IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx CML 16.0152X

Issue No: 0

Certificate history:
Issue No. 0 (2017-07-10)

Status: **Current**

Date of Issue: **2017-07-10**

Applicant: **T.E.L. Engineering Limited (Trading as Trolex Engineering)**
Newby Road
Hazel Grove
Stockport
Cheshire
SK7 5DA
United Kingdom

Equipment: **TX4740 & TX4741 Slip Ring Units**

Optional accessory:

Type of Protection: **'Ex db', 'Ex tb', 'Ex [op is]', 'Ex [ia]'**

Marking:

Ex db* IIB T* Gb

Ex tb* IIIC T*°C Db

Tamb = -40°C to +*°C

* Refer to certificate Annex for marking options.

Approved for issue on behalf of the IECEx Certification Body: H M Amos MIET

Position: Technical Manager

Signature:
(for printed version)

Date: July 10, 2017

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

Certification Management Limited
Unit 1, Newport Business Park
New Port Road
Ellesmere Port, CH65 4LZ
United Kingdom

IECEx Certificate of Conformity

Certificate No: IECEx CML 16.0152X Issue No: 0

Date of Issue: **2017-07-10** Page 2 of 3

Manufacturer: **T.E.L. Engineering Limited (Trading as Trolex Engineering)**
Newby Road
Hazel Grove
Stockport
Cheshire
SK7 5DA
United Kingdom

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-28 : 2015 Edition:2	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

*This Certificate **does not** indicate compliance with electrical 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 Report:

GB/CML/ExTR16.0194/00

Quality Assessment Report:

GB/BAS/QAR08.0003/06

IECEx Certificate of Conformity

Certificate No: IECEx CML 16.0152X Issue No: 0

Date of Issue: 2017-07-10 Page 3 of 3

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

TX4740 and TX4741 Slip Ring Units.

Refer to certificate Annex for full description and conditions of manufacture.

SPECIFIC CONDITIONS OF USE: YES as shown below:

Refer to certificate Annex for Specific Conditions of Use.

Annex:

Annex to IECEx CML 16.0152X Issue 0.pdf

Annexe to:	IECEx CML 16.0152X Issue 0
Applicant:	T.E.L. Engineering Limited (Trading as Trolex Engineering)
Apparatus:	TX4740 and TX4741 Slip Ring Units

Description

TX4740

The TX4740 Slip Ring Collector Unit comprises a stainless steel housing incorporating a bearing and a flange at one end of an outer tube, the tube having various lengths up to 740 mm, and an aluminium or steel housing at the other end. The outer tube encloses slip rings and associated brush gear. Cable entries are provided in the end housings which may be provided with permanently attached cables fitted by the manufacturer. The slip rings are individually rated up to 4500 V, 48 A and may be used for power, signal and intrinsically safe circuits, with a maximum total throughput of 400 A. When used with intrinsically safe circuits, the slip rings are suffixed with an 'i' and the maximum voltage for the intrinsically safe circuits is reduced to 60 V.

Cable entry holes are provided as specified on the approved drawings for the accommodation of suitable certified flameproof cable entry devices, with or without the interposition of a suitable certified flameproof thread adaptor. Unused entries are to be fitted with suitable certified flameproof stopping plugs.

Equipment Marking Variations		
Temperature Class / Max. Surface Temperature	**Ambient Range**	**Unit Type**
T5 / T100°C	-40°C to +40°C	TX4740, TX4740i and TX4740FORJ
T5 / T100°C	-40°C to +60°C	TX4740 (Max current reduced to 285 A) with optional FORJ
T5 / T100°C	-40°C to +45°C	TX4740 and TX4740FORJ
T5 / T100°C	-40°C to +50°C	TX4740 (Max current reduced to 285 A) with optional FORJ

Unit 1, Newport Business Park
New Port Road
Ellesmere Port
CH65 4LZ

T +44 (0) 151 559 1160
E info@cmlex.com

www.cmlex.com

Company Reg No. 8554022 VAT No. GB163023642

TX4741

The TX4741 Slip Ring Collector Unit is similar in construction and operation to the TX4740. The main differences are that the TX4741 has a smaller diameter and thinner walled outer tube. Also, at the end of the enclosure, there is a continuous welded joint where the TX4740 has a cylindrical flamepath. There are also several options of cable entry arrangements on the TX4741.

The electrical ratings are the same as the TX4740.

