



(1) EC-TYPE-EXAMINATION CERTIFICATE (Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**



(3) EC-type-examination Certificate Number:

PTB 09 ATEX 1106 X

(4) Equipment: Incremental encoder, types 8.7053..., 8.7063..., 8.7058... and 8.7068...

(5) Manufacturer: Fritz Kübler GmbH

(6) Address: Schubertstraße 47, 78054 Villingen-Schwenningen, Germany

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment 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 the confidential assessment and test report PTB Ex 09-18330.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0:2006 EN 60079-1:2007 EN 61241-0:2006 EN 61241-1:2004

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment 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 in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

II 2 G Ex d IIC T6 resp. II 2 D Ex tD A21 IP6X T85 °C

Zertifizierungssektor Explosionsschutz

Braunschweig, November 10, 2009

By order
(signature)

Dr.-Ing. M. Thedens
Oberregierungsrat

3 pages, correct and complete as regards content.

By order:

Dipl.-Phys. U. Völkel

Braunschweig, June 2, 2010

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EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 09 ATEX 1106 X**

(15) Description of equipment

The incremental encoders of types 8.7053..., 8.7063..., 8.7058... and 8.7068... are used for the conversion of a rotary motion into equivalent electric or digital pulses. They are designed to Flameproof Enclosure "d" type of protection. The plane cylindrical enclosure is of aluminium- or stainless steel design.

The shaft rotates in rolling bearings. Together with the flange and the cap, the shaft forms a flameproof shaft joint on one side.

Provided the Technical Rules for Flammable Liquids are considered, the incremental encoders can be used in filling and dispensing stations for flammable liquids.

Electrical connection is realized by an integrated connecting cable (open ended line) which is brought-out by means of a separately certified cable gland in compliance with Directive 94/9/EG.

The range of ambient temperatures is 40 °C down to -20 °C. This temperature range may be extended to 60 °C down to -40 °C with a special electrical or thermal design in which suitable materials or components are used.

For incremental encoders that are designed for ambient temperatures down to -40 °C suitable materials and components are used, which have been separately certified or tested.

Electrical data

Rated voltage, max.	30	V _{DC}
Rated current, max.	130	mA
Power dissipation, max.	4	W
Rated conductor cross-section, max.	12 x 2 x 0.25	mm ²
Ambient temperature	60 to -40	°C

(16) Assessment and test report PTB Ex 09-18330

(17) Special conditions for safe use

The gap widths remain below those specified in EN 60079-1:2007, table 2. They are documented in the descriptive documents (see test report PTB Ex 09-18330). A note to this effect is included in the operating instructions.

For repair of the flameproof joints due regard must be given to the structural specifications provided by the manufacturer. Repair in compliance with the values in table 2 of EN 60079-1 is not permissible.

Notes for manufacturing and operation

Measures must be taken to ensure that the temperatures permissible for the components used will not be exceeded.

The connecting cable shall be of a quality that meets the thermal and mechanical requirements under field service conditions.

When used in petrol pumps, the connecting cable shall be permanently installed outside the drop affected area. It shall be protected sufficiently against mechanical damage.

Equipotential bonding/earthing shall be safeguarded by the way the incremental encoder is connected with the complete system.

Any components mounted or installed (terminal compartments, bushings, cable entries, connectors) shall be of a technical standard that complies with the specifications on the cover sheet. They shall be suited for the operating conditions and be covered by a separate examination certificate. Any special conditions specified for the components shall be considered, and the components may have to be included into the type test.

(18) Essential health and safety requirements

Met by compliance with the afore-mentioned Standards.

Zertifizierungssektor Explosionsschutz

Braunschweig, November 10, 2009

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3 pages, correct and complete as regards content.

By order:



Dipl.-Phys. U. Völker

Braunschweig, June 2, 2010



1st SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 09 ATEX 1106 X

(Translation)

Equipment: Incremental encoder, type
8.7000..., 8.7014..., 8.7053..., 8.7063..., 8.7058... and 8.7068...

