



CONAX TECHNOLOGIES
2300 WALDEN AVENUE, BUFFALO, NY 14225

No. TSD 40.004	
Rev.	Date
Orig.	11/04/2022

SUGGESTED INSTALLATION PROCEDURE
FOR
MINIATURE BEARING SENSORS (MBS) STYLE CASE “A” AND “E”
CT P/N: 10-4025- (T/C), 10-4030- (RTD) - “A” CAPS
&
CT P/N: 10-4029- (T/C), 10-4034- (RTD) – “E” CAPS

PREPARED BY P. Marinaccio, Sr. Project Engineer

DATE 10/18/23

APPROVED BY J Michaels, Manager, Power

DATE 10/30/23

REVISION RECORD				
Revision	Affected Paragraphs	Brief Description of Revision	Date	Approval Signature
Orig.	All	Original Release per ECN 220269	11/04/22	<u> </u> P. Marinaccio

1. Introduction

- 1.1. This Technical Support Document (TSD) provides the field installation instructions for Conax Technologies (CT) Miniature Bearing Sensor (MBS) Style Case "A" and "E" in bearing shoe case.

2. Applicable Conax Drawings

- 2.1. 10-4025-, 10-4030-, 10-4029-, 10-4034-, ; All MBS Style Case "A" and "E" Assemblies

3. Installation Procedure for .275 (6.99mm) detectors (case style "A")

- 3.1. Drill a .278/.281" (7.05/7.15mm) diameter hole, by 5/16 (7.95mm) deep in the bearing surface where temperature detection is desired, making sure all sharp edges are eliminated. Mill a groove in back of the bearing shoe ~1/8" (3.20mm) wide by 3/16" (4.75mm) deep. The groove should extend from the drilled hole to where the lead wires are to exit from the bearing.
- 3.2. Apply a small amount of silicon heat sink compound to the tip end of the temperature detector (Dow Corning #340 or similar compound is recommended). Apply enough compound to fill the drill tip cone at the bottom of the hole when the detector is installed. This compound will improve thermal conductivity from bearing shoe to detector when installed, and will result in faster response of the detector to bearing temperature change.
- 3.3. Insert the detector into the hole until it reaches the bottom.
- 3.4. Pot the lead wire in place where it enters the shoe: use an epoxy or other suitable potting compound compatible with the bearing shoe materials, temperature, and service conditions. During application and curing of the potting compound, make certain the detector remains at the bottom of the hole. Position the shoe so the lead wire extends upward. This method is recommended because it uses gravity to help keep the detector at the bottom of the hole.
- 3.5. When routing the lead wire from the bearing shoe, leave sufficient slack in the lead wire for movement of the shoe when it is in service. Use mechanical retainers to secure the lead wire externally to the shoe, or pot the lead wire in place using epoxy or other suitable potting compound.
- 3.6. "Install per drawing 70-0034" (for TCs) and "Install per drawing 70-0035" (for RTDs)

4. Installation Procedure for .250" (6.35mm) detectors (case style "E")

- 4.1. Drill a .253" (6.43mm) diameter hole by 5/16 (7.95mm) deep in the bearing surface where temperature detection is desired. Mill a groove in back of the bearing shoe ~1/8" (3.20mm) wide by 3/16" (4.75mm) deep. The groove should extend from the drilled hole to where the lead wires are to exit from the bearing.
- 4.2. Apply a small amount of silicon heat sink compound to the tip end of the temperature detector (Dow Corning #340 or similar compound is recommended). Apply enough compound to fill the drill tip cone at the bottom of the hole when the detector is installed. This compound will improve thermal conductivity from bearing shoe to detector when installed, and will result in faster response of the detector to bearing temperature change.
- 4.3. Insert the detector into the hole until it reaches the bottom.
- 4.4. Pot the lead wire in place where it enters the shoe: use an epoxy or other suitable potting compound compatible with the bearing shoe materials, temperature, and service conditions. During application and curing of the potting compound, make certain the detector remains at the bottom of the hole. Position the shoe so the lead wire extends upward. This method is recommended because it uses gravity to help keep the detector at the bottom of the hole.
- 4.5. When routing the lead wire from the bearing shoe, leave sufficient slack in the lead wire for movement of the shoe when it is in service. Use mechanical retainers to secure the lead wire externally to the shoe, or pot the lead wire in place using epoxy or other suitable potting compound.
- 4.6. "Install per drawing 70-0034" (for TCs) and "Install per drawing 70-0035" (for RTDs)

