

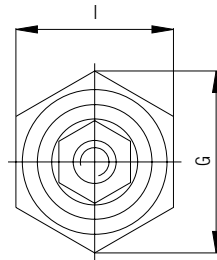


Bushing conductor studs

Features

- 16 A to 630 A
- 690 V, 1000 V and 1600 V
- Max. working temperature 130 °C
- Different types of terminals
- Standard thread M16 x 1.5 to M42 x 1.5

Dimensions



Description

A bushing conductor stud is a component with which the electrical connection between an enclosure in type of protection Flameproof enclosure „d“ and its connection enclosure in type of protection Increased Safety „e“ is established.

The cable bushing includes a threaded metal sleeve, a ceramic insulation, terminals and a stud.

Standard threaded sleeves from M16 to M42 are included in the delivery of bushing conductor studs.

The diameter of the stud depends on current and the terminal size on the cable diameter.

Thanks to different types of terminals, vertical as well as horizontal cable connection is possible. Special terminals are available on request.

After installation, the bushing conductor stud needs to be secured by means of a nut or adhesive to prevent self-loosening.



Explosion protection

Ex protection type

- II 2G Ex de IIC Gb
I M2 Ex de I Mb

Certification

PTB 04 ATEX 1099 U

Temperature range

at the place of installation by rated operation of the electrical apparatus
-50 °C to +130 °C

The maximum current carrying capacity of the bushing conductor stud and the connecting leads shall be established on the basis of the self-heating rate and the enclosure heating rate at the place of installation starting from the maximum permissible ambient temperature.

Technical data

Protection class

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

Material

Insulation ceramic, C610

Stud

16 A to 250 A CuZn39Pb2
400 A to 630 A E-Cu

Current

16 A to 630 A

Voltage

690 V, 1000 V and 1600 V

Connection

1.5 mm² to 300 mm²

Stud size

4 mm to 20 mm

Thread size

M16 x 1.5 to M42 x 1.5

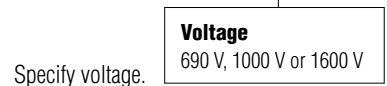
Selection chart

Table with 4 columns: Type, Current, Type of terminal, Thread size. Rows include models like TOS4.16A, TOS5.25A, TOS6.63A, TOS8.100A, TOS10.160A, TOS12.250A, TOS16.400A, TOS20.630A.

Example- Complete order no.

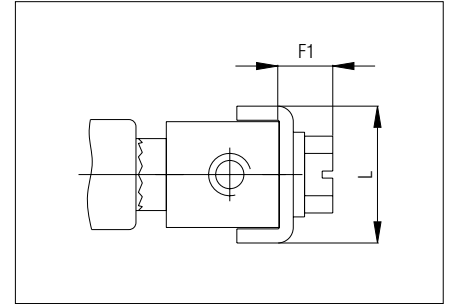
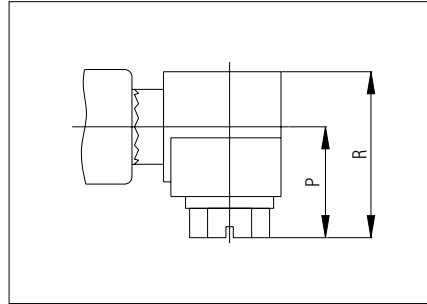
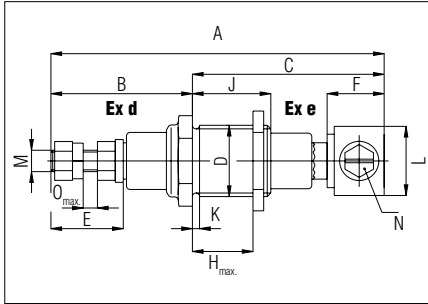
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TOS8.100A.690V - RF