Equipment Marking Variations		
Temperature Class / Max. Surface Temperature	**Ambient Range**	**Unit Type**
T5 / T100°C	-40°C to +40°C	TX4741, TX4741i and TX4741FORJ
T5 / T100°C	-40°C to +60°C	TX4741 (Max current reduced to 285 A) with optional FORJ
T5 / T100°C	-40°C to +45°C	TX4741 and TX4741FORJ
T5 / T100°C	-40°C to +50°C	TX4741 (Max current reduced to 285 A) with optional FORJ

Marking

The equipment shall be marked with the following:

Ex db* IIB T** Gb

Ex tb* IIIC T**°C Db

Ta = -40°C to **°C

* Models TX4740i and TX4741i include the symbol '[ia]' and models TX4740FO and TX4741FO include the symbol '[op is]', in both the gas and dust marking.

** T-class and maximum surface temperature are dependent on the model and ambient applied; refer to Description.

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.

ii. Each unit shall be subjected to a routine overpressure test in accordance with IEC 60079-1, clause 16. A test pressure of 19 bar shall be applied for at least 10 seconds. There shall be no permanent deformation or damage to the enclosure or leakage through the walls of the enclosure.

iii. Factory fitted cable glands and cable shall be installed in accordance with IEC 60079-14 and shall be suitable for the service temperature range.

Special Conditions for Safe Use (IECEx Specific Conditions of Use)

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

i. Prior to any modification or repair of the flamepaths, the manufacturer shall be contacted for information on the dimensions of the flameproof joints.

ii. The integral cables, when fitted, shall be protected against impact and be terminated in a suitable junction facility.

iii. For units carrying intrinsically safe circuits:
- The voltage of each intrinsically safe circuit and between separate intrinsically safe circuits shall not exceed 60 V.
- The sum of the maximum peak voltages of intrinsically safe and non-intrinsically safe circuits shall not exceed 1575 V.
- Each intrinsically safe circuit shall be separately screened.

iv. For units incorporating a fibre optic rotary joint:

The optical power through the Type 4740FO and Type 4741FO units shall be limited to a radiated power of less than 35 mW and a peak power density of less than 5 mW/mm^2, as defined by IEC 60079-28.

v. When fitted with the Controlflex SY cable of 0.75 mm^2 to 18 mm^2, the equipment shall be used in a minimum ambient temperature no lower than -15°C.

vi. When fitted with the Raychem Zerohal cable, the equipment shall be used in a minimum ambient temperature no lower than -30°C.

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx CML 16.0152X

Issue No: 1

Certificate history:
Issue No. 1 (2018-07-25)
Issue No. 0 (2017-07-10)

Status: **Current**

Date of Issue: **2018-07-25**

Applicant: **T.E.L. Engineering Limited (Trading as Trolex Engineering)**
Unit 2 Levens Road
Newby Road Industrial Estate
Hazel Grove
Stockport
Cheshire
SK7 5DL
United Kingdom

Equipment: **TX4740 & TX4741 Slip Ring Units**

Optional accessory:

Type of Protection: **'Ex db', 'Ex tb', 'Ex [op is]', 'Ex [ia]'**

Marking:

Ex db* IIB T* Gb

Ex tb* IIIC T*°C Db

Tamb = -40°C to +*°C

* Refer to certificate Annex for marking options.

Approved for issue on behalf of the IECEx Certification Body: A Snowdon MIET

Position: Certification Officer

Signature:
(for printed version)

Date: July 25, 2018

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

Certification Management Limited
Unit 1, Newport Business Park
New Port Road
Ellesmere Port, CH65 4LZ
United Kingdom

IECEx Certificate of Conformity

Certificate No: IECEx CML 16.0152X Issue No: 1

Date of Issue: **2018-07-25**

Manufacturer: **T.E.L. Engineering Limited (Trading as Trolex Engineering)**
Unit 2 Levens Road
Newby Road Industrial Estate
Hazel Grove
Stockport
Cheshire
SK7 5DL
United Kingdom

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-28 : 2015 Edition:2	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

*This Certificate **does not** indicate compliance with electrical 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 Report:

GB/CML/ExTR16.0194/00 GB/CML/ExTR18.0119/00

Quality Assessment Report:

GB/BAS/QAR08.0003/07

IECEx Certificate of Conformity

Certificate No: IECEx CML 16.0152X Issue No: 1

Date of Issue: 2018-07-25 Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

TX4740 and TX4741 Slip Ring Units.

