Certificate of Compliance

Certificate: 70217566 **Master Contract:** 154402

Project: 70217566 **Date Issued:** 2020-03-19

Issued To: **Minco Products Incorporated**
7300 Commerce Lane
Minneapolis, Minnesota, 55432
United States

Attention: Rob Bohland

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Issued by: *Ronald (Ron) Bell*
Ronald (Ron) Bell

PRODUCTS
CLASS 2258 02 PROCESS CONTROL EQUIPMENT -- For Hazardous Locations
CLASS 2258 82 PROCESS CONTROL EQUIPMENT -- For Hazardous Locations - Certified to US Standards

Ex eb IIC T6...T2 Gb
Ex ec IIC T6…T2 Gc
Class I, Zone 1 AEx eb IIC T6…T2 Gb
Class I, Zone 2 AEx ec IIC T6…T2 Gc
Class I, Division 2, Groups A, B, C, D T6…T2

Miniature RTD and TC Temperature Sensor – Models B216681 a b c d e f. Maximum surface temperature as defined below.

Ui = 30 V, Ii = 46 mA, Pi =0.4 W Ambient -60°C ≤ Ta ≤200°C; Max Process Temp 200°C; Elastomer Filled 125°C.
Connect per drawing SPI00-1069

Where:
a = Case configuration; 1, 2, 3, 4, or 5
b = Sensor element;
- 1 Thin Film RTD in Short Case
- 2 Thin Film RTD in Long Case
- 3 Wirewound RTD in Short Case
- 4 Wirewound RTD in Long Case
- 5 Thermocouple Junction Ungrounded
- 6 Thermocouple Junction Grounded

c = Number of leads; 2. 3. Or 4
d = Lead length (inches); 1 to no maximum
e = Lead wire covering;
- T PTFE insulated leads only
- S Stainless Steel Braid over PTFE Insulated Leads
- F FEP over TFE Insulated leads
- R FEP over stainless steel braid
- E FEP over stainless steel braid with Elastomer Fill
- K Polyimide insulated leads only
- KS Stainless steel braid over polyimide insulated leads
- P PFA Teflon insulated leads Thermocouple Only
- PS Stainless Steel Braid over PFA Teflon insulated leads Thermocouple Only

f = Optional construction;
- (Blank) None
- Feedthrough
- Babbitt layer on case tip (Case styles A, B only)
- Spring and Rings (Flanged Case Styles B Only)
- Stainless Steel or Paper ID Tag attached to sensor leads

Maximum Surface Temperature:
The hazardous locations maximum surface temperature assigned is contingent upon the rated ambient and process temperatures, as well as the power dissipated in the sensing element, as follows.

RTD power dissipation	Maximum surface temperature assigned				
	T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200 °C)	T2 (300 °C)
	Maximum process temperature				
0.1 W	+70°C	+85°C	+120°C	+185°C	+200°C
0.2 W	+65°C	+80°C	+115°C	+180°C	+200°C
0.4 W	+50°C	+65°C	+100°C	+165°C	+200°C

Thermocouple power dissipation	Maximum surface temperature assigned				
	T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200 °C)	T2 (300 °C)
	Maximum process temperature				
0.1 W	+70°C	+85°C	+120°C	+185°C	+200°C

Conditions of Acceptability:

1. This device is OPEN type equipment that must be used within a suitable end-use system enclosure, the interior of which is accessible only through the use of a tool.
2. Power supplied to this equipment shall be from a source considered "Class 2", per the Canadian Electrical Code, C22.1, Section 16-200, and the National Electrical Code, NFPA 70, Article 725.121.
3. This device must be installed in an appropriately certified (e.g. Ex p, Ex d, Ex e, Ex nA or equivalent protection concept) enclosure, which provides a minimum ingress protection of IP54 and protects against mechanical impact.
4. Flying leads must be terminated within an enclosure which establishes protection from access and impact, by means of a screw or spring terminal suitable for use with 24 AWG (0.25 mm2) or smaller conductors, which are appropriately rated for the service temperature, maintain the required spacings, and secures against accidental disconnection.
5. After integration in the end-use system, the apparatus shall be submitted to a dielectric test of 500VAC, 50/60HZ during 60 Seconds without breakdown, according to Clause 7.1 of CAN/CSA C22.2 No. 60079-7:15 and ANSI/UL 60079-7-2017.
6. After installation, the user shall ensure that the ambient temperature is respected for the apparatus and connected equipment. It shall be suitable for the measured service temperature with the temperature sensor installed.

