



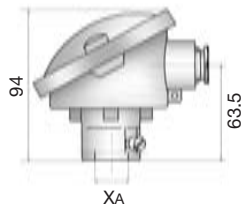
➔ 99 - EZT // Individual components





Head Type A

Large, slanted head with a fitted removable cover (screwed)



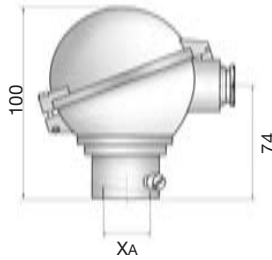
Connection (Xa) for the thermowell or the holding tube

| Connection (Xa) for the thermowell or the holding tube | Protective system | Cable outlet | Approx. weight/g | Article number |
|--|-------------------|--------------|------------------|------------------|
| Thread M24 x 1.5 | IP 54 | M20 x 1.5 | 250 | 98-91300106-GM24 |
| Hole 11.8 mm | IP 53 | M20 x 1.5 | 260 | On request |
| Hole 22.8 mm | IP 53 | M20 x 1.5 | 255 | 98-91300106-G022 |
| Hole 24.8 mm | IP 53 | M20 x 1.5 | 250 | 98-91300106-G024 |
| Hole 26.8 mm | IP 53 | M20 x 1.5 | 235 | 98-91300106-G026 |
| Hole 28.8 mm | IP 53 | M20 x 1.5 | 235 | 98-91300106-G028 |
| Hole 32.8 mm | IP 53 | M20 x 1.5 | 235 | 98-91300106-G032 |

Connection head made of die-cast light alloy for the protection and holding tubes of various dimensions.

Head Type AUZ

Spherical head with a hinged cover and a cheese-head screw



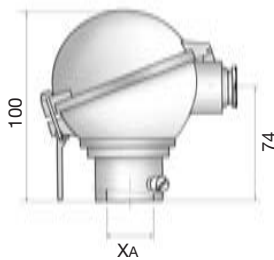
Connection (Xa) for the thermowell or the holding tube

| Connection (Xa) for the thermowell or the holding tube | Protective system | Cable outlet | Approx. weight/g | Article number |
|--|-------------------|--------------|------------------|------------------|
| Thread M24 x 1.5 | IP 65 | M20 x 1.5 | 260 | 99-91300306-GM24 |
| Hole 22.8 mm | IP 54 | M20 x 1.5 | 280 | 99-91300306-G022 |
| Hole 24.8 mm | IP 54 | M20 x 1.5 | 270 | 99-91300306-G024 |
| Hole 32.8 mm | IP 54 | M20 x 1.5 | 260 | 99-91300306-G032 |
| G 3/8 I | IP 65 | M20 x 1.5 | 280 | On request |
| G 1/2 I | IP 65 | M20 x 1.5 | 270 | On request |

Connection head made of die-cast light alloy with a hinged cover and a cheese-head screw for protection and holding tubes of various dimensions.

Head Type AUS

Spherical head with a hinged cover and a snap fastener



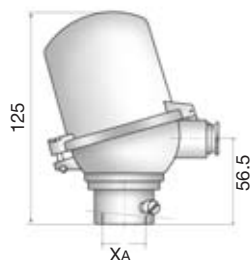
Connection (Xa) for the thermowell or the holding tube

| Connection (Xa) for the thermowell or the holding tube | Protective system | Cable outlet | Approx. weight/g | Article number |
|--|-------------------|--------------|------------------|------------------|
| Thread M24 x 1.5 | IP 65 | M20 x 1.5 | 260 | 99-91300206-GM24 |
| Hole 22.8 mm | IP 54 | M20 x 1.5 | 280 | 99-91300206-G022 |
| Hole 24.8 mm | IP 54 | M20 x 1.5 | 270 | 99-91300206-G024 |
| Hole 32.8 mm | IP 54 | M20 x 1.5 | 260 | 99-91300206-G032 |
| G 3/8 I | IP 65 | M20 x 1.5 | 280 | On request |
| G 1/2 I | IP 65 | M20 x 1.5 | 270 | On request |

Connection head made of die-cast light alloy with a hinged cover and a snap fastening for protection and holding tubes of various dimensions.

Head Type AUZH

Raised hinged cover with a cheese-head screw (AUSH alternative)



Connection (Xa) for the thermowell or the holding tube

| Connection (Xa) for the thermowell or the holding tube | Protective system | Cable outlet | Approx. weight/g | Article number |
|--|-------------------|--------------|------------------|------------------|
| Hole 15.8 mm | IP 54 | M20 x 1.5 | 320 | 99-91300506-G015 |
| Hole 22.8 mm | IP 54 | M20 x 1.5 | 320 | 99-91300506-G022 |
| Hole 32.8 mm | IP 54 | M20 x 1.5 | 320 | 99-91300506-G032 |
| Thread M24 x 1.5 | IP 65 | M20 x 1.5 | 320 | 99-91300506-GM24 |
| Thread M22 x 1.5 | IP 65 | M20 x 1.5 | 320 | 99-91300506-GM22 |

Connection head made of die-cast light alloy with a hinged cover for protection and holding tubes of various dimensions.

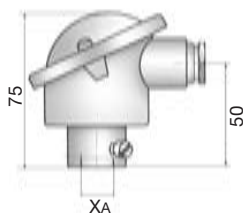
This connection head is suitable for the installation of a head transmitter in the cover.





Head Type B

Small, slanted head with a fitted removable cover (screwed)

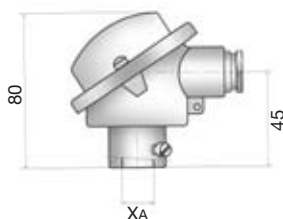


| Connection (Xa) for the thermowell or the holding tube | Protective system | Cable outlet | Approx. weight/g | Article number |
|--|-------------------|--------------|------------------|------------------|
| Hole 10.8 mm | IP 53 | M20 x 1.5 | 195 | 98-91300706-G010 |
| Hole 15.8 mm | IP 53 | M20 x 1.5 | 195 | 98-91300706-G015 |
| Thread M24 x 1.5 | IP 53 | M20 x 1.5 | 190 | 98-91300706-GM24 |
| G 1/2 I | IP 53 | M20 x 1.5 | 190 | On request |

Connection head made of die-cast light alloy for the protection and holding tubes of various dimensions.

Head Type B-h (high)

Small, slanted head with a fitted removable cover (screwed)

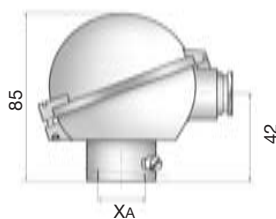


| Connection (Xa) for the thermowell or the holding tube | Protective system | Cable outlet | Approx. weight/g | Article number |
|--|-------------------|--------------|------------------|------------------|
| Hole 10.8 mm | IP 53 | M20 x 1.5 | 160 | 98-91301206-G010 |
| Hole 15.8 mm | IP 53 | M20 x 1.5 | 160 | 98-91301206-G015 |
| Thread M24 x 1.5 | IP 53 | M20 x 1.5 | 160 | 98-91301206-GM24 |
| G 1/2 I | IP 53 | M20 x 1.5 | 160 | On request |

Connection head made of die-cast light alloy for the protection and holding tubes of various dimensions (generally used for right-angle thermocouples).

Head Type BUZ

Spherical head with a hinged cover and a cheese-head screw

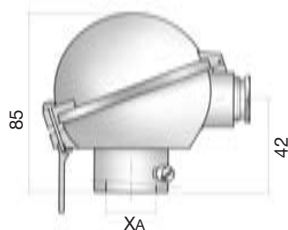


| Connection (Xa) for the thermowell or the holding tube | Protective system | Cable outlet | Approx. weight/g | Article number |
|--|-------------------|--------------|------------------|------------------|
| Hole 15.3 mm | IP 54 | M20 x 1.5 | 220 | 99-91300906-G015 |
| Hole 22.5 mm | IP 54 | M20 x 1.5 | 210 | 99-91300906-G022 |
| Thread M24 x 1.5 | IP 65 | M20 x 1.5 | 210 | 99-91300906-GM24 |
| G 1/2 I | IP 65 | M20 x 1.5 | 215 | 99-91300906-GG12 |

Connection head made of die-cast light alloy with a hinged cover for protection and holding tubes of various dimensions.

Head Type BUS

Spherical head with a hinged cover and a snap fastening

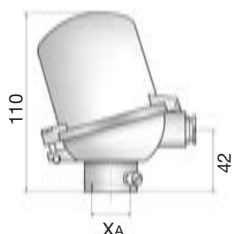


| Connection (Xa) for the thermowell or the holding tube | Protective system | Cable outlet | Approx. weight/g | Article number |
|--|-------------------|--------------|------------------|------------------|
| Hole 15.3 mm | IP 54 | M20 x 1.5 | 220 | 99-91300806-G015 |
| Hole 22.5 mm | IP 54 | M20 x 1.5 | 210 | 99-91300806-G022 |
| Thread M24 x 1.5 | IP 65 | M20 x 1.5 | 210 | 99-91300806-GM24 |
| G 1/2 I | IP 65 | M20 x 1.5 | 215 | 99-91300806-GG12 |

Connection head made of die-cast light alloy with a hinged cover for protection and holding tubes of various dimensions.

Head Type BUZH

Raised hinged cover with a cheese-head screw (BUSH alternative)



| Connection (Xa) for the thermowell or the holding tube | Protective system | Cable outlet | Approx. weight/g | Article number |
|--|-------------------|--------------|------------------|------------------|
| Hole 15.8 mm | IP 54 | M20 x 1.5 | 275 | 99-91301106-G015 |
| Hole 22.8 mm | IP 54 | M20 x 1.5 | 270 | 99-91301106-G022 |
| Thread M24 x 1.5 | IP 65 | M20 x 1.5 | 270 | 99-91301106-GM24 |
| G 1/2 I | IP 65 | M20 x 1.5 | 275 | 99-91301106-GG12 |

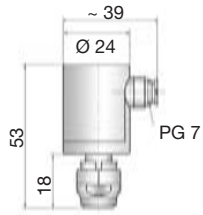
Connection head made of die-cast light alloy with a hinged cover for protection and holding tubes of various dimensions.

This connection head is suitable for the installation of a head transmitter in the cover.





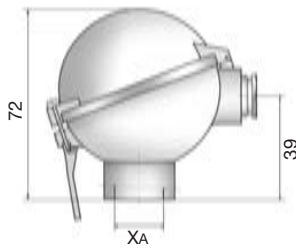
Connection head Type L
Cylindrical head with a slip lid



| | |
|-------------------------|---|
| Material: | Lower part made of nickel-plated brass, cover made of aluminium |
| Connection: | Bracket clamp d = 8.2 mm * |
| Cable entry: | PG 7 |
| Weight: | approx. 80 g |
| Günther Art. no. | 99-91301503-0008 |

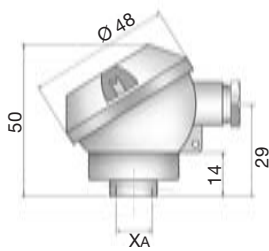
* The bracket clamp serves to clamp the thermowell (ceramic, metal or quartz glass)

Connection head Type NA
Small spherical head with a hinged cover



| | | |
|-------------------------|--------------------------|-------------------------|
| Material: | Die-cast light alloy | Die-cast light alloy |
| Connection: | Ø 15.8 mm | M24 x 1.5 thread |
| Cable entry: | M20 x 1.5 / M22 x 1.5 mm | M20 x 1.5 mm |
| Weight: | approx. 165 g | approx. 160 g |
| Günther Art. no. | 99-91301606-G015 | 99-91301606-GM24 |
| | 99-91301607-G015 | |

Connection head Type DL
Small spherical head with a screw cover



| | | | |
|-------------------------|-------------------------|-------------------------|-------------------------|
| Material: | Die-cast light alloy | Die-cast light alloy | Die-cast light alloy |
| Connection: | Female thread | Male thread | Ø 6.1 mm |
| | M10 x 1 | M20 x 0.75 | |
| Cable entry: | PG 9 | PG 9 | PG 9 |
| Weight: | approx. 70 g | approx. 70 g | approx. 70 g |
| Protection: | IP 54 | IP 54 | IP 54 |
| Günther Art. no. | 99-91301702-GM10 | 99-91301702-GM20 | 99-91301702-G006 |

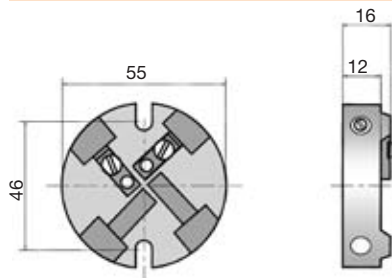
The connection heads shown above are the most widely-used models.
Other models are available on request.