Refer to certificate Annex for full description and conditions of manufacture.

SPECIFIC CONDITIONS OF USE: YES as shown below:

Refer to certificate Annex for Specific Conditions of Use.

IECEx Certificate of Conformity

Certificate No: IECEx CML 16.0152X Issue No: 1

Date of Issue: **2018-07-25** Page 4 of 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Issue 1 introduces the following modification:

1. Update of the applicant/manufacturer's address.

Annex:

Annex to IECEx CML 16.0152X Issue 1.pdf

Annexe to:	IECEx CML 16.0152X Issue 1
Applicant:	T.E.L. Engineering Limited (Trading as Trolex Engineering)
Apparatus:	TX4740 and TX4741 Slip Ring Units

Description

TX4740

The TX4740 Slip Ring Collector Unit comprises a stainless steel housing incorporating a bearing and a flange at one end of an outer tube, the tube having various lengths up to 740 mm, and an aluminium or steel housing at the other end. The outer tube encloses slip rings and associated brush gear. Cable entries are provided in the end housings which may be provided with permanently attached cables fitted by the manufacturer. The slip rings are individually rated up to 4500 V, 48 A and may be used for power, signal and intrinsically safe circuits, with a maximum total throughput of 400 A. When used with intrinsically safe circuits, the slip rings are suffixed with an 'i' and the maximum voltage for the intrinsically safe circuits is reduced to 60 V.

Cable entry holes are provided as specified on the approved drawings for the accommodation of suitable certified flameproof cable entry devices, with or without the interposition of a suitable certified flameproof thread adaptor. Unused entries are to be fitted with suitable certified flameproof stopping plugs.

Equipment Marking Variations		
Temperature Class / Max. Surface Temperature	**Ambient Range**	**Unit Type**
T5 / T100°C	-40°C to +40°C	TX4740, TX4740i and TX4740FORJ
T5 / T100°C	-40°C to +60°C	TX4740 (Max current reduced to 285 A) with optional FORJ
T5 / T100°C	-40°C to +45°C	TX4740 and TX4740FORJ
T5 / T100°C	-40°C to +50°C	TX4740 (Max current reduced to 285 A) with optional FORJ

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Ellesmere Port
CH65 4LZ

T +44 (0) 151 559 1160
E info@cmlex.com

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TX4741

The TX4741 Slip Ring Collector Unit is similar in construction and operation to the TX4740. The main differences are that the TX4741 has a smaller diameter and thinner walled outer tube. Also, at the end of the enclosure, there is a continuous welded joint where the TX4740 has a cylindrical flamepath. There are also several options of cable entry arrangements on the TX4741.

The electrical ratings are the same as the TX4740.

Equipment Marking Variations		
Temperature Class / Max. Surface Temperature	**Ambient Range**	**Unit Type**
T5 / T100°C	-40°C to +40°C	TX4741, TX4741i and TX4741FORJ
T5 / T100°C	-40°C to +60°C	TX4741 (Max current reduced to 285 A) with optional FORJ
T5 / T100°C	-40°C to +45°C	TX4741 and TX4741FORJ
T5 / T100°C	-40°C to +50°C	TX4741 (Max current reduced to 285 A) with optional FORJ

Marking

The equipment shall be marked with the following:

Ex db* IIB T** Gb

Ex tb* IIIC T**°C Db

Ta = -40°C to **°C

* Models TX4740i and TX4741i include the symbol '[ia]' and models TX4740FO and TX4741FO include the symbol '[op is]', in both the gas and dust marking.

** T-class and maximum surface temperature are dependent on the model and ambient applied; refer to Description.

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.

ii. Each unit shall be subjected to a routine overpressure test in accordance with IEC 60079-1, clause 16. A test pressure of 19 bar shall be applied for at least 10 seconds. There shall be no permanent deformation or damage to the enclosure or leakage through the walls of the enclosure.

iii. Factory fitted cable glands and cable shall be installed in accordance with IEC 60079-14 and shall be suitable for the service temperature range.

