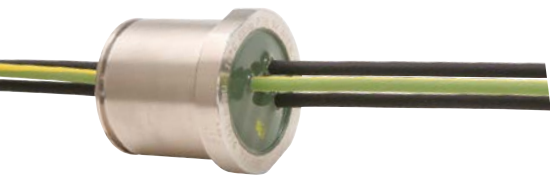




Line bushings



multi-core
with threaded sleeve



multi-core
with cylindrical sleeve



4-pole or 6-pole
with terminals

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.
- On the Ex d side, the cores are connected directly to the electrical load, intermediate terminals are no longer necessary.
- Small dimensions allow a rated insulation voltage of up to 3 kV
- Blue cores for Ex i low power circuits
- Permanent heat-resistance of the cores up to +110 °C

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 in the Ex e terminal box



Connection side of the line bushing with terminals

Explosion protection

Ex protection type

Line bushing

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 limit switch

depending on the design and the cores/
 -leads

Standard versions*:

Cores depending on the working temperature and voltage

H07G-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: \varnothing 22 mm to \varnothing 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!

Ex protection type

Line bushing with terminals

ATEX II 2G Ex d e IIC Gb
 I M2 Ex d e I Mb

Certification

EPS 14 ATEX 1644 U

IECEX Ex d e IIC Gb
 Ex d e I Mb

Certification

IECEX EPS 14.0020 U

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

Working temperature

-60 °C to +110 °C
 depending on the design, terminals and lead (temperature ranges apply to the "permanent installation" of the leads)

Ambient temperature of limit switches

depending on the design and the cores/leads

Standard versions*:

Cores depending on the working temperature and voltage

H07G-K
 radiation cross-linked polyolefin copolymer
 NSGAFÖU

Number of terminals

4 or 6 (depending on the cross-section)

Cross-section

0.75 mm²/1.5 mm²/2.5 mm²/4 mm²/6 mm²

Sleeve size

metric: M24 x 1.5 to M42 x 1.5
 non-threaded: \varnothing 22 mm to \varnothing 36 mm

Sleeve material

metal, bare, varnished or galvanised

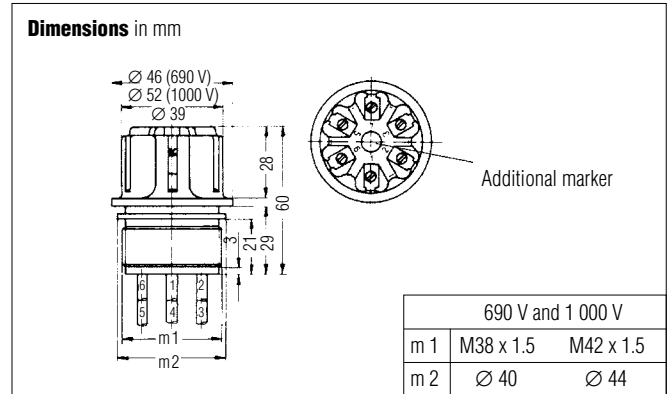
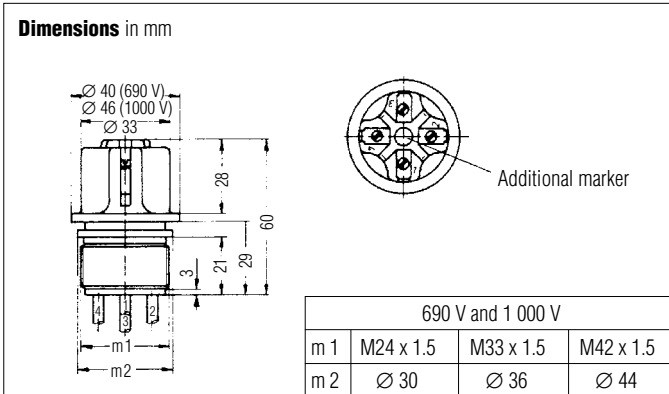
Nominal voltage

690 V/1 000 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!



Selection chart - cores						
Rated insulation voltage	No. of terminals/cores	Conductor cross section mm ²	Rated current (A) for continuous operation (reference values) ¹⁾ Max. permissible operating temperature at the conductor +110 °C Max. current-carrying capacity based on VDE 0298-4 Table 11, Gap 2	Thread size	Order no. Core length please specify in plain text	
690 V	4	0.75	11 A	M24 x 1.5	07-9304-F042	
		1.5	17 A	M24 x 1.5	07-9304-H042	
		2.5	23 A	M24 x 1.5	07-9304-J042	
		4	31 A	M24 x 1.5	07-9304-K042	
	4	4	0.75	11 A	M33 x 1.5	07-9304-F043
			1.5	17 A	M33 x 1.5	07-9304-H043
			2.5	23 A	M33 x 1.5	07-9304-J043
		4	4	31 A	M33 x 1.5	07-9304-K043
			6	40 A	M33 x 1.5	07-9304-L043
690 V	6	0.75	11 A	M42 x 1.5	07-9304-F046	
		1.5	17 A	M42 x 1.5	07-9304-H046	
		2.5	23 A	M42 x 1.5	07-9304-J046	
		4	31 A	M42 x 1.5	07-9304-K046	
		6	6	40 A	M42 x 1.5	07-9304-L046
			6	0.75	11 A	M38 x 1.5
	1.5	17 A		M38 x 1.5	07-9304-H065	
	2.5	23 A		M38 x 1.5	07-9304-J065	
	4	31 A		M38 x 1.5	07-9304-K065	
	1 000 V	4	1.5	17 A	M33 x 1.5	07-9306-H043
2.5			23 A	M33 x 1.5	07-9306-J043	
4			31 A	M33 x 1.5	07-9306-K043	
6			40 A	M33 x 1.5	07-9306-L043	
4		4	1.5	17 A	M42 x 1.5	07-9306-H046
			2.5	23 A	M42 x 1.5	07-9306-J046
		6	4	31 A	M42 x 1.5	07-9306-K046
			6	40 A	M42 x 1.5	07-9306-L046
6		6	1.5	17 A	M38 x 1.5	07-9306-H065
			2.5	23 A	M38 x 1.5	07-9306-J065
		6	4	31 A	M38 x 1.5	07-9306-K065
			6	40 A	M42 x 1.5	07-9306-L066
6		6	1.5	17 A	M42 x 1.5	07-9306-H066
			2.5	23 A	M42 x 1.5	07-9306-J066
6	6	4	31 A	M42 x 1.5	07-9306-K066	
		6	40 A	M42 x 1.5	07-9306-L066	

¹⁾ 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.