EU Type Examination Certificate CML 16ATEX1399X Issue 0

1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

2 Equipment **TX4740 and TX4741 Slip Ring Units**

3 Manufacturer **T.E.L. Engineering Limited (Trading as Trolex Engineering)**

4 Address **Newby Road**
Hazel Grove
Stockport, SK7 5DA
UK

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 Certification Management Limited, Unit 1 Newport Business Park, New Port Road, Ellesmere Port CH65 4LZ, UK, Notified Body Number 2503, 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 60079-0:2012+A11:2013	EN 60079-1:2014	EN 60079-11:2012
EN 60079-28:2015	EN 60079-31:2014	

10 The equipment shall be marked with the following:

II 2 G D

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 section 11.

H M Amos MIET
Technical Manager

11 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

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

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	10/07/2017	R1782A/00	Report for the prime certificate.

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.

13.1 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.

13.2 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.

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

14 Special Conditions for Safe Use (Conditions of Certification)

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

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

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

14.3 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.

14.4 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 EN 60079-28.

14.5 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.

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

Certificate Annex

Certificate Number CML 16ATEX1399X

Equipment TX4740 and TX4741 Slip Ring Units

Manufacturer T.E.L. Engineering Limited (Trading as Trolex Engineering)

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

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
1/4740/10/CML	1 to 2	A	10/07/2017	Certification G.A.
1/4740/11	1 to 2	A	10/07/2017	Certification G.A. Alt've Cover
1/4740/198	1 of 1	A	10/07/2017	Approval G.A. – I.S. Circuits
1/4740/220	1 of 1	A	10/07/2017	Approval Information
1/4740/271	1 of 1	A	10/07/2017	Approval G.A. – FORJ/Nameplate
1/4740/291	1 of 1	A	10/07/2017	Approval G.A. – Gland Boss
3/4740/290	1 of 1	A	10/07/2017	Submission drawing inc ambient
1/4740/680	1 of 3	B	10/07/2017	Certification G.A.
1/4740/680	2 of 3	B	10/07/2017	Certification G.A.
1/4740/680	3 of 3	A	10/07/2017	Certification G.A.
1/4740/695	1 of 1	A	10/07/2017	Nameplate update of standards

EU Type Examination Certificate CML 16ATEX1399X Issue 1

1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

2 Equipment **TX4740 and TX4741 Slip Ring Units**

3 Manufacturer **T.E.L. Engineering Limited (Trading as Trolex Engineering)**

4 Address Unit 2 Levens Road
Newby Road Industrial Estate
Hazel Grove
Stockport
Cheshire
SK7 5DL
UK

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 Certification Management Limited, Unit 1 Newport Business Park, New Port Road, Ellesmere Port CH65 4LZ, UK, Notified Body Number 2503, 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 60079-0:2012+A11:2013	EN 60079-1:2014	EN 60079-11:2012
EN 60079-28:2015	EN 60079-31:2014	

10 The equipment shall be marked with the following:

II 2 G D

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 section 11.

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11 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

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

Variation 1

Variation 1 introduces the following modification:

i. Update of the manufacturer's address.

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	10/07/2017	R1782A/00	Report for the prime certificate.
1	25/07/2018	R11317A/00	Introduction of Variation 1

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.

13.1 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.

13.2 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.

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

14 Special Conditions for Safe Use (Conditions of Certification)

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

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

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

14.3 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.

14.4 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 EN 60079-28.

14.5 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.

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

Certificate Annex

Certificate Number	CML 16ATEX1399X
Equipment	TX4740 and TX4741 Slip Ring Units
Manufacturer	T.E.L. Engineering Limited (Trading as Trolex Engineering)

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

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
1/4740/10/CML	1 to 2	A	10/07/2017	Certification G.A.
1/4740/11	1 to 2	A	10/07/2017	Certification G.A. Alt've Cover
1/4740/198	1 of 1	A	10/07/2017	Approval G.A. – I.S. Circuits
1/4740/220	1 of 1	A	10/07/2017	Approval Information
1/4740/271	1 of 1	A	10/07/2017	Approval G.A. – FORJ/Nameplate
1/4740/291	1 of 1	A	10/07/2017	Approval G.A. – Gland Boss
3/4740/290	1 of 1	A	10/07/2017	Submission drawing inc ambient
1/4740/680	1 of 3	B	10/07/2017	Certification G.A.
1/4740/680	2 of 3	B	10/07/2017	Certification G.A.
1/4740/680	3 of 3	A	10/07/2017	Certification G.A.
1/4740/695	1 of 1	A	10/07/2017	Nameplate update of standards

Issue 1

None

EU Type Examination Certificate CML 16ATEX1399X Issue 2

1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

2 Equipment **TX4740 and TX4741 Slip Ring Units**

3 Manufacturer **T.E.L. Engineering Limited (Trading as Trolex Engineering)**

4 Address Unit 2 Levens Road
Newby Road Industrial Estate, Hazel Grove
Stockport
Cheshire,SK7 5DL
UK

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 Eurofins E&E Certification Management Limited, Newport Business Park, New Port Road, Ellesmere Port CH65 4LZ, UK, Notified Body Number 2503, 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 60079-0:2012+A11:2013	EN 60079-1:2014	EN 60079-7:2015
EN 60079-11:2012	EN 60079-28:2015	EN 60079-31:2014

10 The equipment shall be marked with the following:


II 2 G D

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 section 11.