Type of terminal A from 690 V to 1000 V



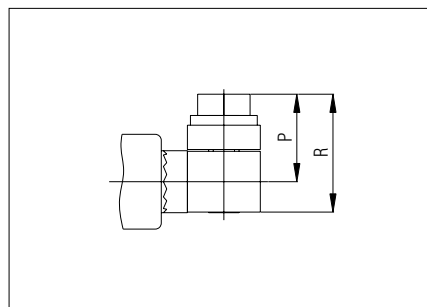
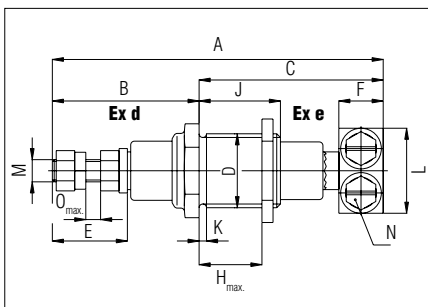
Selection chart Type of terminal A to 690 V

| Type | D | A | B | C | E | F/F1 | G | H _{max} | I | J | K | L | M | N | O _{max} | P | R | Terminals |
|----------------|-----------|------|------|------|------|--------|------|------------------|----|----|---|------|----|---------|------------------|------|------|--------------------------|
| TOS4.16.690 V | M16 x 1.5 | 81.5 | 33 | 48.5 | 13.4 | 12/5.5 | 19.6 | 18 | 17 | 22 | 2 | 13.4 | M4 | M4 x 10 | 4 | 10.7 | 15.7 | 1.5 - 6 mm ² |
| TOS5.25.690 V | M18 x 1.5 | 87 | 36 | 51 | 16.5 | 14/5.5 | 21.9 | 18 | 19 | 22 | 2 | 15.4 | M5 | M5 x 10 | 4 | 11.7 | 17.7 | 2.5 - 10 mm ² |
| TOS6.63A.690 V | M20 x 1.5 | 93.5 | 39.5 | 54 | 20.3 | 16/7.6 | 25.4 | 18 | 22 | 22 | 2 | 19.4 | M6 | M6 x 10 | 4 | 15.1 | 22.6 | 2.5 - 16 mm ² |

Selection chart Type of terminal A to 1000 V

| Type | D | A | B | C | E | F/F1 | G | H _{max} | I | J | K | L | M | N | O _{max} | P | R | Terminals |
|-----------------|-----------|-------|------|------|------|--------|------|------------------|----|----|---|------|----|---------|------------------|------|------|--------------------------|
| TOS4.16.1000 V | M16 x 1.5 | 97.5 | 41 | 56.5 | 13.4 | 12/5.5 | 19.6 | 18 | 17 | 22 | 2 | 13.4 | M4 | M4 x 10 | 4 | 10.7 | 15.7 | 1.5 - 6 mm ² |
| TOS5.25.1000 V | M18 x 1.5 | 103 | 44 | 59 | 16.5 | 14/5.5 | 21.9 | 18 | 19 | 22 | 2 | 15.4 | M5 | M5 x 10 | 4 | 11.7 | 17.7 | 2.5 - 10 mm ² |
| TOS6.63A.1000 V | M20 x 1.5 | 109.5 | 47.5 | 62 | 20.3 | 16/7.6 | 25.4 | 18 | 22 | 22 | 2 | 19.4 | M6 | M6 x 10 | 4 | 15.1 | 22.6 | 2.5 - 16 mm ² |