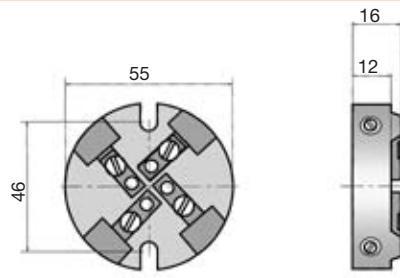
Socket A, standard

For **base** thermocouples
from Ø 1.38 mm to Ø 3.0 mm
Art. no. 98-91540000-0002



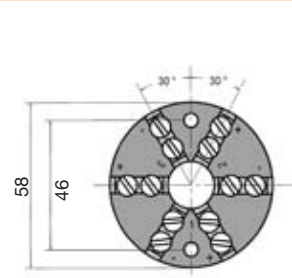
Socket A, double

For **base** thermocouples
from Ø 1.38 mm to Ø 3.0 mm
Art. no. 98-91540000-0004



Socket A, triple

For **base** thermocouples
up to Ø 1.6 mm
Art. no. 98-91540002-0006



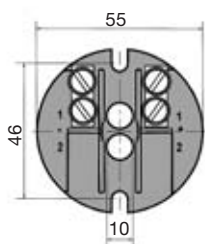
Accessories: 1 washer 55 mm
2 fastening screws
(M4 x 18 mm with a washer
10 x 4.5 mm)

Accessories: 1 washer 55 mm
2 fastening screws
(M4 x 18 mm with a washer
10 x 4.5 mm)

Accessories: 1 washer 55 mm
2 fastening screws
(M4 x 20 mm with a washer
10 x 4.5 mm)

Socket A, standard

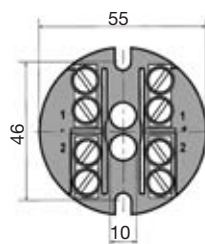
With a test socket
for **base** thermocouples
Art. no. 98-91540003-0002



Accessories: 1 washer 55 mm
2 fastening screws
(M4 x 18 mm with a washer
10 x 4.5 mm)

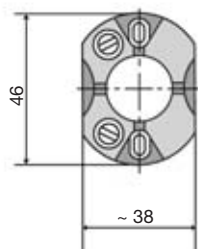
Socket A, double

With a test socket
for **base** thermocouples
Art. no. 98-91540003-0004



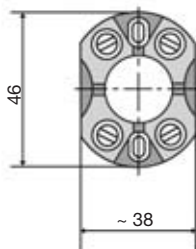
Accessories: 1 washer 55 mm
2 fastening screws
(M4 x 18 mm with a washer
10 x 4.5 mm)

Round socket, Type B, standard
for **sheath** thermocouples
Art. no. 99-91550000-0002



Accessories: 1 washer 55 mm made
of VA steel (2 mm thick)
2 fastening screws
(M4 x 18 mm with a washer
10 x 4.5 mm)

Round socket, Type B, double
for **sheath** thermocouples
Art. no. 99-91550000-0004



Accessories: 1 washer 55 mm made
of VA steel (2 mm thick)
2 fastening screws
(M4 x 18 mm with a washer
10 x 4.5 mm)

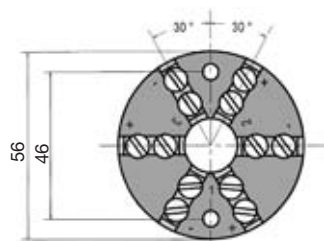
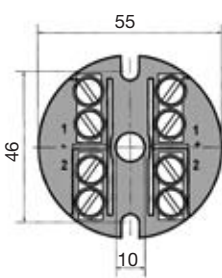
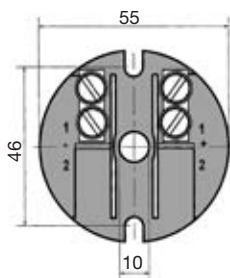




Socket A, standard
For precious metal thermocouples
Art. no. 98-91540001-0002

Socket A, double
For precious metal thermocouples
Art. no. 98-91540001-0004

Socket A, triple
For precious metal thermocouples
Art. no. 98-91540002-0006



Accessories: 1 washer 55 mm
2 fastening screws
(M4 x 18 mm with a washer
10 x 4.5 mm)
1 retaining spring

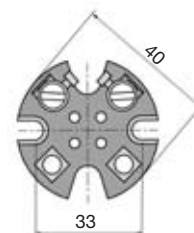
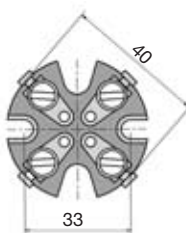
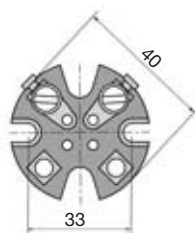
Accessories: 1 washer 55 mm
2 fastening screws
(M4 x 18 mm with a washer
10 x 4.5 mm)
1 retaining spring

Accessories: 1 washer 55 mm
2 fastening screws
(M4 x 20 mm with a washer
10 x 4.5 mm)
1 retaining spring

Socket B, standard
For base thermocouples
from Ø 0.5 mm to Ø 2.0mm
Art. no. 98-91550000-0002

Socket B, double
For base thermocouples
from Ø 0.5 mm to Ø 2.0 mm
Art. no. 98-91550000-0004

Socket B, standard
For precious metal thermocouples
Art. no. 98-91550001-0002



Accessories: 1 washer 42 mm
2 fastening screws
(M4 x 18 mm with a washer
10 x 4.5 mm)

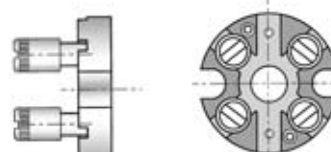
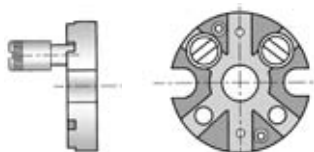
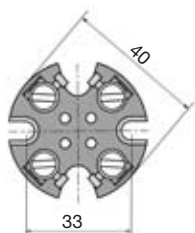
Accessories: 1 washer 42 mm
2 fastening screws
(M4 x 18 mm with a washer
10 x 4.5 mm)

Accessories: 1 washer 42 mm
2 fastening screws
(M4 x 18 mm with a washer
10 x 4.5 mm)

Socket B, double
For precious metal thermocouples
Art. no. 98-91550001-0004

**Socket B, standard
(2 sheath clamps)**
Art. no. 98-91550010-0002

**Socket B, double
(4 sheath clamps)**
Art. no. 98-91550010-0004



Accessories: 1 washer 42 mm
2 fastening screws
(M4 x 18 mm with a washer
10 x 4.5 mm)

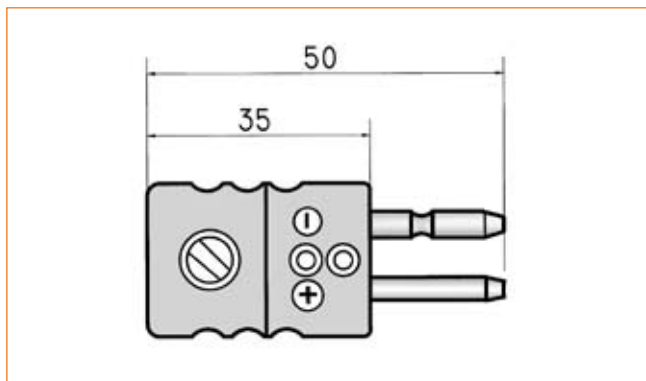
Accessories: 1 washer 40 mm
2 fastening screws
M4 x 16 mm, each
with 1 washer 7 x 4.2 mm

Accessories: 1 washer 40 mm
2 fastening screws
M4 x 16 mm, each with
1 washer 7 x 4.2 mm





Standard plugs



Application:

Plug-and-socket connectors for the measuring circuits of thermocouples and resistance thermometers. Solid pins ensure a reliable connection.

Mechanical structure:

- Casing made of plastic filled with fibre glass
- Pins and sleeves thermally stress-relieved
- Solid pins and spring-loaded sockets
- Reverse voltage protection through various pin thicknesses
- Central cover fastening facilitates assembly
- Internally separated conductors prevent short circuits
- Terminal screws enable fast connections

Conductor cross-section:

- Secure clamping from \varnothing 0.2 mm to \varnothing 2.0 mm
- Max. cable diameter of 8.0 mm

Thermal load:

- Max. 200°C

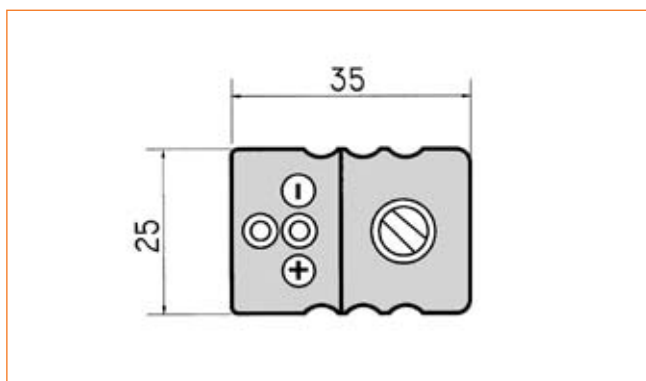
Code colours for the casing:

- All of the international colour codes are available: DIN IEC, DIN 43710, ANSI, NFE, BS, JIS, etc.

Accessories:

- Strain reliefs, gaskets, splash protection, etc.

Standard couplers



| Type | J/L | K | S | B | N |
|-----------|------|------|----------|----|----------|
| Contact + | Fe | NiCr | Cu | Cu | Nicrosil |
| Contact - | CuNi | Ni | Alloy#11 | Cu | Nisil |

DIN IEC 584 colour coding

| Casing colour | Black (type J) | Green | Orange | Grey | Pink |
|---------------|------------------|------------------|------------------|------------------|------------------|
| Plug | 99-91440010-HJ00 | 99-91440010-HK00 | 99-91440010-HS00 | 99-91440010-HB00 | 99-91440010-HN00 |
| Coupler | 99-91441010-HJ00 | 99-91441010-HK00 | 99-91441010-HS00 | 99-91441010-HB00 | 99-91441010-HN00 |

DIN 43710 colour coding

| Casing colour | Blue (type L) | Green | - | White | - |
|---------------|------------------|------------------|---|------------|---|
| Plug | 99-91440020-HL00 | 99-91440020-HK00 | - | On request | - |
| Coupler | 99-91441020-HL00 | 99-91442020-HK00 | - | On request | - |

ANSI colour coding

| Casing colour | Black | Yellow | Green | White | Orange |
|---------------|------------|------------------|------------------|------------|------------|
| Plug | On request | 99-91440030-HK00 | 99-91440030-HS00 | On request | On request |
| Coupler | On request | 99-91441030-HK00 | 99-91441030-HS00 | On request | On request |

The strain relief (accessories) fixes cables of varying diameters onto the plugs and the couplers.

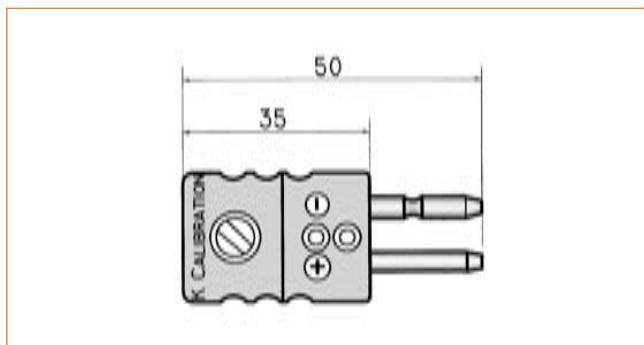
Strain relief Art. no. 99-91444000-0000

Assembly is carried out by means of screwing it into the female thread in the plug-and-socket connector.





Standard high-temperature plugs



Application:

Plug-and-socket connectors for the measuring circuits of thermocouples and resistance thermometers. Solid pins ensure a reliable connection.

