



# GÜNTHER <sup>GmbH</sup>

Temperaturmesstechnik

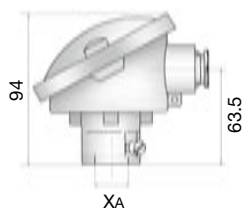


**Product category 99-EZT  
Individual components**



**Head Type A**

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



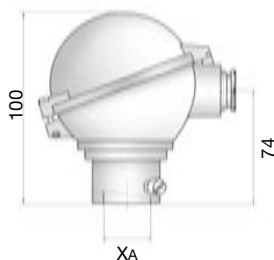
**Connection (Xa) for the thermowell or the holding tube**

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



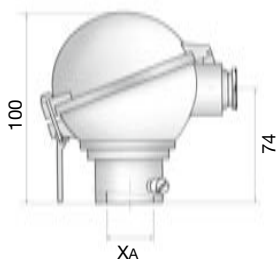
**Connection (Xa) for the thermowell or the holding tube**

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



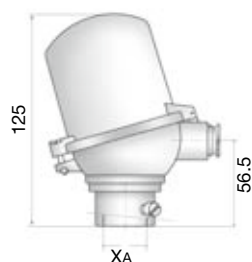
**Connection (Xa) for the thermowell or the holding tube**

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

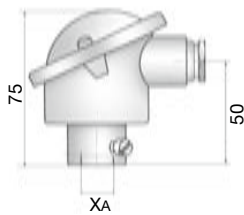
Connection head made of die-cast light alloy with a hinged cover for protection and holding tubes of various dimensions.

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)

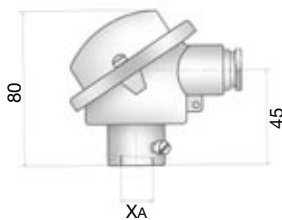


Connection (Xa) for the thermowell or the holding tube	Protective system	Cable outlet	Approx. weight/g	Article number
Hole 10.8 mm	IP 53	M20 x 1.5	195	98-91300706-G010
Hole 15.8 mm	IP 53	M20 x 1.5	195	98-91300706-G015
Thread M24 x 1.5	IP 53	M20 x 1.5	190	98-91300706-GM24
G 1/2 I	IP 53	M20 x 1.5	190	On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

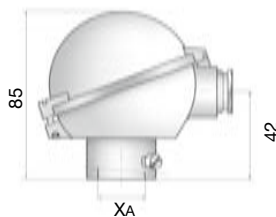


Connection (Xa) for the thermowell or the holding tube	Protective system	Cable outlet	Approx. weight/g	Article number
Hole 10.8 mm	IP 53	M20 x 1.5	160	98-91301206-G010
Hole 15.8 mm	IP 53	M20 x 1.5	160	98-91301206-G015
Thread M24 x 1.5	IP 53	M20 x 1.5	160	98-91301206-GM24
G 1/2 I	IP 53	M20 x 1.5	160	On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

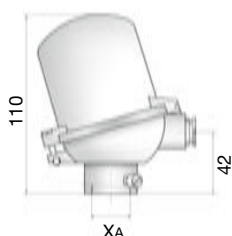


Connection (Xa) for the thermowell or the holding tube	Protective system	Cable outlet	Approx. weight/g	Article number
Hole 15.3 mm	IP 54	M20 x 1.5	220	99-91300806-G015
Hole 22.5 mm	IP 54	M20 x 1.5	210	99-91300806-G022
Thread M24 x 1.5	IP 65	M20 x 1.5	210	99-91300806-GM24
G 1/2 I	IP 65	M20 x 1.5	215	99-91300806-GG12

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)



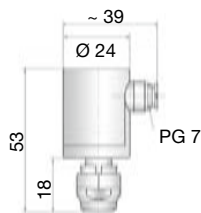
Connection (Xa) for the thermowell or the holding tube	Protective system	Cable outlet	Approx. weight/g	Article number
Hole 15.8 mm	IP 54	M20 x 1.5	275	99-91301106-G015
Hole 22.8 mm	IP 54	M20 x 1.5	270	99-91301106-G022
Thread M24 x 1.5	IP 65	M20 x 1.5	270	99-91301106-GM24
G 1/2 I	IP 65	M20 x 1.5	275	99-91301106-GG12

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.



