



1 **EC TYPE EXAMINATION CERTIFICATE**

2 Equipment or protective system intended for use in potentially explosive atmospheres –
Directive 94/9/EC – Annex III

3 EC Type Examination **TRAC14ATEX0045X**
Certificate No.:

4 Equipment: **Flameproof Temperature Sensors,
AS8X series**

5 Manufacturer: **Minco Products,**

6 Address: **7300 Commerce Lane, Minneapolis, Minnesota 55432,
United States of America**

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

8 TRaC Global Ltd, Notified Body number 0891 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment or protective system intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential report **TRA-016158-33-00A**.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in section 18 of the schedule to this certificate, has been assured by compliance with:

EN 60079-0:2012

EN 60079-1:2007

EN 60079-7:2007

10 If the sign "X" is placed after the certificate number then this indicates that the equipment or protective system is subject to special conditions of safe use specified in the schedule to this certificate.

11 This EC-Type Examination certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of this equipment or protective system shall include the following:

 **II 2 G Ex db eb IIC TX Gb T_{amb} = -50°C to +55°C**

This certificate and its schedules may only be reproduced in its entirety and without change. This certificate is issued in accordance with the TRaC Ex Certification Scheme.

S.P. Winsor

S P Winsor, Certification Team Leader

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Form RF355 is16A

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13 **SCHEDULE TO EC TYPE EXAMINATION CERTIFICATE**

14 **TRAC14ATEX0045X**

15 **General description of equipment or protective system included within the scope of this certificate**

The AS8X range of temperature sensor assemblies are comprised of flameproof connection head enclosures, temperature probes (sensors) and fittings. The connection head enclosures are available in three types, CH356 (Aluminium), CH357 (Stainless Steel) & CH358 (Aluminium, Epoxy Coated). The temperature probes are either RTD's or thermocouples. The RTD types can be tip sensitive, stem sensitive and magnesium oxide (MgO) powder filled. The thermocouples can be tip sensitive or MgO powder filled. All probe cases are constructed from stainless steel and are sealed with epoxy resin. The range of fitting types are – fluid seal, spring loaded (set screw, fixed or release knob) and welded types. All fittings are constructed from stainless steel. The assemblies can be supplied in varying lengths with probe extensions from 46mm to 244mm. The sensors can also be supplied with a thermowell fitting to protect the probe tips from high process temperatures. The connection head enclosures can be supplied with a ceramic two way terminal block or an array of Minco TT series temperature transmitters which convert the RTD / thermocouple outputs to 4 to 20mA or 1 to 5VDC.

The temperature classification of the connection head enclosures meet T6 at the manufacturer's maximum power rating of 45VDC, 30mA, 1.35W and maximum ambient of 55°C. However the process temperature will determine the temperature classification of the whole assembly including the probe, the table in the special conditions of use can be used to establish the equipment's temperature classification and hence the equipment is marked 'TX'.



CONTINUATION OF SCHEDULE TO CERTIFICATE TRAC14ATEX0045X

AS8X range part number breakdown:

RTD ASSEMBLY: AS8abcdefguvw
 RTD TRANSMITTER ASSEMBLY: AS8abcdefguvwjkt
 THERMOCOUPLE ASSEMBLY: AS8abchiePguvw
 THERMOCOUPLE TRANSMITTER ASSEMBLY: AS8abchiePguvwjkt

ALTERNATE ASSEMBLY MARKING:

RTD ASSEMBLY: AS8abcdefg
 DUPLEX RTD ASSEMBLY: AS8abcddefg
 RTD TRANSMITTER ASSEMBLY: AS8abcdefgTTjkt
 THERMOCOUPLE ASSEMBLY: AS8abchiePg
 DUPLEX THERMOCOUPLE ASSEMBLY: AS8abchhiePg
 THERMOCOUPLE TRANSMITTER ASSEMBLY: AS8abchiePgTTjk

a = PROBE DIAMETER A:

PROBE DIAMETER	CURRENT CODE	OLD CH357 CODE (9)	OLD CH358 CODE (9)
6.0mm (.236")	0	3	6
6.4mm (.250")	1	4	7
4.8mm (.188")	2	5	8

b = PROBE TYPE:

PROBE TYPE	SIMPLEX	DUPLEX
TIP-SENSITIVE RTD	0	1
STEM SENSITIVE RTD	2	3
MgO FILLED RTD (7) (10)	4	5
TIP-SENSITIVE THERMOCOUPLE	6	7
MgO FILLED THERMOCOUPLE (10)	8	9

c = FITTING TYPE AND PROCESS THREAD:

FITTING TYPE AND PROCESS THREAD	CODE
FLUID SEAL, 1/2 NPT	0
FLUID SEAL, G1/2	1
SET SCREW SPRING-LOADED, 1/2 NPT	2
SET SCREW SPRING-LOADED, G1/2	3
FIXED SPRING-LOADED, 1/2 NPT	4
FIXED SPRING-LOADED, G1/2	5
WELDED, 1/2 NPT	6
WELDED, G1/2	7
RELEASE KNOB SPRING-LOADED, 1/2 NPT	8
RELEASE KNOB SPRING-LOADED, G1/2	9

d = RTD SENSING ELEMENT TYPE: CA, CC, NA, NB, PA, PD, PE, PF, PM, PW.
 e = INSERTION DEPTH OR THERMOWELL DEPTH IN MILLIMETERS: MINIMUM = 35.
 f = NUMBER OF LEADS PER ELEMENT AND LEADS COLOR CODE: A THROUGH Z.
 g = CONDUIT THREAD: 3 = 1/2 NPT, 4 = 3/4 NPT, OR 5 = M20 x 1.5-6H.
 h = THERMOCOUPLE TYPE: E, J, K, OR T.
 i = JUNCTION: U OR G.
 j = TRANSMITTER MODEL NUMBER: SEE SHEET 9 FOR MODEL NUMBERS.
 k = ONE OR TWO LETTER TEMPERATURE CODE: A THROUGH Z OR AA THROUGH ZZ.
 r = RESISTANCE CURVE AND TOLERANCE: A THROUGH Z.
 t = CALIBRATION: 0 THROUGH 9.
 u = CONNECTION HEAD:

ALUMINUM (CH357)	A
STAINLESS STEEL (CH356)	S
ALUMINUM, EPOXY COATED (CH358)	E

v = EXTENSION TYPE/LENGTH:

NO EXTENSION	----	----	0
NIPPLE/UNION, 1/2 NPT	46mm (1.8") LONG	FG537	1
NIPPLE/UNION, 1/2 NPT	66mm (2.6") LONG	FG579L20	2
NIPPLE/UNION, 1/2 NPT	91mm (3.6") LONG	FG579L30	3
NIPPLE/UNION, 1/2 NPT	117mm (4.6") LONG	FG579L40	4
NIPPLE/UNION, 1/2 NPT	142mm (5.6") LONG	FG579L50	5
NIPPLE/UNION, 1/2 NPT	168mm (6.6") LONG	FG579L60	6
NIPPLE/UNION, 1/2 NPT	193mm (7.6") LONG	FG579L70	7
NIPPLE/UNION, 1/2 NPT	218mm (8.6") LONG	FG579L80	8
NIPPLE/UNION, 1/2 NPT	244mm (9.6") LONG	FG579L90	9

w = THERMOWELL MOUNTING TYPE AND SIZE: A0 THROUGH Z9. SEE SHEET 11 FOR MATRIX.
 x = THERMOWELL MATERIAL: A THROUGH Z. SEE SHEET 11 FOR OPTIONS.

A list of controlled Manufacturer's Documents is given in Appendix A to this schedule.

16 Test report No.: TRA-016158-33-00A.

17 **“Special Conditions of Safe Use” for Ex Equipment:**

1. Overall temperature class of the assemblies is determined by process temperature as stated below.

T _{process} [°C]	Temperature class of the assembly	Max. surface temperature of the assembly [°C]
80	T6	85
95	T5	100
130	T4	135
190	T3	200
290	T2	300
440	T1	450
> 440	-	T _{process} +10

Alternatively the temperature class may be determined by temperature measurement on the actual installation. This must be performed when no flammable atmosphere is present. The hottest point shall be established – typically the closest part to where the equipment passes through a boundary wall into the hot zone.

2. Set Screw or Release Knob type fittings shall not be used with process temperatures ≥ 260°C. Magnesium oxide probe types may be used for process temperatures up to 600°C.

18 **Essential health and safety requirements**

Covered by application of the standards listed in section 9 of this certificate and the assessment conducted in the test report listed in section 16 of this certificate.

