

Miniature Bearing Sensors

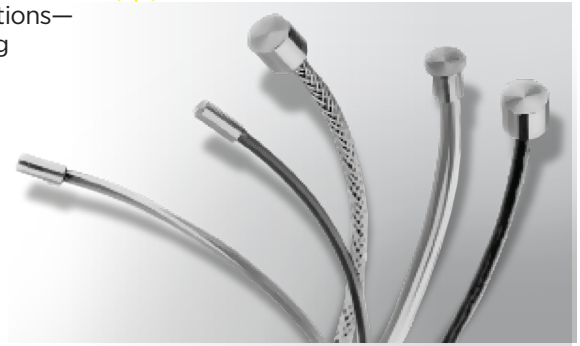
EXPLOSION PROOF RATED

Ex/MBS Certified in:
NFPA 70 ATEX
CEC 22.2 IECEx
NEC 500 & 505

The bearings of industrial rotating equipment operate under arduous conditions—often for considerable periods of time. The most reliable indicator of bearing condition is the temperature of the metal beneath the shoe.

Recognition of rising temperature can provide an early warning of the breakdown of the lubricating oil film, allowing machine shutdown and maintenance to take place before catastrophic failure of the bearing and possible damage to its mounting. Conax Miniature Bearing Sensors provide a reliable and cost-effective method to monitor bearing temperatures.

These sensors are valuable in multiple industry applications, such as power generation turbines, water and wastewater treatment plants, refineries, petrochemical plants, and industrial gas production facilities.








Explosion Proof Rated and Commercial Grade MBS assemblies

Conax Technologies offers two types of Miniature Bearing Sensors: Explosion Proof Rated (Ex/MBS) and Commercial Grade (MBS) assemblies. Conax Ex/MBS and MBS assemblies are environmentally sealed by a proprietary process. The Ex/MBS certifies that the cap protects the integrity of the seal over time, reducing the occurrence of seal failures and capillary action that leads to wicking of oil and creates a fire hazard. Additionally, all Conax Miniature Bearing Sensors use an exclusive epoxy, enabling a rated pull test of >30 pounds at high temperature. Competitors have a pull strength of 10 pounds.

Embedment RTDs and Thermocouples

Maximum Number of Conductors and Wire Gauge (AWG)

Sensor Type	Case Style A ⁷		Case Style B ⁵		Case Style C ⁶		Case Style D ⁶		Case Style E ⁷	
										
	Case L: 0.250" (6.4 mm) Case Ø: 0.275" (7.0 mm)		Case L: 0.250" (6.4 mm) Case Ø: 0.188" (4.8 mm) Flange Ø: 0.250" (6.4 mm)		Case L: 0.300" (7.6 mm) Case Ø: 0.125" (3.2 mm)		Case L: 0.300" (7.6 mm) Case Ø: 0.080" (2.0 mm)		Case L: 0.250" (6.4 mm) Case Ø: 0.250" (6.4 mm)	
	Single ¹	Dual ¹	Single ¹	Dual ¹	Single ¹	Dual ¹	Single ¹	Dual ¹	Single ¹	Dual ¹
Platinum, 100 Ω ± 0.12% at 0° C (Meets EN60751, Class B) ^{2,4}	3 wire 24 AWG	6 wire 24 AWG	3 wire 24 AWG	6 wire 24 AWG	3 wire 26 AWG	N/A	3 wire 30 AWG	N/A	3 wire 24 AWG	6 wire 24 AWG
Thermocouple (E, J, K, T) ³	2 wire 24 AWG	4 wire 24 AWG	2 wire 24 AWG	4 wire 24 AWG	2 wire 26 AWG	N/A	2 wire 28 AWG	N/A	2 wire 24 AWG	4 wire 24 AWG

¹Smaller wire available - Contact Factory

²Also meets ± .36% Tolerance Band

³Thermocouple (E, J, K, T) - Standard Limits of Error, Special Limits of Error available - Consult factory

⁴RTD, Recommended Driving Current - 1mA max

⁵Installation Procedure Request TSD 40.001

⁶Installation Procedure Request TSD 40.003

⁷Installation Procedure Request TSD 40.004

Specifications

Temperature Range: -40 to 230° C (-40 to 446° F)

Case Materials: 316 SS; Copper; Nickel Plated Copper; Tin Plated Copper, Brass.

Lead Wires: Stranded silver plated copper conductors with Teflon™ insulation and optional stainless steel overbraid.

Time Constant: 3.0 sec. (Style A) to 1.5 sec. (Style D), typical value in moving water (3 ft/sec)

Insulation Resistance: 10 Megaohms Min. at 100 VDC, leads to case (RTD). 10 Megaohms Min. at 100 VDC, Ungrounded only (T/C)

Pull Strength: Conax uses an exclusive epoxy process enabling a rated pull test of >30 pounds at high temperature



Ideas. Solutions. Success.

