1 # EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC - Type Examination Certificate Number: **Baseefa06ATEX0207X – Issue 3**

4 Equipment or Protective System: **TX4798 Slip Ring Unit**

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

6 Address: **Hazel Grove, Stockport, Cheshire, SK7 5DA**

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

8 Baseefa, Notified Body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No's. **12(C)0886**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0: 2012 EN 60079-0: 2009 EN 60079-7: 2007 EN60079-11: 2012

except in respect of those requirements listed at item 18 of the Schedule.

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

11 This EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

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

See schedule

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **1428**

Project File No. **12/0886**

This certificate is granted subject to the general terms and conditions of Baseefa. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa

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Baseefa is a trading name of Baseefa Ltd
Registered in England No. 4305578. Registered address as above.

13 **Schedule**

14 **Certificate Number Baseefa06ATEX0207X – Issue 3**

15 Description of Equipment or Protective System

The TX4798 Slip Ring Unit is designed to transfer Intrinsically Safe signals across a rotating interface, which allows for continuous rotary motion.

The equipment comprises a hollow shaft fixed to a mounting pedestal with slip rings – isolated from each other and the enclosure - mounted upon the periphery of the shaft. Precision ball bearings are used to allow the box-shaped or cylindrical-shaped enclosure to be fitted to the outer bearing races' permitting continuous rotation in both directions. The electrical signals are transferred by spring loaded brush contacts that slide along the periphery of the slip ring surface.

A multi-core cable is fitted through an Ex gland mounted to the shaft bearing boss and the cores are terminated by solder connection to the inner diameter of the slip rings. A second multi-core cable is fitted to the enclosure through an Ex gland and the cores are terminated by solder connection to the brush contact assemblies.

The equipment may optionally be fitted with an anti-condensation Heater and/or internal PT100 temperature sensor.

Type Numbers: TX4798-aa-bb-cc-dd

Where….	aa =	omitted for the square, box version
	aa =	RD for the round cylindrical version
	bb =	the number of slip-rings (25 maximum)
	cc =	omitted when no heater is fitted
	cc =	HTR when the anti-condensation heater is fitted
	dd =	Omitted when the temperature sensor is not fitted
	dd =	TS when the temperature sensor is fitted

Versions without the anti-condensation heater fitted to be marked:

Ⓔx II 1G Ex ia IIC T4 (-20°C ≤ Ta ≤ +50°C)

Versions with the anti-condensation heater fitted to be marked:

Ⓔx II 2G Ex e ia IIC T4 (-20°C ≤ Ta ≤ +50°C)

Type TX4798 (square box version)

Each slip ring circuit	Anti-condensation heater
Ui = 375Vpeak	Umax = 254Vrms
Pi = 1.2W	

Type TX4798-RD (round cylindrical version)

Each slip ring circuit	Anti-condensation heater
Ui = 60Vpeak	Umax = 254Vrms
Pi = 1.2W	

16 Report Number

12(C)0886

17 Specific Conditions of Use

The following apply to the Ex e junction box for the anti-condensation heater only:

1. Unused entry holes shall be fitted with stopping plugs as specified in the empty enclosure certificate IECEx BAS.08.0064U. The operating temperature range of the enclosure is limited to that of the stopping plug fitted.

2. All terminal screws, used and unused, shall be tightened down by the end user.

3. Insulation of conductors must extend to within 1mm of the metal of the terminal throat unless specified otherwise on the terminal certificate.

4. No more than one single or multi-stranded lead shall be connected to either side of any terminal unless multiple conductors have been joined in a suitable manner, e.g. two conductors into a single insulated bootlace ferrule, or any method indicated on the terminal certificate.

18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

19 Drawings and Documents

New drawings submitted for this issue of certificate.

Number	Sheet	Issue	Date	Description
10391/100	1 to 2	G	16 Dec 12	TX4798 Slip Ring Unit General Arrangement
10391/100	1 to 2	H	16 Dec 12	TX4798 Slip Ring Unit General Arrangement
10391/101	1 to 2	B	11 Nov 12	TX4798-RD Slip Ring Unit General Arrangement

Current drawings also associated with this certificate.