Special Conditions for Safe Use (IECEx Specific Conditions of Use)

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

i. Prior to any modification or repair of the flamepaths, the manufacturer shall be contacted for information on the dimensions of the flameproof joints.

ii. The integral cables, when fitted, shall be protected against impact and be terminated in a suitable junction facility.

iii. For units carrying intrinsically safe circuits:
- The voltage of each intrinsically safe circuit and between separate intrinsically safe circuits shall not exceed 60 V.
- The sum of the maximum peak voltages of intrinsically safe and non-intrinsically safe circuits shall not exceed 1575 V.
- Each intrinsically safe circuit shall be separately screened.

iv. For units incorporating a fibre optic rotary joint:

The optical power through the Type 4740FO and Type 4741FO units shall be limited to a radiated power of less than 35 mW and a peak power density of less than 5 mW/mm^2, as defined by IEC 60079-28.

v. When fitted with the Controlflex SY cable of 0.75 mm^2 to 18 mm^2, the equipment shall be used in a minimum ambient temperature no lower than -15°C.

vi. When fitted with the Raychem Zerohal cable, the equipment shall be used in a minimum ambient temperature no lower than -30°C.

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx CML 16.0152X

Issue No: 2

Certificate history:
Issue No. 2 (2019-08-12)
Issue No. 1 (2018-07-25)
Issue No. 0 (2017-07-10)

Status: Current

Date of Issue: 2019-08-12

Applicant: T.E.L. Engineering Limited (Trading as Trolex Engineering)
Unit 2 Levens Road
Newby Road Industrial Estate
Hazel Grove
Stockport
Cheshire
SK7 5DL
United Kingdom

Equipment: TX4740 & TX4741 Slip Ring Units

Optional accessory:

Type of Protection: 'Ex db', 'Ex tb', 'Ex [op is]', 'Ex [ia]', 'Ex eb'

Marking:

Ex db* IIB T* Gb

Ex tb* IIIC T*°C Db

Tamb = -40°C to +*°C

* Refer to certificate Annex for marking options.

Approved for issue on behalf of the IECEx Certification Body: A C Smith

Position: Technical Operations Director

Signature:
(for printed version)

Date: 2019-08-12

2019-08-12

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

Eurofins E&E CML Limited
Unit 1, Newport Business Park
New Port Road
Ellesmere Port, CH65 4LZ
United Kingdom

IECEx Certificate of Conformity

Certificate No: IECEx CML 16.0152X Issue No: 2

Date of Issue: 2019-08-12 Page 2 of 4

Manufacturer: T.E.L. Engineering Limited (Trading as Trolex Engineering)
Unit 2 Levens Road
Newby Road Industrial Estate
Hazel Grove
Stockport
Cheshire
SK7 5DL
United Kingdom

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-28 : 2015 Edition:2	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7 : 2017 Edition:5.1	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

*This Certificate **does not** indicate compliance with electrical 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 Report:

GB/CML/ExTR16.0194/00 GB/CML/ExTR18.0119/00 GB/CML/ExTR19.0141/00

Quality Assessment Report:

GB/BAS/QAR08.0003/07

IECEx Certificate of Conformity

Certificate No:	IECEx CML 16.0152X	Issue No: 2
Date of Issue:	2019-08-12	Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

TX4740 and TX4741 Slip Ring Units.

Refer to certificate Annex for full description and conditions of manufacture.

SPECIFIC CONDITIONS OF USE: YES as shown below:

Refer to certificate Annex for Specific Conditions of Use.

IECEx Certificate of Conformity

Certificate No: IECEx CML 16.0152X Issue No: 2

Date of Issue: 2019-08-12 Page 4 of 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Refer to annex for details of certificate changes (in the 'Description' section).

Annex:

Annex to IECEx CML 16.0152X Issue 2.pdf

Annexe to:	IECEx CML 16.0152X Issue 2
Applicant:	T.E.L. Engineering Limited (Trading as Trolex Engineering)
Apparatus:	TX4740 and TX4741 Slip Ring Units

Description

TX4740

The TX4740 Slip Ring Collector Unit comprises a stainless steel housing incorporating a bearing and a flange at one end of an outer tube, the tube having various lengths up to 740 mm, and an aluminium or steel housing at the other end. The outer tube encloses slip rings and associated brush gear. Cable entries are provided in the end housings which may be provided with permanently attached cables fitted by the manufacturer. The slip rings are individually rated up to 4500 V, 48 A and may be used for power, signal and intrinsically safe circuits, with a maximum total throughput of 400 A. When used with intrinsically safe circuits, the slip rings are suffixed with an 'i' and the maximum voltage for the intrinsically safe circuits is reduced to 60 V.