5. Product Certification for this MBS "B" Cap Configuration

5.1 CSA 23CA80129811U

- 5.1.1 Ex ia IIC Ga
Class I, Zone 0, AEX ia IIC Ga
IS CLASS I, Div 1, Group ABCD

Entity Parameters:

Ui	30 V
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li	45 mA
Pi	0.4 W
Ci	1.7 nF
Li	0.26 mH

Condition of Acceptability (Intrinsic Safety Installation Only):

1. These device assemblies Shall only be powered by a certified “[Ex ia]” Associated apparatus (barrier device) meeting the entity concept for the Entity parameters as designated. The designated installation for Intrinsically Safe protection is declared prior to installation on the Ex marking label using A permanent marking method. These assemblies shall only be powered by an “[Ex ia] associated apparatus (barrier device).

5.1.2 Ex eb IIC Gb

Ex ic IIC Gc

Class I, Zone 1, AEx eb IIC Gb

Class I, Zone 2 , AEx ic IIC Gc

Class I, Div 2, Group ABCD

Electrical Parameters:

Vmax	30 V
I _{max}	45 mA
Pmax	0.4 W

Condition of Acceptability (Schedule of Limitation):

1. The device assemblies designated for increase safety “[Ex eb]” installation are declared Prior to installation on the manufacturer’s marking label using a permanent marking method. These assemblies shall only be powered by supply having a limited energy electric circuit in accordance with CAN/CSA C22.2 No. 61010-1-12 and ANSI/UL 61010-1, CSA/UL 62368-1 or Class 2 as defined in the Canadian Electrical Code C22.1 Section 16-200 and/or National Electrical Code (NFPA70), article 725.121.
2. The device assemblies designated for level of protection “[Ex ic]” and non-incendive (Division 2) installation are declared prior to installation on the Manufacturer’s Marking Using a permanent marking method. These assemblies shall only be powered by an “[Ex ic]” associated apparatus (barrier device).

6. Product Certification for this MBS “A” and “E” Cap Configuration, (ATEX)

6.1 CSANe 23ATEXC1098U (Category 1&2)

- 6.1.1 II 1G Ex ia IIC Ga
II 2G Ex eb IIC Gb
- 6.2 CsaNe 23ATEX1099U (Category 3)
- 6.2.1 II 3G Ex ec IIC Gc

2813  II 1 G
II 2 G
II 3 G

7. Product Certification for this MBS “A” and “E” Cap Configuration, (IECEX)

7.1 IECEX CSA 23.0021U

- 7.1.1 Ex ia IIC Ga
Ex eb IIC Gb
Ex ic IIC Gc

Entity Parameters (Intrinsic Safety, Ex ia only):

Ui	30 V
Ii	45 mA
Pi	0.4 W
Ci	1.7 nF
Li	0.26 mH

Electrical Parameters (Increased Safety, Ex eb/ec only):

Vmax	30 V
Imax	45 mA
Pmax	0.4 W

Condition of Acceptability(Schedule of Limitation):

1. For devices assemblies designated levels of protection “Ex eb” and “Ex ic” this devise is installed in a sealed bearing and the assembly extension wires To be installed in an appropriate certified enclosure. (eg. Ex eb, Ex ic) respectively, or Greater explosion protection concept0, and ingress protection of IP 54 and meets the Enclosure requirements of IEC/EN 60079-0 and IEC/EN 60079-7. The suitability of the Enclosure is subject to investigation by the local Authority having jurisdiction at the time of Installation.
2. End user shall ensure proper earthing of the devise/extension wires upon installation

In accordance with IEC/EN 60079-14. The mounting of the device for installation must ensure that the metallic body is reliably connected to system earth, continuity to be checked and confirmed.

