



Note on Instructions

When working in hazardous areas, the safety of personnel and equipment depends on compliance with the relevant safety regulations. The people in charge of installation and maintenance bear a special responsibility. It is essential that they have an exact knowledge of the applicable rules and regulations.

The instructions provide a summary of the most important safety measures and must be read by everyone working with the product so that they will be familiar with the correct handling of the product.

The instructions have to be kept for future reference and must be available throughout the expected life of the product.

Description

The optical fibre bushings, type 57-91...../....., allows optical fibre cables to be run into flame-proof enclosures.

The optical fibre bushings can be used in hazardous (potentially explosive) areas in Zones 1 and 2 in accordance with the certified explosion hazard subgroups I and II.

The optical fibre cable is made of glass and is resistant to mechanical, climatic, chemical and electromagnetic influences.

The optical fibre cable is most commonly used for carrying signals with the aid of electromagnetic waves in the optical frequency (light) range. The type and structure of the optical fibre cable determine the transmission properties.

The bushings meet the requirements of IEC/EN 60079-0 and IEC/EN 60079-1. They were developed in accordance with the latest technical developments and have been manufactured and tested in conformance to DIN EN ISO 9001.

Explosion Protection

Ex type of protection

ATEX

⊕ Ex II 2 G Ex d IIC Gb

⊕ Ex I M2 Ex d I Mb

IECEX

Ex d IIC Gb

Ex d I Mb

Certification

PTB 99 ATEX 1090 U

IECEX PTB 13.0030U

Approved for zones

1 and 2

Maximum ambient temperature ranges

-55 °C to +80 °C

(-67 °F to +176 °F) at T6

Operating temperature range

-55 °C to +110 °C

(-67 °F to +230 °F)

depending on the selected optical fibre cable

Max. thermal properties of the optical fibre cable

on the outer jacket during operation

PVC -40 °C ≤ Ta ≤ +105 °C
(-40 °F ≤ Ta ≤ +221 °F)

PE -55 °C ≤ Ta ≤ +85 °C
(-67 °F ≤ Ta ≤ +185 °F)

FRNC -10 °C ≤ Ta ≤ +70 °C
(14 °F ≤ Ta ≤ +158 °F)

Technical Data

Maximum allowable light energy

In accordance to IEC/EN 60079-28 in explosion hazard areas.

Ex d IIC Gb: ≤ 35 mW / 5 mW/mm²

Ex d I Mb: ≤ 150 mW / 20 mW/mm²

Temperature class

Suitable for T6

Sleeve material

Metal

bare, painted, or galvanized

Thread size

M10 x 1 to M42 x 1.5

External diameter of the sleeve

10 mm to 70 mm

(0.39 in to 2.76 in)

Gap length of the sleeve

L ≥ 12.5 mm (0.49 in)

L ≥ 25 mm (0.98 in)

L ≥ 40 mm (1.57 in)

Safety Instructions

The assignment of the temperatures to the temperature class for the optical fibre bushing must be specified in the type approval for the respective electrical equipment.

Consideration must be given to the self-heating and enclosure heating that can occur at the site of installation at maximum permissible ambient temperatures.

Incorrect installation can cause malfunctioning and the loss of explosion protection.

The optical fibre bushings may be connected and assembled only by qualified personnel who are authorized and trained to assemble electrical components in hazardous (potentially explosive) areas.

Utilization in areas other than those specified or the modification of the product by anyone other than the manufacturer is not permitted and will exempt BARTEC from liability for defects and any further liability.

The generally applicable statutory rules and other binding directives relating to workplace safety, accident prevention and environmental protection must be observed.

The optical fibre bushings may be operated only if they are clean and not damaged in any way. It is not allowed to use the optical fibre bushings as a mechanical stop.

It is not permissible to convert or modify the optical fibre bushings.

Marking

Particularly important points in these instructions are marked with a symbol:

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

Note

Important instructions and information on effective, economical and environmentally compatible handling.

Standards conformed to

IEC 60079-0:2007
EN 60079-0:2009
IEC/EN 60079-1:2007

Transport, Storage

NOTICE

Damage to the optical fibre bushings through incorrect transport or incorrect storage.

- Transport and storage is permissible in original packaging only.

Assembly, Installation and Commissioning

WARNING

Risk of serious injury due to incorrect proceedings.

- Only authorized and qualified personnel may do any of the assembly, disassembly, installation, and commissioning work.

Assembly/Disassembly

WARNING

Risk of serious injury due to incorrect assembly.

