

1 **EU - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres**
Directive 2014/34/EU

3 EU - Type Examination Certificate Number: **Baseefa18ATEX0114X**

4 Product: **Series of CH, SF, RM and TSC temperature probe, transmitter and enclosure head assemblies**

5 Manufacturer: **Thermo Electric Company Inc**

6 Address: **1193 McDermott Drive, West Chester, PA, 19380, United State of America**

7 This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 SGS Baseefa, Notified Body number 1180, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. **GB/BAS/ExTR18.0231/00**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012 +A11:2013 EN 60079-1:2014 EN 60079-7:2015 EN 60079-11:2012 EN 60079-31:2014

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following :

⊕ II 2 G Ex db eb IIC T6 Gb
⊕ II 2 D Ex tb IIIC T85°C Db
(Ta = -40°C to +60°C)

⊕ II 2 G Ex ia IIC T6 Ga
⊕ II 2 D Ex ia IIIC T85°C Da
(Ta = -40°C to +60°C)

⊕ II 3 G Ex ic IIC T6 Gc
⊕ II 3 D Ex ic IIIC T85°C Dc
(Ta = -40°C to +60°C)

SGS Baseefa Customer Reference No. **7572**

Project File No. **16/0278**

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R S SINCLAIR
TECHNICAL MANAGER
On behalf of SGS Baseefa Limited

13

Schedule

14

Certificate Number Baseefa18ATEX0114X

15 Description of Product

The temperature probes are manufactured in four models CH, SF, RM and TSC of which they are coming with single (2 wires), duplex (4 Wires) and triplex (6 Wires) thermocouples and when fitted with RTD's they will be as single RTD's 2, 3 or 4 wires or Duplex RTD's 2 wires (4 in Total), 3 wires (6 in Total). The wires are potted at the end of the probes using STYCAST sealant.

The temperature probes of above types are designed for multiple types of protection as detailed below:

The CH assembly for Ex db and Ex eb application is comprising of a CH temperature probe with a collar brazed or welded on the probe outer sheath which makes the flameproof joint between the probe and the spring loaded fitting. The assembly of CH probe and the spring loaded fitting is then completed by a flameproof enclosure head which is either contain a terminal block or intrinsic safety equipment certified transmitter. Similarly the same temperature probe, excluding of collar arrangement, is fitted into a flameproof enclosure head connected to either a terminal block or intrinsic safety equipment certified transmitter for Ex ia, ib or ic applications. For preventing the "Ex i" assembly from mechanical damage the temperature probe is secured by standard type nipple or union fittings and thermowell.

The SF assembly for Ex db and Ex eb application is comprising of a SF temperature probe which is brazed or welded to a seal fitting and the probe conductors are solder to wires which the electrical connection is potted by STYCAST compound in the seal fitting. The assembly of probe and seal fitting is then completed by a flameproof enclosure head which is either fitted with a terminal block or intrinsic safety equipment certified transmitter. The probe may be provided with additional fixing devices such as compression fitting for the purpose of connecting the assembly onto processes. Similarly the same arrangement as described above, can be used for Ex ia, ib and ic applications.

The RM assembly for Ex db and Ex eb application comprised of a RM temperature probe fitted with a compression fitting to connect the assembly to processes. The probe outer sheath is brazed or welded to a metallic ferrule and the probe conductors are welded to a flexible flying lead cable wires. The electrical connection is then secured inside the ferrule by STYCAST 2651 compound. The assembly of temperature probe and flexible flying lead cable is then completed by connecting onto a flameproof enclosure head via approved barrier cable gland which is either fitted with a terminal block or intrinsic safety equipment certified transmitter. The assembly may be provided with thermowell to prevent the temperature probe from mechanical damage. Similarly the same arrangement as described above, can be used for Ex ia, ib and ic applications.

The TSC assembly for Ex db and Ex eb application is available in two optional assemblies. The first assembly is the series ExTSC-3, comprises of a TC or RTD temperature probe, which can be secured by optional support tube fitted with equipment certified compression fittings and adaptor reducer. The assembly is then completed by connecting onto a flameproof enclosure head which is fitted with a terminal block for terminating the electrical connections. The second assembly is the series ExTSC-2, comprises of a TC or RTD temperature probe, which is mechanically secured by a series of fitting assemblies such as threaded flame joint housing, equipment certified compression fitting and adaptor reducers and standard type ½" pipe union and ½" pipe nipple, all of which can be connected onto an optional flanged connection. Similarly the same arrangement as described above, except series ExTSC-2 which is detailed below, can be used for Ex ia, ib and ic applications. The series ExTSC-2 difference is in the fitting arrangement which is comprises of two ¾" NPT nipple in which one is connected onto the flameproof enclosure head and connected to the other nipple via a ¾" NPT union. The temperature probe is fitted onto a plate inside the union by a compression fitting and the end of the nipple assembly is fitted with a reducer which can be fitted onto an optional flanged connection.