Mechanical structure:

- Casing made of temperature-resistant special plastic for high ambient temperatures
- Pins and sleeves thermally stress-relieved
- Solid pins and spring-loaded sockets
- Reverse voltage protection through various pin thicknesses
- Central cover fastening facilitates assembly
- Internally separated conductors prevent short circuits
- Terminal screws enable fast connections

Conductor cross-section:

- Secure clamping from Ø 0.2 mm to Ø 2.0 mm
- Max. cable diameter of 8.0 mm

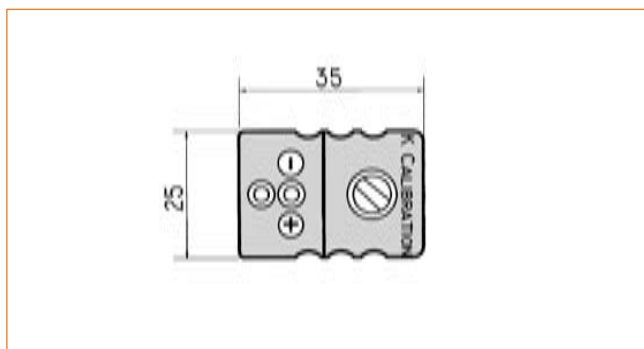
Thermal load:

- Max. 350°C

Colour coding:

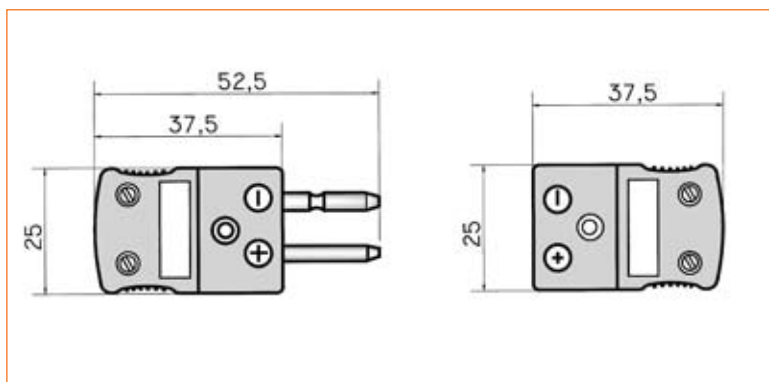
- Casing brown, with element code

Standard high-temperature couplers



| Type | J/L | K | S | B | N |
|-----------|------------|------------------|------------------|------------------|------------------|
| Contact + | Fe | NiCr | Cu | Cu | Nicrosil |
| Contact - | CuNi | Ni | Alloy#11 | Cu | Nisil |
| Plug | On request | 99-91460010-HK00 | 99-91460010-HS00 | 99-91460010-HB00 | 99-91460010-HN00 |
| Coupler | On request | 99-91461010-HK00 | 99-91461010-HS00 | 99-91461010-HB00 | 99-91461010-HN00 |

Standard ceramic plugs/couplers



Application:

Plug-and-socket connectors for the measuring circuits of thermal elements and resistance thermometers. Solid pins ensure a reliable connection.

Mechanical structure:

- Ceramic casing for extremely high ambient temperatures
- Pins and sleeves thermally stress-relieved
- Solid pins and spring-loaded sockets
- Reverse voltage protection through various pin thicknesses
- Central cover fastening facilitates assembly
- Internally separated conductors prevent short circuits
- Terminal screws enable fast connections

Conductor cross-section:

- Secure clamping from Ø 0.2 mm to Ø 2.0 mm
- Max. cable diameter of 8.0 mm

Thermal load:

- Max. 650°C

Colour coding:

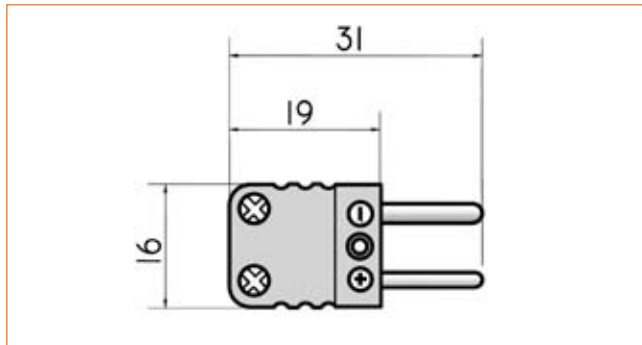
- Casing white, with element code

| Type | K | S | B |
|-----------|------------------|------------------|------------------|
| Contact + | NiCr | Cu | Cu |
| Contact - | Ni | Alloy#11 | Cu |
| Plug | 99-91480010-HK00 | 99-91480010-HS00 | 99-91480010-HB00 |
| Coupler | 99-91481010-HK00 | 99-91481010-HS00 | 99-91481010-HB00 |





Miniature plugs



Application:

Plug-and-socket connectors for the measuring circuits of thermocouples and resistance thermometers. Solid pins ensure a reliable connection.

Mechanical structure:

- Casing made of plastic filled with fibre glass
- Pins and sleeves thermally stress-relieved
- Solid pins and spring-loaded sockets
- Reverse voltage protection through various pin widths
- Central cover fastening facilitates assembly
- Internally separated conductors prevent short circuits
- Terminal screws enable fast connections

Conductor cross-section:

- Secure clamping from \varnothing 0.1 mm to \varnothing 0.6 mm
- Max. cable diameter of 4.5 mm

Thermal load:

- Max. 200°C

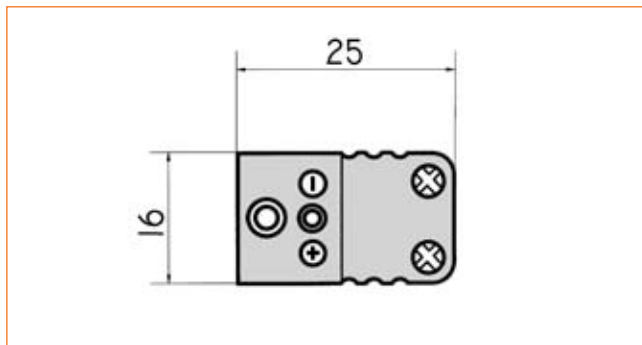
Code colours for the casing:

- All of the international colour codes are available:
DIN IEC, DIN 43710, ANSI, NFE, BS, JIS, etc.

Accessories:

- Strain reliefs, gaskets, splash protection, etc.

Miniature couplers



| Type | J/L | K | S | B | N |
|-----------|------|------|----------|----|----------|
| Contact + | Fe | NiCr | Cu | Cu | Nicrosil |
| Contact - | CuNi | Ni | Alloy#11 | Cu | Nisil |

DIN IEC 584 colour coding

| Casing colour | Black (type J) | Green | Orange | Grey | Pink |
|---------------|------------------|------------------|------------------|------------------|------------------|
| Plug | 99-91450010-HJ00 | 99-91450010-HK00 | 99-91450010-HS00 | 99-91450010-HB00 | 99-91450010-HN00 |
| Coupler | 99-91451010-HJ00 | 99-91451010-HK00 | 99-91451010-HS00 | 99-91451010-HB00 | 99-91451010-HN00 |

DIN 43710 colour coding

| Casing colour | Blue (type L) | Green | - | White | - |
|---------------|------------------|------------------|---|------------|---|
| Plug | 99-91450020-HL00 | 99-91450020-HK00 | - | On request | - |
| Coupler | 99-91451020-HL00 | 99-91451020-HK00 | - | On request | - |

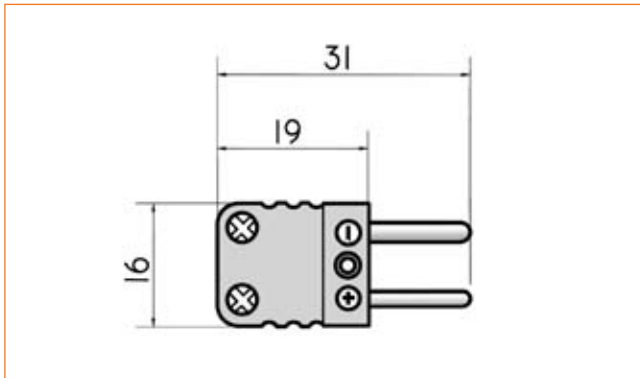
ANSI colour coding

| Casing colour | Black | Yellow | Green | White | Orange |
|---------------|------------|------------------|------------------|------------|------------|
| Plug | On request | 99-91450030-HK00 | 99-91450030-HS00 | On request | On request |
| Coupler | On request | 99-91451030-HK00 | 99-91451030-HS00 | On request | On request |





Miniature high-temperature plugs



Application:

Plug-and-socket connectors for the measuring circuits of thermocouples and resistance thermometers. Solid pins ensure a reliable connection.

Mechanical structure:

- Casing made of temperature-resistant special plastic for high ambient temperatures
- Pins and sleeves thermally stress-relieved
- Solid pins and spring-loaded sockets
- Reverse voltage protection through various pin widths
- Central cover fastening facilitates assembly
- Internally separated conductors prevent short circuits
- Terminal screws enable fast connections

Conductor cross-section:

- Secure clamping from Ø 0.1 mm to Ø 0.6 mm
- Max. cable diameter of 4.5 mm

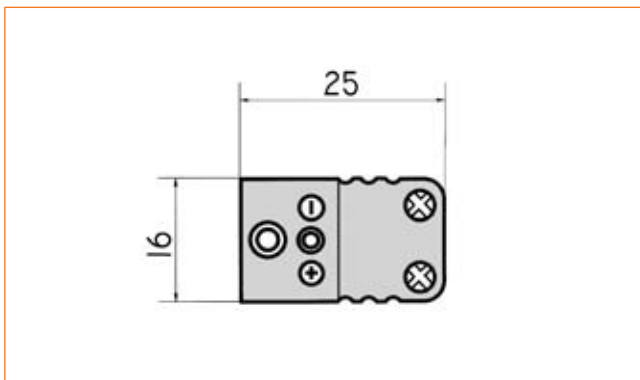
Thermal load:

- Max. 350°C

Colour coding:

- Casing brown, with element code

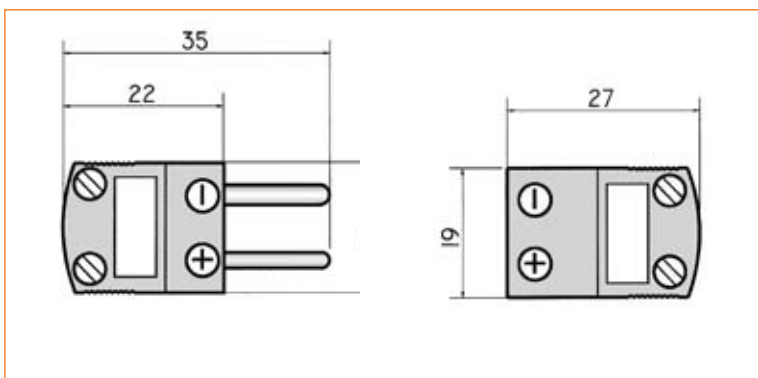
Miniature high-temperature couplers



| Type | J/L | K | S | B | N |
|-----------|------|------|----------|----|----------|
| Contact + | Fe | NiCr | Cu | Cu | Nicrosil |
| Contact - | CuNi | Ni | Alloy#11 | Cu | Nisil |

| | | | | | |
|---------|------------|------------------|------------------|------------------|------------------|
| Plug | On request | 99-91470010-HK00 | 99-91470010-HS00 | 99-91470010-HB00 | 99-91470010-HN00 |
| Coupler | On request | 99-91471010-HK00 | 99-91471010-HS00 | 99-91471010-HB00 | 99-91471010-HN00 |

Miniature ceramic plugs/couplers



Application:

Plug-and-socket connectors for the measuring circuits of thermocouples and resistance thermometers. Solid pins ensure a reliable connection.

