





Mining And Surface Certification (Pty) Ltd

2015/021934/07

THIS CERTIFICATE IS ISSUED AS AN I.A. CERTIFICATE IN TERMS OF THE MINE HEALTH AND SAFETY ACT, ACT NO 29 OF 1996 (AND REGULATIONS), THE OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993) AND REGULATION 17 OF THE ELECTRICAL MACHINERY REGULATIONS

IA CERTIFICATE	MASC MS/25-8220X	Issue	1
Issue Date	3 June 2026	Expiry Date	28 May 2028
** Based on Certificate No	CML 26ATEX2018X	Issue / Variations / Amendment	0
Requested by	Troxel Limited 10a Newby Road, Hazel Grove Stockport SK7 5DY, United Kingdom		
Manufacturer	Troxel Limited Hazel Grove, Stockport, Cheshire, SK7 5DY, U.K.		
Description	<p>The TX592x.35(.xx...) Vortex Gas Flow Sensor/Transmitters comprise three PCBs housed in an antistatic plastic enclosure. A polycarbonate window is fitted to allow viewing of the liquid crystal display. The Vortex Gas Flow Sensor, which projects from the enclosure or is mounted remotely via a flying lead, comprises a single PCB in a stainless-steel cylindrical case.</p> <p><u>There are three types of sensor/Transmitters:</u> TX5921: rear-projecting sensor TX5922: side-projecting sensor TX5923: remote sensor</p> <p><u>Each of these types may be manufactured in one of four versions:</u> Group I: 4 to 20 mA version Group I: 0.4 to 2 V version Group II: 4 to 20 mA version</p> <p>The supply to the equipment is via terminals T3 and T4. The equipment is designed to detect the rate of gas flow by creating a stream of vortices, through which an ultrasonic beam is passed. The received signal, which is modulated by the vortex stream, is then converted into an output at terminals T1 and T2.</p> <p>See Base Certificate** for further description.</p>		
Equipment	Vortex Gas Flow Sensor/Transmitter	Type	TX592x.35(.xx...)
MARKING: Original marking as per certificate ** remains applicable. IA number must be added.	Type:	TX592x.35(.xx...) Vortex Gas Flow Sensor/Transmitter	
	Ex Marking:	Ex ia I Ma Ex ia IIC T4 Ga Ta=-20°C to +60°C	
	IA Number:	MASC MS/25-8220X (To be additionally marked on equipment)	
	Warnings:	See Base Certificate ** (original marking must be applied)	
Quality Assurance report (QAR) / Notification (QAN):	"It is a requirement under ATEX that all equipment for category 1 and 2 areas must have 3rd party quality assurance from a notified body. This is accepted to cover the equipment's quality requirements."		
Compliance:	<p>The equipment as described above has been allocated the rating <u>Explosion Protected 'as above'</u> utilizing the SANS/IEC Standards:</p> <ul style="list-style-type: none"> SANS (IEC) 60079-0: 2019 Equipment - General requirements SANS (IEC) 60079-11: 2024 Equipment protection by intrinsic safety "i" <p><i>Note: This certificate covers only the listed standards and does not imply compliance to any other standard, related or inferred. It is up to the manufacturer to ensure that the product complies to all relevant standards for the application.</i></p>		
Specific conditions of use "X":	<ul style="list-style-type: none"> Refer to Annex A below for more details. 		
Conditions of manufacture:	<ul style="list-style-type: none"> Refer to Annex A below for more details. 		
 S. JORDAAN TECHNICAL SPECIALIST		 N. VILOJEN TECHNICAL OFFICER	
<p>This certificate covers all units sold as long as the QAR/QAN remains valid. According to the relevant requirements of the MHS Act and the OHS Act, production units of explosion protected equipment are required to comply with third party quality assurance (an approved mark scheme or batch testing by an accredited test laboratory).</p>			

Apparatus in hazardous locations is subject to the following provisions as applicable, which shall be adhered to:

- SANS 10086 requirements;
- Any conditions mentioned in the above certificate;
- Any relevant requirements of the MHS Act;

Any restrictions and conditions enforced by the chief inspector of mines, principal inspector (Group I equipment) or chief inspector of factories (Group II equipment).

