Line bushings

Features

- Space-saving construction as many single cores are gathered in one single sleeve, thus requiring only one cable entry hole.
- As all 6 cores are brought out, direct Y-switching is also possible on the motor terminal board of Ex d motors.
- Motor mains and thermoprotection cables can be exited in one common sleeve.
- Numbered cores simplify connections and eliminate the usual “Ring out” in larger control systems.

Description

A line bushing is a component for the electrical connection between a flameproof “d” enclosure and an increased safety “e” terminal box. The bushing consists of a threaded or non-threaded metal sleeve encapsulating one or more cores providing a flameproof barrier. The lengths of these leads vary according to their applications.

The depth of engagement of the threaded sleeves and the joint length of the cylindrical sleeve in the wall of the “d” enclosure must correspond to the EN 60079-0 and EN 60079-1 standards.

After installation the bushing must be protected against rotation and accidental loosening. Recommendations are given under “Accessories”. Our standard bushings come with threaded sleeves from M10 to M48 or with cylindrical sleeves. They are equipped with cores with a 0.2 to 95 mm² csa. and approved for nominal voltages between 250 V and 3 000 V. See also table “Electrical data”.

For the connection of intrinsically safe circuits in the “d” area with the terminal strip in the connection compartment we provide line bushings with blue cores for “i” low power circuits.

Another product of our line-bushing range is the bushing with terminals. Combining Ex d line bushing with an Ex e terminal we designed an element which is hardly any bigger than a normal line bushing. This bushing plus terminals reduces the size of the terminal box and, at the same time, the installation costs. The bushings plus terminals are rated for 690 V and 1 000 V and PTB-certified. We supply them with 2 to 6 poles and threaded sleeves from M 24 to M 42.

All line bushings have been PTB and BVS tested and certified for their use in hazardous areas according to the European standards EN 50014, EN 50018, EN 50019. BARTEC also has numerous other international approvals for these line bushings.

All line bushings have been certified by the Federal Physical-Technical Institute in accordance with the European standards EN 60079-0, EN 60079-1 and EN 60079-7 concerning electrical operating equipment for explosion-endangered areas for above-ground (II) and underground (I) according to ATEX. BARTEC has furthermore obtained several foreign admissions for these line bushings (FM, UL).

When the 94/9/EC guideline comes into force on 01/07/2003, explosion protected operating equipment must be properly installed in accordance with EN 60079-14.

Among other things, section 10.4.2 requires that cast, pressure-proof cable insertions according to EN 60079-1 are used for operating equipment with an internal ignition source for the explosion subgroup IIC and operating equipment with an enclosure volume greater than 2 dm³ in zone 1.

BARTEC offers a wide range of products with EC type test certification.
Line bushings

Explosion protection

Ex protection type

**Line bushings**

**ATEX**

II 2G  Ex db IIC

I M2  Ex db I

**Certification**

EPS 13 ATEX 1619 U

**IECEx**

Ex db IIC

Ex db I

**Certification**

IECEx EPS 13.0045 U

**Other approvals**

INMETRO, UL, CSA, NEPSI, GOST, FM

Other approvals and certification can be found at www.bartec.de

**Standard product printing**

ATEX and IECEx marking. Other international imprints obtainable on request. Please specify in plain text.

**Working temperature**

-60 °C to +110 °C depending on the lead used and static test pressure (temperature ranges apply to the "fixed installation" of leads)

**Ambient temperature of limit switches**

depending on the design and the cores/leads

**Standard versions**:  
Cores depending on the working temperature and voltage

HO7G-K radiation cross-linked polyolefin copolymer

NSGAFÖU

**max. number of cores**

50 cores

**Cross-section**

0.25 mm² to 120 mm²

AWG24 to AWG1

**max. number of cores**

50 cores

**Sleeve size**

metric: M16 x 1.5 to M42 x 1.5

non-threaded: Ø 22 mm to Ø 36 mm

**Sleeve material**

Metal, bare, varnished or galvanised

**Rated voltage**

690 V/1 000 V/3 000 V

**Rated currents**

see following table based on VDE 0298-04

* all other versions on request Please use the customer requirements form at the end of the chapter!
**Line bushings with terminals**

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**Selection chart - cores**

<table>
<thead>
<tr>
<th>Rated insulation voltage</th>
<th>No. of terminals/cores</th>
<th>Conductor cross section mm²</th>
<th>Rated current (A) for continuous operation (reference values)</th>
<th>Thread size</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>690 V</td>
<td>4</td>
<td>0.75 1.5 2.5 4 6</td>
<td>11 17 23 31 40</td>
<td>M24 x 1.5</td>
<td>07-9304-F042</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.75 1.5 2.5 4 6</td>
<td>11 17 23 31 40</td>
<td>M33 x 1.5</td>
<td>07-9304-H042</td>
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<td>M38 x 1.5</td>
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<td></td>
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<td>11 17 23 31 40</td>
<td>M38 x 1.5</td>
<td>07-9304-L065</td>
</tr>
<tr>
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<td>4</td>
<td>1.5 2.5 4 6</td>
<td>17 23 31 40</td>
<td>M24 x 1.5</td>
<td>07-9306-H043</td>
</tr>
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<td></td>
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<td>17 23 31 40</td>
<td>M33 x 1.5</td>
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</table>

When determining the maximum current-carrying capacity of the connection cores, the self-heating and enclosure heating at the site of installation at the maximum permissible ambient temperature must be assumed. The maximum tightening torque for the terminal screw is 0.8 Nm.

Other equipment options and special sleeves on request.

It is essential to submit a customer requirements form which has been filled in correctly and completely. The form can be found in the catalogue at the end of the chapter.