Mechanical structure:

- Ceramic casing for extremely high ambient temperatures
- Pins and sleeves thermally stress-relieved
- Solid pins and spring-loaded sockets
- Reverse voltage protection through various pin widths
- Central cover fastening facilitates assembly
- Internally separated conductors prevent short circuits
- Terminal screws enable fast connections

Conductor cross-section:

- Secure clamping from Ø 0.1 mm to Ø 0.5 mm
- Max. cable diameter of 3.6 mm

Thermal load:

- Max. 650°C

Colour coding:

- Casing white, with element code

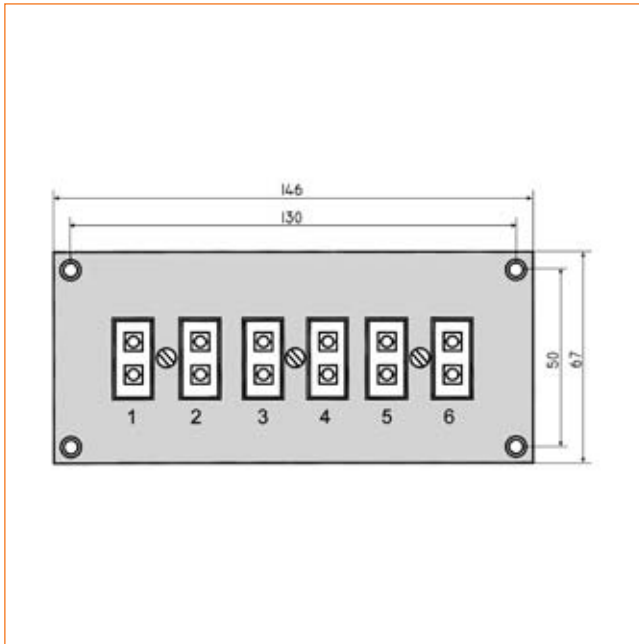
| Type | J/L | K | S |
|-----------|------|------|----------|
| Contact + | Fe | NiCr | Cu |
| Contact - | CuNi | Ni | Alloy#11 |

| | | | |
|---------|------------|------------------|------------------|
| Plug | On request | 99-91490010-HK00 | 99-91490010-HS00 |
| Coupler | On request | 99-91491010-HK00 | 99-91491010-HS00 |

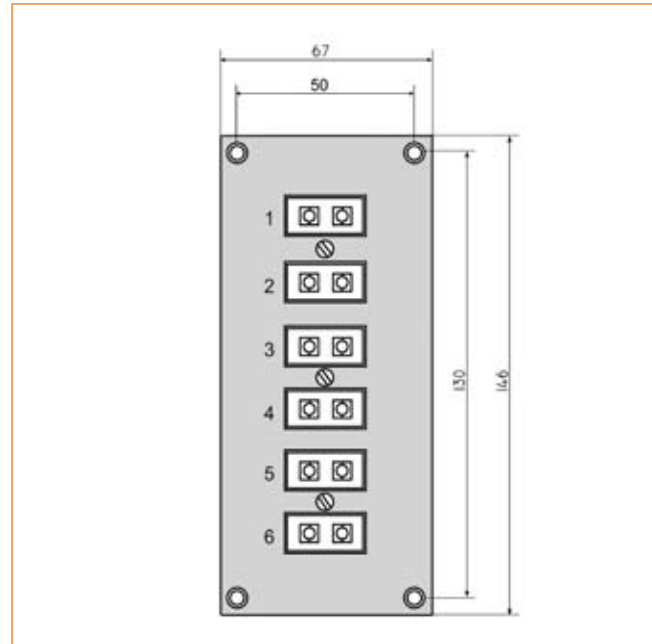




Standard panels – horizontal



Standard panels - vertical



Horizontal model

| Type | Dimensions [mm] | J to IEC "black" | L to DIN "blue" | K to IEC "green" | N to IEC "violet" |
|-----------------------|-----------------|---------------------|--------------------|---------------------|----------------------|
| 1 measuring circuit | 38 x 38 | 98-91442111-HJ01 | 98-91442121-HL01 | 98-91442111-HK01 | |
| 6 measuring circuits | 146 x 67 | 98-91442111-HJ06 | 98-91442121-HL06 | 98-91442111-HK06 | |
| 12 measuring circuits | 260 x 67 | 98-91442111-HJ12 | 98-91442121-HL12 | 98-91442111-HK12 | |
| 24 measuring circuits | 260 x 115 | 98-91442111-HJ24 | 98-91442121-HL24 | 98-91442111-HK24 | |

Horizontal model

| Type | Dimensions [mm] | S to IEC "orange" | B to IEC "grey" | N to IEC "violet" |
|-----------------------|-----------------|----------------------|--------------------|----------------------|
| 1 measuring circuit | 38 x 38 | 98-91442111-HS01 | 98-91442111-HB01 | 98-91442111-HN01 |
| 6 measuring circuits | 146 x 67 | 98-91442111-HS06 | 98-91442111-HB06 | 98-91442111-HN06 |
| 12 measuring circuits | 260 x 67 | 98-91442111-HS12 | 98-91442111-HB12 | 98-91442111-HN12 |
| 24 measuring circuits | 260 x 115 | 98-91442111-HS24 | 98-91442111-HB24 | 98-91442111-HN24 |

Vertical model

| Type | Dimensions [mm] | J to IEC "black" | L to DIN "blue" | K to IEC "green" |
|----------------------|-----------------|---------------------|--------------------|---------------------|
| 6 measuring circuits | 72 x 116 | 98-91442211-HJ06 | 98-91442221-HL06 | 98-91442211-HK06 |

Vertical model

| Type | Dimensions [mm] | S to IEC "orange" | B to IEC "grey" | N to IEC "violet" |
|----------------------|-----------------|----------------------|--------------------|----------------------|
| 6 measuring circuits | 72 x 116 | 98-91442211-HS06 | 98-91442211-HB06 | 98-91442211-HN06 |

Application:

For permanent installation on control panels and casings of any kind for inserting standard plugs.

Conductor cross-section:

– Secure clamping from Ø 0.2 mm to Ø 2.0 mm

Thermal load:

– Max. 200°C

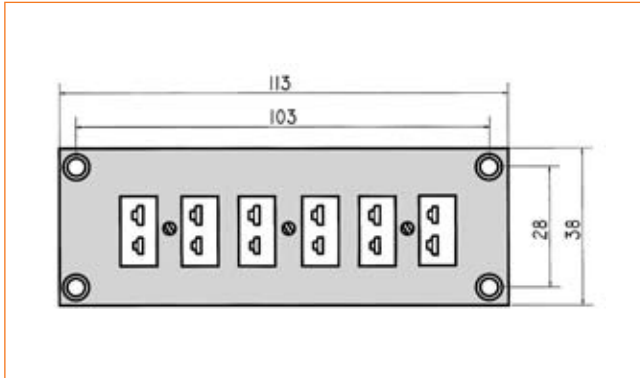
Mechanical structure:

- Aluminium front panel, anodised, protected against corrosion.
- Measuring circuits numbered, abrasion-resistant, smudge-proof
- Fastenings made of stainless steel and nickel-plated brass
- Assembly and construction design prevent the assembled built-in couplers from being pushed in or pressed out.
- Slanted connection planes enable access for the wires to be connected and disconnected while installed.
- Only a few screws need to be removed in order to replace individual built-in couplers
- Standard panels for 1 to 6 measuring circuits





Miniature panels – horizontal:



Application:

For permanent installation on control panels and casings of any kind for inserting miniature plugs.

Conductor cross-section:

– Secure clamping from Ø 0.1 mm to Ø 0.6 mm

Thermal load:

– Max. 200°C

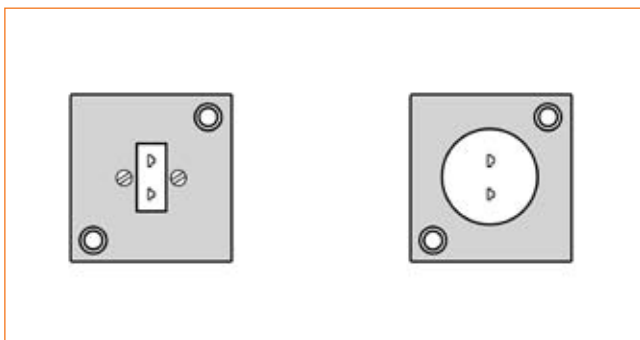
Mechanical structure:

- Aluminium front panel, anodised, protected against corrosion
- Measuring circuits numbered, abrasion-resistant, smudge-proof
- Fastenings made of stainless steel and nickel-plated brass
- Assembly and construction design prevent the assembled built-in couplers from being pushed in or pressed out.
- Slanted connection planes enable access for the wires to be connected and disconnected while installed.
- Only a few screws need to be removed in order to replace individual built-in couplers
- Standard panels for 1 to 6 measuring circuits

| Type | Dimensions | J to IEC | L to DIN | K to IEC |
|-----------------------|------------|------------------|------------------|------------------|
| Colour | | “black” | “blue” | “green” |
| 1 measuring circuit | 38 x 38 | 98-91452111-HJ01 | 98-91452121-HL01 | 98-91452111-HK01 |
| 6 measuring circuits | 113 x 38 | 98-91452111-HJ06 | 98-91452121-HL06 | 98-91452111-HK06 |
| 12 measuring circuits | 203 x 38 | 98-91452111-HJ12 | 98-91452121-HL12 | 98-91452111-HK12 |
| 24 measuring circuits | 203 x 76 | 98-91452111-HJ24 | 98-91452121-HL24 | 98-91452111-HK24 |

| Type | Dimensions | S to IEC | B to IEC | N to IEC |
|-----------------------|------------|------------------|------------------|------------------|
| Colour | | “orange” | “grey” | “violet” |
| 1 measuring circuit | 38 x 38 | 98-91452111-HS01 | 98-91452111-HB01 | 98-91452111-HN01 |
| 6 measuring circuits | 113 x 38 | 98-91452111-HS06 | 98-91452111-HB06 | 98-91452111-HN06 |
| 12 measuring circuits | 203 x 38 | 98-91452111-HS12 | 98-91452111-HB12 | 98-91452111-HN12 |
| 24 measuring circuits | 203 x 76 | 98-91452111-HS24 | 98-91452111-HB24 | 98-91452111-HN24 |

Standard miniature panel jacks – rectangular and round:



Application:

For permanent installation on control panels and casings of any kind for inserting miniature plugs.

Conductor cross-section:

– Secure clamping from Ø 0.1 mm to Ø 0.6 mm

Thermal load:

– Max. 200°C

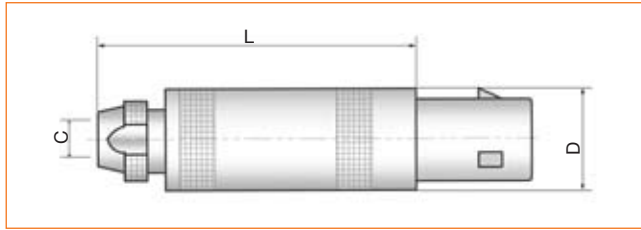
| Type | J to IEC | L to DIN | K to IEC |
|-------------|------------------|------------------|------------------|
| Colour | “black” | “blue” | “green” |
| Rectangular | 98-91456011-HJ00 | 98-91456021-HL00 | 98-91456011-HK00 |
| Round | 98-91456012-HJ00 | 98-91456022-HL00 | 98-91456012-HK00 |

| Type | S to IEC | B to IEC | N to IEC |
|-------------|------------------|------------------|------------------|
| Colour | “orange” | “grey” | “violet” |
| Rectangular | 98-91456011-HS00 | 98-91456011-HB00 | 98-91456011-HN00 |
| Round | 98-91456012-HS00 | 98-91456012-HB00 | 98-91456012-HN00 |

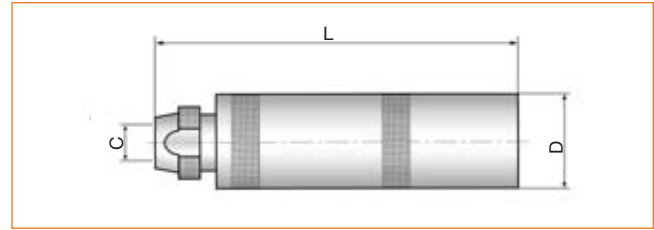




Plug, Lemo^{*)}



Coupling, Lemo^{*)}



Lemo plug Size 0, L=34.5 mm D=9.0 mm C=4.2 mm

| No. of poles | Collet | Article number |
|--------------|-------------------------|------------------|
| 2 | 4.2 mm - cable collet | 98-91420202-0042 |
| 2 | 4.7 mm - cable collet | 98-91420202-0047 |
| 2 | 1.6 mm - thermal collet | 98-91420222-0016 |
| 2 | 2.1 mm - thermal collet | 98-91420222-0021 |
| 2 | 3.0 mm - thermal collet | 98-91420222-0030 |
| 4 | 4.2 mm - cable collet | 98-91420204-0042 |
| 4 | 4.7 mm - cable collet | 98-91420204-0047 |
| 4 | 1.6 mm - thermal collet | 98-91420224-0016 |
| 4 | 2.1 mm - thermal collet | 98-91420224-0021 |
| 4 | 3.0 mm - thermal collet | 98-91420224-0030 |