This certificate may only be reproduced in full
The certificate is not transferable and remains the property of the issuing body.

IA CERTIFICATE: MASC MS/25-8220X
Equipment: TX592x.35(.xx...) Vortex Gas Flow Sensor/Transmitter
(Expiry date: 28 May 2028)

ANNEX A

This document is based on and must be read in conjunction with certificate CML 26ATEX2018X	
Description (According to Base Certificate) **	
"Refer to description in Base Certificate ** (and any applicable schedules/issues/variations)."	
Standard compliance	See Base Certificate **
Specific conditions of use ("X")	<ul style="list-style-type: none"> The only sensor that may be used with the TX5923 (remote sensor head version) is that supplied by Trolex. The maximum length of cable allowed is 10 m. The plastic enclosure and polycarbonate window are non-conducting and may generate an ignition-capable level of static under certain extreme conditions. The user should ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure stream) which might cause a build-up of static on non-conducting surfaces, additionally, cleaning of the equipment should be done only with a damp cloth.
Conditions of manufacture	<ul style="list-style-type: none"> Where the product incorporates certified parts or safety critical components, the manufacturer of the product defined on this certificate shall continually monitor these parts/components for any modifications introduced by the manufacturer(s) of these constituent parts. If the manufacturer of any constituent part introduces any changes which affect the compliance of the certified product that is the subject of this certificate, the manufacturer is required to have this certificate updated.
Conditions of Certification	<ul style="list-style-type: none"> This IA Certificate covers all units sold from the date of this document to the expiry date of this certificate. As per ARP 0108: 2018 / NCoP 2398: 2022 (as applicable) a maximum three yearly review is required on this IA Certificate (expiry is determined as per the QAR/QAN/QMS expiry date). The apparatus must be additionally marked with the MASC marking details above. This approval only covers the equipment as certified above and does not include any scheduled additions or variations / amendments / new issues to the certificate(s), made after the above date. The equipment does not need to be re-tested when used on the conditions and with such restrictions as prescribed by the certificate on which this IA Certificate is based and any other conditions in this IA Certificate. The certification on which this IA Certificate is based must remain valid. The extent of the requirements in the ARP 0108:2018 / NCoP 2398: 2022 (as applicable), SANS 10108 and any other applicable regulations on the certification of the equipment must remain unchanged. The Ex-quality assurance notification/report for the equipment must remain valid.
Conclusion:	<ul style="list-style-type: none"> From the above and the selective examination of the documentation, nothing contrary to the requirements of the applicable standards was found, provided that the equipment / component is used as described in the above document / certificate and according to the MASC conditions below. A MASC IA certificate is issued based on the work done as per the Base Certificate **. The routine tests for production units according to the Base Certificate ** must be complied with (if applicable).
Supplement	<ul style="list-style-type: none"> Issue 1: Supplemented for the replacement of Sira 99ATEX2135X to CML 26ATEX2018X.

This document is issued based on Mining And Surface Certification's Standard Contract terms and conditions available on request.

While every endeavour is made to ensure that a test / assessment / inspection is representative and accurately performed, and that a report / certificate is accurate in the quoted results and conclusions drawn from the test / assessment / inspection, MASC or its directors/employees shall in no way be liable for any error made in carrying out the test / assessment or for any erroneous statement, whether in fact or in opinion, contained in a report / certificate issued pursuant to a test / assessment / inspection.

MASC takes no responsibility for any non-conformances, exclusions, or any results / assessments / inspections not in compliance with the standards. By marking the equipment in accordance with the documentation / standard, the manufacturer / applicant attests on his own responsibility that the equipment / installation has been designed and constructed in accordance with the applicable requirements of the relevant standards and documentation, that the routine verifications / routine tests have been correctly completed and the equipment / installation complies with the documentation and standard(s).

This document is only for use and application in South Africa. It is issued based on National interpretations and accepted practices.