3. Wiring that is part of the final MBS sensors in which enters or leaves the system enclosure, shall utilize wiring methods as specified in IEC/EN 60079-14 as appropriate for Installation.
4. The device assemblies designated for Intrinsically Safe "Ex ia" installation are declared Prior to installation on the manufacturer Ex marking label using a permanent marking method. These assemblies shall only be powered by an "[Ex ia]" associated apparatus (barrier device).
5. The device assemblies designated for Increased Safety "Ex eb" installation are declared prior to assemblies on the manufacturer Ex marking label using a permanent marking method. These assemblies shall only be powered by a supply having limited energy electric circuit in accordance with IEC/EN 61010-1, or in accordance with IEC/EN 62368-1.
6. The device Assemblies designated for level of protection "Ex ic" installation are declared prior to installation on the manufacture Ex label using a permanent marking method. These assemblies shall only be powered by an "[Ex ic]" associated apparatus (barrier device).
7. An aluminum enclosure may be capable of producing incendive sparks when impacted or equipment must be mounted and/or physically guarded such that it is not subjected to impact or friction. (Note:, Enclosures are not supplied by the device manufacturer)
8. A nonmetallic enclosure parts of the devices may become a spark ignition hazard in the presence of static electricity. The enclosure shall be mounted to avoid building static electric charge from nonconductive process flow, strong air currents or other potential charging through friction.
9. The nonmetallic markings label (tag) shall be cleaned only with a damp cloth, and the equipment shall be mounted to avoid static electric charge from nonconductive process flow, strong air currents or other potential charging through friction.

Marking Examples: (Showing 6 labels for Clarity)

1. Label showing TSD 40.004 under the international information symbol is for MBS Cap designated as (Type "A"and "E"). See example below.
2. Two (2) labels, First label shown below, starting with **Conax P/N:** and second label starting with **Warning** - shall be attached to each individual MBS sensor at pig tail end of extension wire.
3. A copy of TSD 40.004 shall be shipped with every order.

CONAX P/N: 10-4030-XXXXXX-XXX
S/N: (PER TSD 19.027)
IECEX CSA 23.0021U
CSANe 23ATEX1098U
(CATEGORY 1 & 2)
CSANe 23ATEX1099U
(CATEGORY 3)
CSA 23CA80129811U

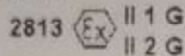


TSD 40.004



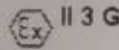
Buffalo, New York
1-800-223-2389

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



Buffalo, New York
1-800-223-2389

Ex ic IIC Gc
Class I, Zone 2, AEx ic IIC Gc
Class I, Div 2, Group ABCD
Ex ic IIC Gc



Buffalo, New York
1-800-223-2389

Ex eb IIC Gb
Ex ic IIC Ge
Class I, Zone 1, AEx eb IIC Gb
Class I, Zone 2, AEx ic IIC Gc
Class I, Div 2, Group ABCD



Buffalo, New York
1-800-223-2389

Ex ia IIC Ga
Ex eb IIC Gb
Ex ic IIC Gc



Buffalo, New York
1-800-223-2389

WARNING - EXPLOSION HAZARD. DO NOT DISCONNECT WHILE THE
CIRCUIT IS LIVE OR UNLESS THE AREA IS FREE OF IGNITABLE
CONCENTRATIONS.

WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD
SEE INSTRUCTIONS

AVERTISSEMENT - RISQUE D'EXPLOSION. NE PAS DÉBRANCHER PENDANT
QUE LE CIRCUIT EST SOUS TENSION OU À MOINS QUE LA ZONE NE SOIT
EXEMPTÉ DE CONCENTRATIONS INFLAMMABLES.

AVERTISSEMENT - RISQUE DE CHARGE ÉLECTROSTATIQUE POTENTIEL -
VOIR INSTRUCTIONS



Buffalo, New York
1-800-223-2389

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