Lemo coupler Size 0, L=33,5 mm D=8,9 mm C=4,2 mm

| No. of poles | Collet | Article number |
|--------------|-------------------------|------------------|
| 2 | 4.2 mm - cable collet | 98-91420302-0042 |
| 2 | 4.7 mm - cable collet | 98-91420302-0047 |
| 2 | 1.6 mm - thermal collet | 98-91420322-0016 |
| 2 | 2.1 mm - thermal collet | 98-91420322-0021 |
| 2 | 3.0 mm - thermal collet | 98-91420322-0030 |
| 4 | 4.2 mm - cable collet | 98-91420304-0042 |
| 4 | 4.7 mm - cable collet | 98-91420304-0047 |
| 4 | 1.6 mm - thermal collet | 98-91420324-0016 |
| 4 | 2.1 mm - thermal collet | 98-91420324-0021 |
| 4 | 3.0 mm - thermal collet | 98-91420324-0030 |

Lemo plug Size 1, L=42,5 mm D=12,0 mm C=6,2 mm

| No. of poles | Collet | Article number |
|--------------|-------------------------|------------------|
| 2 | 3.7 mm - cable collet | 98-91421202-0037 |
| 2 | 4.7 mm - cable collet | 98-91421202-0047 |
| 2 | 1.6 mm - thermal collet | 98-91421222-0016 |
| 2 | 2.2 mm - thermal collet | 98-91421222-0022 |
| 2 | 3.1 mm - thermal collet | 98-91421222-0031 |
| 2 | 4.6 mm - thermal collet | 98-91421222-0046 |
| 2 | 6.1 mm - thermal collet | 98-91421222-0061 |
| 4 | 3.7 mm - cable collet | 98-91421204-0037 |
| 4 | 4.7 mm - cable collet | 98-91421204-0047 |
| 4 | 1.6 mm - thermal collet | 98-91421224-0016 |
| 4 | 2.2 mm - thermal collet | 98-91421224-0022 |
| 4 | 3.1 mm - thermal collet | 98-91421224-0031 |
| 4 | 4.6 mm - thermal collet | 98-91421224-0046 |
| 4 | 6.1 mm - thermal collet | 98-91421224-0061 |

Lemo coupler Size 1, L=40,5 mm D=11,0 mm C=6,2 mm

| No. of poles | Collet | Article number |
|--------------|-------------------------|------------------|
| 2 | 3.7 mm - cable collet | 98-91421302-0037 |
| 2 | 4.7 mm - cable collet | 98-91421302-0047 |
| 2 | 1.6 mm - thermal collet | 98-91421322-0016 |
| 2 | 2.2 mm - thermal collet | 98-91421322-0022 |
| 2 | 3.1 mm - thermal collet | 98-91421322-0031 |
| 2 | 4.6 mm - thermal collet | 98-91421322-0046 |
| 2 | 6.1 mm - thermal collet | 98-91421322-0061 |
| 4 | 3.7 mm - cable collet | 98-91421304-0037 |
| 4 | 4.7 mm - cable collet | 98-91421304-0047 |
| 4 | 1.6 mm - thermal collet | 98-91421324-0016 |
| 4 | 2.2 mm - thermal collet | 98-91421324-0022 |
| 4 | 3.1 mm - thermal collet | 98-91421324-0031 |
| 4 | 4.6 mm - thermal collet | 98-91421324-0046 |
| 4 | 6.1 mm - thermal collet | 98-91421324-0061 |

Lemo plug Size 2, L=52,0 mm D=14,8 mm C=8,5 mm

| No. of poles | Collet | Article number |
|--------------|-------------------------|------------------|
| 2 | 5.2 mm - cable collet | 98-91422202-0052 |
| 2 | 7.2 mm - cable collet | 98-91422202-0072 |
| 2 | 3.1 mm - thermal collet | 98-91422222-0031 |
| 2 | 4.6 mm - thermal collet | 98-91422222-0046 |
| 2 | 6.1 mm - thermal collet | 98-91422222-0061 |
| 4 | 5.2 mm - cable collet | 98-91422204-0042 |
| 4 | 7.2 mm - cable collet | 98-91422204-0047 |
| 4 | 3.1 mm - thermal collet | 98-91422224-0031 |
| 4 | 4.6 mm - thermal collet | 98-91422224-0046 |
| 4 | 6.1 mm - thermal collet | 98-91422224-0061 |

Lemo coupler Size 2, L=50,0 mm D=14,8 mm C=8,5 mm

| No. of poles | Collet | Article number |
|--------------|-------------------------|------------------|
| 2 | 5.2 mm - cable collet | 98-91422302-0052 |
| 2 | 7.2 mm - cable collet | 98-91422302-0072 |
| 2 | 3.1 mm - thermal collet | 98-91422322-0031 |
| 2 | 4.6 mm - thermal collet | 98-91422322-0046 |
| 2 | 6.1 mm - thermal collet | 98-91422322-0061 |
| 4 | 5.2 mm - cable collet | 98-91422304-0042 |
| 4 | 7.2 mm - cable collet | 98-91422304-0047 |
| 4 | 3.1 mm - thermal collet | 98-91422324-0031 |
| 4 | 4.6 mm - thermal collet | 98-91422324-0046 |
| 4 | 6.1 mm - thermal collet | 98-91422324-0061 |

Lemo plugs and couplers for connection to sheath thermocouples, resistance thermometers and supply lines

| | |
|--------------------------|-----------------------|
| Case: | Chromium-plated brass |
| Contacts: | Gold-plated brass |
| Insulation: | PEEK |
| Max. temperature: | 250°C |

^{*)} Lemo plug-and-socket connections Size 3 and panel jacks Sizes 1 and 2 available on request.



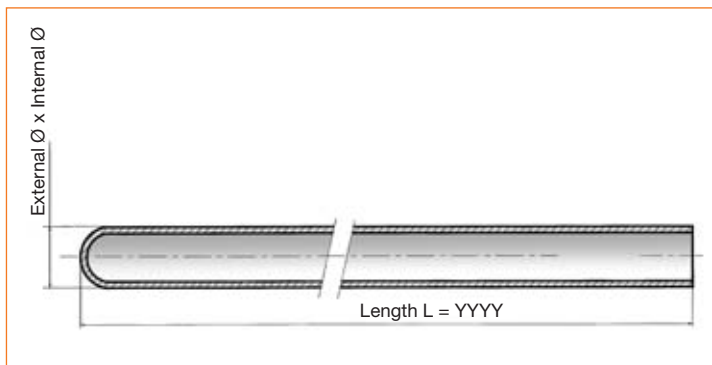


Models:

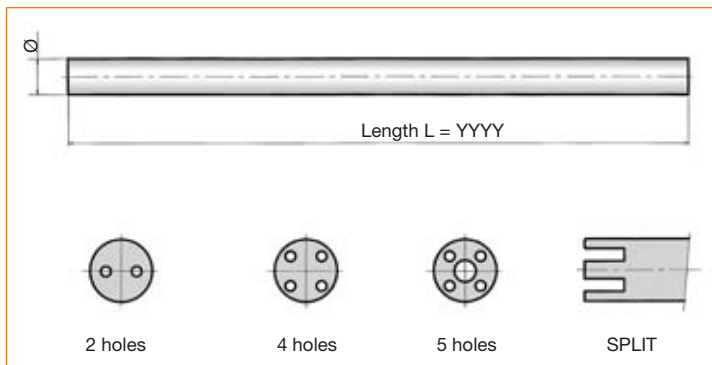
Open on both ends, closed on one end, open on both ends with a flange, closed on one end with a flange. We supply thermocouple thermowells, insulation rods and short insulation tubes for thermocouples made of the materials ALSINT 99.7 = TYPE C 799, PYTHAGORAS = TYPE C 610 and SILLIMANTIN 60 = TYPE C 530
Tolerances in accordance with DIN 40 680 are maintained. Tighter tolerances on request.

| Properties | Dim. | Alsint 99.7 | Pythagoras | Sillimantin 60 |
|---|-------------------|----------------|------------|----------------|
| Type acc. to DIN VDE 0335 | | C 799 | C 610 | C 530 |
| Chemical composition AL ₂ O ₃ | % | 99,7 | 60 | 80 |
| Type of body | | Gasproof | Gasproof | Porous |
| Bulk density | g/cm ³ | 3.8 | 2.7 | 2.4 |
| Application limit | °C | 1750 | 1600 | 1500 |
| Thermal conductivity 20-100°C | W/mK | 25 | 5 | 2 |
| Resistance to temperature changes | | Medium to good | Good | Very good |
| Special electrical resistance at RT | □ | 1 x 1014 | 1 x 1013 | - |
| Special electrical resistance at 600°C | | 1 x 108 | 1 x 106 | 1 x 106 |

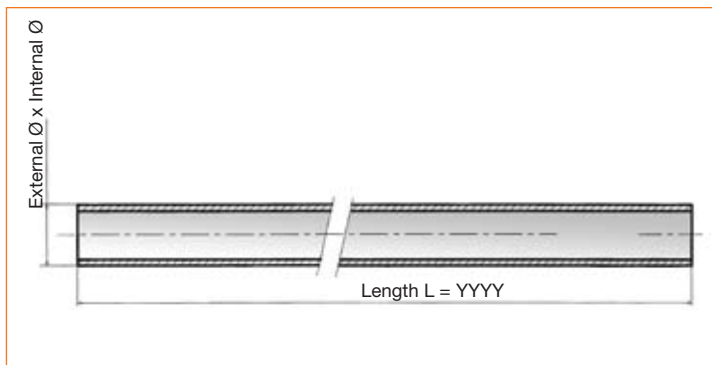
Ceramic protection tube closed on one end:



Insulation rod with 2, 4 or 5 holes:



Ceramic tube open at both ends:





Ceramic thermowells closed on one end:

Alsint 99.7 – C799

| Dimensions Ø Da x Di x L mm | Article number |
|-----------------------------|------------------|
| Ø 10 x 6 x 530 | 80-21100060-0530 |
| Ø 10 x 6 x 740 | 80-21100060-0740 |
| Ø 10 x 6 x 1030 | 80-21100060-1030 |
| Ø 10 x 6 x 1430 | 80-21100060-1430 |
| Ø 15 x 10 x 530 | 80-21150100-0530 |
| Ø 15 x 10 x 740 | 80-21150100-0740 |
| Ø 15 x 10 x 1030 | 80-21150100-1030 |
| Ø 15 x 10 x 1430 | 80-21150100-1430 |
| Ø 16 x 12 x 530 | 80-21160120-0530 |
| Ø 16 x 12 x 740 | 80-21160120-0740 |
| Ø 16 x 12 x 1030 | 80-21160120-1030 |
| Ø 16 x 12 x 1430 | 80-21160120-1430 |
| Ø 24 x 18 x 530 | 80-21240180-0530 |
| Ø 24 x 18 x 740 | 80-21240180-0740 |
| Ø 24 x 18 x 1030 | 80-21240180-1030 |
| Ø 24 x 18 x 1430 | 80-21240180-1430 |

Pythagoras – C610

| Dimensions Ø Da x Di x L mm | Article number |
|-----------------------------|------------------|
| Ø 10 x 7 x 530 | 80-11100070-0530 |
| Ø 10 x 7 x 740 | 80-11100070-0740 |
| Ø 10 x 7 x 1030 | 80-11100070-1030 |
| Ø 10 x 7 x 1430 | 80-11100070-1430 |
| Ø 15 x 11 x 530 | 80-11150110-0530 |
| Ø 15 x 11 x 740 | 80-11150110-0740 |
| Ø 15 x 11 x 1030 | 80-11150110-1030 |
| Ø 15 x 11 x 1430 | 80-11150110-1430 |
| Ø 16 x 12 x 530 | 80-11160120-0530 |
| Ø 16 x 12 x 740 | 80-11160120-0740 |
| Ø 16 x 12 x 1030 | 80-11160120-1030 |
| Ø 16 x 12 x 1430 | 80-11160120-1430 |
| Ø 24 x 19 x 530 | 80-11240190-0530 |
| Ø 24 x 19 x 740 | 80-11240190-0740 |
| Ø 24 x 19 x 1030 | 80-11240190-1030 |
| Ø 24 x 19 x 1430 | 80-11240190-1430 |

Sillimantín 60 – C530

| Dimensions Ø Da x Di x L mm | Article number |
|-----------------------------|------------------|
| Ø 26 x 18 x 530 | 80-01260180-0530 |
| Ø 26 x 18 x 740 | 80-01260180-0740 |
| Ø 26 x 18 x 1530 | 80-01260180-1530 |
| Ø 26 x 18 x 1230 | 80-01260180-1230 |
| Ø 26 x 18 x 1430 | 80-01260180-1430 |

Comment: Ceramic tubes open on both ends are available in the same dimensions. Special dimensions – on request !