When the increased safety junction boxes are fitted (refer to section 11), the coding includes the symbol 'eb'.

11 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

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.

Variation 1

Variation 1 introduces the following modification:

i. Update of the manufacturer's address.

Variation 2

Variation 2 introduces 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, EN 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.

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	10/07/2017	R1782A/00	Report for the prime certificate.
1	25/07/2018	R11317A/00	Introduction of Variation 1
2	12/08/2019	R12680A/00	Introduction of Variation 2

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.

13.1 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.

13.2 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.

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

13.4 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.

13.5 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.

13.6 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.

13.7 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.

14 Special Conditions for Safe Use (Conditions of Certification)

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

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

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

14.3 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.

14.4 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 EN 60079-28.

14.5 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.

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

14.7 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.

Certificate Annex

Certificate Number	CML 16ATEX1399X
Equipment	TX4740 and TX4741 Slip Ring Units
Manufacturer	T.E.L. Engineering Limited (Trading as Trolex Engineering)

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

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
1/4740/10/CML	1 to 2	A	10/07/2017	Certification G.A.
1/4740/11	1 to 2	A	10/07/2017	Certification G.A. Alt've Cover
1/4740/198	1 of 1	A	10/07/2017	Approval G.A. – I.S. Circuits
1/4740/220	1 of 1	A	10/07/2017	Approval Information
1/4740/271	1 of 1	A	10/07/2017	Approval G.A. – FORJ/Nameplate
1/4740/291	1 of 1	A	10/07/2017	Approval G.A. – Gland Boss
3/4740/290	1 of 1	A	10/07/2017	Submission drawing inc ambient
1/4740/680	1 of 3	B	10/07/2017	Certification G.A.
1/4740/680	2 of 3	B	10/07/2017	Certification G.A.
1/4740/680	3 of 3	A	10/07/2017	Certification G.A.
1/4740/695	1 of 1	A	10/07/2017	Nameplate update of standards

Issue 1

None

Issue 2

Drawing No.	Sheets	Rev	Approved /issued date	Title
1/4740/779	1 to 4	A	12/08/2019	Ex e junction box

EU Type Examination Certificate CML 16ATEX1399X Issue 3

1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

2 Equipment **TX4740 and TX4741 Slip Ring Units**

3 Manufacturer **T.E.L. Engineering Limited (Trading as Trolex Engineering)**

4 Address **Levens Road, Hazel Grove,**
Stockport, SK7 5DL, UK

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 CML B.V., Chamber of Commerce No 6738671, 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 60079-1:2014	EN 60079-7:2015+A1:2018
EN 60079-11:2012	EN 60079-28:2015	EN 60079-31:2014

10 The equipment shall be marked with the following:

Ex II 2 G D

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 section 11.

When the increased safety junction boxes are fitted (refer to section 11), the coding includes the symbol 'eb'.

11 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.

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.

Variation 1

This variation introduces the following modification:

i. Update of the manufacturer's address.

Variation 2

This variation introduces 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, EN 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.

Variation 3

This variation introduces the following modifications:

i. 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
ii. Updating EN 60079-7:2015 to EN IEC 60079-7:2015+A1:2018
iii. To update the applicant and manufacturing address

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	10 Jul 2017	R1782A/00	Report for the prime certificate
1	25 Jul 2018	R11317A/00	Introduction of Variation 1
2	12 Aug 2019	R12680A/00	Introduction of Variation 2
3	04 May 2022	R15325A/00	Introduction of Variation 3

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 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.

14 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/mm2, as defined by EN 60079-28.

v. When fitted with the Controlflex SY cable of 0.75 mm2 to 18 mm2, 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.

Certificate Annex

Certificate Number	**CML 16ATEX1399X**
Equipment	**TX4740 and TX4741 Slip Ring Units**
Manufacturer	**T.E.L. Engineering Limited (Trading as Trolex Engineering)**

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

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
1/4740/10/CML	1 to 2	A	10 Jul 2017	Certification G.A.
1/4740/11	1 to 2	A	10 Jul 2017	Certification G.A. Alt've Cover
1/4740/198	1 of 1	A	10 Jul 2017	Approval G.A. – I.S. Circuits
1/4740/220	1 of 1	A	10 Jul 2017	Approval Information
1/4740/271	1 of 1	A	10 Jul 2017	Approval G.A. – FORJ/Nameplate
1/4740/291	1 of 1	A	10 Jul 2017	Approval G.A. – Gland Boss
3/4740/290	1 of 1	A	10 Jul 2017	Submission drawing inc ambient
1/4740/680	1 of 3	B	10 Jul 2017	Certification G.A.
1/4740/680	2 of 3	B	10 Jul 2017	Certification G.A.
1/4740/680	3 of 3	A	10 Jul 2017	Certification G.A.
1/4740/695	1 of 1	A	10 Jul 2017	Nameplate update of standards

Issue 1

None

Issue 2

Drawing No.	Sheets	Rev	Approved /issued date	Title
1/4740/779	1 to 4	A	12 Aug 2019	Ex e junction box

Issue 3

None