

Instructions:

Intrinsic Safety Temperature Detectors and Feedthroughs

Ⓔ II 1 G Ex ia IIC T6...T2 Ga

IECEX Ex ia IIC T6...T2 Ga

Increased Safety Temperature Detectors and Feedthroughs

Ⓔ II 2 G Ex e IIC T6...T2 Gb (N/A for models S102954 & TC102964)

IECEX Ex e IIC T6...T2 Gb (N/A for models S102954 & TC102964)

SPI 00-0530 Rev. H (Document 2125635)

1. Description

These temperature sensors are designed to be installed in various locations.

- Operating temperature range for sensor location is defined on individual specifications drawings.
- Operating temperature range -20°C to +125°C for connecting parts.
- S__ models are available for 2-, 3- or 4-wire measurement circuits and with single or dual resistance temperature detector (RTD) elements.
- TC__ models are available with single or dual thermocouple elements.
- Accessories:
 - Feedthrough AC717/AC718/AC958/AC961 can be used in assemblies with temperature sensors S__ models and TC__ models.
 - Operating temperature range is -20°C to +149°C (elastomer filled cable limited to +125°C)
 - Pressure rating to 25 psi (1.7 bar)
 - Springs AC171/AC672 and rings AC172/AC1038 are fit to S102951/S102953/TC102961/TC102963 only.

2. EU Declaration of Conformity

This Declaration of Conformity is issued under the sole responsibility of the manufacturer.

Temperature Detector Type: S102900, S102901, S102902, S102905, S102906, S102907, TC102910, TC102911, TC102912, TC102915, TC102917, S102920, S102921, S102922, S102923, S102930, S102931, S102935, S102936, S102950, S102951, S102952, S102953, S102954 (Ex ia only), S102970, S102971, S102972, S102973, S102974, TC102960, TC102961, TC102962, TC102963, TC102964 (Ex ia only).

The product defined above is in conformity with the following relevant legislation:

ATEX Directive 2014/34/EU

EN 60079-0:2012+A11:2013* Explosive atmospheres - Part 0: Equipment - General requirements

EN 60079-7:2007* Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

EN 60079-11:2012 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

EN 50495:2010 Safety devices required for the safe functioning of equipment with respect to explosion risks - SIL2 capable

IEC 60079-0:2011-06* Explosive atmospheres - Part 0: Equipment - General requirements

IEC 60079-7:2006-07* Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

IEC 60079-11:2011-06 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

TP TC 012/2011, ГОСТ 31610.0-2014, ГОСТ Р МЭК 60079-7-2012, ГОСТ 31610.11-2014 (Сертификат RU

C-US.HA65.B.00646/20)

Russian Metrology for Miniature RTD Models S102950-S102954 (Certificate OC.C.32.004.A No. 60435)

Russian Metrology for Miniature TC Models TC102960-TC102964 (No. 64423-16)

*NOTE: The harmonized standards EN IEC 60079-0:2018 and EN IEC 60079-7:2015+A1:2018 have been compared to the standard used for certification purposes and no changes in the "state of the art" apply to the product. The standards IEC 60079-0:2017/COR1:2020 and IEC 60079-7:2015+AMD1:2017 CSV have been compared to the standards used for certification purposes and no changes in the "state of the art" apply to the product.

Certificates LCIE 05 ATEX 6038 X and LCIE 05 ATEX 6039 X

Q.A. N.B.: DEKRA Certification B.V. (0344)

Certificate IECEX LCIE 14.0057X

LCIE Bureau Veritas (0081)

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 03 Mar 2023

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3. Installation Instructions

A separate installation instruction is included with each shipment of bearing embedment sensors only. If lost, a copy can be downloaded from the Minco website (www.minco.com). The appropriate Engineering Instruction(s) for each model is as follows:

- S102950, TC102960:
EI 164 Temperature Detector in Sleeve Bearing, Case Style "A", Babbitt Method or EI 167 Temperature Detector in Thrust Bearing, Case Style "A".
- S102951, S102953, TC102961, and TC102963:
EI 180 Temperature Detector in Thrust Bearing, Case Style "B", Babbitt Method or EI 181 Temperature Detector in Thrust Bearing, Case Style "B", Spring and Ring Method.
- S102952, S102954, TC102962, TC102964:
EI 184 Temperature Detector in Bearing Shoe Case, Case Style "C" and "D", Potting Method.
- Dielectric Test: Recommended after installation; 500VRMS at 50-60Hz for 1min, lead to case with 5mA maximum leakage current. Not applicable for grounded thermocouples "G".
- Feedthrough Accessory Installation: When ordered with a case style B bearing sensors, spring and ring are automatically included.
- See page 2 of model specification drawing for accessory assembly features.

