

# Case Mounted Accelerometers

## Datasheet

Bently Nevada Machinery Condition Monitoring

124M2609 Rev. C

## 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<sup>2</sup>. 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 stainless design, corrosion resistant
- Hermetic seal, case isolated
- ESD protection
- Reverse wiring protection
- EMI / RFI shielded
- Hazardous area certifications

## Benefits

- Able to fit in small spaces
- Light weight for walk around programs
- Cross wiring will not harm sensor
- Prevents ground loops in permanent mount applications
- Can be hosed down or submersed with proper connector
- Can be used in applicable certified hazardous areas

## Compliance

- See individual accelerometers for compliance.

# Ordering Information

Accelerometer	Part Number
AM3100T2-Z2	Top exit sensor, 100 mV/g, Zone 2 rated
AS3100S2-Z2	Side exit sensor, 100 mV/g, Zone 2 rated
AP3500S2-Z1	Side exit sensor, 500 mV/g, Zone 1 rated
AP3500T2-Z1	Top exit sensor, 500 mV/g, Zone 1 rated
AS3100S2-Z0	Side exit sensor, 100 mV/g, Zone 0 rated
AM3100T2-Z0	Top exit sensor, 100 mV/g, Zone 0 rated

## Accessories supplied:

- 1/4-28 to 1/4-28 mounting stud
- calibration data

# AM3100T2-Z2

## Specifications

### Dynamic

Sensitivity, $\pm 5\%$ @25°C	100 mV/g
Acceleration range	80 g peak
Amplitude nonlinearity	1%
Frequency response	$\pm 10\%$ : 0.7-9,000 Hz $\pm 3$ dB: 0.4-14,000 Hz
Resonant frequency	30 kHz
Transverse sensitivity, max	$\pm 5\%$ of axial
Temperature response	-55°C : -20% +120°C : +10%

### Electrical

Voltage source	18-30 Vdc
Current regulating diode	2-10 mA
Broadband electrical noise @ 2.5 Hz to 25 kHz	500 $\mu$ g
Spectral electrical noise @ 10 Hz	7 $\mu$ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 100 Hz	4 $\mu$ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 1000 Hz	2 $\mu$ g/ $\sqrt{\text{Hz}}$
Output Impedance, max	100 $\Omega$
Bias output voltage	12 Vdc
Grounding	case isolated, internally shielded

### Environmental

Temperature range	-55°C to 120°C
Vibration limit	500 g peak
Shock limit	5,000 g peak
Electromagnetic sensitivity, equiv g, max	70 $\mu$ g/gauss
Sealing hermetic base strain sensitivity, max	0.0002 g/ $\mu$ strain

### Physical

Sensing element design	PZT ceramic / shear
Weight	62 grams
Case material	316L Stainless Steel
Mounting	7/16-28 UNF tapped hole
Connector	2-pin, MIL-C-5015 style
Recommended cabling	Shielded, twisted pair, no longer than 100 feet

### Connections

Connector Pin	Function
Shell	ground
A	power/signal
B	common



Frequency response and spectral noise values are typical.

## Compliance and Certifications



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

ATEX Directive 2014/34/EU  
EMC Directive 2014/30/EU  
LV Directive 2014/35/EU  
Reach Directive 1907/2006/EC  
ROHS Directive 2011/65/EU

## Standards

EN 61326-1  
EN 60079-0  
EN 60079-15  
EN 60079-11

## Hazardous Area Approvals



## CSA/NRTL/C

Class I, Div 2, Groups A, B, C, D  
Class I, Zone 2, AEx/Ex na II T4  
Install per drawing 117M2767

# AS3100S2-Z0

## Specifications

### Dynamic

Sensitivity, $\pm 5\%$ @25°C	100 mV/g
Acceleration range	80 g peak
Amplitude nonlinearity	1%
Frequency response	$\pm 10\%$ : 1.0-5,000 Hz $\pm 3$ dB: 0.7-10,000 Hz
Resonant frequency	22 kHz
Transverse sensitivity, max	$\pm 5\%$ of axial
Temperature response	-55°C: -8% +120°C: +10%