Cable entry holes are provided as specified on the approved drawings for the accommodation of suitable certified flameproof cable entry devices, with or without the interposition of a suitable certified flameproof thread adaptor. Unused entries are to be fitted with suitable certified flameproof stopping plugs.

Equipment Marking Variations		
Temperature Class / Max. Surface Temperature	**Ambient Range**	**Unit Type**
T5 / T100°C	-40°C to +40°C	TX4740, TX4740i and TX4740FORJ
T5 / T100°C	-40°C to +60°C	TX4740 (Max current reduced to 285 A) with optional FORJ
T5 / T100°C	-40°C to +45°C	TX4740 and TX4740FORJ
T5 / T100°C	-40°C to +50°C	TX4740 (Max current reduced to 285 A) with optional FORJ

Unit 1, Newport Business Park
New Port Road
Ellesmere Port
CH65 4LZ

T +44 (0) 151 559 1160
E info@cmlex.com

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Company Reg No. 8554022 VAT No. GB163023642

TX4741

The TX4741 Slip Ring Collector Unit is similar in construction and operation to the TX4740. The main differences are that the TX4741 has a smaller diameter and thinner walled outer tube. Also, at the end of the enclosure, there is a continuous welded joint where the TX4740 has a cylindrical flamepath. There are also several options of cable entry arrangements on the TX4741.

The electrical ratings are the same as the TX4740.

Equipment Marking Variations		
Temperature Class / Max. Surface Temperature	**Ambient Range**	**Unit Type**
T5 / T100°C	-40°C to +40°C	TX4741, TX4741i and TX4741FORJ
T5 / T100°C	-40°C to +60°C	TX4741 (Max current reduced to 285 A) with optional FORJ
T5 / T100°C	-40°C to +45°C	TX4741 and TX4741FORJ
T5 / T100°C	-40°C to +50°C	TX4741 (Max current reduced to 285 A) with optional FORJ

Increased Safety Junction Box Option

There is an option to mount increased safety junction boxes to the drive end and cover end of the flameproof enclosure of the TX4740 and TX4741. Adapted cable gland bosses are used to fix the increased safety junction boxes to the flameproof enclosure, with IP sealing interfaces on both sides. Flameproof cable glands are fitted into the threads in the gland bosses to segregate the flameproof and increased safety compartments. The metal junction box has bolted cover arrangements, sealed by gaskets.

When the increased safety junction boxes are fitted, the maximum ambient temperature is limited to +45°C and the maximum supply voltage and throughput current are limited to 1 kV and 200 A respectively. The increased safety junction boxes may be mounted to any of the above listed TX4740 and TX4741 design variants, providing these ambient and current limitations are adhered to.

Details of certificate changes:

Variation/Issue 1:

This variation introduced the following modification:

i. Update of the applicant/manufacturer's address.

Variation/Issue 2

This variation introduced the following modification:

i. Introduction of increased safety junction boxes mounted to the existing flameproof enclosure of the TX4740 and TX4741 Slip Ring Units. Accordingly, IEC 60079-7 has been added to the certificate and the symbol 'eb' has been added to the marking when the increased safety junction boxes are fitted. The Conditions of Manufacture and Specific Conditions of Use have also been amended

Marking

The equipment shall be marked with the following:

Ex db* IIB T** Gb

Ex tb* IIIC T**°C Db

Ta = -40°C to **°C

* Models TX4740i and TX4741i include the symbol '[ia]' and models TX4740FO and TX4741FO include the symbol '[op is]', in both the gas and dust marking.

** T-class and maximum surface temperature are dependent on the model and ambient applied; refer to Description.

When the increased safety junction boxes are fitted (refer to 'Description' above), the coding includes the symbol 'eb'.

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.

ii. Each unit shall be subjected to a routine overpressure test in accordance with IEC 60079-1, clause 16. A test pressure of 19 bar shall be applied for at least 10 seconds. There shall be no permanent deformation or damage to the enclosure or leakage through the walls of the enclosure.

iii. Factory fitted cable glands and cable shall be installed in accordance with IEC 60079-14 and shall be suitable for the service temperature range.

iv. When fitted, the increased safety junction boxes of each unit shall be subjected to routine dielectric strength testing in accordance with IEC 60079-7:2015, clause 7.1. A test voltage of 3 kV r.m.s. shall be applied for 1 minute. Alternatively, a test voltage of 3.6 kV r.m.s. shall be maintained for 100 ms. No dielectric breakdown or flashover shall occur.