- When assembling the equipment, the IEC/EN 60079-14 and other applicable national standards and installation regulations must be observed.
- The boreholes through which the optical fibre bushings are run must meet the minimum requirements of IEC/EN 60079-1, section 5.2 (table 1 or table 2). Minimum length and gap length must be observed.
- For threaded optical fibre bushings the requirements in accordance with IEC/EN 60079-1, section 5.3 (table 3 and table 4) must be observed.

Check when assembling:

- Use appropriate tools.

Thread size	Max. tightening torque
M16 x 1	15 Nm (1.03 lb.ft)
M16 x 1.5	15 Nm (1.03 lb.ft)
M24 x 1.5	35 Nm (2.40 lb.ft)
M33 x 1.5	50 Nm (3.43 lb.ft)
M36 x 1.5	50 Nm (3.43 lb.ft)
M42 x 1.5	50 Nm (3.43 lb.ft)

- The optical fibre bushings have to be in perfect condition.
- The optical fibre bushings must be fastened in the electrical equipment so that they are secure against twisting and accidental loosening.

Installation

Check when installing:

- That the connection has been established carefully and that the connection is protected by an enclosure with a standardized type of protection in compliance with IEC/EN 60079-0.
- That a minimum bending radius of 6 x cable's outer diameter has been observed when laying the cables in a fixed position.

Commissioning

Before commissioning, check that:

- The optical fibre bushings are assembled and installed correctly.
- The optical fibre bushings and the optical waveguiders are not damaged.
- The junction space is clean.
- The connection has been established properly.
- The cores have been laid correctly.

Note

Temperature ranges are specified for fixed installed cables.

Operation

DANGER

Death or serious injury due to improper use.

- The optical fibre bushings may be operated only within the technical limits that apply to them (see page 1).

Maintenance and Fault Clearance

WARNING

Risk of serious injury due to incorrect proceedings.

- Only authorized qualified personnel may do any of the work relating to maintenance and fault clearance.
- IEC/EN 60079-17 must be observed.

The operator of optical fibre bushings must keep them in good condition, operate them properly, monitor them and clean them regularly.

The optical fibre bushings cannot be repaired. They have to be replaced with original parts considering this operational instruction.

Accessories, Spare Parts

See BARTEC catalogue.

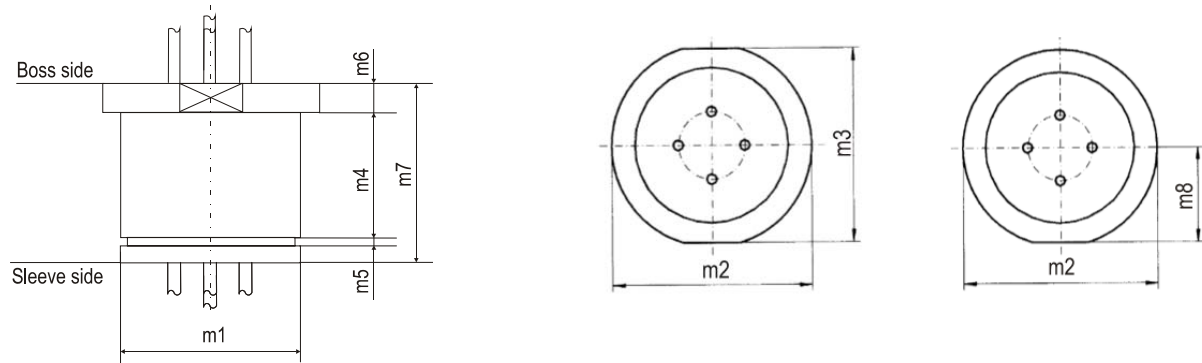
Disposal

The components in the optical fibre bushings contain metal and plastic parts.

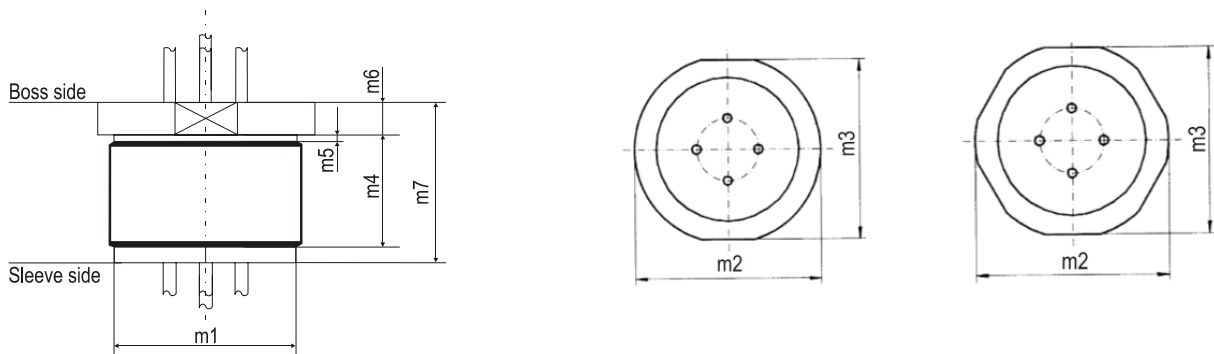
Therefore the statutory requirements for disposing of electronic scrap must be observed (e.g. disposal by an approved disposal company).

