)

[4 mA equals 0.0 mm/s and
20 mA equals 25.4 mm/s]

Output Format, Pin A Referenced to Pin B

4 to 20 mA current loop Velocity
vibration

Excitation Voltage

12 to 30 Vdc (current limited to 40
mA)

Note: This product is for use with PLCs,
DCS and SCADA systems that have
internal power supply that are typically
current limited in the range of 30 mA to 35
mA.

Settling Time

Less than 15 seconds within 2%
of final value

Connector Wiring Convention

Pin A: 4-20 mA Positive Loop

Pin B: 4-20 mA Negative Loop
and common for
Dynamic Signal

Pin C: Dynamic Signal in
voltage, unbuffered

Frequency Response

10 Hz to 1 kHz (600 cpm to 60
kcpm) ± 10%

Sensitivity – Dynamic Signal (Signal Two)

10.2 mV/m/s² (100 mV/g) ± 5%

Output Format, Pin C Referenced to Pin B

Voltage, Acceleration vibration

Note: 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.

Frequency Response

2.5 Hz to 10 kHz (150 cpm to 600
kcpm) ± 10%

Linearity

±1%

Output Bias Referenced to Pin B

2.5 V ± 0.1 V

Full Scale Range

196m/s² (20 g's) peak

Velocity Range

420 mm/s (16.5 in/s) peak

Mounted Resonant Frequency

Greater than 12 kHz

Transverse Sensitivity

Less than 5% of sensitivity

Sensing Element Type

Ceramic / Shear

Environmental Limits

Operating Temperature Range

-40 °C to +85 °C
(-40 °F to +185 °F)

Electrical Isolation

Greater than 10⁸ ohms

Isolation Breakdown Voltage

600 Vrms with less than 1 mA leakage current

Shock Survivability

9.810 m/s² (1.000 g peak), maximum drop test

Note: This part typically mounts directly to the machine via a stub. Customers can use this device with a mag-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 mag-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/s²/gauss (150 μg/gauss) peak
[base 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

304L stainless steel

Connector

3-pin MIL-C-5015, stainless steel

Mounting Hole in Body

1/4-28 UNF

Mounting Threads

M6 X 1 SI

M8 x 1.25 SI

1/4-28 UNF

Note: The above stud adapters are provided with each device. Other adapters are available if needed. Please see the Studs and Adapters section below, or contact the Custom Products Division.

Mounting Torque

4 to 7 N-m (35.4 to 62.0 in-lbf)

Connector Wiring Convention

Pin A: 4-20 mA Loop Power (Positive with reference to Pin B)

Pin B: 4-20 mA Loop Return (Negative/ return for Dynamic Signal)

Pin C: Dynamic Signal (Unbuffered, referenced to Pin B)

Compliance and Certifications

EMC

European Community Directives

EN 60950/108/EC

Standards:

EN 61326, Electrical Equipment for Measurement, Control, and Laboratory Use, EMC Requirements.

CISPR 11, Radiated Emissions

EN 61000-4-2, Electro-Static Discharge

EN 61000-4-3, Radiated Immunity

EN 61000-4-4, Electrical Fast Transient

EN 61000-4-5, Surge

Explosive Atmospheres

European Community Directives:

ATEX 1994/9/EC

Standards:

EN 60079-0

EN 60079-11

EN 60079-15

For further certification and approvals information please visit the following website:

http://www.ge-energy.com/prod_serv/products/oc/en/bently_nevada.htm

Approvals

North America:

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, and G;
Class III, Div 1

Europe:

Ex nL IIC T4

 $U_i \leq 28V$, $I_i \leq 120\text{ mA}$, $P_i \leq 1W$,
 $C_i \approx 0$, $L_i \leq 121.06\ \mu H$

Ex ia IIC T4

$U_i \leq 28V$, $I_i \leq 120\text{ mA}$, $P_i \leq 1W$,
 $C_i \approx 0$, $L_i \leq 121.06\ \mu H$

Ordering Information

We can provide private labels for the Seismic Transmitter for customers who require one. Contact your local service representative for further information.

For standard orders use the number provided below.