Marking:  **II 2 G Ex d IIC T4 - T6 Gb /**
II 2 D Ex tb IIIC T 135 °C - T 85 °C Db IP6X

Manufacturer: Fritz Kübler GmbH

Address: Schubertstraße 47, 78054 Villingen-Schwenningen, Germany

Description of supplements and modifications

The above incremental encoders conform with the requirements set forth in the EN 60079 series of standards and their marking requirements.

The incremental encoder series is extended to include the types 8.7000... and 8.7014... .

The maximum conductor size is increased to 12 x 0.5 mm².

Special conditions for safe use

The gap widths and lengths remained below/exceeded those specified in EN 60079 1:2007, table 2. They are documented in the descriptive documents (see test report PTB Ex 09-18330). A note to this effect is included in the instructions for operation.

Repairs on the flameproof joints may only be made in accordance with the manufacturer's structural specifications. Repair on the basis of the values in tables 1 and 2 of EN 60079-1 is not permitted.

Notes for manufacturing and operation

The incremental encoders are exempted from the routine test requirements according to 60079-1, section 16, because they passed the static overpressure test at four times the reference pressure.

Parts that are attached or installed (e.g. bushings, cable glands, connectors) shall be of a technical standard that complies with the specifications on the cover sheet. They must be suited for the operating conditions and come with a separate examination certificate. The special conditions have to be observed and included in the type test, if necessary.

For incremental encoders with speeds of up to 2,000 rpm, and when using a shaft sealing ring at the same time, a temperature rise of 26 K and the max. ambient temperature must be considered to ensure that the temperature class and the maximum surface temperature are complied with.

For incremental encoders with speeds of up to 6,000 rpm, and when using a shaft sealing ring at the same time, a temperature rise of 60 K and the max. ambient temperature must be considered to ensure that the temperature class and the maximum surface temperature are complied with.

In the case of intermediate speed values, a repeat type test can be made with suitable measuring instruments to ensure that the temperature class and the max. surface temperature are complied with. The results of this type test must be filed internally.

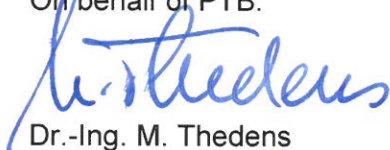
Applied standards

EN 60079-0:2009, EN 60079-1:2007, EN 60079-31:2009

Test report: PTB Ex 13-13003

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, September 05, 2013





Dr.-Ing. M. Thedens
Oberregierungsrat



2nd SUPPLEMENT
according to Directive 94/9/EC Annex III.6
to EC-TYPE-EXAMINATION CERTIFICATE PTB 09 ATEX 1106 X
(Translation)

Equipment: Incremental decoder, types 8.7000***, 8.7014***, 8.7053***, 8.7063***, 8.7058*** and 8.7068***

Marking:  II 2 G Ex d IIC T4 - T6 Gb or
 II 2 D Ex tb IIIC T135°C - T85°C Db

Manufacturer: Fritz Kübler GmbH

Address: Schubertstraße 47, 78054 Villingen-Schwenningen, Deutschland/Germany

Description of supplements and modifications

The incremental decoder of types 8.7000***, 8.7014***, 8.7053***, 8.7063***, 8.7058*** and 8.7068*** meets the requirements of standards EN 60079-0 et seqq. and their marking has been adjusted.

The range of ambient temperatures is 40 °C down to -20 °C. This temperature range may be extended to 90 °C down to -40 °C with a special electrical or thermal design in which suitable materials and components are used.

Notes for manufacture and operation

Due care shall be taken to make sure that the admissible temperatures of the components used will not be exceeded.

In particular at ambient temperatures greater than +40 °C, the maximum service temperature of the materials, components and seals shall be duly considered in the electro-thermal tests.

Components attached or installed (e.g. terminal compartments, bushings, cable glands, connectors) must be of a technical standard that complies with the specifications on the cover sheet. They must be suited for the operating conditions and be covered by a separate examination certificate. The special conditions specified for the components must be complied with, and the components have to be included in the type test, if necessary.

2nd SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 09 ATEX 1106 X

Applied standards


EN 60079-0:2012, EN 60079-1:2014, EN 60079-31:2009

Test report: PTB Ex 16-16002

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, April 15, 2016

On behalf of PTB:


Dr.-Ing. D. Markus
Oberregierungsrat