Insulation rods:

Alsint 99.7 – C799

| Dimensions Ø Da x Di x L mm | Article number |
|------------------------------|------------------|
| Ø 5.5 x 1.2 x 560 (2 holes) | 81-02205512-0560 |
| Ø 5.5 x 1.2 x 770 (2 holes) | 81-02205512-0770 |
| Ø 5.5 x 1.2 x 1060 (2 holes) | 81-02205512-1060 |
| Ø 5.5 x 1.2 x 1460 (2 holes) | 81-02205512-1460 |
| Ø 5.5 x 1.2 x 560 (4 holes) | 81-02405512-0560 |
| Ø 5.5 x 1.2 x 770 (4 holes) | 81-02405512-0770 |
| Ø 5.5 x 1.2 x 1060 (4 holes) | 81-02405512-1060 |
| Ø 5.5 x 1.2 x 1460 (4 holes) | 81-02405512-1460 |
| Ø 8.5 x 1.5 x 560 (2 holes) | 81-02208515-0560 |
| Ø 8.5 x 1.5 x 770 (2 holes) | 81-02208515-0770 |
| Ø 8.5 x 1.5 x 1060 (2 holes) | 81-02208515-1060 |
| Ø 8.5 x 1.5 x 1460 (2 holes) | 81-02208515-1460 |
| Ø 8.5 x 1.5 x 560 (4 holes) | 81-02408515-0560 |
| Ø 8.5 x 1.5 x 770 (4 holes) | 81-02408515-0770 |
| Ø 8.5 x 1.5 x 1060 (4 holes) | 81-02408515-1060 |
| Ø 8.5 x 1.5 x 1460 (4 holes) | 81-02408515-1460 |

Pythagoras – C610

| Dimensions Ø Da x Di x L mm | Article number |
|------------------------------|------------------|
| Ø 5.5 x 1.2 x 560 (2 holes) | 81-01205512-0560 |
| Ø 5.5 x 1.2 x 770 (2 holes) | 81-01205512-0770 |
| Ø 5.5 x 1.2 x 1060 (2 holes) | 81-01205512-1060 |
| Ø 5.5 x 1.2 x 1460 (2 holes) | 81-01205512-1460 |
| Ø 5.5 x 1.2 x 560 (4 holes) | 81-01405512-0560 |
| Ø 5.5 x 1.2 x 770 (4 holes) | 81-01405512-0770 |
| Ø 5.5 x 1.2 x 1100 (4 holes) | 81-01405512-1060 |
| Ø 5.5 x 1.2 x 1460 (4 holes) | 81-01405512-1460 |
| Ø 8.5 x 1.5 x 560 (4 holes) | 81-01408515-0560 |
| Ø 8.5 x 1.5 x 770 (4 holes) | 81-01408515-0770 |
| Ø 8.5 x 1.5 x 1060 (4 holes) | 81-01408515-1060 |
| Ø 8.5 x 1.5 x 1460 (4 holes) | 81-01408515-1460 |
| Ø 8.5 x 1.5 x 560 (5 holes) | 81-01508515-0560 |
| Ø 8.5 x 1.5 x 770 (5 holes) | 81-01508515-0770 |
| Ø 8.5 x 1.5 x 1060 (5 holes) | 81-01508515-1060 |
| Ø 8.5 x 1.5 x 1460 (5 holes) | 81-01508515-1460 |

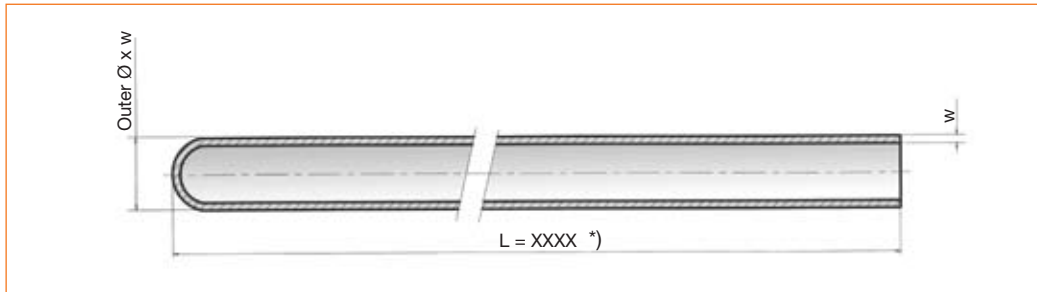
The insulation rods are available with one or with two slits for the welded measuring point if required.

Comment: The thermowells and insulation rods specified above are a selection of the most widely-used dimensions. We will gladly make an offer for any other lengths or dimensions you may require.

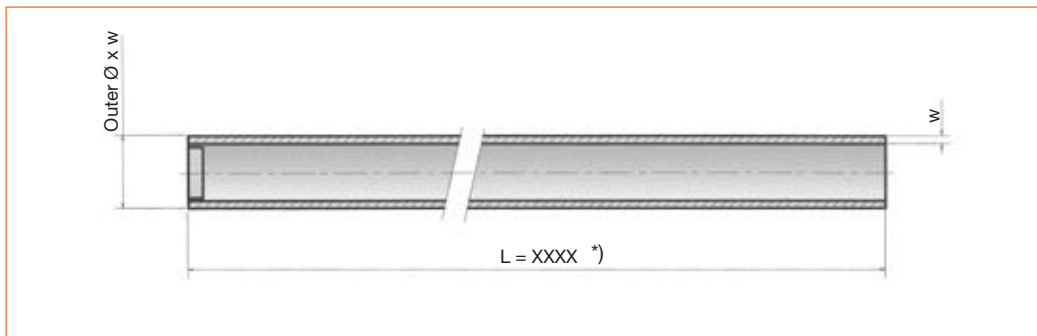


The metal thermowells specified in this section are limited to those made of the most-widely used materials. Tubes of this kind are used for standard temperature measurements, mainly in gaseous and liquid media. The choice of thermowell will depend on the space available, the type of fastening and stresses caused by temperatures, pressure, flows and chemical corrosion.

Model with a semi-circular, closed base, the tube is seamlessly extruded or it has welded joints



Model with a closed round base, the tube is seamlessly extruded or it has welded joints



| Material / Dimensions / Model | Properties / Article number |
|--|--|
| 1.0305 - Tube with a welded base, seamlessly extruded | Mostly air case-hardened; low resistance to sulphurous gases, medium resistance to nitrogenous gases. Thermal stability up to 550°C |
| 15 x 2 mm | 82-50041500-xxxx.0200 *) |
| 22 x 2 mm | 82-50042200-xxxx.0200 |
| 1.4541 - Tube with welded base, seamlessly extruded | High degree of corrosion-resistance to numerous aggressive media such as combustion gases. Resistant to particle decomposition in accordance with DIN 50914, to 700°C |
| 11 x 1 mm | 82-50101100-xxxx.0100 |
| 15 x 2 mm | 82-50101500-xxxx.0200 |
| 22 x 2 mm | 82-50102200-xxxx.0200 |
| 1.4571 - Tube with a welded base, seamlessly extruded | As 1.4541, but also corrosion-resistant to certain acids such as phosphoric, acetic and sulphuric acid due to the addition of approx. 2% molybdenum. Resistant to pitting, up to 700°C |
| 9 x 1 mm | 82-50010900-xxxx.0100 |
| 10 x 1.5 mm | 82-50011000-xxxx.0150 |
| 11 x 1 mm | 82-50011100-xxxx.0100 |
| 11 x 2 mm | 82-50011100-xxxx.0200 |
| 15 x 2 mm | 82-50011500-xxxx.0200 |
| 15 x 3 mm | 82-50011500-xxxx.0300 |
| 22 x 2 mm | 82-50012200-xxxx.0200 |

*) xxxx stands for the overall length of the required thermowell in mm.





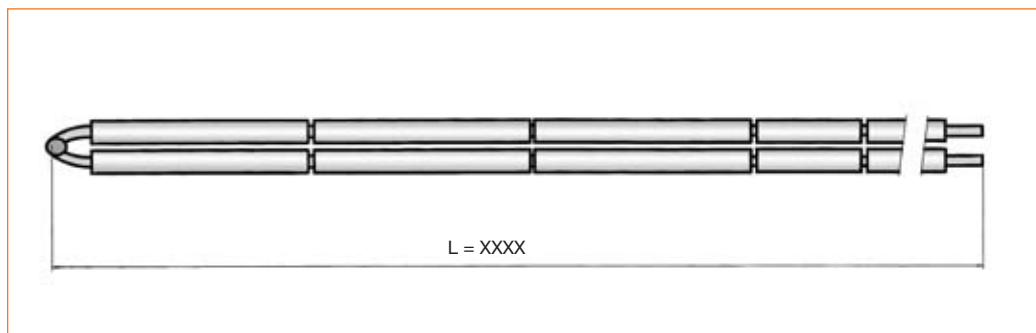
| Material / Dimensions / Model | Properties / Article number |
|--|---|
| 1.4762 - Tube with semi-circular closed base, welded joints | Good resistance properties to sulphurous gases; low resistance to nitrogenous gases, up to 1200°C |
| 15 x 2 mm | 82-30021500-xxxx.0200 *) |
| 22 x 2 mm | 82-30022200-xxxx.0200 |
| 1.4762 - Tube with welded base, welded joints | Good resistance properties against sulphurous gases; low resistance to nitrogenous gases, up to 1200°C |
| 15 x 2 mm | 82-20021500-xxxx.0200 |
| 22 x 2 mm | 82-20022200-xxxx.0200 |
| 1.4841 - Tube with semi-circular closed base, welded joints | Good resistance properties when used in nitrogenous gases; low resistance to sulphurous gases, operation temperature up to 1150°C |
| 15 x 2 mm | 82-30031500-xxxx.0200 |
| 22 x 2 mm | 82-30032200-xxxx.0200 |
| 1.4841 - Tube with welded base, welded joints | Good resistance properties when used in nitrogenous gases; low resistance to sulphurous gases, operation temperature up to 1150°C |
| 15 x 2 mm | 82-30031500-xxxx.0200 |
| 15 x 2 mm | 82-20031500-xxxx.0200 |
| 22 x 2 mm | 82-20032200-xxxx.0200 |
| 1.4893 - Tube with semi-circular closed base, welded joints | Extremely good resistance properties in a reducing sulphurous atmosphere. Very good resistance properties in an oxidising atmosphere. Good resistance properties against corrosion caused by combustion ash, in copper, lead and zinc molten metals, up to 1150°C |
| 24 x 3 mm | 82-60072400-xxxx.0300 |
| 26 x 4 mm | 82-60072600-xxxx.0400 |
| 2.4816 - Tube with welded base, seamlessly extruded | Good general corrosion resistance properties, resistant to stress corrosion cracking. Excellent resistance properties against oxidation. Not recommendable for gases containing CO ₂ and sulphur above 550°C and sodium above 750°C. Stable in air up to 1100°C. |
| 14 x 2 mm | 82-50081400-xxxx.0200 |
| 22 x 2 mm | 82-50082200-xxxx.0200 |

*) xxxx stands for the overall length of the required thermowell in mm.





a) Base-metal thermocouples with both limbs insulated with single-hole insulation tubes for thermocouples in product groups 00-TMT and 05-TKT



Type NiCr-Ni/K DIN IEC 584

| Diameter | Insulation | Max. temp. | Continuous temp. | Article number |
|----------|---|------------|------------------|------------------|
| 1.0 mm | Single-hole tube 2.7 x 1.7 x 50 mm C610 | 1000°C | 800°C | On request |
| 1.38 mm | Single-hole tube 4 x 2 x 50 mm C610 | 1100°C | 900°C | 94-211382xx-xxxx |
| 1.5 mm | Single-hole tube 4 x 2 x 50 mm C610 | 1100°C | 900°C | 94-211502xx-xxxx |
| 2.0 mm | Single-hole tube 4.5 x 2.5 x 50 mm C610 | 1200°C | 1000°C | 94-212002xx-xxxx |
| 3.0 mm | Single-hole tube 6 x 4 x 50 mm C610 | 1200°C | 1000°C | 94-213002xx-xxxx |