The voltage rating marked on units with increased safety junction boxes shall be no more than 1 kV.

v. When the increased safety junction boxes are fitted, the marked ambient temperature range shall not exceed the limits -40°C to +45°C. If a lower maximum ambient, e.g. +40°C is required for the design variant, the lower limit shall take precedence.

vi. The equipment covered by this certificate includes previously certified devices. It is the manufacturer's responsibility to continually monitor the status of these certified devices. These devices shall be installed in accordance with their certificates and instructions. The manufacturer shall also inform Certification Management Limited of any changes to these devices that may impact upon the explosion safety aspects of their equipment. A copy of the appropriate certification documentation for these devices shall be provided to the end user.

vii. When the increased safety junction boxes are fitted, the threaded holes between the flameproof and increased safety compartments shall be fitted with IECEx and ATEX approved cable glands, certified Ex db IIB Gb and shall be suitable for the following service temperature range: -40°C to +74°C.

These shall be installed in accordance with their IECEx/ATEX certificate, their instruction manual, and with IEC 60079-14. A suitable cable shall be selected. Any unused threaded holes shall be fitted with stopping plugs which meet the above installation and certification requirements.

The cable entries into the increased safety junction boxes may also occasionally be fitted with cable glands and cable by the manufacturer. In these cases, these cable glands shall be certified Ex e II Gb and Ex tb IIIC Db, and also be selected and installed in accordance with the above requirements.

Special Conditions for Safe Use (IECEx Specific Conditions of Use)

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

i. Prior to any modification or repair of the flamepaths, the manufacturer shall be contacted for information on the dimensions of the flameproof joints.

ii. The integral cables, when fitted, shall be protected against impact and be terminated in a suitable junction facility.

iii. For units carrying intrinsically safe circuits:

- The voltage of each intrinsically safe circuit and between separate intrinsically safe circuits shall not exceed 60 V.
- The sum of the maximum peak voltages of intrinsically safe and non-intrinsically safe circuits shall not exceed 1575 V.
- Each intrinsically safe circuit shall be separately screened.

iv. For units incorporating a fibre optic rotary joint:

The optical power through the Type 4740FO and Type 4741FO units shall be limited to a radiated power of less than 35 mW and a peak power density of less than 5 mW/mm^2, as defined by IEC 60079-28.

v. When fitted with the Controlflex SY cable of 0.75 mm^2 to 18 mm^2, the equipment shall be used in a minimum ambient temperature no lower than -15°C.

vi. When fitted with the Raychem Zerohal cable, the equipment shall be used in a minimum ambient temperature no lower than -30°C.

vii. When the increased safety junction boxes are fitted, external cable glands installed into threaded entries on the increased safety junction boxes shall be fitted with their associated gasket/sealing ring at the enclosure interface. The cable glands shall be IECEx/ATEX certified Ex eb IIC Gb and Ex tb IIIC Db and be capable of maintaining an IP rating of at least IP64 when the gaskets/seals are installed.

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx CML 16.0152X**

Page 1 of 4

Certificate history:
Issue 2 (2019-08-12)
Issue 1 (2018-07-25)
Issue 0 (2017-07-10)

Status: **Current**

Issue No: 3

Date of Issue: 2022-05-04

Applicant: **T.E.L. Engineering Limited (Trading as Trolex Engineering)**
Unit 2 Levens Road
Newby Road Industrial Estate
Hazel Grove
Stockport
Cheshire SK7 5DL
United Kingdom

Equipment: **TX4740 & TX4741 Slip Ring Units**

Optional accessory:

Type of Protection: **'Ex db', 'Ex tb', 'Ex [op is]', 'Ex [ia]', 'Ex eb'**

Marking: Ex db* IIB T* Gb

Ex tb* IIIC T*°C Db

Tamb = -40°C to +*°C

* Refer to certificate Annex for marking options.