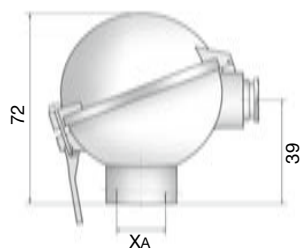
**Connection head Type L**  
Cylindrical head with a slip lid



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

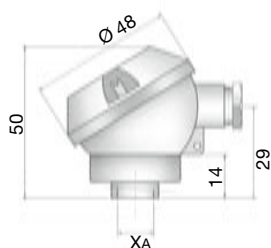
\* The bracket clamp serves to clamp the thermowell (ceramic, metal or quartz glass)

**Connection head Type NA**  
Small spherical head with a hinged cover



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

**Connection head Type DL**  
Small spherical head with a screw cover



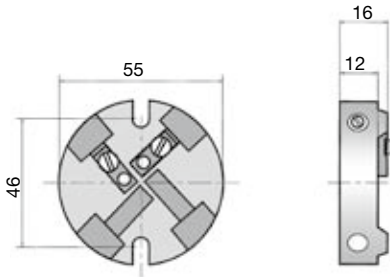
<b>Material:</b>	Die-cast light alloy	Die-cast light alloy	Die-cast light alloy
<b>Connection:</b>	Female thread	Male thread	Ø 6.1 mm
	M10 x 1	M20 x 0.75	
<b>Cable entry:</b>	PG 9	PG 9	PG 9
<b>Weight:</b>	approx. 70 g	approx. 70 g	approx. 70 g
<b>Protection:</b>	IP 54	IP 54	IP 54
<b>Günther Art. no.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

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



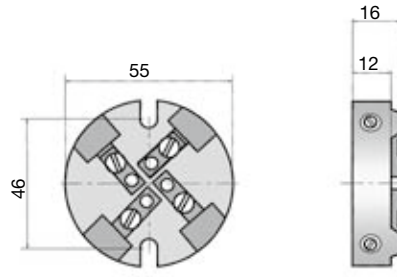
**Socket A, standard**

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



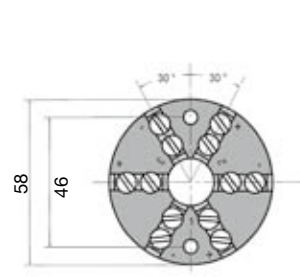
**Socket A, double**

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**



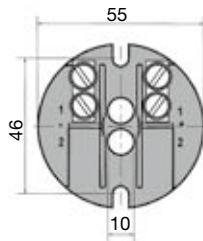
**Accessories:** 1 washer 55 mm  
2 fastening screws  
(M4 x 18 mm with a washer  
10 x 4.5 mm)

**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**

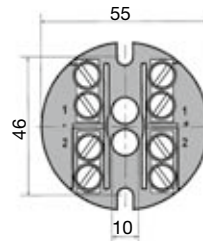
With a test socket  
for **base** thermocouples  
**Art. no. 98-91540003-0002**



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

**Socket A, double**

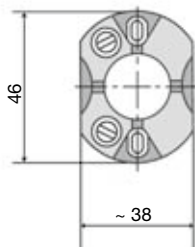
With a test socket  
for **base** thermocouples  
**Art. no. 98-91540003-0004**



**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**

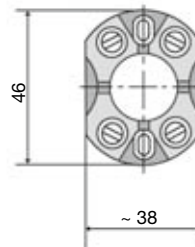
for **sheath** thermocouples  
**Art. no. 99-91550000-0002**



**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**

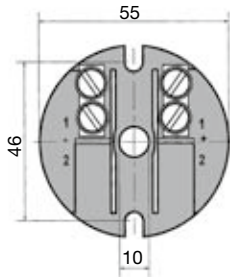


**Accessories:** 1 washer 55 mm made  
of VA steel (2 mm thick)  
2 fastening screws  
(M4 x 18 mm with a washer  
10 x 4.5 mm)