4. Special Conditions of Use

The equipment is Intrinsic Safety and Increased Safety rated, and can be used in potentially explosive atmospheres. Because of the 2 protection modes available, the user must check the appropriate box on the marking label (See §8. Marking Examples)

Intrinsic Safety installations only:

The apparatus must be only connected to certified associated intrinsically safe equipment and this combination must be compatible as regards to intrinsic safety rules.

The electrical parameters of the associated intrinsically safe equipment must not exceed any of the following values: $U_o \leq 30 \text{ V}$ and $P_o \leq 0.4 \text{ W}$.

The connection of the cable must be effected in an enclosure with a minimum protection degree IP20, according to clause 6.1 of the standard EN 60079-11.

In case of SIL use, temperature detectors have to be replaced after 10 years of use.

5. Electrical Data

	S___ models	TC___ models
Maximum input voltage	30 V	30 V
Maximum input power	0.40 W	/

Cable: $Ci_max = 0.028\eta\text{F/m}$ $Li_max = 0.0013\text{mH/m}$ $Ri_max = 0.16 \Omega/\text{m}$

6. Temperature Class Tables:

For installation, the user shall ensure that the ambient temperature of connective parts is respected. It shall not be impacted by the measured temperature.

The temperature class rating of the equipment is determined according to the ambient temperature (process side) and the dissipated power in the sensor.

Power dissipated in the RTD sensor	Maximum Temperature				
	Class T6	Class T5	Class T4	Class T3**	Class T2***
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

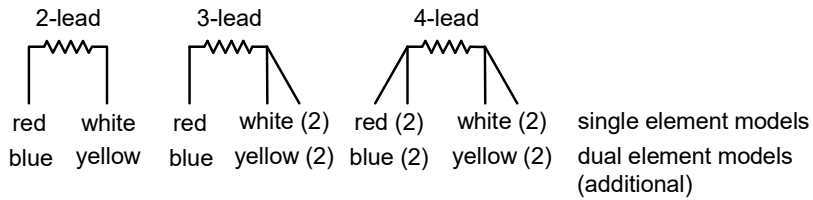
Power dissipated in the thermocouple sensor	Maximum Temperature				
	Class T6	Class T5	Class T4	Class T3**	Class T2***
0.1 W	+70°C	85°C	120°C	185°C	200°C

**Elastomer-filled cables should not be used for T3 temperature class applications. Feedthroughs should not be used on T3 temperature class applications where ambient temperature exceeds +149°C.

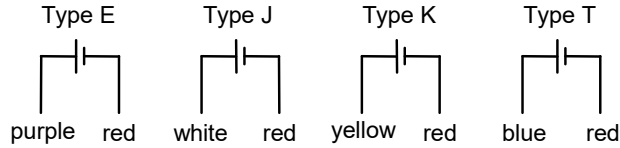
***Elastomer-filled cables and feedthroughs should not be used on T2 temperature class applications.

7. Electrical Connections

S___ models:



TC___ models:



8. Marking Examples

Temperature detectors may be manufactured in our facilities in the United States or France. Below are examples of identification of manufacturing facility location.

Important: On the marking label, the user must check the box (☐) corresponding to the selected protection mode.

Minco US Label Marking:

Front Side	Rear Side
MINCO S.A.S. Z.I. – 09310 ASTON – FRANCE Mfg site: Minneapolis, MN USA Type: S102952 Batch number: 123456-*-*-001 CE 0344 SIL2 EAC	<input type="checkbox"/> Ex II 1 G Ex ia IIC T6...T2 Ga <input type="checkbox"/> Ex II 2 G Ex e IIC T6...T2 Gb LCIE 05 ATEX 6038 X LCIE 05 ATEX 6039 X IECEX LCIE 14.0057 X $U_i \leq 30V, 0.1W \leq P_i \leq 0.4W$

Electrical parameters change to just $U_i \leq 30V$ for thermocouples.

Minco France Label Marking:

Front Side	Rear Side
MINCO S.A.S. Z.I. – 09310 ASTON – FRANCE Mfg site: ASTON, France Type: S102952 Batch number: 123456-*-*-001 CE 0081 SIL2 EAC	<input type="checkbox"/> Ex II 1 G Ex ia IIC T6...T2 Ga <input type="checkbox"/> Ex II 2 G Ex e IIC T6...T2 Gb LCIE 05 ATEX 6038 X LCIE 05 ATEX 6039 X IECEX LCIE 14.0057 X $U_i \leq 30V, 0.1W \leq P_i \leq 0.4W$

Electrical parameters change to just $U_i \leq 30V$ for thermocouples.