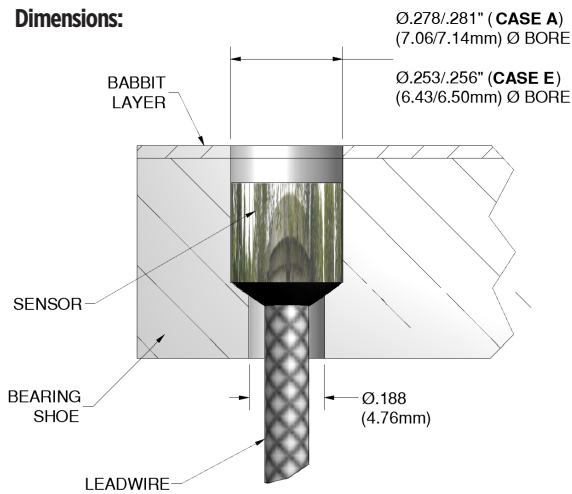
Installation and Accessories

Case Style A & E (7)

Installation Instructions:

Install Case Style A sensor just below the babbitt layer, then puddle the babbitt metal over the sensor tip and smooth. Case E is bonded with epoxy near the babbitt face for best readings.

Dimensions:

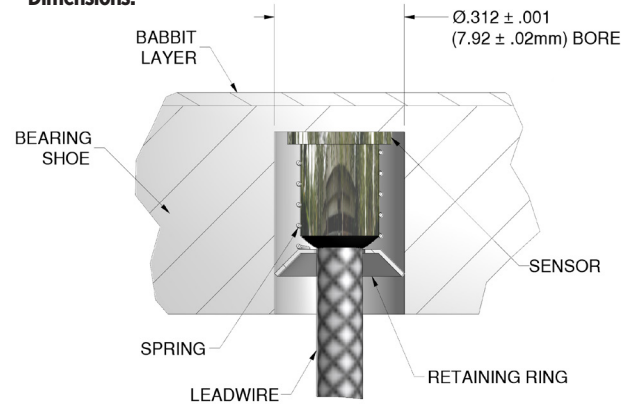


Case Style B (5)

Installation Instructions:

The Spring Steel style retaining ring allows spring loading with the spring and retaining ring (order separately). The Beryllium Copper style retaining ring allows removal and reinstallation. Slide the spring and ring over the leads, insert the sensor tip into a milled hole, and push down on the retaining ring to compress the spring and secure the sensor.

Dimensions:

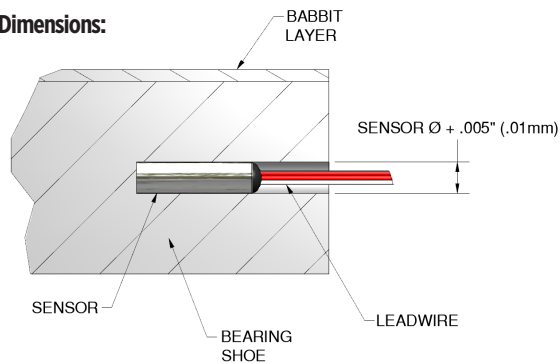


Case Style C & D (6)

Installation Instructions:

Bond with epoxy inside small bearing shoes. Locate near the babbitt face for best readings.

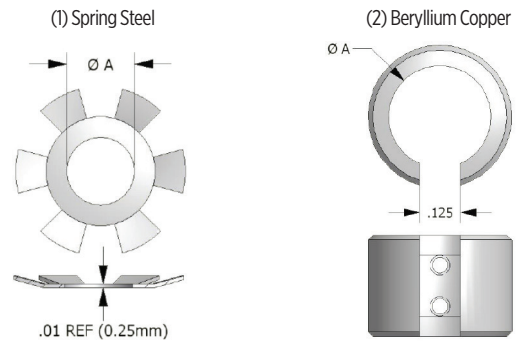
Dimensions:



Retaining Rings

To be ordered in conjunction with Case Style B

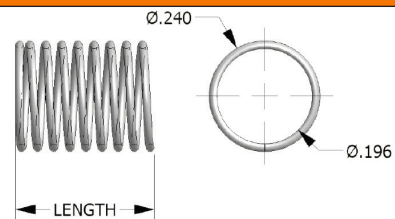
Style	Ordering P/N	"A" Diameter
1	48-0054-001	0.156" (3.96 mm)
1	48-0054-002	0.136" (3.45 mm)
2	48-0111-001	0.213" (5.4 mm)