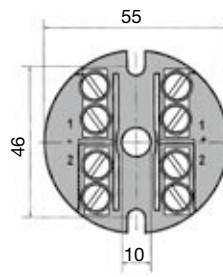
**Socket A, standard**

For precious metal thermocouples  
Art. no. 98-91540001-0002



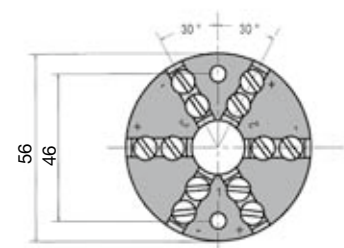
**Socket A, double**

For precious metal thermocouples  
Art. no. 98-91540001-0004



**Socket A, triple**

For precious metal thermocouples  
Art. no. 98-91540002-0006



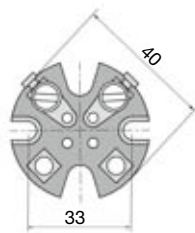
**Accessories:** 1 washer 55 mm  
2 fastening screws  
(M4 x 18 mm with a washer  
10 x 4.5 mm)  
1 retaining spring

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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

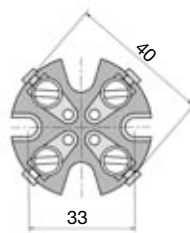
**Socket B, standard**

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



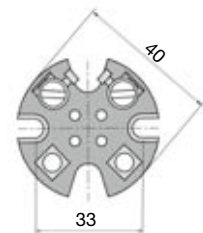
**Socket B, double**

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



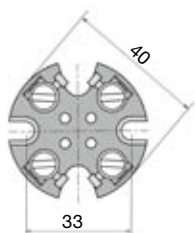
**Accessories:** 1 washer 42 mm  
2 fastening screws  
(M4 x 18 mm with a washer  
10 x 4.5 mm)

**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)

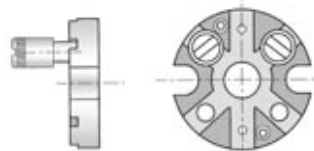
**Socket B, double**

For precious metal thermocouples  
Art. no. 98-91550001-0004



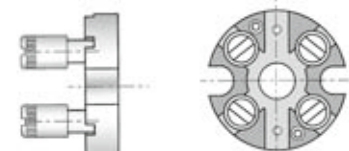
**Socket B, standard  
(2 sheath clamps)**

Art. no. 98-91550010-0002



**Socket B, double  
(4 sheath clamps)**

Art. no. 98-91550010-0004



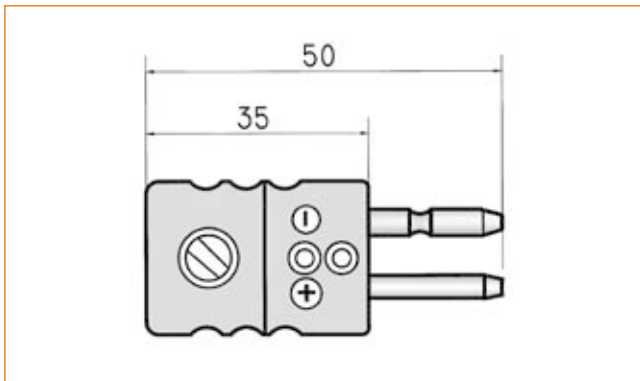
**Accessories:** 1 washer 42 mm  
2 fastening screws  
(M4 x 18 mm with a washer  
10 x 4.5 mm)

**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

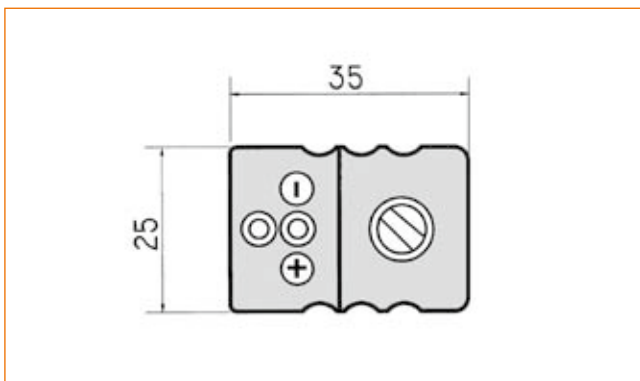
### Code colours for the casing:

- 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

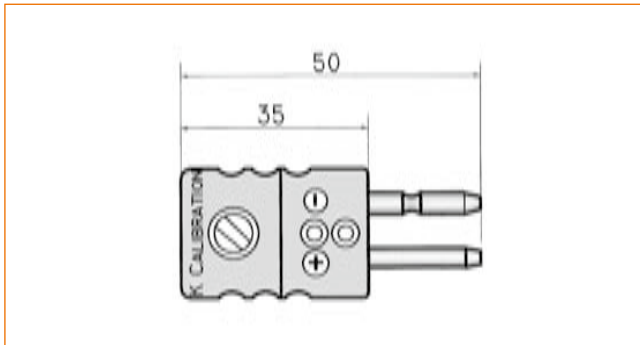
The strain relief (accessories) fixes cables of varying diameters onto the plugs and the couplers.

**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

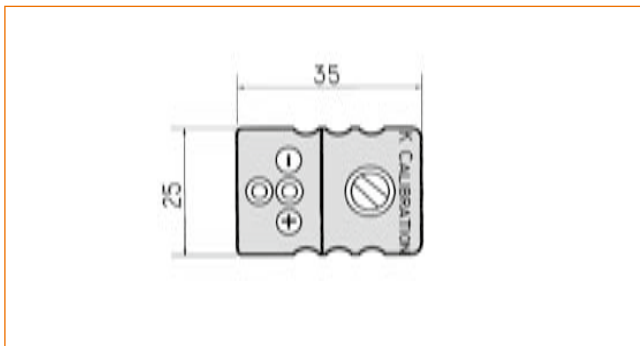
**Thermal load:**

- Max. 350°C

**Colour coding:**

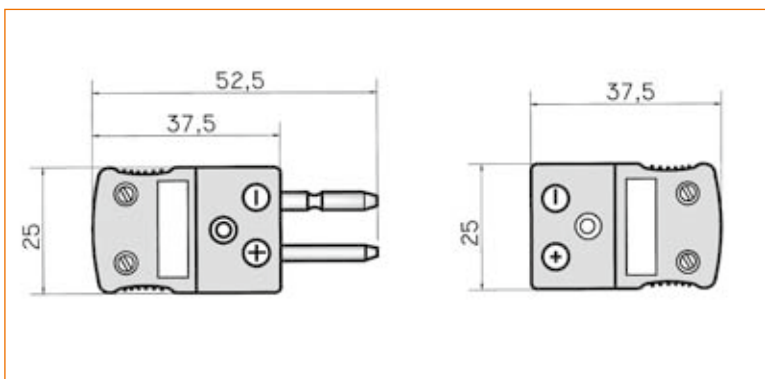
- Casing brown, with element code

### Standard high-temperature couplers



Type	J/L	K	S	B	N
Contact +	Fe	NiCr	Cu	Cu	Nicosil
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:**

