



IECEx Certificate of Conformity

Certificate No .:	IECEx SIR 18.0012X	Page 2 of 4
Date of issue:	2024-02-20	Issue No: 3
Manufacturer:	Delta Controls Corporation 585 Fortson St. Shreveport Louisiana 71107 United States of America	
Manufacturing locations:	Delta Controls Corporation 585 Fortson St. Shreveport Louisiana 71107 United States of America	
This certificate is iss IEC Standard list be found to comply with Rules, IECEx 02 and	ued as verification that a sample(s), representative of production, v low and that the manufacturer's quality system, relating to the Ex p n the IECEx Quality system requirements.This certificate is granted d Operational Documents as amended	vas assessed and tested and found to comply with the roducts covered by this certificate, was assessed and subject to the conditions as set out in IECEx Scheme
STANDARDS : The equipment and to comply with the fo	any acceptable variations to it specified in the schedule of this cert Illowing standards	ificate and the identified documents, was found
IEC 60079-0:2017 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requireme	ents

IEC 60079-1:2014 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d" Edition:7.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

GB/SIR/ExTR18.0184/00 GB/SIR/ExTR24.0026/00 GB/SIR/ExTR19.0111/00

GB/SIR/ExTR22.0101/00

Quality Assessment Report:

GB/SIR/QAR17.0014/04



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

2024-02-20

Claus Thermal Reaction Furnace Thermocouples are designed to measure temperature via thermocouple. The flameproof assembly is interconnection of housing to cover, upper gas chamber to transition/lower gas chamber and transition/lower gas chamber to process flange connection. Gas chambers are made of 1117, 1141 carbon steel, A511, A276 or A351 stainless steel. The process flange is made of A516-70 carbon steel, A240 316L SS or A182 and terminal housing is made of A351 stainless steel or 356 aluminum. Thermowelland thermocouple support are 99.8% ALUMINA, monocrystalline sapphire or silicon carbide. Housing consist of maximum 6 terminal blocks.

Refer to the Annexe for additional information.

SPECIFIC CONDITIONS OF USE: YES as shown below: Refer to the Annexe.



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2024-02-20

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above) This issue, Issue 3 recognises the following changes; refer to the certificate annex to view a comprehensive history:

- 1. Addition of new models HTS and HTV
- 2. Update lower ambient temperature rating from -20°C to -40°C
- 3. Update upper ambient temperature rating from +70°C to +80°C
- 4. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, IEC 60079-0:2011 Ed. 6was replaced by IEC 60079-0:2017 Ed. 7.

Annex:

IECEx SIR 18.0012X Issue 4 Annexe.pdf

Annexe to: IECEx SIR 18.0012X Issue 3

Applicant: Delta Controls Corporation



Apparatus: Claus Thermal Reaction Furnace Thermocouple model HTX series

Equipment:

Claus Thermal Reaction Furnace Thermocouples are designed to measure temperature via thermocouple. The flameproof assembly is interconnection of housing to cover, upper gas chamber to transition/lower gas chamber and transition/lower gas chamber to process flange connection. Gas chambers are made of 1117, 1141 carbon steel, A511, A276 or A351 stainless steel. The process flange is made of A516-70 carbon steel, A240 316L SS or A182 and terminal housing is made of A351 stainless steel or 356 aluminum. Thermowelland thermocouple support are 99.8% ALUMINA, monocrystalline sapphire or silicon carbide. Housing consist of maximum 6 terminal blocks.

Housing is common between all models. Housing is secured by threaded cover and has 2 threaded entries. One is for cable entry located on side of housing. The second is provided at the base of housing for connection to upper gas chamber. Internally, there are up to 6 terminal blocks.

Model HTX: Transition/lower gas chamber is secured by flange joint to upper gas chamber. It includes plugs provided for gas inlet and gas outlet.

Model HTV: Transition/lower gas chamber is secured by threaded joint to the upper gas chamber and includes a glass partition with non-metallic seal between the two chambers.

Model HTS: This model only has a single internal gas chamber secured by threaded joint.

All Models: Transition/lower gas chamber is secured by flange joint to Process flange and is provided with 1 5/8-16UN-Cl2B entry for shipping tube connection. Transition/lower gas chamber includes T/C element supported by follower and grafoil seal.