Number	Sheet	Issue	Date	Description
10391/37/06	1 of 1	A	1 June 2006	Connection Diagram

20 Certificate History

Certificate No.	Date	Comments
Baseefa06ATEX0207	25 July 2006	The release of the prime certificate. The associated test and assessment is documented in Test Report No. 06(C)0394.
Baseefa06ATEX0207/1X	7 January 2008	To permit the inclusion of an Ex e anti-condensation heater mounted inside the apparatus terminated using an Ex e junction box mounted on the outside of the apparatus, thus producing the TX4798.HTR Slip Ring Unit.
Baseefa06ATEX0207/2X	23 October 2008	To permit the unit to be manufactured with fewer slip rings and a corresponding reduction in overall height. The new unit to be identified as TX4798-xx-HTR; where xx = the number of slip rings fitted and HTR = Anti Condensation Heater Fitted. To permit other minor mechanical changes that do not affect the original intrinsic safety assessment.

Certificate No.	Date	Comments
Baseefa06ATEX0207X Issue 3	4 January 2013	This issue of the certificate incorporates previously issued primary & supplementary certificates into one certificate and includes the following: 1. Confirms the current design meets the requirements of EN 60079-0: 2012 and EN 60079-11: 2012 including the revision of the marking in accordance with these standards. 2. To permit the introduction of the model TX4798-RD; which is a larger circular unit. 3. To permit an alternative junction box to be used to make electrical connections to the anti-condensation heater. 4. To permit an optional temperature sensor to be fitted allowing the temperature of the Anti-Condensation Heater to be monitored.
For drawings applicable to each issue, see original of that issue.		

1 # EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC - Type Examination Certificate Number: **Baseefa06ATEX0207X – Issue 4**

4 Equipment or Protective System: **TX4798 Slip Ring Unit**

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

6 Address: **Hazel Grove, Stockport, Cheshire, SK7 5DA**

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

8 Baseefa, Notified Body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No's. **See Certificate History**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0: 2012 EN 60079-0: 2009 EN 60079-7: 2007 EN60079-11: 2012

except in respect of those requirements listed at item 18 of the Schedule.

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

11 This EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

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

See schedule

Baseefa Customer Reference No. **1428**

Project File No. **13/0855**

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R S SINCLAIR
GENERAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number Baseefa06ATEX0207X – Issue 4**

15 Description of Equipment or Protective System

The TX4798 Slip Ring Unit is designed to transfer Intrinsically Safe signals across a rotating interface, which allows for continuous rotary motion.

The equipment comprises a hollow shaft fixed to a mounting pedestal with slip rings – isolated from each other and the enclosure - mounted upon the periphery of the shaft. Precision ball bearings are used to allow the box-shaped or cylindrical-shaped enclosure to be fitted to the outer bearing races' permitting continuous rotation in both directions. The electrical signals are transferred by spring loaded brush contacts that slide along the periphery of the slip ring surface.

A multi-core cable is fitted through an Ex gland mounted to the shaft bearing boss and the cores are terminated by solder connection to the inner diameter of the slip rings. A second multi-core cable is fitted to the enclosure through an Ex gland and the cores are terminated by solder connection to the brush contact assemblies.

The equipment may optionally be fitted with an anti-condensation Heater and/or internal PT100 temperature sensor.

