

# Miniature Bearing Temperature Sensors

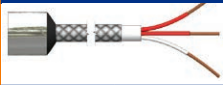
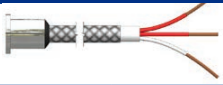


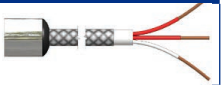
The bearings of industrial rotating equipment operate under arduous conditions—often for considerable periods of time. The most reliable indicator of bearing condition is the temperature of the metal beneath the shoe.

Recognition of rising temperature can provide a 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 simple and cost-effective method to monitor bearing temperatures.



## Embedment RTDs and Thermocouples

Maximum Number of Conductors and Wire Gauge (AWG)

Sensor Type	Case Style A <sup>6</sup>		Case Style B <sup>5</sup>		Case Style C <sup>6</sup>		Case Style D <sup>6</sup>		Case Style E <sup>6</sup>	
										
	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 <sup>1</sup>	Dual <sup>1</sup>	Single <sup>1</sup>	Dual <sup>1</sup>	Single <sup>1</sup>	Dual <sup>1</sup>	Single <sup>1</sup>	Dual <sup>1</sup>	Single <sup>1</sup>	Dual <sup>1</sup>
Platinum, 100 Ω ± 0.12% at 0°C (Meets EN60751, Class B) <sup>2,4</sup>	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) <sup>3</sup>	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

<sup>1</sup>Smaller wire available - Contact Factory

<sup>2</sup>Also meets ± .36% Tolerance Band

<sup>3</sup>Thermocouple (E,J,K,T) - Standard Limits of Error, Special Limits of Error Available - Consult Factory

<sup>4</sup>RTD, Recommended Driving Current - 1mA max

<sup>5</sup>Installation Procedure Request TSD 40.001

<sup>6</sup>Installation Procedure Request TSD 40.003

## 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 PTFE insulation and optional stainless steel overbraid.

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

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



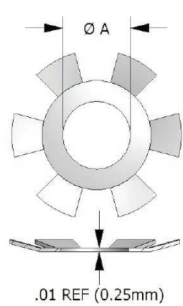
Ideas. Solutions. Success.

## Installation and Accessories

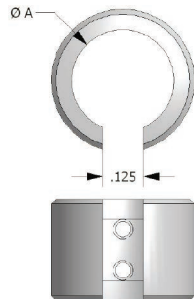
Case Style	Installation Instructions	Dimensions
<b>A&amp;E</b>	Install Case Style A sensor just below the babbitt layer, then puddle the babbitt metal over the sensor tip and smooth. Case E is bonded with epoxy near the babbitt face for best readings.	
<b>B (5)</b>	The Spring Steel style retaining ring 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.	
<b>C&amp;D (6)</b>	Bond with epoxy inside small bearing shoes. Locate near the babbitt face for best readings.	

Retaining Rings		
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)
To be ordered in conjunction with Case Style B		

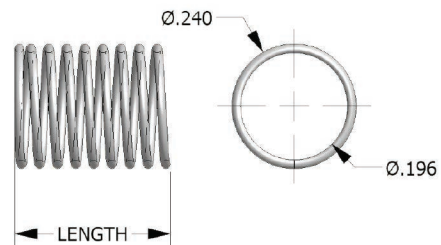
(1) Spring Steel



(2) Beryllium Copper



Springs		
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
To be ordered in conjunction with Case Style B		



