



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:** ITS15ATEX18372X

4. **Equipment or Protective System:** Optical Encoder Type ***78E

5. **Manufacturer:** Pepperl+Fuchs GmbH

6. **Address:** Lilienthalstrasse 200, 68307 Mannheim, Germany

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. Intertek Testing and Certification Limited, notified body number 0359 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 Intertek Report 102337162CHE-002 Dated: December 2015

9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with standards EN 60079-0:2012 +A11:2013, EN 60079-1:2014 and EN 60079-31:2014 except in respect of those requirements referred to at item 16 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, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. 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:-



II 2 G Ex db IIC T5 Gb

II 2 D Ex tb IIIC T100°C Db

-40 °C ≤ Ta ≤ +70°C

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D G Bosson
Certification Officer
11 January 2016



SCHEDULE

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13. **Description of Equipment or Protective System**

The Optical Encoders ***78E are small flameproof enclosures containing electronics. The encoder housing is manufactured from stainless steel, acid proof stainless steel or aluminium with a drive shaft in one end shield. The shaft can be either solid type shaft or hollow type shaft. The body makes one cylindrical joint with the drive end shield on another side. Each end shield (the drive end and the non-drive end) is secured to the body with six M4 counter bored socket head cap screws. O-rings are fitted to each cylindrical joint. There is a shaft seal on drive end seal, where two ball bearings are mounted to the cylindrical joint between the shaft and the drive end shield.

The encoder housing can be provided with up to two M20 x 1.5 or M25 x 1.5 threaded entries on the non-drive end shield. These threaded entries are closed with the suitable separately ATEX certified cable glands. All unused entries must be closed with suitable separately ATEX certified blanking elements. The apparatus is rated at 300 mA maximum current and voltage range from 10 V dc to 30 V dc. Rated speed for type variants with seal max 3000 rpm, without seal max. 6000 rpm
Max. permissible load on the shaft: axial 60 N and 80 N radial.

Additionally the encoders meet IP64/65/66/67 in accordance with EN 60529.

Additional testing has also been carried out to permit the use of the following cable gland and cable combinations;

Cable gland	cable	Minimum length
HSK INOX	Cable Lapp FD855CP	0.5m
HSK INOX	Cable Radox 125	2m
Hawke 501/453	Cable Lapp Robocable	2m

14. **Report Number**

Intertek Report 102337162CHE-002 Dated: December 2015

15. **Conditions of Certification**

(a). Special Conditions for safe use

- It is a condition of certification that the flame paths have to comply with the manufacturers drawings and can only be repaired by the manufacturer.
- It is a condition of certification that the precautions must be taken to avoid dust from forming layers on the encoder.
- The fasteners used to secure enclosure body to end shields shall have a minimum yield stress of 450 MPa.
- Use only suitably certified Ex db IIC Gb and Ex tb IIIC Db cable glands, thread adapters and blanking elements.

(b). Conditions of Manufacture

- There are no routine tests.

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16. **Essential Health and Safety Requirements (EHSR's)**

The relevant EHSR's have been identified and assessed in Intertek Report 102337162CHE-002 Dated: December 2015

17. **Drawings and Documents**

Title	Drawing No.:	Rev. Level:	Date:
Description – Type ***78E/***78E Mining ATEX and IECEx Certification for rotary encoder type***78E (Sheets 1 to 5 of 5)	16-1227IN-00	-	2015-11-30
Instructions - Type ***78E/***78E Mining ATEX and IECEx Certification for rotary encoder type***78E (Sheets 1 to 6 of 6)	16-1227IN-09	-	2015-11-30
Type label - Type ***78E/***78E Mining ATEX and IECEx Certification for rotary encoder type***78E (Sheets 1 to 5 of 5)	16-1227IN-10	-	2015-11-30

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