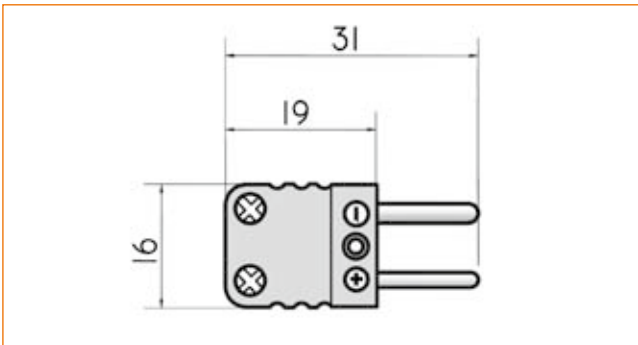
- Casing white, with element code

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

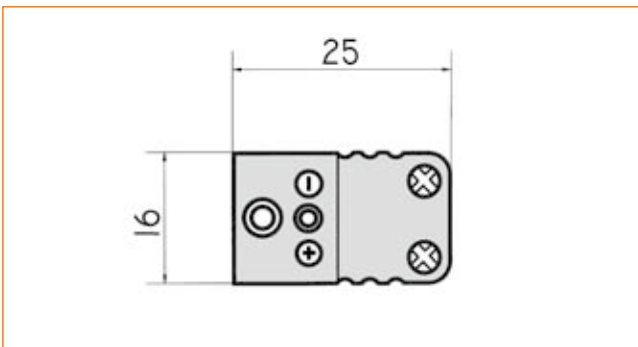
### Code colours for the casing:

- 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

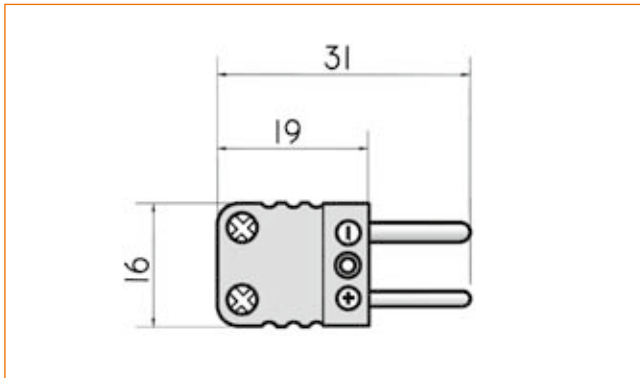
Casing colour	Blue (type L)	Green	-	White	-
Plug	99-91450020-HL00	99-91450020-HK00	-	On request	-
Coupler	99-91451020-HL00	99-91451020-HK00	-	On request	-

### 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



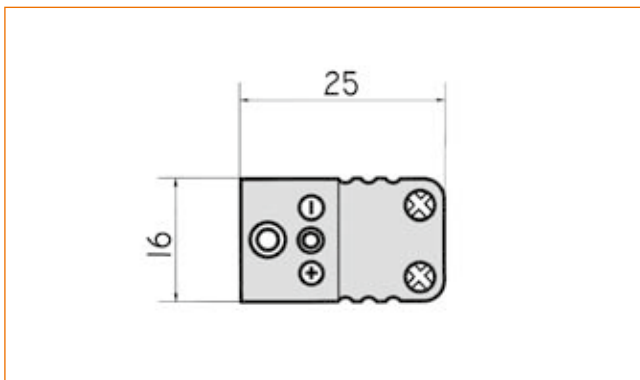
**Application:**

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

### Miniature high-temperature couplers



**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. 350°C

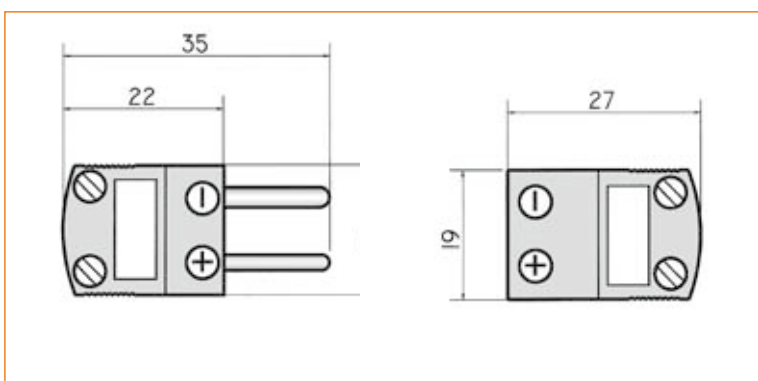
**Colour coding:**

- Casing brown, with element code

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  $\varnothing 0.1$  mm to  $\varnothing 0.5$  mm
- Max. cable diameter of 3.6 mm

