

UK Type Examination Certificate CML 21UKEX2323X Issue 1**United Kingdom Conformity Assessment**

- 1 Product or Protective System Intended for use in Potentially Explosive Atmospheres UKSI 2016:1107 (as amended) – Schedule 3A, Part 1
- 2 Equipment **Sentro 1 Sensor/Transmitters TX635x.01i.xx.35(.xx) and TX9081.01i.xx.35(.xx)**
- 3 Manufacturer **Trolex Ltd.**
- 4 Address **Newby Road, Hazel Grove,
Stockport, Cheshire SK7 5DY, UK**
- 5 The equipment is specified in the description of this certificate and the documents to which it refers.
- 6 Eurofins E&E CML Limited, Newport Business Park, New Port Road, Ellesmere Port, CH65 4LZ, United Kingdom, Approved Body Number 2503, in accordance with Regulation 43 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), 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 Schedule 1 of the Regulations.

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 specific conditions of use (affecting correct installation or safe use). These are specified in Section 14.
- 8 This UK Type Examination certificate relates only to the design and construction of the specified equipment. Further requirements of the Regulations apply to the manufacturing process and supply of the product. These are not covered by this certificate.
- 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 60079-11:2012

- 10 The equipment shall be marked with the following:



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Ta = -20°C to +40°C



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11 Description

The Sentro 1 Sensor/Transmitters TX635x.01i.xx.35(.xx) and TX9081.01i.xx.35(.xx) monitor an input from sensor modules. The sensor module is fully integrated into the base unit to give direct monitoring of oxygen, toxic or flammable gas concentrations (versions with eModules), or alternatively the monitoring channel may be connected to a remote sensor to measure airflow, pressure, vibration, etc (versions with rModules).

The equipment may be fitted with various gas sensing modules (eModules) and various terminal modules (rModules) for remote connection of external sensors.

The unit comprises a Control PCB, Display PCB and an Output PCB housed in a non-metallic enclosure with polycarbonate LCD window which provides a degree of protection of at least IP54. External circuit connections are made through the two gland entries at the bottom of the housing, and via terminals on the front of the unit (rModules).

The Output PCB may be fitted in one of the following variants:

- Relay Output PCB
- Analogue/Comms Output PCB - 0.4V - 2V Output
- Analogue/Comms Output PCB - 4mA - 20mA Output
- Analogue/Comms Output PCB - RS485 Output
- 4-20mA Loop Powered Output PCB

The following table details the various build options of the base unit:

Base model no.	Output Type	Module type
TX6351.01i.11.35(.xx)	0.4V – 2V	eModule
TX6351.01i.12.35(.xx)	4mA – 20mA	
TX6351.01i.15.35(.xx)	RS485	
TX6351.01i.14.35(.xx)	Relays NC	
TX6351.01i.17.35(.xx)	Relays NO	
TX6352.01i.12.35(.xx)	4-20mA loop powered	eModule
TX9081.01i.11.35(.xx)	0.4V – 2V	rModule
TX9081.01i.12.35(.xx)	4mA – 20mA	
TX9081.01i.15.35(.xx)	RS485	
TX9081.01i.14.35(.xx)	Relays NC	
TX9081.01i.17.35(.xx)	Relays NO	

NOTE – only models with digits 35 after the output type option digits are covered by this certificate.



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The eModules and rModules may be any of the following types:

Type	Part no.	Description
eModule	TX6350.35(.XX...)	Infra red
	TX6350.35(.XX...)	Toxic gas and oxygen
	TX6350.35(.XX...)	Flammable gas
rModule	TX9160.01i.301.35(.XX..)	4-20mA input
	TX9160.01i.303.35(.XX..)	0.4V – 2V input
	TX9160.01i.306.35(.XX..)	PT100 input
	TX9160.01i.501.35(.XX..)	NAMUR input
	TX9160.01i.502.35(.XX..)	Switch input

NOTE – only models with digits 35 before the final option digits are covered by this certificate.

Intrinsic safety is achieved by limiting energy storage and discharge, and by connecting to the non-hazardous area via intrinsically safe interface devices.