CLASS 2258 04 PROCESS CONTROL EQUIPMENT -- Intrinsically Safe, Entity - For Hazardous Locations
CLASS 2258 84 PROCESS CONTROL EQUIPMENT -- Intrinsically Safe, Entity - For Hazardous Locations - Certified to US Standards

Ex ia IIC T6…T2 Ga
Ex ic IIC T6…T2 Gc
Class I, Zone 0 AEx ia IIC T6…T2 Ga
Class I, Zone 2 AEx ic IIC T6…T2 Gc
Class I, Division 1, Groups A, B, C, D T6…T2
Class I, Division 2, Groups A, B, C, D T6…T2

Miniature RTD and TC Temperature Sensor – Models B216681 a b c d e f. Maximum surface temperature as defined below.
Entity parameters: Ui = 30 V, Ii = 46 mA, Pi =0.4 W , Cable: Ci = 0.28 nF/m, Li = 0.0013 mH/m, Ri = 0.16 Ω/m
Ambient -60°C ≤ Ta ≤200°C; Max Process Temp 200°C; Elastomer Filled 125°C.

Intrinsically safe when connected per drawing SPI00-1069

Where:
a = Case configuration; 1, 2, 3, 4, or 5
b = Sensor element;
- 1 Thin Film RTD in Short Case
- 2 Thin Film RTD in Long Case
- 3 Wirewound RTD in Short Case
- 4 Wirewound RTD in Long Case
- 5 Thermocouple Junction Ungrounded
- 6 Thermocouple Junction Grounded

c = Number of leads; 2. 3. Or 4
d = Lead length (inches); 1 to No maximum
e = Lead wire covering;
- T PTFE insulated leads only
- S Stainless Steel Braid over PTFE Insulated Leads
- F FEP over TFE Insulated leads
- R FEP over stainless steel braid
- E FEP over stainless steel braid with Elastomer Fill
- K Polymide insulated leads only
- KS Stainless steel braid over polyimide insulated leads
- P PFA Teflon insulated leads Thermocouple Only
- PS Stainless Steel Braid over PFA Teflon insulated leads Thermocouple Only

f = Optional construction;
- (Blank) None
- Feedthrough
- Babbitt layer on case tip (Case styles A, B only)
- Spring and Rings (Flanged Case Styles B Only)
- Stainless Steel or Paper ID Tag attached to sensor leads

Maximum Surface Temperature
The hazardous locations maximum surface temperature assigned is contingent upon the rated ambient and process temperatures, as well as the power dissipated in the sensing element, as follows.

RTD power dissipation	Maximum surface temperature assigned				
	T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200 °C)	T2 (300 °C)
	Maximum process temperature				
0.1 W	+70°C	+85°C	+120°C	+185°C	+200°C
0.2 W	+65°C	+80°C	+115°C	+180°C	+200°C
0.4 W	+50°C	+65°C	+100°C	+165°C	+200°C

Thermocouple power dissipation	Maximum surface temperature assigned				
	T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200 °C)	T2 (300 °C)
	Maximum process temperature				
0.1 W	+70°C	+85°C	+120°C	+185°C	+200°C

Conditions of Acceptability:

1. Flying leads must be terminated within a suitable enclosure having a screw or spring terminal suitable for use with 24 AWG (0.25 mm2) or smaller conductors, which maintains the required spacings and secures against accidental disconnection.
2. After integration in the end-use system, the apparatus shall be submitted to a dielectric test of 500VAC, 50/60HZ during 60 Seconds without breakdown, according to Clause 10.3 of CAN/CSA C22.2 No. 60079-11:14 and ANSI/UL 60079-11-2014.
3. After installation, the user shall ensure that the ambient temperature is respected for the apparatus and connected equipment. It shall be suitable for the measured service temperature with the temperature sensor installed.
4. After integration in the end-use system, the apparatus shall be submitted to a dielectric test of 500VAC, 50/60HZ during 60 Seconds without breakdown, according to Clause 7.1 of CAN/CSA C22.2 No. 60079-7:15 and ANSI/UL 60079-7-2017.
5. After installation, the user shall ensure that the ambient temperature is respected for the apparatus and connected equipment. It shall be suitable for the measured service temperature with the temperature sensor installed.