19 **Additional information**

“Routine tests”, if any:

1. 100% routine testing is required at ≥ 14 bar for ≥ 10s on all welded fittings and temperature probe casings. There shall be no leakage, permanent deformation or damage as a result of the test.
2. The RTD and Thermocouple temperature sensors shall be subjected to an electric strength test at 500V r.m.s. for at least 1 min between the connection leads and the sensor casing. Alternatively the test may be performed at 600V r.m.s. for at least 100ms.

“Special conditions for manufacture”, if any:

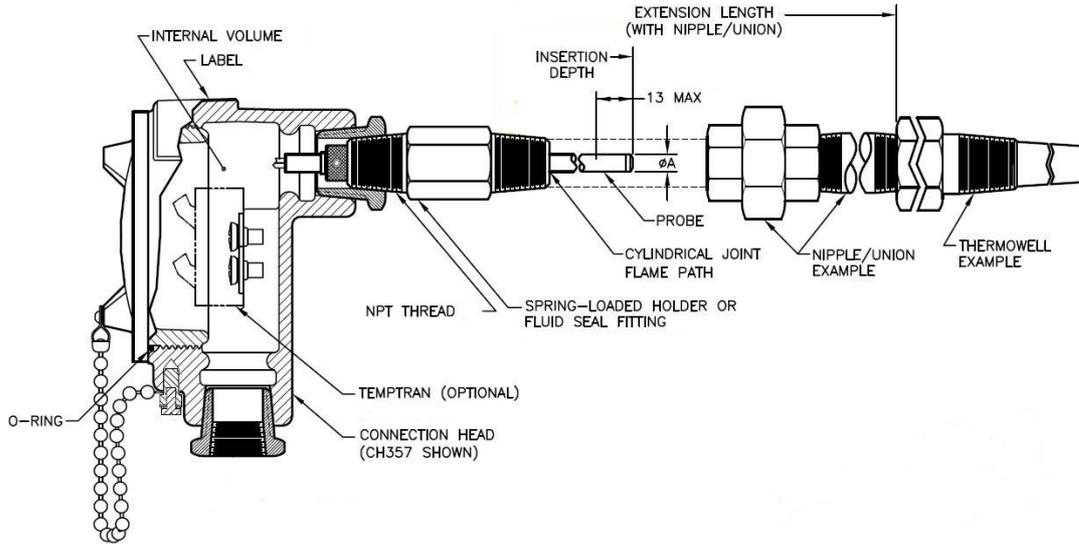
None.

Other information, if any:

None.

CONTINUATION OF SCHEDULE TO CERTIFICATE TRAC14ATEX0045X

Photographs



Details of markings:

CH356 (Assemblies Without Transmitters)

CH356 (Assemblies With Transmitters)



CH357 / CH358 (Assemblies Without Transmitters)

CH357 / CH358 (Assemblies With Transmitters)



Details of variations to this certificate

- None.

CONTINUATION OF SCHEDULE TO CERTIFICATE TRAC14ATEX0045X

Notes to CE marking

In respect of CE Marking, TRaC Global Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

Notes to this certificate

TRaC certification reference: **TRA-01658-32-00**.

Throughout this certificate, the date format yyyy-mm-dd (year-month-day) is used.



CONTINUATION OF SCHEDULE TO CERTIFICATE TRAC14ATEX0045X

APPENDIX A - LIST OF CONTROLLED MANUFACTURER'S DOCUMENTS

Title:	Drawing No.:	Rev. Level:	Date:
Flameproof Assembly ATEX Approval Drawing (11 pages)	B13090	C	2013-04-29
Case Assembly Explosion proof / Flameproof Resistance Thermometer	B12507	D	2012-02-21
Flameproof Connection Head Ex II 2 G Ex d IIC CH356 Series	CH356	B	2009-05-20
Flameproof Connection Head Ex II 2 G Ex d IIC CH357/CH358 Series	CH357/CH358	D	2009-05-20
Flameproof Connection Head Approval Drawing CH356 Series (2 pages)	B13089	B	2014-10-31
Flameproof Connection Head Approval Drawing (Epoxy Coated Gray) CH358 Series (2 pages)	B13795	E	2014-10-31
Flameproof Connection Head Approval Drawing CH357 Series (2 pages)	B13794	E	2014-10-31
Reducing Bushing for CH357 / CH106 Approval Drawing	A12299	B	2008-03-17
Installation and Operation Instructions (5 pages)	1148912	F	*
*no information provided.			