### Electrical

Voltage source	18-30 Vdc
Current regulating diode	2-10 mA
Broadband electrical noise @ 2.5 Hz to 25 kHz	700 $\mu$ g
Spectral electrical noise @ 10 Hz	10 $\mu$ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 100 Hz	5 $\mu$ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 1000 Hz	5 $\mu$ g/ $\sqrt{\text{Hz}}$
Output Impedance, max	100 $\Omega$
Bias output voltage	12 Vdc
Grounding	Case isolated, internally shielded

### Environmental

Temperature range	-50°C to 120°C
Vibration limit	500 g peak
Shock limit	5,000 g peak
Electromagnetic sensitivity, equiv g, max	70 $\mu$ g/gauss
Sealing hermetic base strain sensitivity, max	0.0002 g/ $\mu$ strain

### Physical

Sensing element design	PZT ceramic / shear
Weight	145 grams
Case material	316L Stainless Steel
Mounting	1/4-28 captive hex head ascrew
Connector	2-pin, MIL-C-5015 style
Recommended cabling	Shielded, twisted pair, no longer than 100 feet

### Connections

Connector Pin	Function
Shell	ground
A	power/signal
B	common



Frequency response and spectral noise values are typical.

## Compliance and Certifications

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## European Community Directives

ATEX Directive 2014/34/EU  
EMC Directive 2014/30/EU  
LV Directive 2014/35/EU  
Reach Directive 1907/2006/EC  
ROHS Directive 2011/65/EU

## Standards

EN 61326-1  
EN 60079-0  
EN 60079-15  
EN 60079-11

## Hazardous Area Approvals

### CSA/NRTL/C

Class I, Div 1, Groups A, B, C, D  
Class II, Div 1, Groups E, F, G  
Class III, Div 1  
Class I, Zone 0, Ex ia IIC T4  
Class I, Zone 0, AEx ia IIC T4

### ATEX

Ga Ex ia IIC T4  
Install per drawing I17M4394

# AP3500S2-Z1

## Specifications

### Dynamic

Sensitivity, $\pm 5\%$ @25°C	500 mV/g
Acceleration range	80 g peak
Amplitude nonlinearity	1%
Frequency response	$\pm 10\%$ : 0.4-1,500 Hz $\pm 3$ dB : 0.2-3,700 Hz
Resonant frequency	18 kHz
Transverse sensitivity, max	$\pm 7\%$ of axial
Temperature response	-55°C: -8% +120°C: +5%

### Electrical

Voltage source	18-30 Vdc
Current regulating diode	2-10 mA
Broadband electrical noise @ 2.5 Hz to 25 kHz	12 $\mu$ g
Spectral electrical noise @ 10 Hz	2 $\mu$ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 100 Hz	0.6 $\mu$ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 1000 Hz	0.2 $\mu$ g/ $\sqrt{\text{Hz}}$
Output Impedance, max	100 $\Omega$
Bias output voltage	10 Vdc
Grounding	case isolated, internally shielded

### Environmental

Temperature range	-50°C to 120°C
Vibration limit	250 g peak
Shock limit	2,500 g peak
Electromagnetic sensitivity, equiv g, max	5 $\mu$ g/gauss
Sealing hermetic base strain sensitivity, max	0.001 g/ $\mu$ strain

### Physical

Sensing element design	PZT ceramic / shear
Weight	148 grams
Case material	316L Stainless Steel
Mounting	1/4-28 captive hex head screw
Connector	2-pin, MIL-C-5015 style
Recommended cabling	shielded, twisted pair, no longer than 100 feet

### Connections

Connector Pin	Function
Shell	ground
A	power/signal
B	common



Frequency response and spectral noise values are typical.