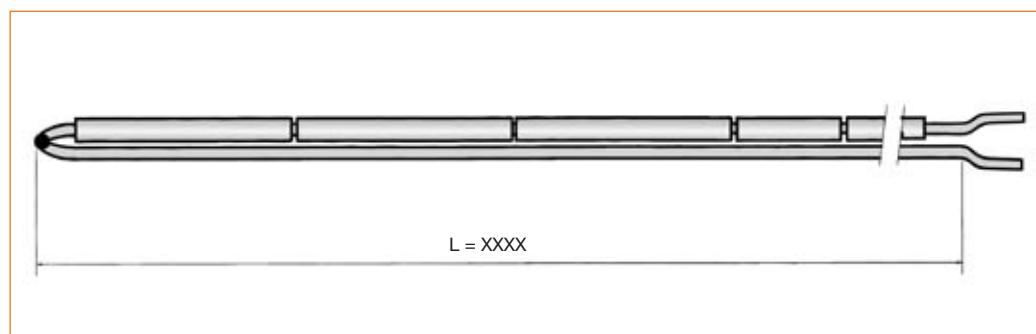
Type Fe-CuNi/L DIN 43710

| | | | | |
|--------|-------------------------------------|-------|-------|------------------|
| 1.5 mm | Single-hole tube 4 x 2 x 50 mm C610 | 800°C | 600°C | 94-221502xx-xxxx |
| 2.0 mm | Single-hole tube 4 x 2 x 50 mm C610 | 900°C | 700°C | 94-222002xx-xxxx |
| 3.0 mm | Single-hole tube 4 x 2 x 50 mm C610 | 900°C | 700°C | 94-223002xx-xxxx |

Type Nicrosil-Nisil/N DIN IEC 584

| | | | | |
|--------|-------------------------------------|--------|--------|------------------|
| 1.5 mm | Single-hole tube 4 x 2 x 50 mm C610 | 1100°C | 1000°C | 94-241502xx-xxxx |
| 2.0 mm | Single-hole tube 4 x 2 x 50 mm C610 | 1200°C | 1100°C | 94-242002xx-xxxx |
| 3.0 mm | Single-hole tube 4 x 2 x 50 mm C610 | 1200°C | 1100°C | 94-243002xx-xxxx |

b) Base-metal thermocouples with one limb insulated for thermocouples in product groups 00-TMT and 05-TKT



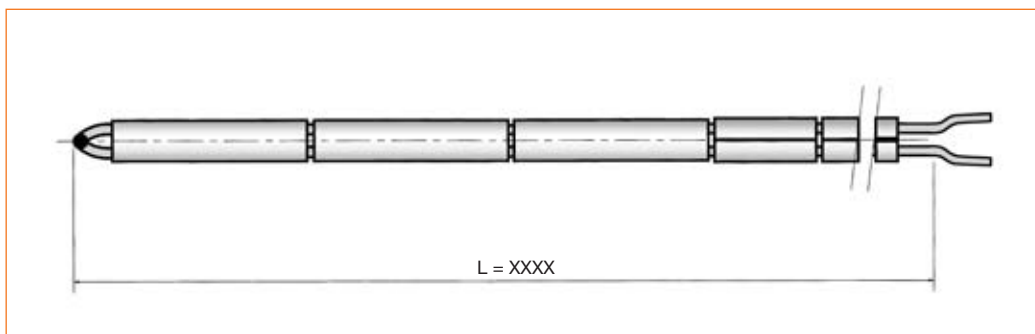
Type NiCr-Ni/K DIN IEC 584

| Diameter | Insulation | Max. temp. | Continuous temp. | Article number |
|----------|---|------------|------------------|------------------|
| 1.0 mm | Single-hole tube 2.7 x 1.7 x 50 mm C610 | 1000°C | 800°C | 94-211002xx-xxxx |
| 1.38 mm | Single-hole tube 4 x 2 x 50 mm C610 | 1100°C | 900°C | 94-211382xx-xxxx |
| 1.5 mm | Single-hole tube 4 x 2 x 50 mm C610 | 1100°C | 900°C | 94-212002xx-xxxx |
| 2.0 mm | Single-hole tube 4.5 x 2.5 x 50 mm C610 | 1200°C | 1000°C | 94-212002xx-xxxx |
| 3.0 mm | Single-hole tube 6 x 4 x 50 mm C610 | 1200°C | 1000°C | 94-213002xx-xxxx |





a) Base-metal thermocouples with both limbs insulated with two-hole insulation tubes for thermocouples in product groups 00-TMT and 05-TKT



Type NiCr-Ni/K DIN IEC 584

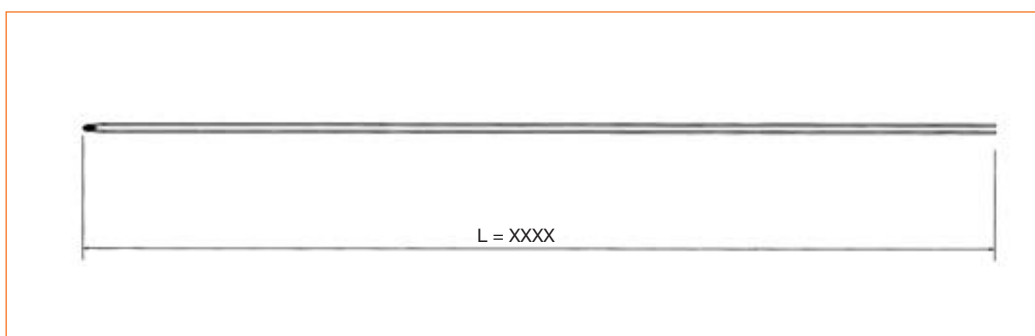
| Diameter | Insulation | Max. temp. | Continuous temp. | Article number |
|----------|------------------|------------|------------------|------------------|
| 1.0 mm | 2-hole tube C610 | 1000°C | 800°C | On request |
| 1.38 mm | 2-hole tube C610 | 1100°C | 900°C | 94-211382xx-xxxx |
| 1.5 mm | 2-hole tube C610 | 1100°C | 900°C | 94-211502xx-xxxx |
| 2.0 mm | 2-hole tube C610 | 1200°C | 1000°C | 94-212002xx-xxxx |
| 3.0 mm | 2-hole tube C610 | 1200°C | 1000°C | 94-213002xx-xxxx |

Type Fe-CuNi/L DIN 43710

| | | | | |
|--------|------------------|-------|-------|------------------|
| 1.5 mm | 2-hole tube C610 | 800°C | 600°C | 94-221502xx-xxxx |
| 2.0 mm | 2-hole tube C610 | 900°C | 700°C | 94-222002xx-xxxx |
| 3.0 mm | 2-hole tube C610 | 900°C | 700°C | 94-223002xx-xxxx |

Precious-metal thermocouples

b) Precious-metal thermocouples, not insulated, for thermocouples in product groups 00-TMT and 05-TKT



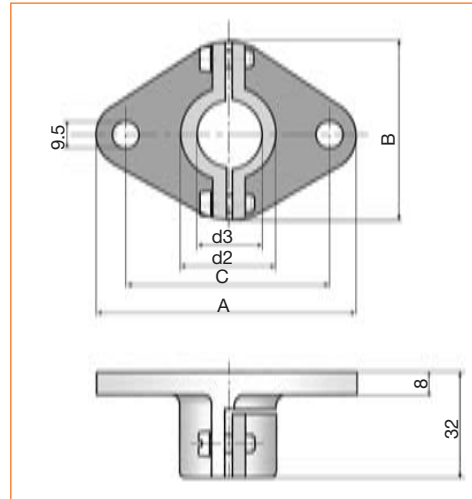
| Diameter | Insulation | Max. temp. | Continuous temp. | Article number |
|----------|----------------|------------|------------------|------------------|
| 0.35 mm | PtRh13-Pt/R | 1450°C | 1300°C | 94-110351xx-xxxx |
| 0.5 mm | PtRh13-Pt/R | 1600°C | 1500°C | 94-110501xx-xxxx |
| 0.35 mm | PtRh10-Pt/S | 1450°C | 1300°C | 94-100351xx-xxxx |
| 0.5 mm | PtRh10-Pt/S | 1600°C | 1500°C | 94-100501xx-xxxx |
| 0.35 mm | PtRh30-PtRh6/B | 1600°C | 1500°C | 94-120351xx-xxxx |
| 0.5 mm | PtRh30-PtRh6/B | 1800°C | 1650°C | 94-120501xx-xxxx |





A) Stop flange

for fastening the thermal sensor
to the wall of the installation point

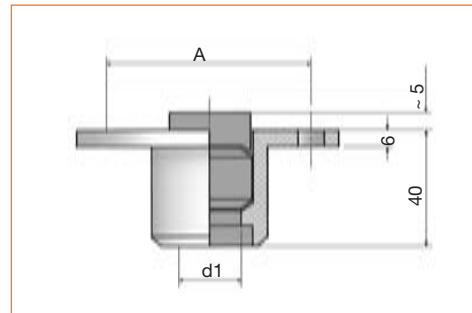


- Material: grey cast iron
- Movable
- Not gasproof

| | A | B | C | d ₂ | d ₃ | Article number |
|-----------------|----|----|----|----------------|----------------|------------------|
| Diameter | | | | | | |
| Thermowell | | | | | | |
| or Holding tube | | | | | | |
| [mm] | | | | | | |
| 15 | 75 | 50 | 55 | 26 | 16 | 89-11015001-0000 |
| 22 | 90 | 65 | 70 | 33 | 23 | 89-11022001-0000 |
| 26 to 29 | 90 | 65 | 70 | 35 | 29 | 89-11026001-0000 |
| 32 | 90 | 65 | 70 | 43 | 33 | 89-11032001-0000 |

B) Counter flange

in connection with the stop
flange for gasproof installation of
the thermal sensor. The counter-
flange is welded to the wall of the
installation point.



- Material: steel

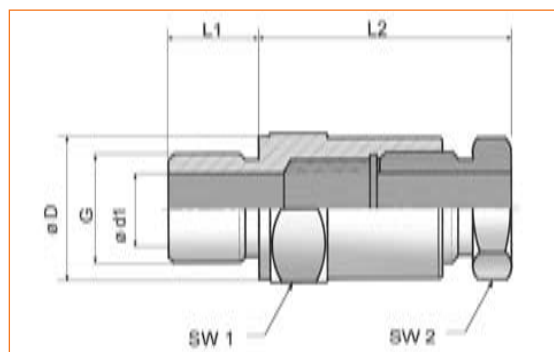
| | A | B | C | d ₁ | d ₂ | d ₃ | Article number |
|------------|----|----|----|----------------|----------------|----------------|------------------|
| Diameter | | | | | | | |
| Metal | | | | | | | |
| thermowell | | | | | | | |
| [mm] | | | | | | | |
| 15 | 75 | 50 | 55 | 28 | 35 | 17 | 89-21015001-0000 |
| 22 | 90 | 65 | 70 | 39 | 43 | 24 | 89-21022001-0000 |
| 26 | 90 | 65 | 70 | 39 | 43 | 28 | 89-21026001-0000 |
| 32 | 90 | 65 | 70 | 39 | 43 | 34 | 89-21032001-0000 |





C) Mounting thread

Gasproof, for screwing into the wall of the installation point

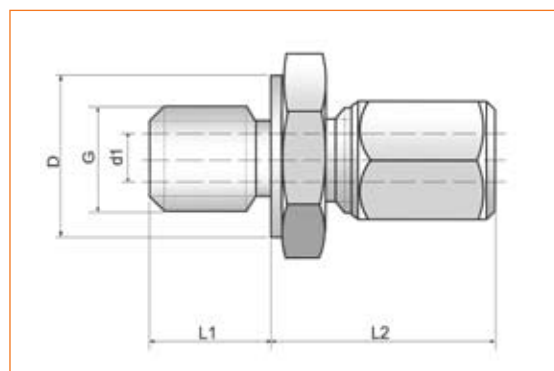


| Tube-Ø d1 | Thread G | Length L1 [mm] | Length L2 [mm] | Collar D [mm] | SW1 [mm] | SW2 [mm] | Material/ Surface | Article number |
|--------------|-------------|----------------------|----------------------|---------------------|-------------|-------------|----------------------|------------------|
| 12 | G ½ A | 16 | 60 | 27 | 27 | 27 | Steel / zinc-coated | 89-34212001-G012 |
| 15 | G ½ A | 16 | 60 | 30 | 30 | 27 | Steel / zinc-coated | 89-34215001-G012 |
| 15 | G ½ A | 16 | 60 | 27 | 27 | 27 | Stainless steel | 89-36115001-G012 |
| 15 | G ¾ A | 18 | 60 | 32 | 32 | 27 | Steel / zinc-coated | 89-34215001-G034 |
| 15 | G ¾ A | 18 | 60 | 32 | 27 | 27 | Stainless steel | 89-36115001-G034 |
| 22 | G 1 A | 20 | 65 | 40 | 46 | 41 | Steel / untreated | 89-32122001-G100 |
| 22 | G 1 A | 20 | 65 | 40 | 41 | 41 | Steel / zinc-coated | 89-34222001-G100 |
| 32 | G 1 ¼ A | 25 | 75 | 49 | 50 | 46 | Steel / burnished | 89-33132001-G114 |
| 32 | G 1 ¼ A | 25 | 75 | 49 | 50 | 46 | Steel / burnished | 89-33132001-G112 |

Further information on request. Dimensions may deviate from those indicated.