Type of terminal F from 690 V to 1000 V



Selection chart Type of terminal F to 690 V

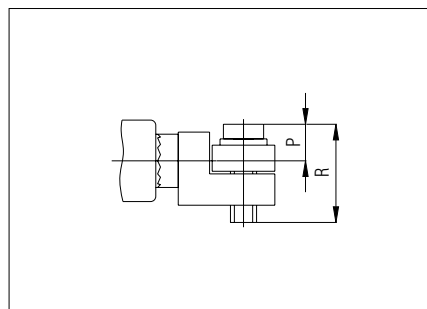
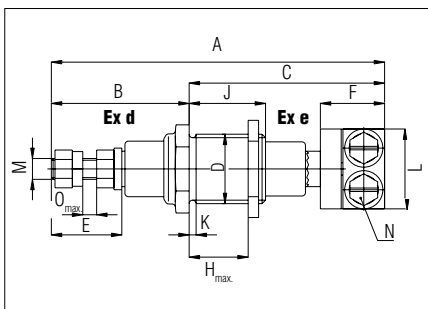
| Type | D | A | B | C | E | F/F1 | G | H _{max} | I | J | K | L | M | N | O _{max} | P | R | Terminals |
|------------------|-----------|------|------|------|------|------|------|------------------|----|----|---|----|-----|----------|------------------|------|------|--------------------------|
| TOS5.25.690 V | M18 x 1.5 | 83.5 | 36 | 47.5 | 16.5 | 10 | 21.9 | 18 | 19 | 22 | 2 | 19 | M5 | M4 x 12 | 4 | 11 | 15 | 2.5 - 25 mm ² |
| TOS6.63A.690 V | M20 x 1.5 | 89.5 | 39.5 | 50 | 20.3 | 12 | 25.4 | 18 | 22 | 22 | 2 | 23 | M6 | M5 x 16 | 4 | 14 | 19.5 | 2.5 - 25 mm ² |
| TOS8.100A.690 V | M24 x 1.5 | 97.5 | 43.5 | 54 | 24.3 | 15 | 31.2 | 18 | 27 | 22 | 2 | 26 | M8 | M6 x 25 | 4 | 17 | 29 | 6 - 50 mm ² |
| TOS10.160A.690 V | M27 x 1.5 | 110 | 50 | 60 | 30 | 20 | 34.6 | 18 | 30 | 22 | 2 | 36 | M10 | M8 x 30 | 5 | 21 | 35.5 | 10 - 95 mm ² |
| TOS12.250A.690 V | M33 x 1.5 | 122 | 55.5 | 66.5 | 35.5 | 25 | 41.6 | 18 | 36 | 22 | 2 | 42 | M12 | M8 x 35 | 5 | 24.5 | 40.5 | 16 - 185 mm ² |
| TOS16.400A.690 V | M36 x 1.5 | 139 | 65 | 74 | 45 | 30 | 47.3 | 18 | 41 | 22 | 2 | 50 | M16 | M10 x 40 | 5 | 32 | 47 | 25 - 300 mm ² |
| TOS20.630A.690 V | M42 x 1.5 | 153 | 75 | 78 | 55.1 | 32 | 53.1 | 18 | 46 | 22 | 2 | 50 | M20 | M10 x 45 | 6 | 34.5 | 51.5 | 25 - 300 mm ² |



Selection chart Type of terminal F to 1000 V

| Type | D | A | B | C | E | F/F1 | G | H _{max.} | I | J | K | L | M | N | O _{max.} | P | R | Terminals |
|--------------------------|-----------|-------|------|------|------|------|------|-------------------|----|----|---|----|-----|----------|-------------------|------|------|--------------------------|
| TOS5.25.1000 V | M18 x 1.5 | 99.5 | 44 | 55.5 | 16.5 | 10 | 21.9 | 18 | 19 | 22 | 2 | 19 | M5 | M4 x 12 | 4 | 11 | 15 | 2.5 - 25 mm ² |
| TOS6.63A.1000 V | M20 x 1.5 | 105.5 | 47.5 | 58 | 20.3 | 12 | 25.4 | 18 | 22 | 22 | 2 | 23 | M6 | M5 x 16 | 4 | 14 | 19.5 | 2.5 - 25 mm ² |
| TOS8.100A.1000 V | M24 x 1.5 | 113.5 | 51.5 | 62 | 24.3 | 15 | 31.2 | 18 | 27 | 22 | 2 | 26 | M8 | M6 x 25 | 4 | 17 | 29 | 6 - 50 mm ² |
| TOS10.160A.1000 V | M27 x 1.5 | 126 | 57.5 | 68.5 | 30 | 20 | 34.6 | 18 | 30 | 22 | 2 | 36 | M10 | M8 x 30 | 5 | 21 | 35.5 | 10 - 95 mm ² |
| TOS12.250A.1000 V | M33 x 1.5 | 138 | 63.5 | 74.5 | 35.5 | 25 | 41.6 | 18 | 36 | 22 | 2 | 42 | M12 | M8 x 35 | 5 | 24.5 | 40.5 | 16 - 185 mm ² |
| TOS16.400A.1000 V | M36 x 1.5 | 155 | 73 | 82 | 45 | 30 | 47.3 | 18 | 41 | 22 | 2 | 50 | M16 | M10 x 40 | 5 | 32 | 47 | 25 - 300 mm ² |
| TOS20.630A.1000 V | M42 x 1.5 | 169 | 83 | 86 | 55.1 | 32 | 53.1 | 18 | 46 | 22 | 2 | 50 | M20 | M10 x 45 | 6 | 34.5 | 51.5 | 25 - 300 mm ² |