Service Address

BARTEC GmbH
 Max-Eyth-Straße 16
 97980 Bad Mergentheim
 Germany
 Tel.: +49 7931 597-0
 Fax: +49 7931 597-119

Dimensions in mm (in)**Plug-in**

m1	m2	m3 ¹⁾	m4	m5	m6	m7	m8
Ø 22 (0.87)	Ø 25 (0.98)	-	26.1 (1.03)	1.3 (0.05)	2 (0.08)	31 (1.22)	11.1 (0.44)
Ø 32 (1.26)	Ø 36 (1.42)	-	26.1 (1.03)	1.6 (0.06)	3 (0.12)	32 (1.26)	17.1 (0.67)
Ø 36 (1.42)	Ø 42 (1.65)	A/F 40	28.1 (1.12)	1.85 (0.07)	7 (0.28)	39 (1.54)	-
Ø 40 (1.58)	Ø 48 (1.89)	A/F 46	28.1 (1.12)	1.85 (0.07)	6.5 (0.26)	40 (1.58)	-

Metric

m1	m2	m3 ¹⁾	m4	m5	m6	m7
M16 x 1 ²⁾	Ø 21 (0.83)	A/F 19	17 (0.67)	max. 1.5 (0.06)	5 (0.2)	25 (0.98)
M16 x 1.5 ²⁾	Ø 21 (0.83)	A/F 19	17 (0.67)	max. 2 (0.08)	5 (0.2)	25 (0.98)
M24 x 1.5 ²⁾	Ø 29 (1.14)	A/F 27	19 (0.75)	max. 2 (0.08)	5 (0.2)	26 (1.02)
M33 x 1.5	Ø 38 (1.5)	A/F 36	18 (0.71)	max. 2 (0.08)	7 (0.28)	30 (1.18)
M36 x 1.5	Ø 42 (1.65)	A/F 40	25 (0.98)	max. 2 (0.08)	7 (0.28)	35 (1.38)
M42 x 1.5 ²⁾	Ø 48 (1.89)	A/F 46	25 (0.98)	max. 2 (0.08)	7 (0.28)	35 (1.38)

¹⁾ Width across flats

²⁾ Boss designed as an internal hexagon

Erklärung der Konformität
Declaration of Conformity
Attestation de conformité

N° 51-9100-7C0001

BARTEC

BARTEC GmbH
Max-Eyth-Straße 16
97980 Bad Mergentheim
Germany

Wir	We	Nous
BARTEC GmbH,		
erklären in alleiniger Verantwortung, dass das Produkt	declare under our sole responsibility that the product	attestons sous notre seule responsabilité que le produit
Lichtwellenleiter-Durchführung	Optical fibre bushing	Traversée de cloison pour fibres optiques

Typ 57-91..****/******

auf das sich diese Erklärung bezieht den Anforderungen der folgenden Richtlinien (RL) entspricht	to which this declaration relates is in accordance with the provision of the following directives (D)	se référant à cette attestation correspond aux dispositions des directives (D) suivantes
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**ATEX-Richtlinie
94/9/EG**

**ATEX-Directive
94/9/EC**

**ATEX-Directive
94/9/CE**

und mit folgenden Normen oder normativen Dokumenten übereinstimmt

and is in conformity with the following standards or other normative documents

et est conforme aux normes ou documents normatifs ci-dessous

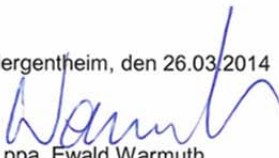
**EN 60079-0:2009
EN 60079-1:2007**

Kennzeichnung	Marking	Marquage
II 2 G Ex d IIC Gb I M2 Ex d I Mb		
Verfahren der EG-Baumusterprüfung / Benannte Stelle	Procedure of EC-Type Examination / Notified Body	Procédure d'examen CE de type / Organisme Notifié

PTB 99 ATEX 1090 U
0102 PTB, Bundesallee 100, 38116 Braunschweig, D

0044

Bad Mergentheim, den 26.03.2014


ppa. Ewald Warmuth
Geschäftsleitung / General Manager

03-0383-0289

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