

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/s². 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 ± 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 μ g
Spectral electrical noise @ 10 Hz	7 μ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 100 Hz	4 μ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 1000 Hz	2 μ g/ $\sqrt{\text{Hz}}$
Output Impedance, max	100 Ω
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 μ g/gauss
Sealing hermetic base strain sensitivity, max	0.0002 g/ μ 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 ± 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 μ g
Spectral electrical noise @ 10 Hz	10 μ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 100 Hz	5 μ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 1000 Hz	5 μ g/ $\sqrt{\text{Hz}}$
Output Impedance, max	100 Ω
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 μ g/gauss
Sealing hermetic base strain sensitivity, max	0.0002 g/ μ 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

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 ± 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 μ g
Spectral electrical noise @ 10 Hz	2 μ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 100 Hz	0.6 μ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 1000 Hz	0.2 μ g/ $\sqrt{\text{Hz}}$
Output Impedance, max	100 Ω
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 μ g/gauss
Sealing hermetic base strain sensitivity, max	0.001 g/ μ 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.

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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 ± 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 μ g
Spectral electrical noise @ 10 Hz	10 μ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 100 Hz	5 μ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 1000 Hz	5 μ g/ $\sqrt{\text{Hz}}$
Output Impedance, max	100 Ω
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 μ g/gauss
Sealing hermetic base strain sensitivity, max	0.0002 g/ μ 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



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EN 60079-11

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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 ± 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 μ g
Spectral electrical noise @ 10 Hz	2 μ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 100 Hz	0.4 μ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 1000 Hz	0.2 μ g/ $\sqrt{\text{Hz}}$
Output Impedance, max	100 Ω
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 μ g/gauss
Sealing hermetic base strain sensitivity, max	0.0001 g/ μ 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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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 ± 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 μ g
Spectral electrical noise @ 10 Hz	10 μ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 100 Hz	5 μ g/ $\sqrt{\text{Hz}}$
Spectral electrical noise @ 1000 Hz	5 μ g/ $\sqrt{\text{Hz}}$
Output Impedance, max	100 Ω
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 μ g/gauss
Sealing hermetic base strain sensitivity, max	0.0002 g/ μ 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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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