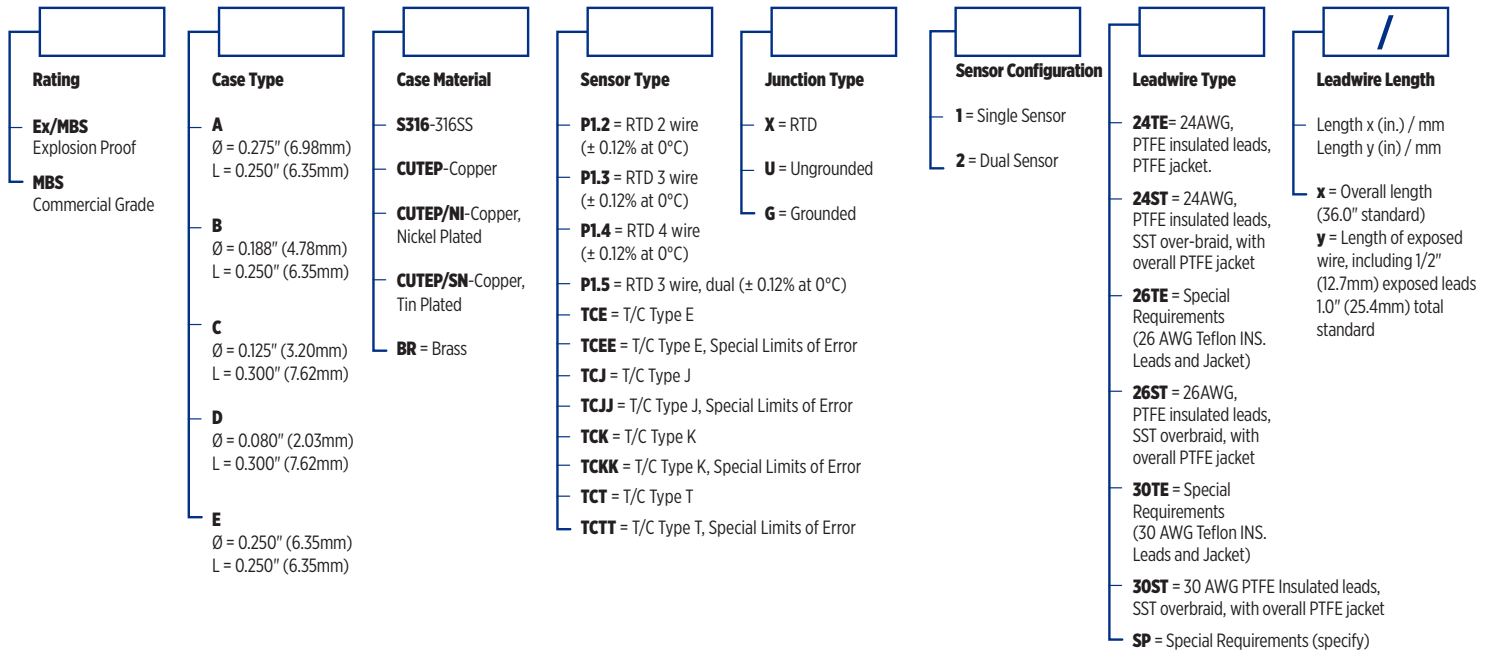
Springs

To be ordered in conjunction with Case Style B

Ordering P/N	Length (in.)	Load (lbs.)
6961-37	.44" (11.2mm)	2.75
6961-24	.50" (12.7mm)	2.71
48-0048-003	1.25" (31.8mm)	2.02
48-0048-005	1.75" (44.5mm)	2.02
48-0048-004	2.00" (50.8mm)	2.02
48-0048-001	3.00" (76.2mm)	2.02



How To Order



Example:

Explosion Proof Rated: **Ex/MBS-A-S316-TCK-U-1-24TE-36.0/1.0**

Commercial Grade: **MBS-A-S316-TCK-U-1-24TE-36.0/1.0**

Explosion Proof Certification

Conax Ex/MBS assemblies are certified for:



CSA 23CA80129811U
 Ex eb IIC Gb
 Ex ic IIC Ge
 Class I, Zone 1, be IIC Gb
 Class I, Zone 2, ic IIC Gc
 Class I, Div 2, Group ABCD



CSANe 23ATEX1098U
 (Category 1 & 2)
 Ex ia IIC Ga
 Class I, Zone 0, AEx ia IIC Ga
 IS Class I, Div 1, Group ABCD
 Ex ia IIC Ga
 Ex eb IIC Gb