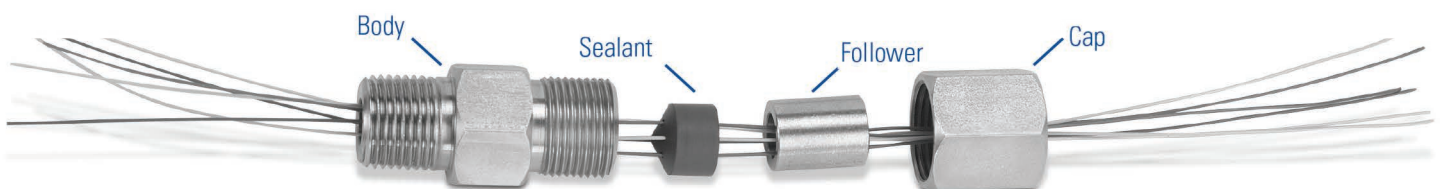
## How To Order

Case Type	Case Material	Sensor Type	Junction Type	Sensor Configuration	Leadwire Type	Leadwire Length
<b>A</b> $\varnothing = 0.275"$ (6.98mm) $L = 0.250"$ (6.35mm)	<b>S316</b> -316SS  <b>CUTEP</b> -Copper  <b>CUTEP/NI</b> -Copper, Nickel Plated  <b>CUTEP/SN</b> -Copper, Tin Plated  <b>BR</b> = Brass	<b>P1.2</b> = RTD 2 wire ( $\pm 0.12\%$ at $0^{\circ}\text{C}$ )  <b>P1.3</b> = RTD 3 wire ( $\pm 0.12\%$ at $0^{\circ}\text{C}$ )  <b>P1.4</b> = RTD 4 wire ( $\pm 0.12\%$ at $0^{\circ}\text{C}$ )  <b>P1.5</b> = RTD 3 wire, dual ( $\pm 0.12\%$ at $0^{\circ}\text{C}$ )  <b>TCE</b> = T/C Type E  <b>TCJ</b> = T/C Type J  <b>TCK</b> = T/C Type K  <b>TCT</b> = T/C Type T	<b>X</b> = RTD  <b>U</b> = Ungrounded  <b>G</b> = Grounded	<b>1</b> = Single Detector  <b>2</b> = Duplex Detector	<b>24TE</b> = 24AWG, PTFE insulated leads, PTFE jacket.  <b>24ST</b> = 24AWG, PTFE insulated leads, SST over-braid, with overall PTFE jacket  <b>26ST</b> = 26AWG, PTFE insulated leads, SST overbraid, with overall PTFE jacket  <b>30ST</b> = 30 AWG PTFE Insulated leads, SST overbraid, with overall PTFE jacket  <b>SP</b> = Special Requirements (specify)	Length x (in.) / mm Length y (in) / mm  <b>x</b> = Overall length (36.0" standard) <b>y</b> = Length of exposed wire, including 1/2" (12.7mm) exposed leads 1.0" (25.4mm) total standard

Example: **MBS-B-BR-P1.3-X-1-24TE-36.0/1.0**

-Miniature Bearing Sensor  
 -Case Type  
 -Case Material  
 -Sensor Type  
 -Junction Type  
 -Sensor Configurations  
 -Leadwire Type  
 -Leadwire Length

## 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  $+100^{\circ}\text{F}$  ( $+37.8^{\circ}\text{C}$ )
- **Pressure Range:** to 50 psig (3.4 bar)

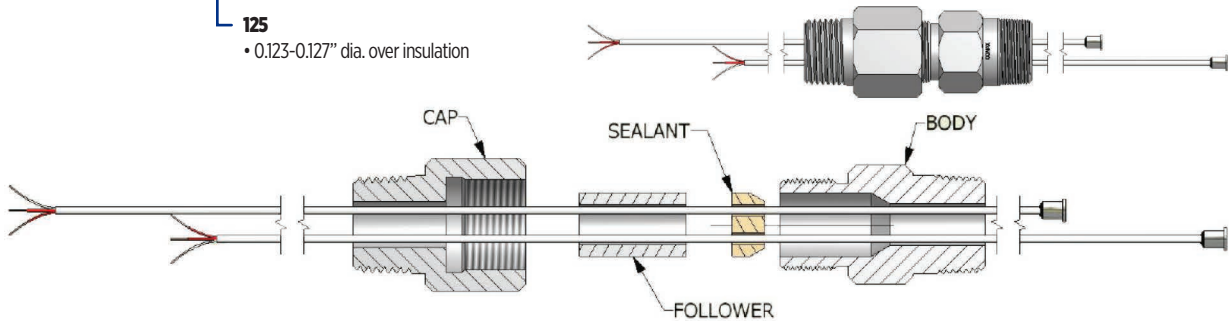
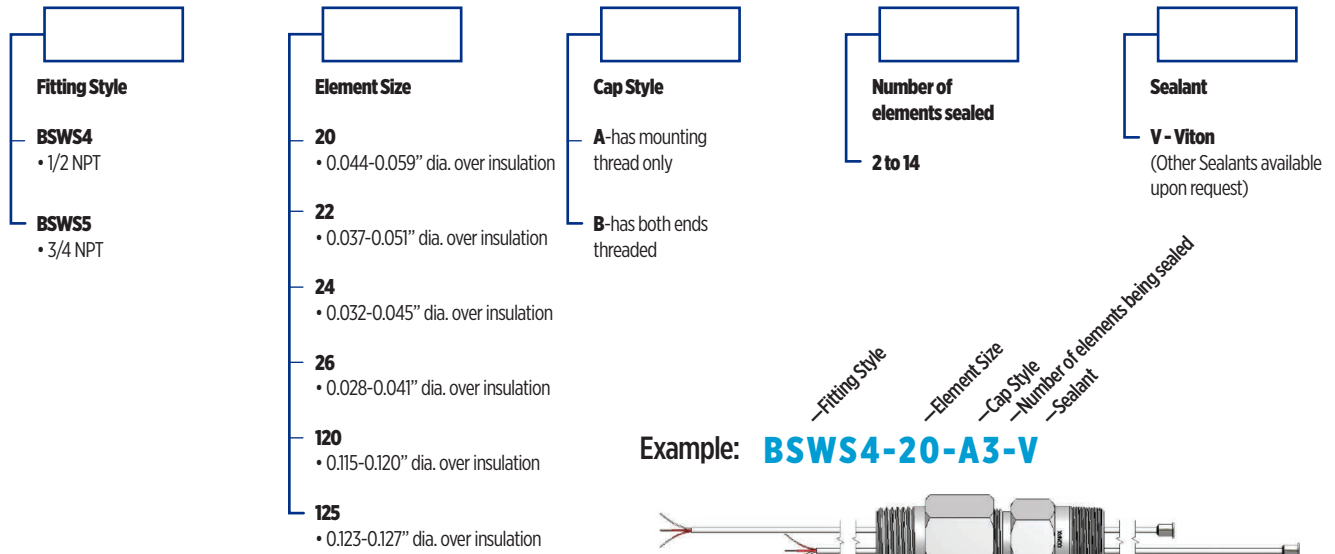
The replaceable sealant permits repeated use of the same fitting. Elements can be easily assembled or replaced in the field. To replace the sealant or elements, simply loosen the cap, replace the necessary items, relubricate and retorque the cap. See page 68 of our Catalog 5001 for more information on our BSWS model.

