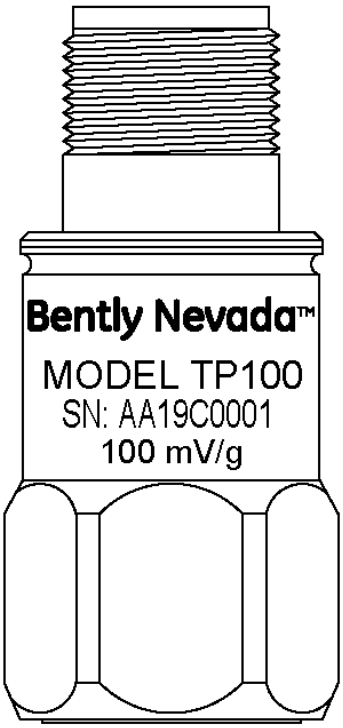
TP100, TP500 General Purpose Accelerometer

Datasheet

Bently Nevada Machinery Condition Monitoring

161M1037 Rev. -



Description

The accelerometers in this sensor series offer a number of features making them well suited for harsh industrial environments and installation in locations with limited available space. These case-mounted accelerometers provide acceleration measurements in units of g or m/s^2.

The sensor has a standardized output voltage proportional to the level of acceleration which can interface to a variety of condition monitoring solutions. The range of vibration frequencies detected by these sensors spans from 0.2 — 14,000 Hz.

Features

- Rugged design
- Corrosion resistant
- Hermetic seal
- Case isolated

Benefits

- Clear signals at low vibration levels
- Extended low end frequency response
- Improved signal-to-noise ratio vs. other general purpose accelerometers
- A single sensor can detect both low- and high-speed vibrations
- Optimized for monitoring slow-turning machinery such as cooling tower fans and slow-speed gearboxes

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TP100 Specifications

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

Dynamic

Sensitivity ± 5% 25°C		100 mV/g
Acceleration range		80 g peak
Amplitude non-linearity		1%
Frequency response	± 5%	3 - 5,000 Hz
	± 10%	1 - 9,000 Hz
	± 3 dB	0.5 - 14K Hz
Resonance frequency		30 kHz
Transverse sensitivity, maximum		5% of axial
Temperature response	−55°C	−20%
	+120°C	+10%

Electrical

Power requirement (IEPE)	Excitation voltage	18 - 30 VDC
	Regulated current	2 - 10 mA
Electrical noise, equivalent g: (Frequency response, spectral noise and broadband noise values are typical.)		
Broadband	2.5 Hz to 25 kHz.	700 µg/√Hz
Spectral	10 Hz	10 µg/√Hz
	100 Hz	5 µg/√Hz
	1,000 Hz	5 µg/√Hz
Output impedance, maximum		100 Ω
Bias output voltage		12 Vdc ± 10%
Grounding		case isolated, internally shielded

Environmental

Temperature range	−55° to +120°C
Vibration limit	500 g pk
Shock limit.	5,000 g pk
Electromagnetic sensitivity, equiv. g, maximum	70 µg/gauss
Sealing	hermetic
Base strain sensitivity, maximum	0.0002 g/µstrain

Physical

Sensing element design	PZT, shear
Dimensions	See Graphs and Figures on page 7.
Weight	90 grams
Case material	316L steel, stainless
Mounting	1/4-28 UNF tapped hole
Connector	2-pin, MIL-C-5015
Recommended cabling	shielded, twisted pair
Recommended cable length (assuming max vibration of 50g, frequency 12 kHz, and cable capacitance 60 pf/ft.) For longer lengths, contact Bently Nevada Tech Support.	99 ft

TP500 Specifications

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

Dynamic

Sensitivity, ± 5%, 25°C		500 mV/g
Acceleration range		10 g peak
Amplitude non-linearity		1%
Frequency response	± 5%	0.7 - 5K Hz
	± 10%	0.5 - 9K Hz
	± 3 dB	0.2 - 14K Hz
Resonance frequency		30 kHz
Transverse sensitivity, maximum		5% of axial
Temperature response	−55°C	−7.5%
	+120°C	+7.5%

Electrical

Power requirement	Voltage source	18 - 30 VDC
	Current regulating diode	2 - 10 mA
Electrical noise, equivalent g: (Frequency response, spectral noise and broadband noise values are typical.)		
Broadband	2.5 Hz to 25 kHz.	250 µg/√Hz
Spectral	10 Hz	2.5 µg/√Hz
	100 Hz	1.5 µg/√Hz
	1,000 Hz	1.5 µg/√Hz
Output impedance, maximum		100 Ω
Bias output voltage		12 Vdc
Grounding		case isolated, internally shielded