Type of terminal FL from 690 V to 1000 V



Selection chart Type of terminal FL to 690 V

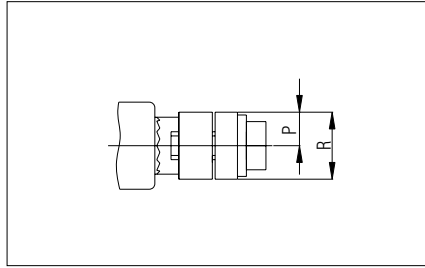
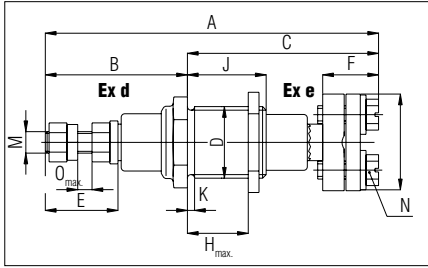
| Type | D | A | B | C | E | F/F1 | G | H _{max.} | I | J | K | L | M | N | O _{max.} | P | R | Terminals |
|-------------------------|-----------|-------|------|------|------|------|------|-------------------|----|----|---|----|-----|----------|-------------------|------|------|--------------------------|
| TOS5.25.690 V | M18 x 1.5 | 88.5 | 36 | 52.5 | 16.5 | 15.5 | 21.9 | 18 | 19 | 22 | 2 | 19 | M5 | M4 x 12 | 4 | 6 | 14.8 | 2.5 - 25 mm ² |
| TOS6.63A.690 V | M20 x 1.5 | 96 | 39.5 | 56.5 | 20.3 | 18.5 | 25.4 | 18 | 22 | 22 | 2 | 23 | M6 | M5 x 16 | 4 | 6.5 | 18.8 | 2.5 - 25 mm ² |
| TOS8.100A.690 V | M24 x 1.5 | 106.5 | 43.5 | 63 | 24.3 | 24 | 31.2 | 18 | 27 | 22 | 2 | 26 | M8 | M6 x 20 | 4 | 8 | 24 | 6 - 50 mm ² |
| TOS10.160A.690 V | M27 x 1.5 | 121 | 50 | 71 | 30 | 31 | 34.6 | 18 | 30 | 22 | 2 | 36 | M10 | M8 x 30 | 5 | 11 | 35.5 | 10 - 95 mm ² |
| TOS12.250A.690 V | M33 x 1.5 | 130 | 55.5 | 74.5 | 35.5 | 33 | 41.6 | 18 | 36 | 22 | 2 | 42 | M12 | M8 x 30 | 5 | 10 | 35.5 | 16 - 185 mm ² |
| TOS16.400A.690 V | M36 x 1.5 | 151 | 65 | 86 | 45 | 42 | 47.3 | 18 | 41 | 22 | 2 | 49 | M16 | M10 x 40 | 5 | 12.5 | 47 | 25 - 300 mm ² |
| TOS20.630A.690 V | M42 x 1.5 | 172 | 75 | 97 | 55.1 | 51 | 53.1 | 18 | 46 | 22 | 2 | 55 | M20 | M10 x 45 | 6 | 10.5 | 52 | 25 - 300 mm ² |

Selection chart Type of terminal FL to 1000 V

| Type | D | A | B | C | E | F/F1 | G | H _{max.} | I | J | K | L | M | N | O _{max.} | P | R | Terminals |
|--------------------------|-----------|-------|------|------|------|------|------|-------------------|----|----|---|----|-----|----------|-------------------|------|------|--------------------------|
| TOS5.25.1000 V | M18 x 1.5 | 104.5 | 44 | 60.5 | 16.5 | 15.5 | 21.9 | 18 | 19 | 22 | 2 | 19 | M5 | M4 x 12 | 4 | 6 | 14.8 | 2.5 - 25 mm ² |
| TOS6.63A.1000 V | M20 x 1.5 | 112 | 47.5 | 64.5 | 20.3 | 18.5 | 25.4 | 18 | 22 | 22 | 2 | 23 | M6 | M5 x 16 | 4 | 6.5 | 18.8 | 2.5 - 25 mm ² |
| TOS8.100A.1000 V | M24 x 1.5 | 122.5 | 51.5 | 71 | 24.3 | 24 | 31.2 | 18 | 27 | 22 | 2 | 26 | M8 | M6 x 20 | 4 | 8 | 24 | 6 - 50 mm ² |
| TOS10.160A.1000 V | M27 x 1.5 | 137 | 57.5 | 79.5 | 30 | 31 | 34.6 | 18 | 30 | 22 | 2 | 36 | M10 | M8 x 30 | 5 | 11 | 35.5 | 10 - 95 mm ² |
| TOS12.250A.1000 V | M33 x 1.5 | 146 | 63.5 | 82.5 | 35.5 | 33 | 41.6 | 18 | 36 | 22 | 2 | 42 | M12 | M8 x 30 | 5 | 10 | 35.5 | 16 - 185 mm ² |
| TOS16.400A.1000 V | M36 x 1.5 | 167 | 73 | 94 | 45 | 42 | 47.3 | 18 | 41 | 22 | 2 | 49 | M16 | M10 x 40 | 5 | 12.5 | 47 | 25 - 300 mm ² |
| TOS20.630A.1000 V | M42 x 1.5 | 188 | 83 | 105 | 55.1 | 51 | 53.1 | 18 | 46 | 22 | 2 | 55 | M20 | M10 x 45 | 6 | 10.5 | 52 | 25 - 300 mm ² |