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 0-10 *(R2015)*	General requirements — Canadian Electrical Code, Part II
CAN/CSA-C22.2 No. 61010-1-12 *(r 2017) + Amd 1-18*	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use — Part 1: General Requirements
CAN/CSA-C22.2 No. 60079-0:19 7th Edition	Explosive atmospheres – Part 0: Equipment – General requirements
CAN/CSA-C22.2 No. 60079-7:16	Explosive atmospheres – Part 7: Equipment protection by increased safety “e”
CAN/CSA-C22.2 No. 60079-11:14 (R2018)	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”
ANSI/UL 61010-1-2018	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use — Part 1: General Requirements
ANSI/UL 60079-0-2013 *(r2017)*	Explosive atmospheres – Part 0: Equipment – General requirements
ANSI/UL 60079-7-2017 *Fifth Edition*	Explosive Atmospheres – Part 7: Equipment protection by increased safety “e”
ANSI/UL 60079-11-2014 *Sixth Edition*	Explosive Atmospheres – Part 11: Equipment Protection by Intrinsic Safety “i”

MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

The following markings are provided on a CSA Certified (Class 7923 01) and UL Recognized (PGJI2) adhesive nameplate, suitable for indoor/outdoor use on stainless steel surfaces, at temperatures of 60°C or higher, and affixed to the side or rear of the housing. Nameplate material is manufactured by Zebra Technologies, designated Z-Ultimate 3000T or Z-Ultimate 3000, and printed using the printer and ink/ribbon combination specified in the manufacturers CSA Listing.

The marking is printed onto self-adhesive polyester film and wrapped around the cable close to the stripped end of the leads of the Temperature Sensor.

- Manufacturer’s name: "Minco", or CSA Master Contract Number “154402”, adjacent to the CSA Mark in lieu of manufacturer’s name.
- Model designation: As specified in the PRODUCTS section, above.
- Electrical ratings: As specified in the PRODUCTS section, above.
- Ambient temperature rating: As specified in the PRODUCTS section, above.
- Manufacturing date in MMYY format, or serial number, traceable to year and month of manufacture.
- The CSA Mark, with or without the “C” and “US” indicators, as shown on the Certificate of Conformity.
- The designation “CSA 19CA70217566X” or abbreviated as “19.70217566”.
- Hazardous Location designation: As specified in the PRODUCTS section, above (may be abbreviated).
- Method of Protection (Ex) Markings; As specified in the PRODUCTS section, above.
- The text: “See installation instructions for complete details.”

Supplement to Certificate of Compliance

Certificate: 70217566 **Master Contract:** 154402

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
70217566	2020-03-19	Original assessment of RTD and TC Temperature Sensor model series for CSAc-us Certification. Methods of Protection: CSA Class 2258 04 and 2258 84: • Ex ia IIC Ga, Class I, Zone 0 AEx ia IIC Ga, -60°C ≤Ta≤200°C; Max Process Temp 200°C. Class I, Division 1, Groups A, B, C, D (optional marking). • Ex ic IIC Gc, Class I, Zone 2 AEx ic IIC Gc, -60°C ≤Ta≤200°C; Max Process Temp 200°C. Class I, Division 2, Groups A, B, C, D (optional marking). CSA Class 2258 02 and 2258 82: • Ex eb IIC Gb, Class I, Zone 1 AEx eb IIC Gb, -60°C ≤Ta≤200°C; Max Process Temp 200°C. • Ex ec IIC Gc, Class I, Zone 2 AEx ec IIC Gc, -60°C ≤Ta≤200°C; Max Process Temp 200°C. Class I, Division 2, Groups A, B, C, D. (Note optional marking is Ex nA IIC T Gc for USA)