The temperature probe and enclosure housing are rated for IP66 ratings.

The Ex db and Ex eb assembly is rated up to 35V, 300mA; the associated intrinsically safe circuits provide a level of protection of Ex ia and Ex ib. The intrinsically safe parameters from the incorporated intrinsically transmitter are incorporated with marking plate of the CH, SF, RM, TSC models. Refer to drawing ExSKG1474 for tabulated list below are detailing the list of approved transmitters that can be used in the enclosure head assembly. This assessment has considered sensor cable (RTDs, thermocouples) lengths up 610mm for cable parameters for levels of protection Ex ia, ib and ic; the certification drawings require the manufacturer to verify that for cable lengths exceeding 610mm do exceed the output capacitances and inductances (cable parameters of 200pF/m and 1uH/m).

For the models CH, SF, RM and TSC, the sensor cables are installed in a sensing rod that has been evaluated to requirements for increased safety for resistance trace heaters; the sensing rod is capable of withstanding dielectric strength testing of 570 VAC, impact and crush testing. Therefore, it is considered that for levels of protection Ex ia and ib need not have any applied faults amongst the sensor wires; for the sensing rod provides a robust mechanical protection and sufficient insulation between the cores and frame of the sensing rod.

16 Report Number

SGS Baseefa Report Number: - GB/BAS/ExTR18.0231/00

17 Specific Conditions of Use

1. Enclosure housing of cast iron is not permitted for ambient temperature lower than -20°C.
2. Enclosure housing of light metal is not permitted for EPL Ga application.
3. Enclosure housings shall not be used for applications with service temperature in excess of 160°C.
4. Enclosure housing unused opening shall be fitted with suitably certified blanking element with IP66 ratings.
5. At least 40% of each cross sectional area should remain free.
6. The SF range of compression type cable glands, PTFE or graphite thread tape shall be applied to the entry threads as per manufacturer instruction.
7. All the relevant specific condition of use associated with intrinsic safety certified transmitters as listed in the description, see table above, and should be fully met by the final assembly.
8. Regular cleaning should be conducted to prevent from accumulation of dust layers.

18 Essential Health and Safety Requirements

All the Essential Health and Safety Requirements (EHSRs) are covered by the standards listed at item 9 above.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
A/D6260	1 of 1	A	18/05/2007	Flame Path Fitting
A/D6261	1 of 1	A	27/04/2007	Flame Path Collar
A/D6306	1 of 1	B	29/06/2015	Seal Fitting
B/57982	1 of 1	(Int'l.)	12/9/2018	Flame Path Assembly
ExC/57253 SHT. 1	1 of 2	F	03/02/2018	CH Series Assembly, Ex d
ExC/57253 SHT. 2	2 of 2	F	31/10/2018	CH Series Assembly, Ex i
ExC/57255 SHT. 1	1 of 2	F	18/09/2018	SF Series Assembly, Ex d
ExC/57255 SHT. 2	2 of 2	E	31/10/2018	SF Series Assembly, Ex i
ExC/57301 SHT. 1	1 of 2	F	18/09/2018	RM Series Assembly
ExC/57301 SHT. 2	2 of 2	F	18/09/2018	RM Series Assembly
ExC/57346 SHT. 1	1 of 2	D	02/10/18	TS-2 Series Tube Skin, Ex d
ExC/57346 SHT. 1	2 of 2	D	31/10/2018	TS-3 Series Tube Skin, Ex d
ExCD7017	1 of 1	A	05/23/2017	Flame Path Fitting Assembly
ExSKG1474	1 to 5	G	27/08/2018	Name Plate/Transmitter List

Certificate Number
Baseefa18ATEX0114X



Issued 5 December 2018
Page 4 of 4

Number	Sheet	Issue	Date	Description
ExSKG1477	1 of 1	(Int'l.)	7/1/15	Potting Compound
ExSKG1502	1 of 1	C	23/05/2017	Approved Heads and Accessories for Ex d