## Compliance and Certifications

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## European Community Directives

ATEX Directive 2014/34/EU  
EMC Directive 2014/30/EU  
LV Directive 2014/35/EU  
Reach Directive 1907/2006/EC  
ROHS Directive 2011/65/EU

## Standards

EN 61326-1  
EN 60079-0  
EN 60079-15  
EN 60079-11

## Hazardous Area Approvals

### CSA/NRTL/C

Class I, Div 1, Groups A, B, C, D  
Class I, Zone 1: Ex ia IIC T4  
Install per drawing 117M4393



# AS3100S2-Z0

## Specifications

### Dynamic

Sensitivity, $\pm 5\%$ @25°C	100 mV/g
Acceleration range	80 g peak
Amplitude nonlinearity	1%
Frequency response	$\pm 10\%$ : 1.0-5,000 Hz $\pm 3$ dB : 0.7-10,000 Hz
Resonant frequency	22 kHz
Transverse sensitivity, max	$\pm 5\%$ of axial
Temperature response	-55°C: -8% +120°C: +10%

### Electrical

Voltage source	18-30 Vdc
Current regulating diode	2-10 mA
Broadband electrical noise @ 2.5 Hz to 25 kHz	700 $\mu$ g
Spectral electrical noise @ 10 Hz	10 $\mu$ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 100 Hz	5 $\mu$ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 1000 Hz	5 $\mu$ g/ $\sqrt{\text{Hz}}$
Output Impedance, max	100 $\Omega$
Bias output voltage	12 Vdc
Grounding	Case isolated, internally shielded

### Environmental

Temperature range	-50°C to 120°C
Vibration limit	500 g peak
Shock limit	5,000 g peak
Electromagnetic sensitivity, equiv g, max	70 $\mu$ g/gauss
Sealing hermetic base strain sensitivity, max	0.0002 g/ $\mu$ strain

### Physical

Sensing element design	PZT ceramic / shear
Weight	145 grams
Case material	316L Stainless Steel
Mounting	1/4-28 captive hex head ascrew
Connector	2-pin, MIL-C-5015 style
Recommended cabling	Shielded, twisted pair, no longer than 100 feet

### Connections

Connector Pin	Function
Shell	ground
A	power/signal
B	common



Frequency response and spectral noise values are typical.

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## Standards

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EN 60079-15  
EN 60079-11

## Hazardous Area Approvals

### CSA/NRTL/C

Class I, Div 1, Groups A, B, C, D  
Class II, Div 1, Groups E, F, G  
Class III, Div 1  
Class I, Zone 0, Ex ia IIC T4  
Class I, Zone 0, AEx ia IIC T4

### ATEX

Ga Ex ia IIC T4  
Install per drawing I17M4394

# AP3500T2-Z1

## Specifications

### Dynamic

Sensitivity, $\pm 5\%$ @25°C	500 mV/g
Acceleration range	10 g peak
Amplitude nonlinearity	1%
Frequency response	$\pm 10\%$ : 0.4-1,000 Hz $\pm 3$ dB : 0.2-2,300 Hz
Resonant frequency	15 kHz
Transverse sensitivity, max	$\pm 5\%$ of axial
Temperature response	-55°C: -8% +120°C: +10%

### Electrical

Voltage source	18-30 Vdc
Current regulating diode	2-10 mA
Broadband electrical noise @ 2.5 Hz to 25 kHz	8 $\mu$ g
Spectral electrical noise @ 10 Hz	2 $\mu$ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 100 Hz	0.4 $\mu$ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 1000 Hz	0.2 $\mu$ g/ $\sqrt{\text{Hz}}$
Output Impedance, max	100 $\Omega$
Bias output voltage	10 Vdc
Grounding	case isolated, internally shielded

### Environmental

Temperature range	-50°C to 120°C
Vibration limit	250 g peak
Shock limit	5,000 g peak
Electromagnetic sensitivity, equiv g, max	20 $\mu$ g/gauss
Sealing hermetic base strain sensitivity, max	0.0001 g/ $\mu$ strain

### Physical

Sensing element design	PZT ceramic / shear
Weight	142 grams
Case material	316L Stainless Steel
Mounting	1/4-28 UNF tapped hole
Connector	2-pin, MIL-C-5015 style
Recommended cabling	shielded, twisted pair, no longer than 100 feet

### Connections

Connector Pin	Function
Shell	ground
A	power/signal
B	common



Frequency response and spectral noise values are typical.