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

Example: **RS-BSWS4-20-2-V**

# How To Order (BSWS)

## Catalog Numbering System



Catalog Number	Number of Wires	Diameter Over Insulation		Thread NPT	Length (A)		Length (B)		Hex Size				Pressure Rating	
		IN	MM		IN	MM	IN	MM	Body IN	Cap IN	Body MM	Cap MM	Viton PSIG	BAR
BSWS4-20	2-8	0.044-0.059	1.1-1.5	1/2	2.50	63.5	3.25	82.6	1.000	1.000	25.4	25.4	50	3.4
BSWS4-22	2-8	0.037-0.051	0.9-1.3	1/2	2.50	63.5	3.25	82.6	1.000	1.000	25.4	25.4	50	3.4
BSWS4-24	2-8	0.032-0.045	0.8-1.1	1/2	2.50	63.5	3.25	82.6	1.000	1.000	25.4	25.4	50	3.4
BSWS4-26	2-8	0.028-0.041	0.7-1.0	1/2	2.50	63.5	3.25	82.6	1.000	1.000	25.4	25.4	50	3.4
BSWS5-20	2-14	0.044-0.059	1.1-1.5	3/4	2.88	73.0	3.63	92.1	1.250	1.500	31.8	38.1	50	3.4
BSWS5-22	2-14	0.037-0.051	0.9-1.3	3/4	2.88	73.0	3.63	92.1	1.250	1.500	31.8	38.1	50	3.4
BSWS5-24	2-14	0.032-0.045	0.8-1.1	3/4	2.88	73.0	3.63	92.1	1.250	1.500	31.8	38.1	50	3.4
BSWS5-26	2-14	0.028-0.041	0.7-1.0	3/4	2.88	73.0	3.63	92.1	1.250	1.500	31.8	38.1	50	3.4
BSWS5-120	2-4	0.115-0.120	2.9-3.3	3/4	2.88	73.0	3.63	92.1	1.250	1.500	31.8	38.1	50	3.4
BSWS5-125	2-4	0.123-0.127	3.1-3.2	3/4	2.88	73.0	3.63	92.1	1.250	1.500	31.8	38.1	50	3.4

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 of these sealing glands, see the Assembly Instructions provided in Catalog 5001.

2300 Walden Avenue, Buffalo, New York 14225  
 +1 800 223 2389 (P) | +1 716 684 7433 (F)  
 conax@conaxtechnologies.com Made in U.S.A.  
 Bulletin 6035, Rev D ©2017 Conax Technologies 11/17