This document may only be reproduced in full.
This certificate is not transferable and remains the property of the issuing body.
This document will not be supported by MASC for certification purposes outside the borders of South Africa.

EU Type Examination Certificate CML 26ATEX2018X Issue 0

- 1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU
- 2 Equipment **TX592x.35(.xx...) Vortex Gas Flow Sensor/Transmitter**
- 3 Manufacturer **Trolex Limited**
- 4 Address **Hazel Grove,
Stockport,
Cheshire,
SK7 5DY, U.K.**
- 5 The equipment is specified in the description of this certificate and the documents to which it refers.
- 6 Eurofins CML B.V., Chamber of Commerce No 67386717, Koopvaardijweg 32, 4906CV Oosterhout, The Netherlands, Notified Body Number 2776, 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 equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 12.
- 7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to conditions of safe use (affecting correct installation or safe use). These are specified in Section 14.
- 8 This EU Type Examination certificate relates only to the design and construction of the specified equipment or component. Further requirements of Directive 2014/34/EU Article 13 apply to the manufacture of the equipment or component and are separately certified.
- 9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

EN IEC 60079-0:2018

EN IEC 60079-11:2024*

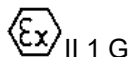
Note*: Although this standard does not appear on the harmonised list, the content has been reviewed and as it is the latest technical knowledge and addresses all the same requirements as the previous edition, it is accepted as meeting the same ESHR's of the Directive as the previous, harmonised edition

- 10 The equipment shall be marked with the following:



Ex ia I Ma

Ta=-20°C to +60°C



Ex ia IIC T4 Ga

Ta=-20°C to +60°C

11 Description

The TX592x.35(.xx...) Vortex Gas Flow Sensor/Transmitters comprise three PCBs housed in an anti-static plastic enclosure. A polycarbonate window is fitted to allow viewing of the liquid crystal display. The Vortex Gas Flow Sensor, which projects from the enclosure or is mounted remotely via a flying lead, comprises a single PCB in a stainless-steel cylindrical case.

There are three types of sensor/Transmitters:

- TX5921: rear-projecting sensor
- TX5922: side-projecting sensor
- TX5923: remote sensor

Each of these types may be manufactured in one of four versions:

- Group I: 4 to 20 mA version
- Group I: 0.4 to 2 V version
- Group II: 4 to 20 mA version

The supply to the equipment is via terminals T3 and T4. The equipment is designed to detect the rate of gas flow by creating a stream of vortices, through which an ultrasonic beam is passed. The received signal, which is modulated by the vortex stream, is then converted into an output at terminals T1 and T2.

The TX5921/2/3 have the following safety descriptions:

Version	T3/T4 (supply)	T1/T2 (signal out) [See notes 1-3]
Group I: 4-20 mA version	U _i = 16.5 V; C _i = 4 nF; L _i = 0	U _i = 16.5 V; P _i = 1.72 W C _i = 15 nF; L _i = 0 U _o = 16.5 V; I _o = 220 mA P _o = 0.91 W C _o = 11.9 μF; L _o = 2.6 mH
Group I: 0.4 – 2 V version	U _i = 16.5 V; C _i = 4 nF; L _i = 0	U _i = 16.5 V; P _i = 1.72 W C _i = 15 nF; L _i = 0 U _o = 16.5 V; I _o = 41 mA P _o = 0.17 W C _o = 11.9 μF; L _o = 2.6 mH

Version	T1/T2/T3/T4 (total inputs to 'supply' and 'signal out')
Group II 4 – 20 mA version:	U _i = 28 V; I _i = 120 mA P _i = 0.84 W C _i = 18.3 nF; L _i = 0

Note 1: In some applications, T1 and T2 are inputs, in which case these output parameters are not relevant.

Note 2: For Group I builds, the connections to terminals T1/T2 and T3/T4 shall be from the same power supply. The user should note that the power to terminals T1/T2 must be limited to 1.72 W via a supply with a minimum source resistance of 40 Ω . There is no specific power limitation to terminals T3/T4, so terminals T1/T2 and T3/T4 should be regarded as separate intrinsically safe circuits.