Environmental

Temperature range	−55° to +120°C
Vibration limit	500 g pk
Shock limit.	5,000 gpk
Electromagnetic sensitivity, equiv. g, maximum	70 µg/gauss
Sealing	hermetic
Base strain sensitivity, maximum	0.0002 g/µstrain

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Connections

Function	Connector pin
Power/signal	A
Common	B
Ground	shell

Compliance and Certifications

FCC

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

EMC

EN 61000-6-2

EN 61000-6-4

EN 61326-1

EN 61326-2-3

EMC Directive 2014/30/EU

Electrical Safety

EN 61010-1

LV Directive 2014/35/EU

Ordering Information

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

General Purpose Accelerometer TP100 and TP500

TP100	1/4-28 to 1/4-28 and 1/4-28 to M8 mounting studs and box supplied. Includes calibration data.
TP500	No mounting stud supplied. Includes calibration data.

Interconnection Cables

9571	Cable with 2-pin straight connector
84661	Cable with 2-pin straight connector with armor
89477	Cable with 2-pin 90 degree connector

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.

Part Number	Description
9571-NN	Two-conductor twisted, shielded 22 AWG cable with two-socket moisture-resistant female connector at one end, terminal lugs at the other end. Used with monitors. Not for use with 21128 Velocity Transducer Housing. Min. length: 2.0 ft (0.6 m) Max. length: 99 ft (30 m)
84661-NN	Two-conductor twisted, shielded 22 AWG armored cable with two-socket moisture-resistant female connector at one end, terminal lugs at the other end. Used with monitors. Not for use with 21128 Velocity Transducer Housing. Min. length: 3.0 ft (0.9 m)

Part Number	Description
	Max. length: 96 ft (29 m)
106765-NN	Two-conductor 22 AWG twisted, shielded cable with two-socket plug and fluorosilicone elastomer boot at one end, terminal lugs at the other. Used with monitors. Not for use with 21128 Velocity Transducer Housing. Min. length: 2.0 ft (0.6 m) Max. length: 99 ft (30 m) Order in Increments of 3 meters.

Graphs and Figures

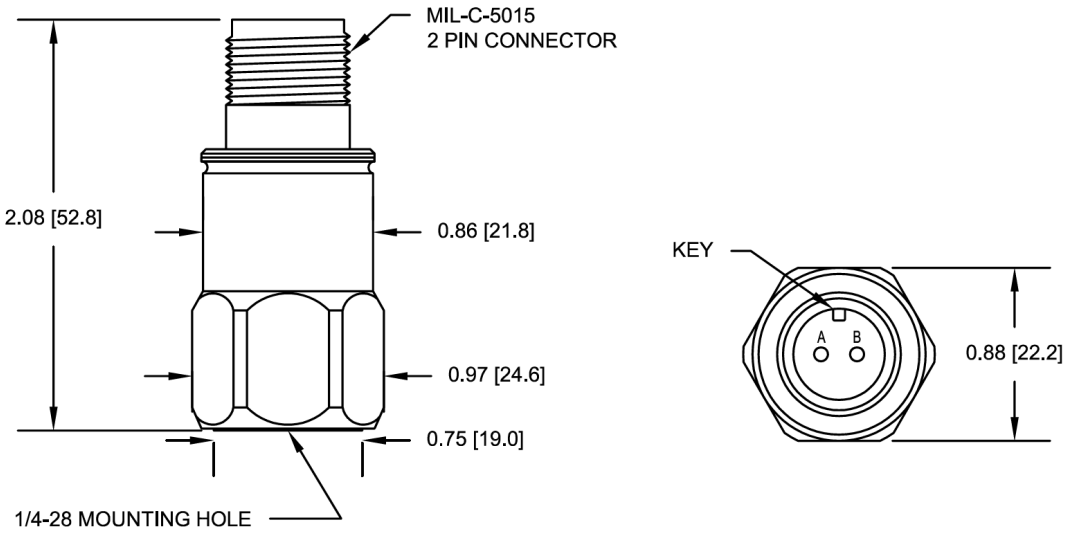

Figure 1: TP100 and TP500 Transducer

Dimensions in inches (mm)

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