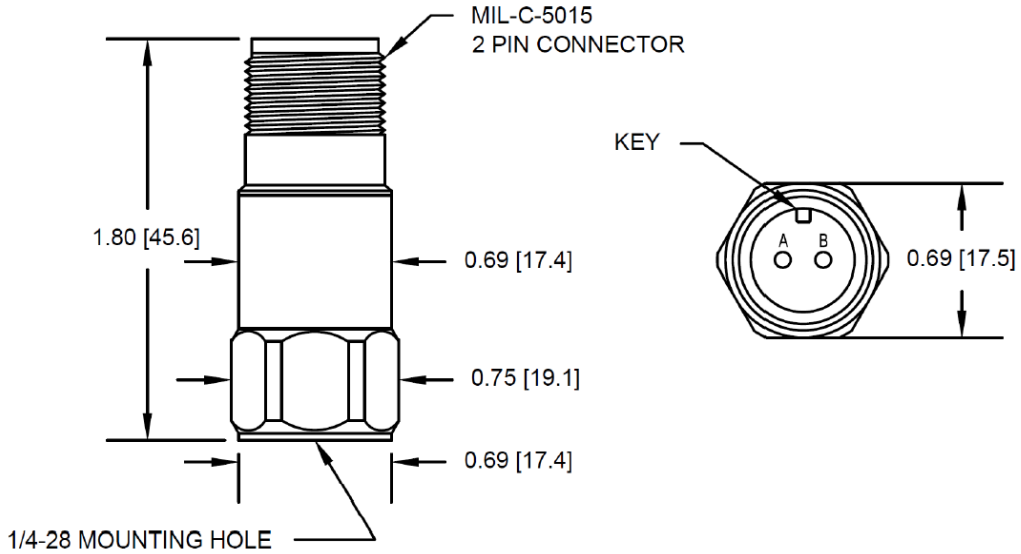


Figure 1: AM3100T2-Z2 dimensions

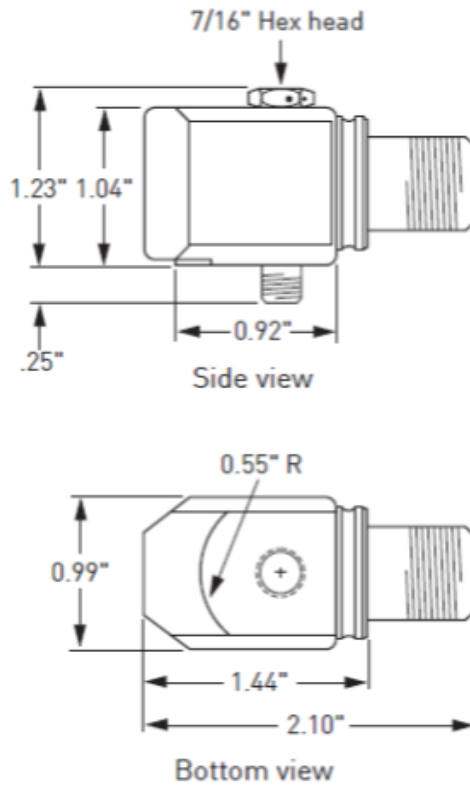


Figure 2: AS3100S2-Z0 dimensions

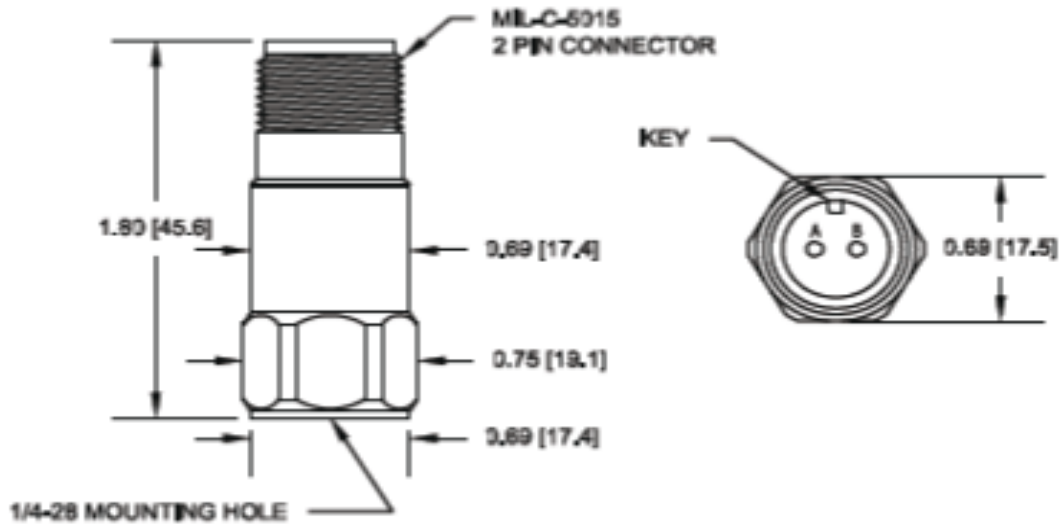


Figure 3: AM3100T2-Z0 dimensions

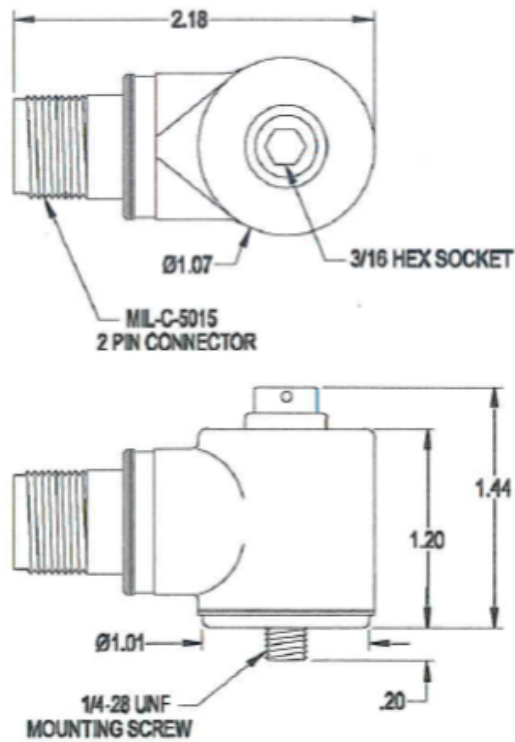


Figure 4: AP3500S2-Z1 dimensions

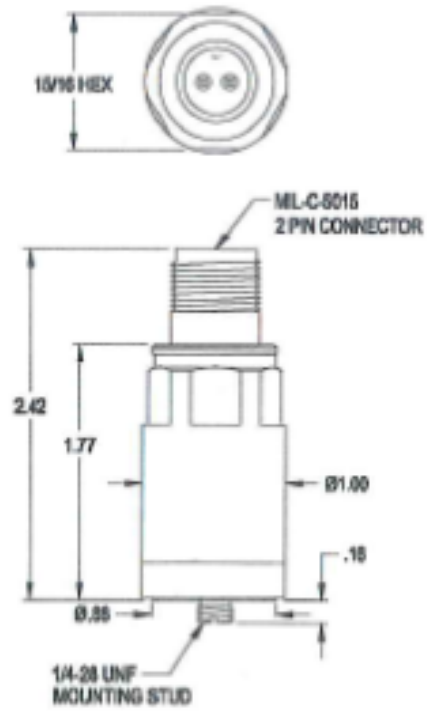


Figure 5: AP3500T2-Z1 dimensions

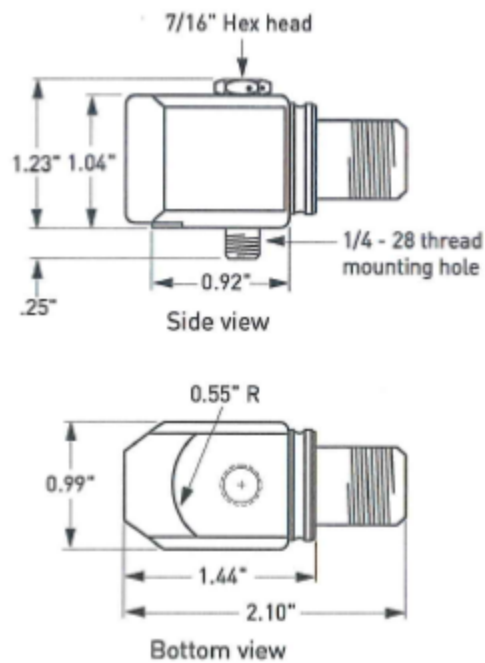


Figure 6: AS3100S2-Z2 dimensions

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