**Thermal load:**

- Max. 650°C

**Colour coding:**

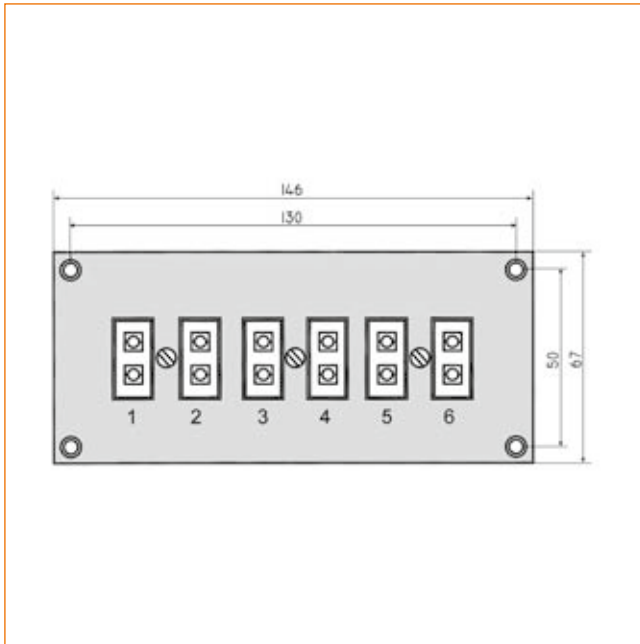
- Casing white, with element code

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

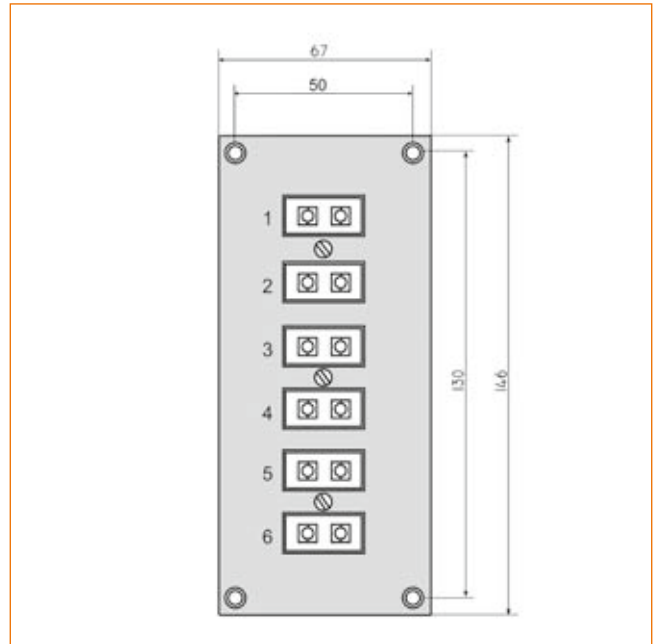
Plug	On request	99-91490010-HK00	99-91490010-HS00
Coupler	On request	99-91491010-HK00	99-91491010-HS00



### Standard panels – horizontal



### Standard panels - vertical



#### Horizontal model

Type	Dimensions	J to IEC "black"	L to DIN "blue"	K to IEC "green"
1 measuring circuit	38 x 38		98-91442111-HJ01	98-91442121-HL01
6 measuring circuits	146 x 67		98-91442111-HJ06	98-91442121-HL06
12 measuring circuits	260 x 67		98-91442111-HJ12	98-91442121-HL12
24 measuring circuits	260 x 115		98-91442111-HJ24	98-91442121-HL24

#### Horizontal model

Type	Dimensions	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	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	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:

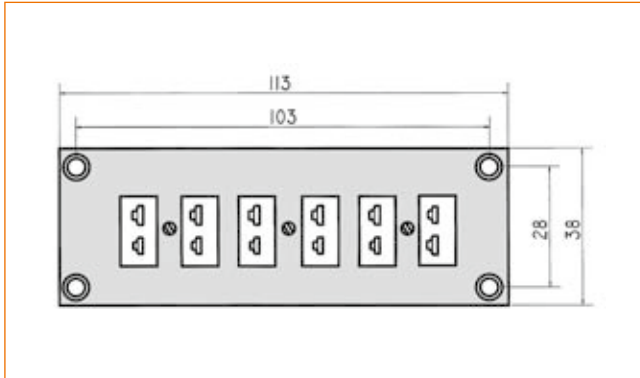
– Max. 200°C

#### 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  $\varnothing 0.1$  mm to  $\varnothing 0.6$  mm

**Thermal load:**

– Max. 200°C

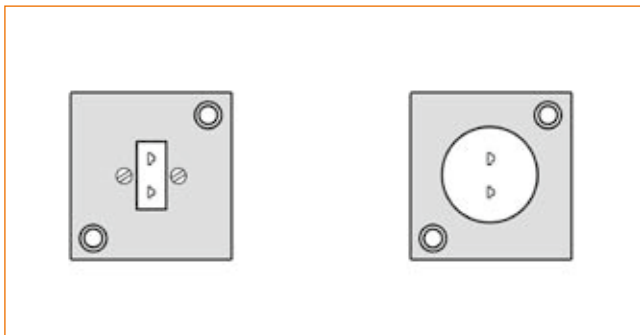
**Mechanical structure:**

- 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
<b>Colour</b>		<b>“black”</b>	<b>“blue”</b>	<b>“green”</b>
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
<b>Colour</b>		<b>“orange”</b>	<b>“grey”</b>	<b>“violet”</b>
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  $\varnothing 0.1$  mm to  $\varnothing 0.6$  mm

**Thermal load:**

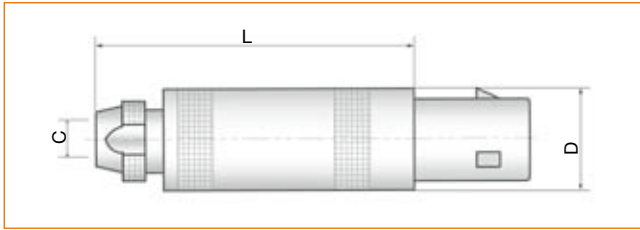
– Max. 200°C

Type	J to IEC	L to DIN	K to IEC
<b>Colour</b>	<b>“black”</b>	<b>“blue”</b>	<b>“green”</b>
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
<b>Colour</b>	<b>“orange”</b>	<b>“grey”</b>	<b>“violet”</b>
Rectangular	98-91456011-HS00	98-91456011-HB00	98-91456011-HN00
Round	98-91456012-HS00	98-91456012-HB00	98-91456012-HN00



**Plug, Lemo<sup>®</sup>)**



**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

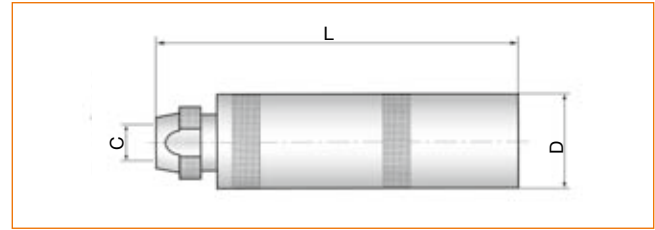
**Lemo plug Size 1, L=42,5 mm D=12,0 mm C=6,2 mm**

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 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

**Coupling, Lemo<sup>®</sup>)**



**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 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 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 thermo-couples, resistance thermometers and supply lines**

<b>Case:</b>	Chromium-plated brass
<b>Contacts:</b>	Gold-plated brass
<b>Insulation:</b>	PEEK
<b>Max. temperature:</b>	250°C