Note 3: The user should refer to the parameters of the equipment connected to terminals T1/T2 and compare these to the parameters listed in the table. The more onerous set of parameters should be used.

Note 4: Terminals T5, T6 and T8 are connections to the Vortex Head which may be integral with the main part of the apparatus (TX5921 and TX5922) or connected by a cable not exceeding 10 m in length (TX5923). T7 is not connected.

TX592x.35(.x...)-Series Vortex Sensing Head

The TX592x.35(.x...) Vortex Gas Flow Sensor Remote Head is a stand-alone item of apparatus designed to be powered from a suitable barrier or isolator, or alternatively via a sensor/transmitter. The Vortex Head comprises a single PCB in a stainless-steel cylindrical case. The apparatus is designed to detect the rate of gas flow by creating a stream of vortices, through which an ultrasonic beam is passed. The received signal is modulated by the vortex stream.

There are two types of sensing heads:

- 1 TX5924: hand-held
- 2 TX5925: fixed mount

Both of these types as manufactured for Group I and Group II applications. The construction of the Group I and Group II versions are identical. The Vortex Head has the following safety descriptions:

	Group I (Total of supply plus signal)	Group II (Total of supply plus signal)
Ui	16.5 V;	30 V;
Ii	390 mA	390 mA
Pi	1.61 W	1.2 W
Ci	0	0
Li	15 μ H	15 μ H

12 Certificate history and evaluation reports

Issue	Date	Associated Report	Notes
0	14 Apr 2026	R19432A/00	Issue of Prime Certification.

Note: Drawings that describe the equipment or component are listed in the Annex.

13 Conditions of Manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

- i. Where the product incorporates certified parts or safety critical components, the manufacturer of the product defined on this certificate shall continually monitor these parts/components for any modifications introduced by the manufacturer(s) of these constituent parts. If the manufacturer of any constituent part introduces any changes which affect the compliance of the certified product that is the subject of this certificate, the manufacturer is required to have this certificate updated.

14 Specific Conditions of Use (Special Conditions)

The following conditions relate to safe installation and/or use of the equipment.

- i. The only sensor that may be used with the TX5923 (remote sensor head version) is that supplied by Trolex. The maximum length of cable allowed is 10 m.
- ii. The plastic enclosure and polycarbonate window are non-conducting and may generate an ignition-capable level of static under certain extreme conditions. The user should ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure stream) which might cause a build-up of static on non-conducting surfaces, additionally, cleaning of the equipment should be done only with a damp cloth.

Certificate Annex

Certificate Number CML 26ATEX2018X
Equipment TX592x.35(.xx...) Vortex Gas Flow Sensor/Transmitter
Manufacturer Trolex Limited



The following documents describe the equipment or component defined in this certificate:

Issue 0

Drawing No	Sheets	Rev	Approved Date	Title
P5430-04	1 to 2	A	14 Apr 2026	Output PCB
P5431.142	1 of 1	A	14 Apr 2026	Output PCB, Certified Circuit Diagram
P5431.02	1 of 1	G	14 Apr 2026	General Assembly
P5431.03	1 of 1	D	14 Apr 2026	Head P.C.B. Artwork
P5431.37	1 of 1	D	14 Apr 2026	Head PCB Certified Circuit Diagram
P5431.42	1 of 1	A	14 Apr 2026	Certified Block Diagram
P9000.100	1 of 1	C	14 Apr 2026	Alternative Housing Arrangement
P5430.01	1 of 1	A	14 Apr 2026	Control PCB Certified Circuit Diagram
P5431.1800	1 of 1	A	14 Apr 2026	ATEX Certification Marking – Group I – TX592x.35(.xx...) Vortex Gas Flow Sensor/Transmitter
P5431.1801	1 of 1	A	14 Apr 2026	ATEX Certification Marking – Group II – TX592x.35(.xx...) Vortex Gas Flow Sensor/Transmitter
P5431.1802	1 of 1	A	14 Apr 2026	ATEX Certification Marking – TX592x.35(.xx...) Vortex Sensing Head