Approved for issue on behalf of the IECEx Certification Body: **L A Brisk**

Position: **Certification Officer**

Signature: (for printed version)

Date: (for printed version) 2022-05-04

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

Eurofins E&E CML Limited
Unit 1, Newport Business Park
New Port Road
Ellesmere Port, CH65 4LZ
United Kingdom

IECEx Certificate of Conformity

Manufacturer: **T.E.L. Engineering Limited (Trading as Trolex Engineering)**
Unit 2 Levens Road
Newby Road Industrial Estate
Hazel Grove
Stockport
Cheshire SK7 5DL
United Kingdom

Manufacturing locations: **T.E.L. Engineering Limited (Trading as Trolex Engineering)**
Unit 2 Levens Road
Newby Road Industrial Estate
Hazel Grove
Stockport
Cheshire SK7 5DL
United Kingdom

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-28:2015 Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
Edition:2

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

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/CML/ExTR16.0194/00 GB/CML/ExTR18.0119/00 GB/CML/ExTR19.0141/00
GB/CML/ExTR22.0090/00

Quality Assessment Report:

GB/BAS/QAR08.0003/09

IECEx Certificate of Conformity

Certificate No.: **IECEx CML 16.0152X** Page 3 of 4

Date of issue: 2022-05-04 Issue No: 3

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

TX4740 and TX4741 Slip Ring Units.

Refer to certificate Annex for full description and conditions of manufacture.

SPECIFIC CONDITIONS OF USE: YES as shown below:
Refer to certificate Annex for Specific Conditions of Use.

IECEx Certificate of Conformity

Certificate No.: **IECEx CML 16.0152X** Page 4 of 4

Date of issue: 2022-05-04 Issue No: 3

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Issue 1
This variation introduced the following modification:

1. Update of the applicant/manufacturer's address.

Issue 2
This variation introduced the following modification:

1. Introduction of increased safety junction boxes mounted to the existing flameproof enclosure of the TX4740 and TX4741 Slip Ring Units. Accordingly, IEC60079-7 has been added to the certificate and the symbol 'eb' has been added to the marking when the increased safety junction boxes are fitted. The Conditions of Manufacture and Specific Conditions of Use have also been amended

Issue 3

This issue introduces the following modifications:

1. Updating EN 60079-0:2012+A11:2013 and IECEx 60079-0:2011 Ed 6 to EN IEC 60079-0:2018 and IEC 60079-0:2017 Ed 7
2. Updating EN 60079-7:2015 to EN IEC 60079-7:2015+A1:2018
3. To update the applicant and manufacturing address

Annex:

Certificate Annex IECEx CML 16.0152X Iss 3_1.pdf

Annexe to: **IECEx CML 16.0152X Issue 3**

Applicant: **TX4740 and TX4741 Slip Ring Units**

Apparatus: **T.E.L. Engineering Limited (Trading as Trolex Engineering)**

Description

TX4740

The TX4740 Slip Ring Collector Unit comprises a stainless steel housing incorporating a bearing anda flange at one end of an outer tube, the tube having various lengths up to 740 mm, and an aluminium or steel housing at the other end. The outer tube encloses slip rings and associated brush gear. Cable entries are provided in the end housings which may be provided with permanently attached cables fitted by the manufacturer. The slip rings are individually rated up to 4500 V, 48 A and may be used for power, signal and intrinsically safe circuits, with a maximum total throughput of 400 A. When used with intrinsically safe circuits, the slip rings are suffixed with an 'i' and the maximum voltage for the intrinsically safe circuits is reduced to 60 V. Cable entry holes are provided as specified on the approved drawings for the accommodation of suitable certified flameproof cable entry devices, with or without the interposition of a suitable certified flameproof thread adaptor. Unused entries are to be fitted with suitable certified flameproof stopping plugs.

Equipment Marking Variations		
Temperature Class / Max. Surface Temperature	**Ambient Range**	**Unit Type**
T5 / T100°C	-40°C to +40°C	TX4740, TX4740i and TX4740FORJ
T5 / T100°C	-40°C to +60°C	TX4740 (Max current reduced to 285 A) with optional FORJ
T5 / T100°C	-40°C to +45°C	TX4740 and TX4740FORJ
T5 / T100°C	-40°C to +50°C	TX4740 (Max current reduced to 285 A) with optional FORJ

TX4741

The TX4741 Slip Ring Collector Unit is similar in construction and operation to the TX4740. The main differences are that the TX4741 has a smaller diameter and thinner walled outer tube. Also, at the end of the enclosure, there is a continuous welded joint where the TX4740 has a cylindrical flamepath. There are also several options of cable entry arrangements on the TX4741.