The equipment has the following safety description:

Model No.	Power Input	Output type	Output
TX6351.01i.11.35(.xx) TX9081.01i.11.35(.xx)	Terminal 5 w.r.t. 6 Ui = 14.4V Ci = 0 Li = 0	0.4V – 2V	Terminal 1 w.r.t. 2 or 3 Ui = 14.4V Uo = 14.4V Io = 40mA Po = 0.135W Ci = 0 Li = 0
TX6351.01i.12.35(.xx) TX9081.01i.12.35(.xx)		4mA – 20mA	Terminal 1 w.r.t. 2 or 3 Ui = 14.4V Uo = 14.4V Io = 0.477A Po = 1.72W Ci = 0 Li = 0
TX6351.01i.15.35(.xx) TX9081.01i.15.35(.xx)		RS485	Terminal 1 w.r.t. 3 (RS485 A) Terminal 2 w.r.t. 3 (RS485 B) Parameters for each output: Ui = 6.88V Uo = 5.88V Ci = 0 Io = 66mA Li = 0 Po = 97mW



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Model No.	Power Input	Output type	Output
TX6351.01i.14.35(.xx) TX9081.01i.14.35(.xx)		Relays NC	Terminal 1 w.r.t. 2 (Relay 1) Terminal 3 w.r.t. 4 (Relay 2) U _i = 30V U _o = 0 C _i = 0 I _o = 0 L _i = 0 P _o = 0
TX6351.01i.17.35(.xx) TX9081.01i.17.35(.xx)		Relays NO	Terminal 1 w.r.t. 2 (Relay 1) Terminal 3 w.r.t. 4 (Relay 2) U _i = 30V U _o = 0 C _i = 0 I _o = 0 L _i = 0 P _o = 0
TX6352.01i.12.35(.xx)	Terminal 1 w.r.t. 2 U _i = 14.4V C _i = 0 L _i = 0	Loop powered	N/A

rModules have the following output parameters:

Model No.	Output type	Output terminals
TX9160.01i.301.35(.XX..)	4-20mA input	Terminal 1m w.r.t 3m Output parameters same as external supply Terminal 2m w.r.t 3m U _o = 14.4V I _o = 3.5mA P _o = 12mW C _i = 0 L _i = 0
TX9160.01i.303.35(.XX..)	0.4V – 2V input	Terminal 1m w.r.t 3m Output parameters same as external supply Terminal 2m w.r.t 3m U _o = 14.4V I _o = 3.5mA P _o = 12mW C _i = 0 L _i = 0



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Model No.	Output type	Output terminals
TX9160.01i.306.35(.XX..)	PT100 input	Terminals 1m and 2m (combined) w.r.t. 3m $U_o = 14.4V$ $I_o = 55mA$ $P_o = 0.20W$ $C_i = 0$ $L_i = 0$
TX9160.01i.501.35(.XX..)	NAMUR input	Terminal 1m w.r.t. terminal 2m $U_o = 14.4V$ $I_o = 46mA$ $P_o = 0.16W$ $C_i = 7.08\mu F$ $L_i = 0$
TX9160.01i.502.35(.XX..)	Switch input	Terminal 1m w.r.t. terminal 2m $U_o = 14.4V$ $I_o = 46mA$ $P_o = 0.16W$ $C_i = 7.08\mu F$ $L_i = 0$

Variation 1

This variation introduces the following modification:

- i. Approval of an alternative DC-DC Converter

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	29 Apr 2021	R13608A/00	Issue of prime certificate
1	12 Aug 2022	R15641A/00	Issue of Variation 1

Note: Drawings that describe the equipment 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 shall ensure that any changes to those parts or components do not affect the compliance of the certified product that is the subject of this certificate.



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14 Specific Conditions of Use

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

- i. Where an external sensor is used with either rModule type TX9160.01i.301.35 (4-20mA) or TX9160.01i.303.35 (0.4-2V) and it is powered from an external supply, the following shall apply
 - No connection shall be made to the power terminal 1m
 - The 0V of the external sensor supply shall be connected to the 0V of the Sentro supply
- ii. rModule types TX9160.01i.306.35 (PT100), TX9160.01i.501.35 (NAMUR), and TX9160.01i.502.35 (switch) shall not be used with externally powered sensors.
- iii. The cable entries to the supply and output terminals shall be made via cable glands which provide a minimum degree of protection of IP54.
- iv. Under certain extreme circumstances, unearthed metal parts of the enclosure may store an ignition-capable level of electrostatic charge. The equipment shall either be earthed via the integral earthing terminal or the user/installer shall implement precautions to prevent the build-up of electrostatic charge. When not earthed, the capacitance of the metallic label to earth is >10pF.