Type Numbers: TX4798-aa-bb-cc-dd

Where….	aa =	omitted for the square, box version
	aa =	RD for the round cylindrical version
	bb =	the number of slip-rings (29 maximum)
	cc =	omitted when no heater is fitted
	cc =	HTR when the anti-condensation heater is fitted
	dd =	Omitted when the temperature sensor is not fitted
	dd =	TS when the temperature sensor is fitted

Versions without the anti-condensation heater fitted to be marked:

Ⓔx II 1G Ex ia IIC T4 Ga (-20°C ≤Ta ≤+50°C)

Versions with the anti-condensation heater fitted to be marked:

Ⓔx II 2G Ex e ia IIC T4 Gb (-20°C ≤Ta ≤+50°C)

Type TX4798 (square box version)

Each slip ring circuit	Anti-condensation heater
Ui = 375Vpeak	Umax = 254Vrms
Pi = 1.2W	

Type TX4798-RD (round cylindrical version)

Each slip ring circuit	Anti-condensation heater
Ui = 60Vpeak	Umax = 254Vrms
Pi = 1.2W	

16 Report Number

See certificate history

17 Specific Conditions of Use

The following apply to the Ex e junction box for the anti-condensation heater only:

1. Unused entry holes shall be fitted with stopping plugs as specified in the empty enclosure certificate IECEx BAS.08.0064U. The operating temperature range of the enclosure is limited to that of the stopping plug fitted.

2. All terminal screws, used and unused, shall be tightened down by the end user.

3. Insulation of conductors must extend to within 1mm of the metal of the terminal throat unless specified otherwise on the terminal certificate.

4. No more than one single or multi-stranded lead shall be connected to either side of any terminal unless multiple conductors have been joined in a suitable manner, e.g. two conductors into a single insulated bootlace ferrule, or any method indicated on the terminal certificate.

18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

19 Drawings and Documents

New drawings submitted for this issue of certificate.

Number	Sheet	Issue	Date	Description
10391/101	1 to 2	C	31 Oct 13	TX4798-RD Slip Ring Unit General Arrangement (ATEX)
10391/102	1 to 2	A	31 Oct 13	TX4798-RD Slip Ring Unit General Arrangement (IECEx)

Current drawings also associated with this certificate.

Number	Sheet	Issue	Date	Description
10391/37/06	1 of 1	A	1 June 2006	Connection Diagram
10391/100	1 to 2	G	16 Dec 12	TX4798 Slip Ring Unit General Arrangement
10391/100	1 to 2	H	16 Dec 12	TX4798 Slip Ring Unit General Arrangement

20 Certificate History

Certificate No.	Date	Comments
Baseefa06ATEX0207	25 July 2006	The release of the prime certificate. The associated test and assessment is documented in Test Report No. 06(C)0394.
Baseefa06ATEX0207/1X	7 January 2008	To permit the inclusion of an Ex e anti-condensation heater mounted inside the apparatus terminated using an Ex e junction box mounted on the outside of the apparatus, thus producing the TX4798.HTR Slip Ring Unit.
Baseefa06ATEX0207/2X	23 October 2008	To permit the unit to be manufactured with fewer slip rings and a corresponding reduction in overall height. The new unit to be identified as TX4798-xx-HTR; where xx = the number of slip rings fitted and HTR = Anti Condensation Heater Fitted. To permit other minor mechanical changes that do not affect the original intrinsic safety assessment.

Certificate No.	Date	Comments
Baseefa06ATEX0207X Issue 3	4 January 2013	This issue of the certificate incorporates previously issued primary & supplementary certificates into one certificate and includes the following: 1. Confirms the current design meets the requirements of EN 60079-0: 2012 and EN 60079-11: 2012 including the revision of the marking in accordance with these standards. 2. To permit the introduction of the model TX4798-RD; which is a larger circular unit. 3. To permit an alternative junction box to be used to make electrical connections to the anti-condensation heater. 4. To permit an optional temperature sensor to be fitted allowing the temperature of the Anti-Condensation Heater to be monitored.
Baseefa06ATEX0207X Issue 4	17 December 2013	1. To permit the maximum number of slip rings to be increased from 25 to 29. 2. Minor mechanical dimensional changes to the enclosure. 3. The termination junction boxes are now optional and carry their own certification. 4. Sealing gasket materials extended to include Silicone rubber. The associated test and assessment is documented in GB/BAS/ExTR13.0279/00.
For drawings applicable to each issue, see original of that issue.		