The electrical ratings are the same as the TX4740.

Eurofins E&E CML Limited
Newport Business Park
New Port Road
Ellesmere Port
CH65 4LZ

T +44 (0) 151 559 1160
E info@cmlex.com

www.cmlex.com

Company Reg No. 8554022 VAT No. GB163023642

Equipment Marking Variations		
Temperature Class / Max. Surface Temperature	**Ambient Range**	**Unit Type**
T5 / T100°C	-40°C to +40°C	TX4741, TX4741i and TX4741FORJ
T5 / T100°C	-40°C to +60°C	TX4741 (Max current reduced to 285 A) with optional FORJ
T5 / T100°C	-40°C to +45°C	TX4741 and TX4741FORJ
T5 / T100°C	-40°C to +50°C	TX4741 (Max current reduced to 285 A) with optional FORJ

Increased Safety Junction Box Option

There is an option to mount increased safety junction boxes to the drive end and cover end of the flameproof enclosure of the TX4740 and TX4741. Adapted cable gland bosses are used to fix the increased safety junction boxes to the flameproof enclosure, with IP sealing interfaces on both sides. Flameproof cable glands are fitted into the threads in the gland bosses to segregate the flameproof and increased safety compartments. The metal junction box has bolted cover arrangements, sealed by gaskets.

When the increased safety junction boxes are fitted, the maximum ambient temperature is limited to +45°C and the maximum supply voltage and throughput current are limited to 1 kV and 200 A respectively. The increased safety junction boxes may be mounted to any of the above listed TX4740 and TX4741 design variants, providing these ambient and current limitations are adhered to.

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.

ii. Each unit shall be subjected to a routine overpressure test in accordance with EN 60079 1, clause 16. A test pressure of 19 bar shall be applied for at least 10 seconds. There shall be no permanent deformation or damage to the enclosure or leakage through the walls of the enclosure.

iii. Factory fitted cable glands and cable shall be installed in accordance with EN 60079-14 and shall be suitable for the service temperature range.

iv. When fitted, the increased safety junction boxes of each unit shall be subjected to routine dielectric strength testing in accordance with EN 60079-7:2015, clause 7.1. A test voltage of 3 kV r.m.s. shall be applied for 1 minute. Alternatively, a test voltage of 3.6 kV r.m.s. shall be maintained for 100 ms. No dielectric breakdown or flashover shall occur.

The voltage rating marked on units with increased safety junction boxes shall be no more than 1 kV.

v. When the increased safety junction boxes are fitted, the marked ambient temperature range shall not exceed the limits 40°C to +45°C. If a lower maximum ambient, e.g. +40°C is required for the design variant, the lower limit shall take precedence.

vi. The equipment covered by this certificate includes previously certified devices. It is the manufacturer's responsibility to continually monitor the status of these certified devices. These devices shall be installed in accordance with their certificates and instructions. The manufacturer shall also inform Certification Management Limited of any changes to these devices that may impact upon the explosion safety aspects of their equipment. A copy of the appropriate certification documentation for these devices shall be provided to the end user.

vii. When the increased safety junction boxes are fitted, the threaded holes between the flameproof and increased safety compartments shall be fitted with IECEx and ATEX approved cable glands, certified Ex db IIB Gb and shall be suitable for the following service temperature range: -40°C to +74°C.

These shall be installed in accordance with their IECEx/ATEX certificate, their instruction manual, and with EN 60079-14. A suitable cable shall be selected. Any unused threaded holes shall be fitted with stopping plugs which meet the above installation and certification requirements.

The cable entries into the increased safety junction boxes may also occasionally be fitted with cable glands and cable by the manufacturer. In these cases, these cable glands shall be certified Ex e II Gb and Ex tb IIIC Db, and also be selected and installed in accordance with the above requirements.

Specific Conditions of Use

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

i. Prior to any modification or repair of the flamepaths, the manufacturer shall be contacted for information on the dimensions of the flameproof joints.

ii. The integral cables, when fitted, shall be protected against impact and be terminated in a suitable junction facility.

iii. For units carrying intrinsically safe circuits:

- The voltage of each intrinsically safe circuit and between separate intrinsically safe circuits shall not exceed 60 V.
- The sum of the maximum peak voltages of intrinsically safe and non-intrinsically safe circuits shall not exceed 1575 V.
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iv. For units incorporating a fibre optic rotary joint:

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