Certificate Annex

Certificate Number CML 21UKEX2323X

Equipment Sentro 1 Sensor/Transmitters TX635x.01i.xx.35(.xx) and TX9081.01i.xx.35(.xx)

Manufacturer Trolex Ltd.



The following documents describe the equipment defined in this certificate:

Issue 0

-	Drawing No	Sheets	Rev	Approved date	Title
-	Sentro 1				
S01	P5536.100.ATEX.IECEEx	1 to 2	A	29 Apr 2021	General Arrangement
S02	P5536-103	1 of 1	A	29 Apr 2021	Relay
S03	P5536.289.ATEX.IECEEx	1 to 2	A	29 Apr 2021	Group I Certification Schematic 5-15Hz/Relay Output PCB
S04	P5536.290.01.ATEX.IECEEx	1 to 5	A	29 Apr 2021	5-15Hz/Relay Output PCB Layout
S05	P5536.292.01.ATEX.IECEEx	1 to 2	A	29 Apr 2021	Group I Certification Schematic Analogue/Comms Output PCB 0.4V - 2V Output
S06	P5536.292.02.ATEX.IECEEx	1 to 2	A	29 Apr 2021	Group I Certification Schematic Analogue/Comms Output PCB 4mA - 20mA Output
S07	P5536.292.03.ATEX.IECEEx	1 to 2	A	29 Apr 2021	Group I Certification Schematic Analogue/Comms Output PCB RS485 Output
S08	P5536.294.ATEX.IECEEx	1 to 4	A	29 Apr 2021	Analogue & Comms Output PCB Group I
S09	P5536.202.ATEX.IECEEx	1 to 2	A	29 Apr 2021	Circuit Control PCB
S10	P5536.203	1 of 1	B	29 Apr 2021	PCB Control
S11	P5536.204.ATEX.IECEEx	1 of 2	A	29 Apr 2021	Circuit Display
S12	P5536.205	1 of 1	C	29 Apr 2021	PCB Display
S13	P5536.286.ATEX.IECEEx	1 to 2	A	29 Apr 2021	Sentro 1 Revised Display ATEX/IECEEx Certification Schematic
S14	P5536.287.ATEX.IECEEx	1 to 2	A	29 Apr 2021	Sentro 1 Revised Display ATEX/IECEEx Certification Layout
S15	P5536.212	1 of 1	B	29 Apr 2021	PCB Connector

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Equipment Sentro 1 Sensor/Transmitters TX635x.01i.xx.35(.xx) and TX9081.01i.xx.35(.xx)

Manufacturer Trolex Ltd.



-	Drawing No	Sheets	Rev	Approved date	Title
S16	P5536.225.ATEX.IECEx	1 to 2	A	29 Apr 2021	Circuit 4-20mA Loop Powered Output PCB
S17	P5536.226.ATEX.IECEx	1 of 1	A	29 Apr 2021	PCB, Loop Powered 4-20mA / 2-Wire
S18	P5536.2050	1 of 1	A	29 Apr 2021	ATEX/IECEx/UKEX Label-TX6351.01i.aa.35 Sentro 1
S19	P5536.2051	1 of 1	A	29 Apr 2021	ATEX/IECEx/UKEX Label-TX6352.01i.12.35 Sentro 1
S20	P5536.2052	1 of 1	A	29 Apr 2021	ATEX/IECEx/UKEX Label-TX9081.01i.aa.35 Sentro 1
eModules					
E01	P5553.11	1 to 2	A	29 Apr 2021	Schematic – Infrared CPU Board
E02	P5553.12	1 of 1	A	29 Apr 2021	PCB Infrared CPU Board
E03	P5553.187.ATEX.IECEx	1 to 2	B	29 Apr 2021	Circuit Diagram Infrared Baseboard
E04	P5553.188.ATEX.IECEx	1 to 4	B	29 Apr 2021	PCB Infrared Baseboard
E05	P5553.21	1 of 1	B	29 Apr 2021	PCB, Connector Board
E06	P5553.21.01.ATEX.IECEx	1 of 1	A	29 Apr 2021	PCB - Connector Board
E07	P5553.113.ATEX.IECEx	1 of 1	A	29 Apr 2021	General Arrangement - Infrared eModule
E08	P5553.118	1 to 2	A	29 Apr 2021	Schematic – Infrared CPU OSC Board (alternative)
E09	P5553.119	1 of 1	A	29 Apr 2021	PCB – Infrared CPU OSC (alternative)
E10	P5553.2050	1 of 1	A	29 Apr 2021	ATEX/IECEx/UKEX Label - TX6350.35 Sentro eModule
E11	P5553.01	1 to 2	A2	29 Apr 2021	Circuit Diagram Sensing Module - CPU Board
E12	P5553.02	1 of 1	B	29 Apr 2021	PCB, Sensing Module CPU
E13	P5553.184.ATEX.IECEx	1 to 2	A	29 Apr 2021	Circuit Diagram Toxic Baseboard
E14	P5553.185.ATEX.IECEx	1 to 4	B	29 Apr 2021	PCB Toxic Baseboard
E15	P5553.05.ATEX.IECEx	1 to 2	A	29 Apr 2021	Circuit Diagram Sensing Module Oxygen Baseboard
E16	P5553.06	1 of 1	B	29 Apr 2021	PCB, Base, O2

