



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 PTB 13.0030U issue No.: 1

Certificate history:

Issue No. 1 (2013-12-3)
Issue No. 0 (2013-7-19)

Status: **Current**

Date of Issue: **2013-12-03** Page 1 of 4

Applicant: **Bartec GmbH**
Max-Eyth-Str. 16,
97980 Bad Mergentheim
Germany

Electrical Apparatus: **Optical fibre feed-through type 57-91**-****/******
Optional accessory:

Type of Protection: **Flameproof enclosure "d"**

Marking: **Ex d IIC Gb**
Ex d I Mb

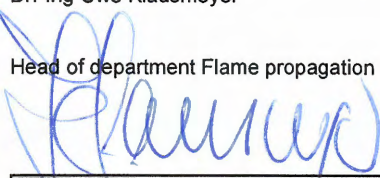
*Approved for issue on behalf of the IECEx
Certification Body:*

Dr.-Ing Uwe Klausmeyer

Position:

Head of department Flame propagation processes

*Signature:
(for printed version)*


2013-12-03

Date:

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:

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100
38116 Braunschweig
Germany





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Certificate No.: IECEx PTB 13.0030U

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Page 2 of 4

Manufacturer: **Bartec GmbH**
Max-Eyth-Str. 16,
97980 Bad Mergentheim
Germany

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 : 2007-10 Explosive atmospheres - Part 0: Equipment - General requirements
Edition: 5

IEC 60079-1 : 2007-04 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition: 6

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:
DE/PTB/ExTR13.0043/00

Quality Assessment Report:
DE/TUN/QAR06.0017/04



IECEx Certificate of Conformity

Certificate No.: IECEx PTB 13.0030U

Date of Issue: 2013-12-03

Issue No.: 1

Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The optical fibre bushing of type 57-91...-.../.... serves for the optical linking of equipment. Linking may be between a flameproof enclosure and an enclosure or equipment of another recognized type of protection in compliance with IEC 60079-0 or between flameproof enclosures.

For further information refer to the attachment!

CONDITIONS OF CERTIFICATION: NO

Empty box for conditions of certification.



IECEX Certificate of Conformity

Certificate No.: IECEx PTB 13.0030U

Date of Issue:

2013-12-03

Issue No.: 1

Page 4 of 4

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

Technical Parameters are amended. See attachment!

Attachment to IECEx PTB 13.0030U

Technical data

Number of cores	0...47	
Thread type and size.....	M10 x 1...M42 x 1,5	Types and sizes of threads, which are not in conformity with ISO standards have been identified.
Temperature class	T6	
Ambient temperature.....	-40 °C	80 °C
Maximum service temperature at the place of installation of the bushing, with the electrical equipment in normal operation	cast resin PVC, PUR, (FRNC, TEP)*)	-40 °C...110 °C -5 °C...80 °C

*) depending on the optical waveguide used

Description of supplements and modifications

The fibre optic cable gland of the type 57-91**-****/**** may also be manufactured with the following modifications:

The lower range of ambient temperatures has been extended to -55 °C. (depending on the fibre optic cable used).

The range of thread types and sizes has been extended.

The fibre optic cable gland may also be manufactured as a plug-type version.

- Outside diameter of the plug-type sleeve 10 ... 70 mm ⁰₋₁₀₀
- Length of flameproof sleeve joint ≥ 12.5 mm ≥ 25 mm ≥ 40 mm
- The surface of the flameproof joint does not exceed a mean roughness of $R_a = 6.3 \mu\text{m}$

The permissible continuous luminous energy of the radiation sources is limited for:

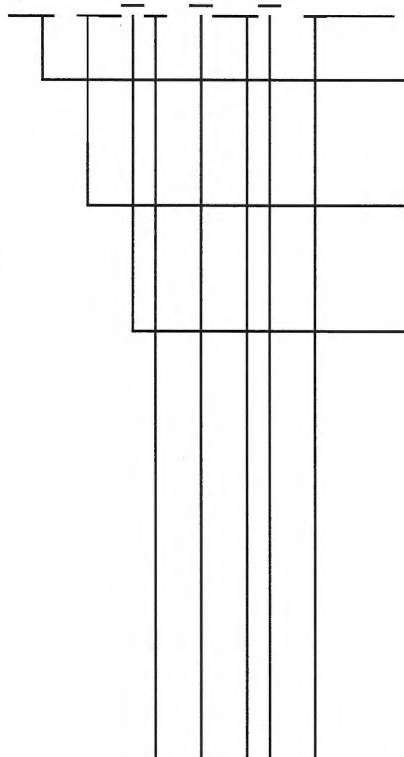
Ex d II	≤ 35 mW / 5 mW/mm ²
Ex d I	≤ 150 mW / 20 mW/mm ²

The fibre optic cable characteristics (type and configuration) have been changed:

BARTEC type	Ø fibre conductor (µm)	Operating temperature (°C)	Sheath material
57-91*A-1***/*	9/125	- 10 ... +75	PVC, PUR,(FRNC, TPE)
57-91*A-2***/*	50/125	- 40 ..+105	PVC, PUR,(FRNC, TPE)
57-91*A-3***/*	62,5/125	- 20 ... +80	PVC, PUR,(FRNC, TPE)
57-91*A-5***/*	100/140	- 10 ... +85	PVC, PUR,(FRNC, TPE)
57-91*A-6***/*	200/230	- 20 ... +70	PVC, PUR,(FRNC, TPE)
57-91*K-R***/*	1	-30 ... +90	PVC, PUR
57-91*K-S***/*	1.5	-30 ... +90	PVC, PUR
57-91*K-T***/*	2	-30 ... +90	PVC, PUR
57-91*K-U***/*	2.5	-30 ... +90	PVC, PUR
57-91*K-V***/*	3	-30 ... +90	PVC, PUR
57-91*K-W***/*	4	-30 ... +90	PVC, PUR
57-91*K-Y***/*	5	-30 ... +90	PVC, PUR
57-91*C-R***/*	1	-55 ... +85	PE