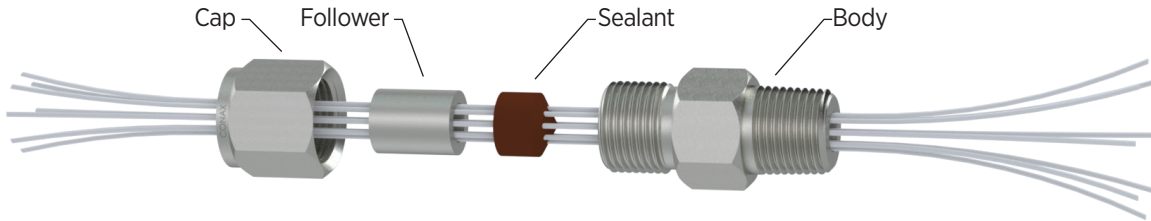
II 1 G
II 2 G
II 3 G

CSANe 23ATEX1099U
 (Category 3)
 Ex ic IIC Gc
 Class I, Zone 2, AEx ia IIC Ga
 IS Class I, Div 2, Group ABCD
 Ex ic IIC Gc



IECEx CSA 23.0021U
 Ex ia IIC Ga
 Ex eb IIC Gb
 Ex ic IIC Gc

Bearing Sensor Wire Seals (BSWS) to prevent oil leakage



Conax Technologies BSWS assemblies were originally designed for use with embedment bearing temperature sensors to prevent oil migrating along the sensor leads. They seal on the individual insulated leads exiting an oil-filled bearing house. They may also be used to seal all types of insulated instrumentation lead wire. These sealing assemblies can be found in large motors, generators, turbines, pumps, compressors and journal bearing pedestals.

Construction consists of 303SST for metallic parts and a sealant made from Viton™. Standard assemblies seal 2 to 14 wires in a variety of wire gauges. Please consult Conax Technologies for custom needs.

- **Temperature Range:** Ambient to +100° F (+37.8° C)
- **Pressure Range:** to 50 PSIG (3.4 bar)

The replaceable sealant permits repeated use of the same fitting. Elements can be easily assembled or replaced in the field. To replace the sealant or elements, simply loosen the cap, replace the necessary items, relubricate and retorque the cap. See page pages 70-71 of our Catalog 5001 for more information on our BSWS model.

To order a Replacement Sealant, order RS - (Fitting) - (Element Size) - (Number of Holes) - V

Example: RS-BSWS4-20-2-V

BSWS assemblies may be purchased with SAE/MS thread mount, weld neck or flange style mounts. Consult factory for details.

All pressure and torque ratings were determined at 68° F (20° C) using stainless steel rod as the element. Pressure ratings may degrade at higher temperatures.

Pressure rating guide values are provided for glands with elements restrained by the compressed sealant. Higher pressure may be attained with additional element restraints.

For proper assembly, see the Assembly Instructions provided in Catalog 5001.

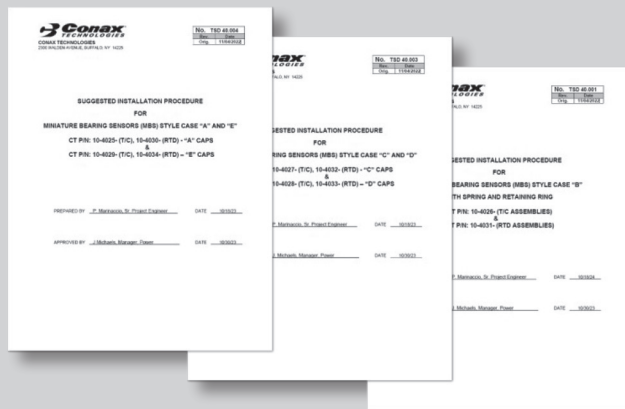
Teflon™ is a trademark of The Chemours Company™

Viton™ is a trademark of The Chemours Company™

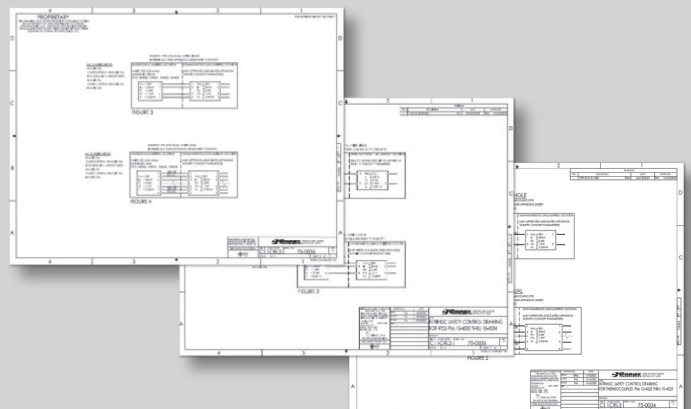
Resources

For Conax Ex/MBS sensors, Installation Procedures and Intrinsic Safety Control Drawings are included with your order. Additional copies may be downloaded at: ConaxTechnologies.com/technical-data

Installation Procedures



Intrinsic Safety Control Drawings



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Ideas. Solutions. Success.