Product Description

Seismic Transmitter

177230-02

Product Description

Interconnect Cable without Armor

16925-AA

Option A description

A: Length in feet

Order in increments of 1 foot (0.3 m)

Minimum length: 12 feet (3.7 m)

Maximum length: 99 feet (30.2m)

Example: 25 = 25 feet

Product Description

Interconnect Cable with Armor

16710-AA

Option A description

A: Length in feet

Order in increments of 1 foot (0.3 m)

Minimum length: 12 Feet (3.7 m)

Maximum length: 99 Feet (30.2m)

Example: 18 = 18 feet

Accessories

The parts listed below are possible vendor sources for the supporting hardware. You can use this information as a reference and select the vendor that you wish to use.

3-Pin Connector (MIL-C-5015):

Base

Cannon (ITT industries):

www.ittcannon.com

P/N: CA3106R-10SL-3S F97 or

P/N: MS3106R-10SL-3S

Shell

Sunbank Co.

www.sunbankcorp.com

Glenair, Inc.

www.glenair.com

Contact a vendor with above part number and ask for their part that fits your application

Wire (3-wire with shield)

3-conductor 18 to 22 AWG cables with a 0.01" minimum outer jacket and inner wire insulation, and 80% minimum coverage shield. Insulation rating should be 600 V minimum.

Mil-W-16878/4 (Type E):

Sonic/Thermax

www.thermaxcdt.com

18 AWG -

P/N: 18-TE-1930 (3) SXE

22 AWG -

P/N: 22-TE-1934 (3) SXE

Standard Wire and Cable Co.

www.std-wire.com

18 AWG -

P/N: 1100-88T

22 AWG -

P/N: 1100-66T

Belden

www.belden.com

18 AWG -

P/N: 83336

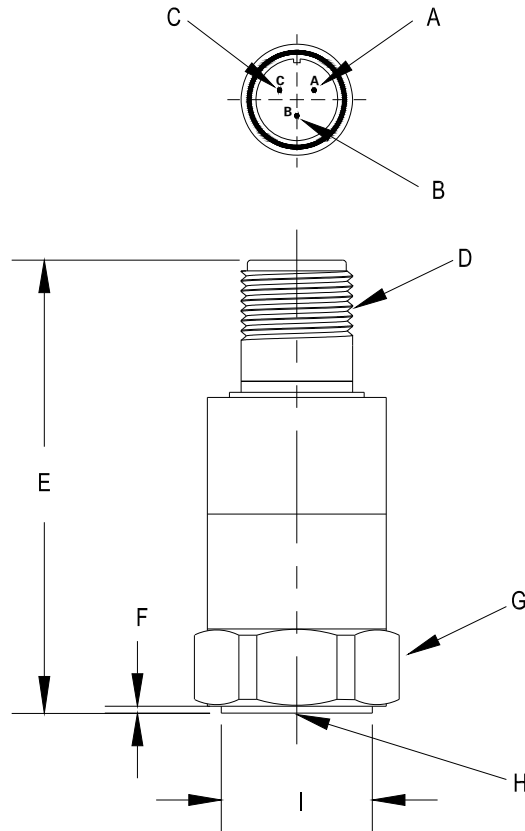
22 AWG -P/N: 83334

Studs and Adapters:

89139-01	M-M ¼-28 UNF to ⅜-24 UNF Standard Stud
128038-01	M-M ¼-28 UNF to ⅜-24 Hex Plate Stud (1-⅜" X 0.25")
146396-01	F-M ¼-18 NPT to ¼-28 Adapter
146394-01	F-M ¼-28 UNF to ¼-18 NPT Adapter
37439-01	F-M ¼-28 UNF to ¼-28 UNF Mounting Base
164373	M-M ¼-28 UNF to ¼-28 UNF Standard Stud with Brass Tip
135826-01	M-M ¼-28 UNF to M10 X 1.0 Standard Stud

Graphs and Figures

Note: All dimensions shown are in millimetres (inches) except as noted.



- A. Positive loop (4-20 mA)
- B. Negative loop (4-20 mA) and common for dynamic signal
- C. Dynamic signal
- D. 3-pin MIL-C-5015, 5/8-24 UNEF-2A
- E. 66.0 mm (2.60 in)
- F. 1.27 mm (0.050 in)
- G. 25.4 mm (1.00 in)
- H. 1/4-28 UNF-2B (English)
- I. 25.1 mm (0.990 in)

Figure 1: Transducer Mechanical Outline and Dimensions

Dimensions shown in mm (inches) except as noted

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