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ROHS Directive 2011/65/EU

## Standards

EN 61326-1  
EN 60079-0  
EN 60079-15  
EN 60079-11

## Hazardous Area Approvals

### CSA/NRTL/C

Class I, Div 1, Groups A, B, C, D  
Class I, Zone 1, Ex ia IIC T4  
Install per drawing 117M4393

# AS3100S2-Z2

## Specifications

### Dynamic

Sensitivity, $\pm 5\%$ @25°C	100 mV/g
Acceleration range	80 g peak
Amplitude nonlinearity	1%
Frequency response	$\pm 10\%$ : 1.0-5,000 Hz $\pm 3$ dB: 0.5-10,000 Hz
Resonant frequency	22 kHz
Transverse sensitivity, max	$\pm 5\%$ of axial
Temperature response	-55°C: -20% +120°C: +10%

### Electrical

Voltage source	18-30 Vdc
Current regulating diode	2-10 mA
Broadband electrical noise @ 2.5 Hz to 25 kHz	700 $\mu$ g
Spectral electrical noise @ 10 Hz	10 $\mu$ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 100 Hz	5 $\mu$ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 1000 Hz	5 $\mu$ g/ $\sqrt{\text{Hz}}$
Output Impedance, max	100 $\Omega$
Bias output voltage	12 Vdc
Grounding	case isolated, internally shielded

### Environmental

Temperature range	-55°C to 120°C
Vibration limit	500 g peak
Shock limit	5,000 g peak
Electromagnetic sensitivity, equiv g, max	70 $\mu$ g/gauss
Sealing hermetic base strain sensitivity, max	0.0002 g/ $\mu$ strain

### Physical

Sensing element design	PZT ceramic / shear
Weight	62 grams
Case material	316L Stainless Steel
Mounting	1/4-28 UNF tapped hole
Connector	2-pin, MIL-C-5015 style
Recommended cabling	Shielded, twisted pair, no longer than 100 feet

### Connections

Connector Pin	Function
Shell	ground
A	power/signal
B	common



Frequency response and spectral noise values are typical.

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ATEX Directive 2014/34/EU  
EMC Directive 2014/30/EU  
LV Directive 2014/35/EU  
Reach Directive 1907/2006/EC  
ROHS Directive 2011/65/EU

## Standards

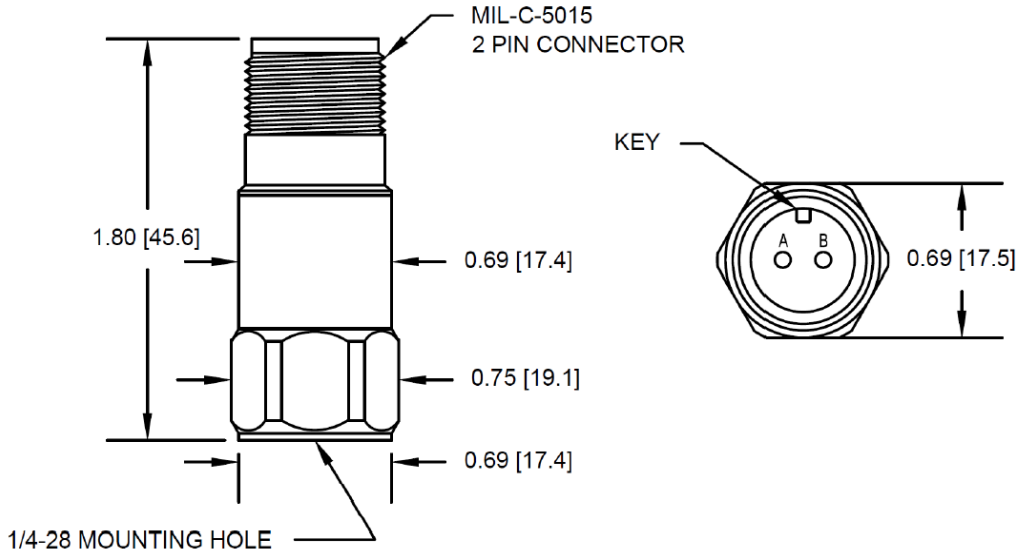
EN 61326-1  
EN 60079-0  
EN 60079-15  
EN 60079-11:2011