IECEx SIR 18.0012X Issue 3 Annexe to:

Applicant: **Delta Controls Corporation**



Apparatus: **Claus Thermal Reaction Furnace Thermocouple** model HTX series

MODEL EXAMPLE	MODEL	·	T/C 1		T/C 2	-	T/C 3	-	INSERTION LENGTH	-	PROCESS CONNECTION	-	OPTIONS
	нтх		R	-	R	-	0	-	15.0	-	6"150RS		AA
MODEL	DESCRIPTION												
HTX	Thermocouple, Sulfur Processing Service, ATEX, IECEX												
T/C	DESCRIPTION				RANGE				•				
В	(-) +6% platinum	n / (+) pl	atinum +30%	rhodiu	m +212 °F	to +32	270 °F (+100	°C to +	1799 °C)				
R	(-) platinum / (+) platinu	m +13% rhoo	dium	+32 °F1	o +320	00 °F (0 °C to	+1760	°C)				
S	(-) platinum / (+) platinu	m +10% rhoo	dium	+32 °F 1	o +320	00 °F (0 °C to	+1760	°C)				
0	None (T/C 2, T	C 3 only	y)										
INSERTIC	ON LENGTH	DESCR	IPTION					•					
		**.* in fr	om flange fa	ce to in	side face of	the refr	ractory						
PROCESS	CONNECTION	DESCR	IPTION				•						
4"1	50RS	4 in Cla	iss 150 raise	d face	flange, carbo	n steel	1						
4"3	OORS	4 in Cla	ass 300 raise	d face f	flange, carbo	n steel	1						
6"1	50RS	6 in Cla	iss 150 raise	d face t	flange, carbo	n steel	L						
6"3	OORS	6 in Cla	iss 300 raise	d face f	flange, carbo	n steel	1						
4*1	50RY	4 in Cla	iss 150 raise	d face f	flange, 316 S	tainles	s Steel						
4*3	OORY	4 in Cla	iss 300 raise	d face f	flange, 316 S	tainles	s Steel						
6*1	50RY	6 in Cla	iss 150 raise	d face f	flange, 316 S	tainles	s Steel						
6*3	OORY	6 in Cla	iss 300 raise	d face f	flange, 316 S	tainles	is Steel						
OPTIONS	DESCRIPTION			•									
AA	None												
XPB	316 Stainless S	Steel hou	using										

Notes: ¹ Temperature shown is the maximum recommended for continuous service

Annexe to: IECEx SIR 18.0012X Issue 3

Applicant: Delta Controls Corporation



Apparatus: Claus Thermal Reaction Furnace Thermocouple model HTX series



00-HTV01_MNS_CSA

Date: 20 February 2024

Annexe to: IECEx SIR 18.0012X Issue 3

Applicant: Delta Controls Corporation



Apparatus: Claus Thermal Reaction Furnace Thermocouple model HTX series

Specific Conditions of Use:

- 1. Flamepath joints are not intended to be repaired.
- 2. Unit must only be disassembled or repaired by manufacturer.
- 3. Flange temperature shall not exceed 200°C.
- 4. Use Fasteners with M6 x 1mm 6g, 25 mm long 18-8 stainless steel with tolerance strength of \geq 70KPSI bolts. Fasteners incorporated in both lower and upper flange joints
- 5. Assembly shall be used with at least minimum 124.24 mm [4.89"] high steel Nozzle with maximum wall thickness 11.252 mm[0.443"] and maximum nozzle diameter 174.625 mm [6.875"].
- 6. Minimum 131.940 mm [5.1945"] refractory below the nozzle shall be provided by the end user. Thermowell shall not extend more than 25.1 mm [1"] beyond the refractory hot face.
- 7. Temperature insulating material provided by manufacturer shall be installed inside the nozzle. Refractory well provided by manufacturer shall be installed in the refractory bore hole."
- 8. This equipment shall be installed so that the flanged joints are not within 40 mm of a solid object that is not part of the equipment.
- 9. Terminal housing threaded conduit entries = $\frac{34''}{NPT}$
- 10. Threaded adaptors size for Nitrogen connection = 1/8'' NPT
- 11. The thermowell tube shall be securely mounted internally to a suitably equally protective enclosure installed such that there is no risk of impact to the ceramic enclosure wall. See manufacture installation instructions for details.

Conditions of Manufacture:

- 1. Grafoil bushing of assembly shall be subjected to routine pressure test of 3000 kPa (30 bar) for at least 10 s, as required by clause C.2.1.4 of IEC 60079-1:2014. There shall be no evidence of permanent deformation of joints or damage to enclosure.
- 2. Tighten the follower on grafoil bushing at 130 ft-lb torque.

Full Certificate Change History:

Issue 1 – this Issue introduced the following changes:

- i. Product description section updated to include change in model nomenclature
- ii. Installation manual has been updated to Rev. C, 2019-1-7 to reflect latest nomenclature.

Issue 2 – this Issue introduced the following changes:

- i. Reduce max flange temperature from 230°C to 200°C.
- ii. Change the Temperature Code from T2 to T3.

Issue 3 – this Issue introduced the following changes:

- i. Addition of new models HTS and HTV
- ii. Update lower ambient temperature rating from -20°C to -40°C
- iii. Update upper ambient temperature rating from +70°C to +80°C
- iv. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, IEC 60079-0:2011 Ed. 6was replaced by IEC 60079-0:2017 Ed. 7.