Nomenclature

57 - 91 * * - * * * * / * * * *



Code number for basic range

Code number for product area fibre bushing

Code number for fibre bushing

0 = thread, metric

1 = thread, NPT-thread

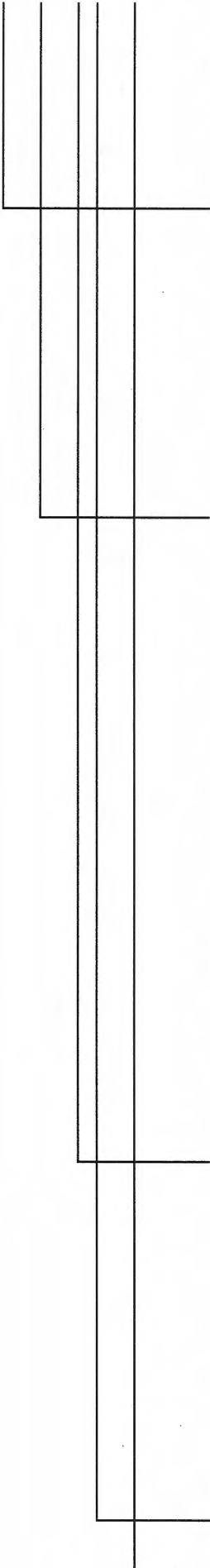
2 = thread WWR-thread

3 = thread, special form (metric)

4 = thread Pg-thread

5 = pluggable, 12,5 mm ≤ joint length L < 25 mm

6 = pluggable, 25 mm ≤ joint length L < 40 mm



7 = pluggable, joint length $L \geq 40$ mm

8 = pluggable, special form

Code number for feature of fibre cable

A = single fibre – Glas

K = bundle fibre - Glas

C = single fibre – plastic (only I M2 Ex d I)

Z = various optical fibres (plastic waveguide only for I M2 Ex d I)

Code number core cross section (terms, material, diameter of fibrecore)

A-single fibre -> numbers, K-bundle fibres -> letters, C-single fibre

1 = 9/125 μm R = 1 mm

2 = 50/125 μm S = 1,5 mm

3 = 62,5/125 μm T = 2 mm

U = 2,5 mm

5 = 100/140 μm V = 3 mm

6 = 200/230 μm W = 4 mm

Y = 5 mm

9 = intermediate diameter of fibre fibre X = intermediate diameter bundle fibre

Z = various diameter of fibre

Code number of cores

01 = 1 fibre

02 = 2 fibres

...

47 = 47 fibres

00 = no fibres

Code number of sleeve size

0 = M10x1

\varnothing 10 mm

1 = M16x1	Pg 7	Ø 15 mm
2 = M24x1,5	Pg 9	Ø 22 mm
3 = M33x1,5	Pg 11	Ø 32 mm
4 = M36x1,5	Pg 13,5	Ø 34 mm
5 = M38x1,5	Pg 16	Ø 36 mm
6 = M42x1,5	Pg 21	Ø 40 mm
7 = M48x1,5 1 1/2" NPTR 1 1/2"	Pg 29	Ø 46 mm
8 = M56x1,5	Pg 36	Ø 54 mm
9 = special forms, intermediate size they are between 0 ... 8 or C ... S		
C = M12x1,5 1/4 " NPT R 1/4"		-
D = M16x1,5 3/8" NPT R 3/8"		Ø 14 mm
E = M20x1,5 1/2" NPT R 1/2"		Ø 18 mm
F = M25x1,5 3/4" NPT R 3/4"		-
G = M32x1,5 1" NPT R 1"		Ø 30 mm
L = M40x1,5 1 1/4" NPTR 1 1/4"		Ø 38 mm
R = M64x1,5		Ø 62 mm
S = M72x1,5		Ø 70 mm

Number or letter for characteristics without influence on the explosion protection

Notes for manufacture and operation

Threaded holes for screwing-in of bushings with internal thread must meet the minimum requirements of IEC 60079-1, section 5.3 (Table 3). These bushings are suitable for installation in electrical equipment of the type of protection flameproof enclosure "d" of group I, IIA, IIB or IIC.

The bushings must be fixed in the electrical equipment so that they are locked against rotation and accidental loosening.

Outside the apparatus the optical waveguide shall lead through the explosion hazardous area without disconnecting point as fixed installation in such a way that it is sufficiently protected against mechanical damage.

If the aperture of the optical waveguide is located inside the explosion hazardous area the irradiance resp. irradiation inside the optical waveguide must not exceed 5 mW/mm^2 or 35 mW total power resp. 0.5 mJ/mm^2 under operating conditions or in case of frequently occurring failures.

The assignment of the temperatures to the temperature class of the optical waveguide bushing is to be made during the type test of the electrical equipment concerned.

The component is suitable for use in both, group I and group II, as the requirements of the standard are the same in this case.

The bushing is a constructional unit. The reproducible assembly procedure and the mounting conditions have been documented. In compliance with IEC 60079-1, section 16.2 (13.4.4), a routine test according to section 16.1 must, therefore, not be carried out.