Type of terminal RF from 690 V to 1000 V



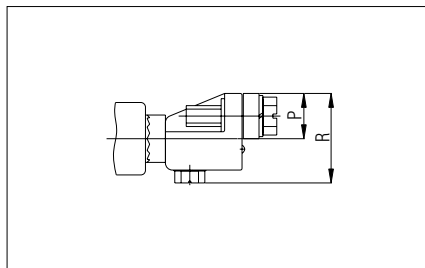
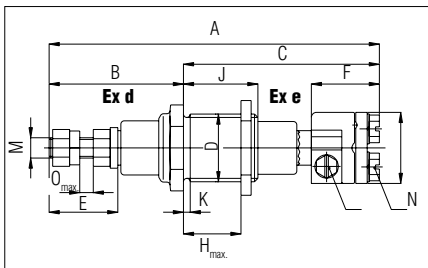
Selection chart Type of terminal RF to 690 V

| Type | D | A | B | C | E | F/F1 | G | H _{max.} | I | J | K | L | M | N | O _{max.} | P | R | Terminals |
|------------------|-----------|------|------|------|------|------|------|-------------------|----|----|---|----|-----|----------|-------------------|------|----|--------------------------|
| TOS5.25.690 V | M18 x 1.5 | 85.5 | 36 | 49.5 | 16.5 | 12.5 | 21.9 | 18 | 19 | 22 | 2 | 22 | M5 | M4 x 12 | 4 | 5 | 10 | 2.5 - 25 mm ² |
| TOS6.63A.690 V | M20 x 1.5 | 93 | 39.5 | 53.5 | 20.3 | 15.6 | 25.4 | 18 | 22 | 22 | 2 | 27 | M6 | M5 x 16 | 4 | 6 | 12 | 2.5 - 25 mm ² |
| TOS8.100A.690 V | M24 x 1.5 | 102 | 43.5 | 58.5 | 24.3 | 19.1 | 31.2 | 18 | 27 | 22 | 2 | 32 | M8 | M6 x 25 | 4 | 7.5 | 15 | 6 - 50 mm ² |
| TOS10.160A.690 V | M27 x 1.5 | 114 | 50 | 64 | 30 | 24 | 34.6 | 18 | 30 | 22 | 2 | 41 | M10 | M8 x 30 | 5 | 10 | 20 | 10 - 95 mm ² |
| TOS12.250A.690 V | M33 x 1.5 | 125 | 55.5 | 69.5 | 35.5 | 28 | 41.6 | 17 | 36 | 22 | 2 | 43 | M12 | M8 x 30 | 5 | 12.5 | 25 | 16 - 185 mm ² |
| TOS16.400A.690 V | M36 x 1.5 | 145 | 65 | 80 | 45 | 36 | 47.3 | 17 | 41 | 22 | 2 | 55 | M16 | M10 x 40 | 5 | 15 | 30 | 25 - 300 mm ² |
| TOS20.630A.690 V | M42 x 1.5 | 161 | 75 | 86 | 55.1 | 40 | 53.1 | 17 | 46 | 22 | 2 | 61 | M20 | M10 x 45 | 5 | 15 | 30 | 25 - 300 mm ² |