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Equipment Sentro 1 Sensor/Transmitters TX635x.01i.xx.35(.xx) and TX9081.01i.xx.35(.xx)

Manufacturer Trolex Ltd.



-	Drawing No	Sheets	Rev	Approved date	Title
E17	P5553.24.ATEX.IECEx	1 of 1	A	29 Apr 2021	General Arrangement Electrochemical eModule
E18	P5553.40	1 to 2	C	29 Apr 2021	Schematic - 4 Series Flammable Baseboard
E19	P5553.41	1 of 1	C	29 Apr 2021	PCB – 4 Series Flammable Baseboard
E20	P5553.95.ATEX.IECEx	1 of 1	A	29 Apr 2021	General Arrangement 4 Series Flammable eModule
E21	P5476.12	1 of 1	B	29 Apr 2021	Flammable Gas Sensor General Arrangement
rModule					
R01	P5553.26.ATEX.IECEx	1 of 1	A	29 Apr 2021	General Arrangement – Analogue/PT100
R02	P5553.27	1 of 1	D	29 Apr 2021	PCB 0.4-2V/4-20mA Input Module Baseboard
R03	P5553.28.ATEX.IECEx	1 to 2	A	29 Apr 2021	Circuit Diagram – 0.4-2V/4-20mA Module Baseboard
R04	P5553.29.ATEX.IECEx	1 to 2	A	29 Apr 2021	Circuit Diagram – Signal Conditioning CPU Board
R05	P5553.30	1 of 1	B	29 Apr 2021	PCB Signal Conditioning CPU Board
R06	P5553.42	1 to 2	E	29 Apr 2021	Circuit Diagram – PT100 Input Module Baseboard
R07	P5553.43	1 of 1	E	29 Apr 2021	PCB PT100 Baseboard
R08	P5553.45	1 to 2	C	29 Apr 2021	Circuit Diagram – Single Namur/Monitoring Switch Baseboard
R09	P5553.46	1 of 1	D	29 Apr 2021	PCB Single Namur/Monitored Switch
R10	P5553.2051	1 of 1	A	29 Apr 2021	ATEX/IECEx/UKEX Label - TX9160.01i.aaa.35 Sentro rModule

Certificate Annex

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Equipment Sentro 1 Sensor/Transmitters TX635x.01i.xx.35(.xx) and TX9081.01i.xx.35(.xx)

Manufacturer Trolex Ltd.



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Drawing No	Sheets	Rev	Approved date	Title
P5536.295.ATEX.IECEx	1 of 2	A	12 Aug 2022	Group I Certification Schematic 5-15Hz/Relay Output PCB Alternative Build
P5536.297.ATEX.IECEx	1 of 5	A	12 Aug 2022	5-15Hz/Relay Output PCB Layout Alternative Build
P5536.298.01.ATEX.IECEx	1 of 2	A	12 Aug 2022	Group I Certification Schematic Analogue/Comms Output PCB 0.4-2 V Output Alternative build
P5536.298.02.ATEX.IECEx	1 of 2	A	12 Aug 2022	Group I Certification Schematic Analogue/Comms Output PCB 4-20mA Output Alternative Build
P5536.298.03.ATEX.IECEx	1 of 2	A	12 Aug 2022	Group I Certification Schematic Analogue/Comms Output PCB RS485 Output Alternative Build
P5536.300.ATEX.IECEx	1 of 4	A	12 Aug 2022	Analogue & Comms Output PCB Group I Alternative Build.