D) Screw fastening for thermal sensors Ø 1.0 mm to Ø 10.0 mm

Gasproof, for screwing into the wall of the installation point



The installation length for clamping rings made of SS and steel can only be adjusted once when the sleeve nut is tightened; Teflon can be repeatedly adjusted.

| Diameter d1 | Thread G | Length L1 [mm] | Length L2 [mm] | Collar D [mm] | Material/ Surface | Article number |
|---------------------------------------|-------------|----------------------|----------------------|---------------------|----------------------|------------------|
| Ø 1.0 Clamping ring, Teflon | M 8 x 1 | 8 | 20 | 11,5 | zinc-coated | 89-44501001-MF08 |
| Ø 1.5 Clamping ring, stainless steel | M 8 x 1 | 8 | 20 | 11,5 | Stainless steel | 89-46401501-MF08 |
| Ø 2.0 Clamping ring, Teflon | M 8 x 1 | 8 | 20 | 11,5 | zinc-coated | 89-44502001-MF08 |
| Ø 3.0 Clamping ring, stainless steel | G ¼ A | 12 | 25 | 18 | Stainless steel | 89-46403001-G014 |
| Ø 4.5 Clamping ring, Teflon | G ¼ A | 12 | 25 | 18 | zinc-coated | 89-44504501-G014 |
| Ø 6.0 Clamping ring, stainless steel | G ½ A | 14 | 30 | 26 | Stainless steel | 89-46406001-G012 |
| Ø 8.0 Clamping ring, Teflon | G ½ A | 14 | 30 | 26 | zinc-coated | 89-44508001-G012 |
| Ø 10.0 Clamping ring, stainless steel | G ½ A | 14 | 30 | 26 | Stainless steel | 89-44510001-G012 |

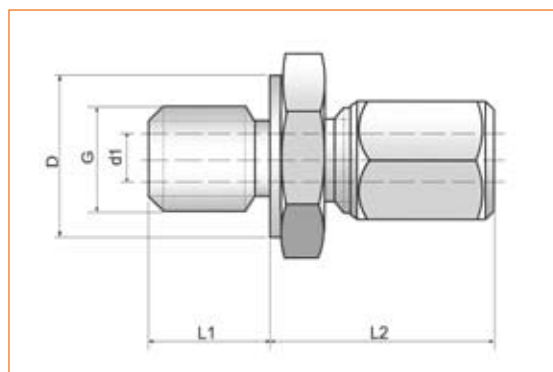
Further information on request. Dimensions may deviate from those indicated.





D) Screw fastening for thermal sensors Ø 1.0 mm to Ø 12.0 mm

Gasproof, for screwing into the wall of the installation point



The installation length for clamping rings made of SS and steel can only be adjusted once when the sleeve nut is tightened; Teflon can be repeatedly adjusted.

| Diameter d1 | Thread G | Length L1 | Length L2 | Collar D | Material/ Surface | Article number |
|---------------------------------------|-------------|--------------|--------------|-------------|----------------------|------------------|
| | [mm] | [mm] | [mm] | [mm] | | |
| Ø 1.0 Clamping ring, Teflon | M 8 x 1 | 8 | 20 | 11,5 | Stainless steel | 89-46501001-MF08 |
| Ø 1.0 Clamping ring, stainless steel | M 8 x 1 | 8 | 20 | 11,5 | zinc-coated | 89-44401001-MF08 |
| Ø 1.5 Clamping ring, Teflon | M 8 x 1 | 8 | 20 | 11,5 | Stainless steel | 89-46501501-MF08 |
| Ø 1.5 Clamping ring, Teflon | M 8 x 1 | 8 | 20 | 11,5 | zinc-coated | 89-44501501-MF08 |
| Ø 1.5 Clamping ring, stainless steel | M 8 x 1 | 8 | 20 | 11,5 | Stainless steel | 89-46401501-MF08 |
| Ø 1.5 Clamping ring, stainless steel | M 8 x 1 | 8 | 20 | 11,5 | zinc-coated | 89-44401501-MF08 |
| Ø 2.0 Clamping ring, Teflon | M 8 x 1 | 8 | 20 | 11,5 | zinc-coated | 89-44502001-MF08 |
| Ø 2.0 Clamping ring, Teflon | M 8 x 1 | 8 | 20 | 11,5 | Stainless steel | 89-46502001-MF08 |
| Ø 3.0 Clamping ring, Teflon | M 8 x 1 | 8 | 20 | 11,5 | Stainless steel | 89-46503001-MF08 |
| Ø 3.0 Clamping ring, Teflon | M 8 x 1 | 8 | 20 | 11,5 | zinc-coated | 89-44503001-MF08 |
| Ø 3.0 Clamping ring, stainless steel | M 8 x 1 | 8 | 20 | 11,5 | Stainless steel | 89-46403001-MF08 |
| Ø 3.0 Clamping ring, stainless steel | M 8 x 1 | 8 | 20 | 11,5 | zinc-coated | 89-44403001-MF08 |
| Ø 3.0 Clamping ring, Teflon | G ½ A | 8 | 20 | 11,5 | Stainless steel | 89-46503001-G018 |
| Ø 3.0 Clamping ring, Teflon | G ¼ A | 12 | 25 | 18 | Stainless steel | 89-46503001-G014 |
| Ø 3.0 Clamping ring, Teflon | G ¼ A | 12 | 25 | 18 | zinc-coated | 89-44503001-G014 |
| Ø 3.0 Clamping ring, stainless steel | G ¼ A | 12 | 25 | 18 | Stainless steel | 89-46403001-G014 |
| Ø 3.0 Clamping ring, stainless steel | G ¼ A | 12 | 25 | 18 | zinc-coated | 89-44403001-G014 |
| Ø 3.0 Clamping ring, Teflon | G ½ A | 14 | 30 | 26 | Stainless steel | 89-46503001-G012 |
| Ø 3.0 Clamping ring, stainless steel | G ½ A | 14 | 30 | 26 | Stainless steel | 89-46403001-G012 |
| Ø 4.5 Clamping ring, Teflon | G ¼ A | 12 | 25 | 18 | Stainless steel | 89-46504501-G014 |
| Ø 4.5 Clamping ring, Teflon | G ¼ A | 12 | 25 | 18 | zinc-coated | 89-44504501-G014 |
| Ø 4.5 Clamping ring, stainless steel | G ¼ A | 12 | 25 | 18 | Stainless steel | 89-46404501-G014 |
| Ø 4.5 Clamping ring, stainless steel | G ¼ A | 12 | 25 | 18 | zinc-coated | 89-44404501-G014 |
| Ø 4.5 Clamping ring, Teflon | G ½ A | 12 | 25 | 18 | Stainless steel | 89-46504501-G012 |
| Ø 4.5 Clamping ring, Teflon | G ½ A | 12 | 25 | 18 | zinc-coated | 89-44504501-G012 |
| Ø 4.5 Clamping ring, stainless steel | G ½ A | 12 | 25 | 18 | Stainless steel | 89-46404501-G012 |
| Ø 6.0 Clamping ring, Teflon | G ¼ A | 12 | 25 | 18 | Stainless steel | 89-46506001-G014 |
| Ø 6.0 Clamping ring, Teflon | G ¼ A | 12 | 25 | 18 | zinc-coated | 89-44506001-G014 |
| Ø 6.0 Clamping ring, stainless steel | G ¼ A | 12 | 25 | 18 | Stainless steel | 89-46406001-G014 |
| Ø 6.0 Clamping ring, stainless steel | G ¼ A | 12 | 25 | 18 | zinc-coated | 89-44406001-G014 |
| Ø 6.0 Clamping ring, Teflon | G ½ A | 12 | 25 | 18 | Stainless steel | 89-46506001-G012 |
| Ø 6.0 Clamping ring, Teflon | G ½ A | 12 | 25 | 18 | zinc-coated | 89-44506001-G012 |
| Ø 6.0 Clamping ring, stainless steel | G ½ A | 12 | 25 | 18 | Stainless steel | 89-46406001-G012 |
| Ø 6.0 Clamping ring, stainless steel | G ½ A | 12 | 25 | 18 | zinc-coated | 89-44406001-G012 |
| Ø 8.0 Clamping ring, Teflon | G ½ A | 12 | 30 | 18 | Stainless steel | 89-46508001-G012 |
| Ø 8.0 Clamping ring, Teflon | G ½ A | 12 | 30 | 18 | zinc-coated | 89-44508001-G012 |
| Ø 8.0 Clamping ring, stainless steel | G ½ A | 12 | 30 | 18 | Stainless steel | 89-46408001-G012 |
| Ø 8.0 Clamping ring, stainless steel | G ½ A | 12 | 30 | 18 | zinc-coated | 89-44408001-G012 |
| Ø 9.0 Clamping ring, Teflon | G ½ A | 12 | 30 | 18 | Stainless steel | 89-46509001-G012 |
| Ø 10.0 Clamping ring, Teflon | G ½ A | 12 | 30 | 18 | Stainless steel | 89-46510001-G012 |
| Ø 10.0 Clamping ring, Teflon | G ½ A | 12 | 30 | 18 | zinc-coated | 89-44510001-G012 |
| Ø 10.0 Clamping ring, stainless steel | G ½ A | 12 | 30 | 18 | Stainless steel | 89-46410001-G012 |
| Ø 12.0 Clamping ring, Teflon | G ½ A | 12 | 30 | 18 | Stainless steel | 89-46512001-G012 |
| Ø 12.0 Clamping ring, stainless steel | G ½ A | 12 | 30 | 18 | Stainless steel | 89-46412001-G012 |

Further information on request. Dimensions may deviate from those indicated.



**Günther PT****Günther Art. no. : 88-01900002-0000**

- Temperature transmitter, PC-programmable
- Application: RTD (Pt100)
- 2-wire 4-20 mA
- Fault reaction: NAMUR NE 43
- Mounting: head form B, DIN 43729

**Günther PCP****Günther Art. no. : 88-01900011-0000**

- Temperature transmitter, PC-programmable
- Application: RTD, TC, Ohm, mV
- 2-wire 4-20mA, galvanic isolation
- Fault reaction: NAMUR NE 43
- Mounting: head form B, DIN 43729

**Günther PCP-HART****Günther Art. no.: 88-01900012-0000**

- Temperature transmitter, Protocol HART®
- Application: RTD, TC, Ohm, mV
- 2-wire 4-20mA, SIL2, galvanic isolation
- Fault reaction: NAMUR NE 43
- Mounting: head form B, DIN 43729

General

The task of transmitters is the transformation of the sensor signal into a stable and standardized signal. In the past, transmitters were built using analog technology. In the meantime digital technology has gained acceptance, however, because it offers better measurement accuracy at simultaneously higher flexibility, improve safety and safe costs. In addition, the measurement accuracy in modern transmitters can be improved by use ‚sensor-transmittermatching‘. The complete measurement point can be calibrated in a loop (Sensor and transmitter together).

On the one hand, the standardized output signal in the process measurement is a 4...20 mA signal, but also the internationally standardized field bus HART®. The HART® protocol serves mainly for a more convenient operation in combination with the 4...20 mA analog measured signal.



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[084Z6041](#) [TCN4L-22R](#) [TCN4M-22R](#) [TX4H-14R](#) [TX4H-24R](#) [TX4H-A4R](#) [TX4H-B4R](#) [TX4L-14R](#) [TX4L-A4R](#) [TX4L-B4R](#) [TX4M-14R](#)
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