Selection chart Type of terminal RF to 1000 V

| Type | D | A | B | C | E | F/F1 | G | H _{max.} | I | J | K | L | M | N | O _{max.} | P | R | Terminals |
|-------------------|-----------|-------|------|------|------|------|------|-------------------|----|----|---|------|-----|----------|-------------------|------|----|--------------------------|
| TOS5.25.1000 V | M18 x 1.5 | 101.5 | 44 | 57.5 | 16.5 | 12.5 | 21.9 | 18 | 19 | 22 | 2 | ∅ 22 | M5 | M4 x 12 | 4 | 5 | 10 | 2.5 - 25 mm ² |
| TOS6.63A.1000 V | M20 x 1.5 | 109 | 47.5 | 61.5 | 20.3 | 15.6 | 25.4 | 18 | 22 | 22 | 2 | ∅ 27 | M6 | M5 x 16 | 4 | 6 | 12 | 2.5 - 25 mm ² |
| TOS8.100A.1000 V | M24 x 1.5 | 118 | 51.5 | 66.5 | 24.3 | 19.1 | 31.2 | 18 | 27 | 22 | 2 | ∅ 32 | M8 | M6 x 20 | 4 | 7.5 | 15 | 6 - 50 mm ² |
| TOS10.160A.1000 V | M27 x 1.5 | 130 | 57.5 | 72.5 | 30 | 24 | 34.6 | 18 | 30 | 22 | 2 | ∅ 41 | M10 | M8 x 30 | 5 | 10 | 20 | 10 - 95 mm ² |
| TOS12.250A.1000 V | M33 x 1.5 | 141 | 63.5 | 77.5 | 35.5 | 28 | 41.6 | 17 | 36 | 22 | 2 | ∅ 43 | M12 | M8 x 30 | 5 | 12.5 | 25 | 16 - 185 mm ² |
| TOS16.400A.1000 V | M36 x 1.5 | 161 | 73 | 88 | 45 | 36 | 47.3 | 17 | 41 | 22 | 2 | ∅ 55 | M16 | M10 x 40 | 5 | 15 | 30 | 25 - 300 mm ² |
| TOS20.630A.1000 V | M42 x 1.5 | 177.5 | 83 | 94.5 | 55.1 | 40 | 53.1 | 17 | 46 | 22 | 2 | ∅ 61 | M20 | M10 x 45 | 5 | 15 | 30 | 25 - 300 mm ² |

Type of terminal C from 690 V to 1000 V



Selection chart Type of terminal C to 690 V

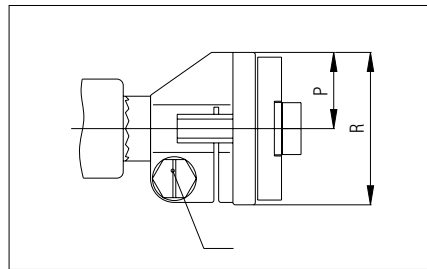
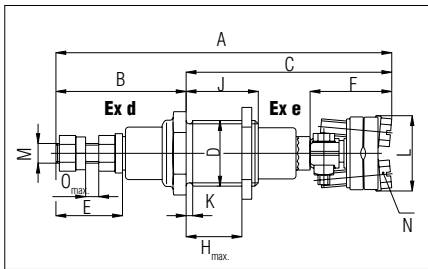
| Type | D | A | B | C | E | F/F1 | G | H _{max.} | I | J | K | L | M | N | O _{max.} | P | R | Terminals |
|-----------------|-----------|-----|------|------|------|------|------|-------------------|----|----|---|------|----|-----------------|-------------------|----|----|--------------------------|
| TOS5.25.690 V | M18 x 1.5 | 90 | 36 | 54 | 16.5 | 16.8 | 21.9 | 18 | 19 | 22 | 2 | 17,5 | M5 | M5 x 20/M4 x 6 | 4 | 7 | 20 | 2.5 - 25 mm ² |
| TOS6.63A.690 V | M20 x 1.5 | 98 | 39.5 | 58.5 | 20.1 | 20.1 | 25.4 | 18 | 22 | 22 | 2 | 21 | M6 | M5 x 20/M4 x 5 | 4 | 7 | 20 | 2.5 - 25 mm ² |
| TOS8.100A.690 V | M24 x 1.5 | 110 | 43.5 | 66.5 | 24.3 | 26.8 | 31.2 | 18 | 27 | 22 | - | 28 | M8 | M6 x 22/M5 x 10 | 4 | 12 | 26 | 4 - 35 mm ² |