## Hazardous Area Approvals

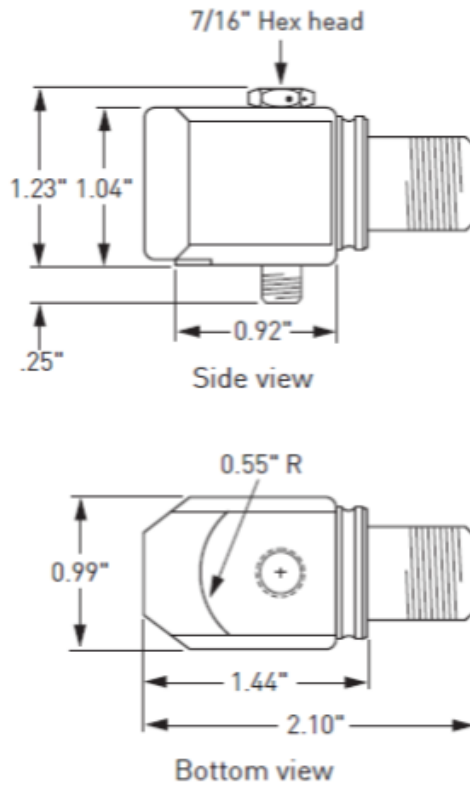
### CSA/NRTL/C

Class I, Div 1, Groups A, B, C, D  
Class I, Zone 2: AEx/Ex na II T4  
Install per drawing 117M2767