Selection chart Type of terminal C to 1000 V

| Type | D | A | B | C | E | F/F1 | G | H _{max.} | I | J | K | L | M | N | O _{max.} | P | R | Terminals |
|-------------------------|-----------|-----|------|------|------|------|------|-------------------|----|----|---|------|----|-----------------|-------------------|----|----|--------------------------|
| TOS5.25.1000 V | M18 x 1.5 | 106 | 44 | 62 | 16.5 | 16.8 | 21.9 | 18 | 19 | 22 | 2 | 17.5 | M5 | M5 x 20/M4 x 6 | 4 | 7 | 20 | 2.5 - 25 mm ² |
| TOS6.63A.1000 V | M20 x 1.5 | 114 | 47.5 | 66.5 | 20.1 | 20.1 | 25.4 | 18 | 22 | 22 | 2 | 21 | M6 | M5 x 20/M4 x 5 | 4 | 7 | 20 | 2.5 - 25 mm ² |
| TOS8.100A.1000 V | M24 x 1.5 | 126 | 51.5 | 74.5 | 24.3 | 26.8 | 31.2 | 18 | 27 | 22 | 2 | 28 | M8 | M6 x 22/M5 x 10 | 4 | 12 | 26 | 4 - 35 mm ² |

Type of terminal R from 690 V to 1000 V



Selection chart Type of terminal R to 690 V

| Type | D | A | B | C | E | F/F1 | G | H _{max.} | I | J | K | L | M | N | O _{max.} | P | R | Terminals |
|-------------------------|-----------|-------|------|------|------|------|------|-------------------|----|----|---|------|-----|------------------|-------------------|------|----|----------------------------------|
| TOS10.160A.690 V | M27 x 1.5 | 130.5 | 50 | 80.5 | 30 | 41.5 | 34.6 | 18 | 30 | 22 | 2 | 37 | M10 | M8 x 30/M6 x 22 | 5 | 19.5 | 39 | 6-70 or 10-95 mm ² |
| TOS12.250A.690 V | M33 x 1.5 | 145.5 | 55.5 | 92 | 35.5 | 48.8 | 41.6 | 17 | 36 | 22 | 2 | 46.6 | M12 | M10 x 35/M6 x 22 | 5 | 23.5 | 47 | 10-95 or 16-150 mm ² |
| TOS16.400A.690 V | M36 x 1.5 | 161.5 | 65 | 96.5 | 45 | 52.3 | 47.3 | 17 | 41 | 22 | 2 | 51 | M16 | M10 x 40/M8 x 30 | 5 | 26 | 52 | 16-150 or 16-300 mm ² |
| TOS20.630A.690 V | M42 x 1.5 | 175 | 75 | 100 | 55.1 | 53.3 | 53.1 | 17 | 46 | 22 | 2 | 59 | M30 | M10 x 45/M8 x 30 | 5 | 29.5 | 59 | 16 - 300 mm ² |

Selection chart Type of terminal R to 1000 V

| Type | D | A | B | C | E | F/F1 | G | H _{max.} | I | J | K | L | M | N | O _{max.} | P | R | Terminals |
|--------------------------|-----------|-------|------|-------|------|------|-----|-------------------|----|----|---|-----|-----|------------------|-------------------|------|----|----------------------------------|
| TOS10.160A.1000 V | M27 x 1.5 | 146,5 | 57,5 | 89 | 30 | 41,5 | 4,6 | 18 | 30 | 22 | 2 | 37 | M10 | M8 x 30/M6 x 22 | 5 | 19,5 | 39 | 6-70 or 10-95 mm ² |
| TOS12.250A.1000 V | M33 x 1,5 | 161,5 | 63,5 | 98 | 35,5 | 48,8 | 1,6 | 17 | 36 | 22 | 2 | 6,6 | M12 | M10 x 35/M6 x 22 | 5 | 23,5 | 47 | 10-95 or 16-150 mm ² |
| TOS16.400A.1000 V | M36 x 1,5 | 177,5 | 73 | 104,5 | 45 | 52,3 | 7,3 | 17 | 41 | 22 | 2 | 51 | M16 | M10 x 40/M8 x 30 | 5 | 26 | 52 | 16-150 or 16-300 mm ² |
| TOS20.630A.1000 V | M42 x 1,5 | 191 | 83 | 108 | 55,1 | 53,3 | 3,1 | 17 | 46 | 22 | 2 | 59 | M30 | M10 x 45/M8 x 30 | 5 | 29,5 | 59 | 16-300 mm ² |