# Graphs and Figures



**Figure 1: AM3100T2-Z2 dimensions**



**Figure 2: AS3100S2-Z0 dimensions**

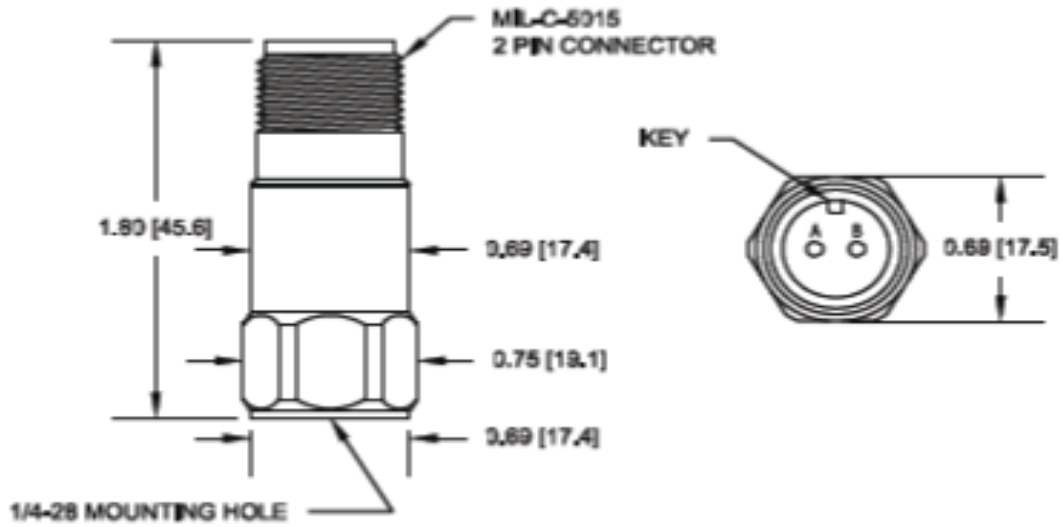


Figure 3: AM3100T2-Z0 dimensions

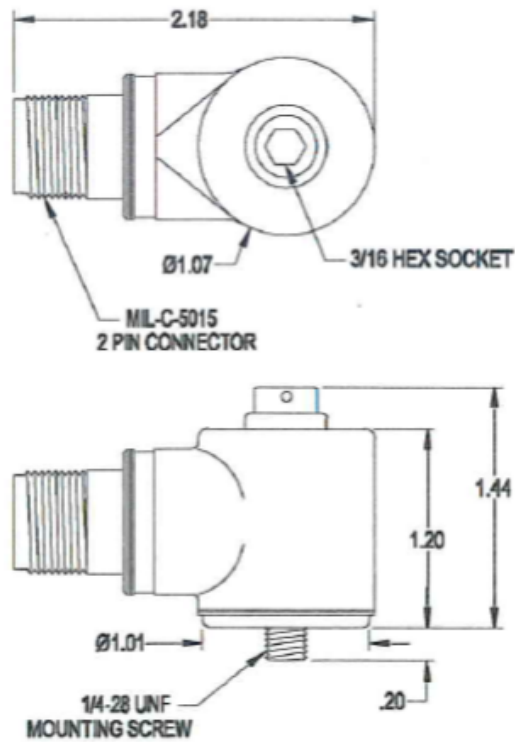


Figure 4: AP3500S2-Z1 dimensions



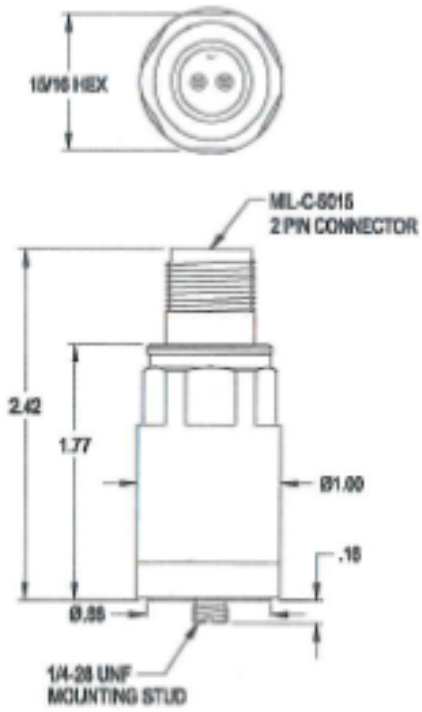


Figure 5: AP3500T2-Z1 dimensions

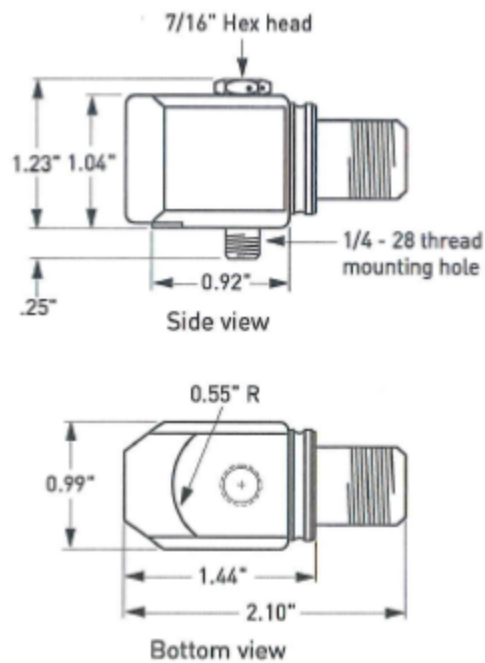


Figure 6: AS3100S2-Z2 dimensions

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