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

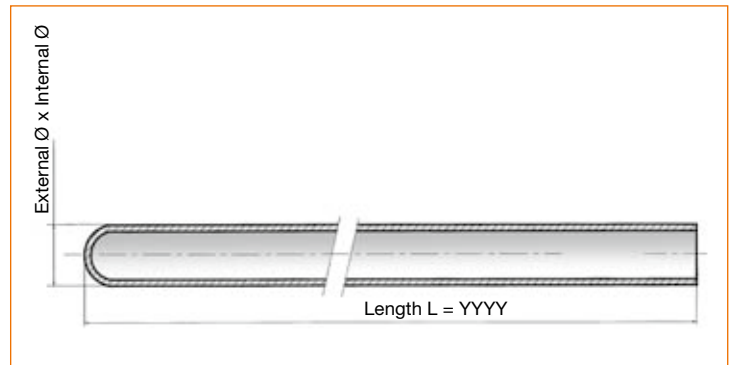


**Models:**

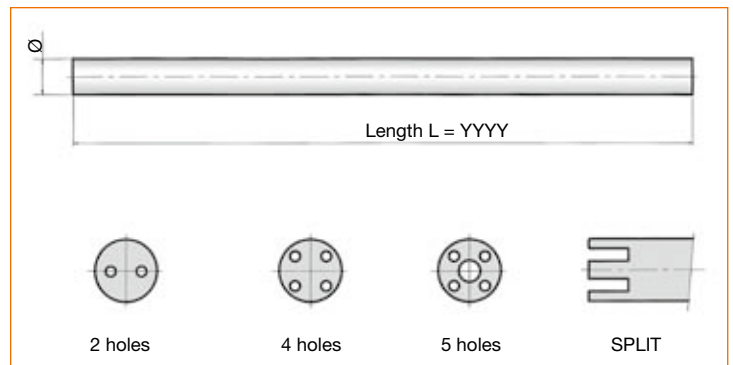
Open on both ends, closed on one end, open on both ends with a flange, closed on one end with a flange. We supply thermocouple thermowells, insulation rods and short insulation tubes for thermocouples made of the materials ALSINT 99.7 = TYPE C 799, PYTHAGORAS = TYPE C 610 and SILLIMANTIN 60 = TYPE C 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 $Al_2O_3$	%	99,7	60	80
Type of body		Gasproof	Gasproof	Porous
Bulk density	g/cm <sup>3</sup>	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	$\square$	1 x 1014	1 x 1013	-
Special electrical resistance at 600°C		1 x 108	1 x 106	1 x 106

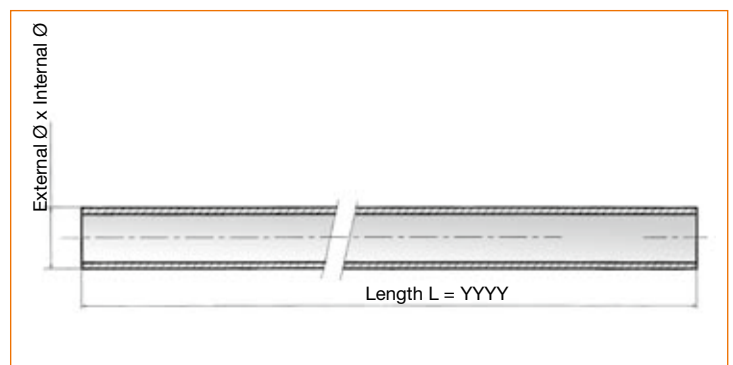
**Ceramic protection tube closed on one end:**



**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

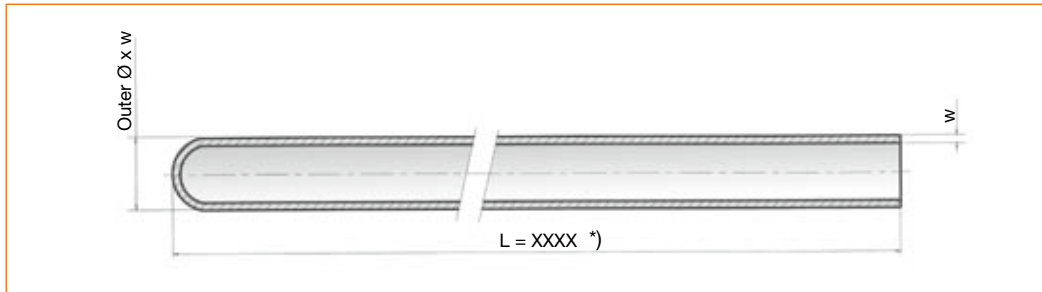
The insulation rods are available with one or with two slits for the welded measuring point if required.

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.

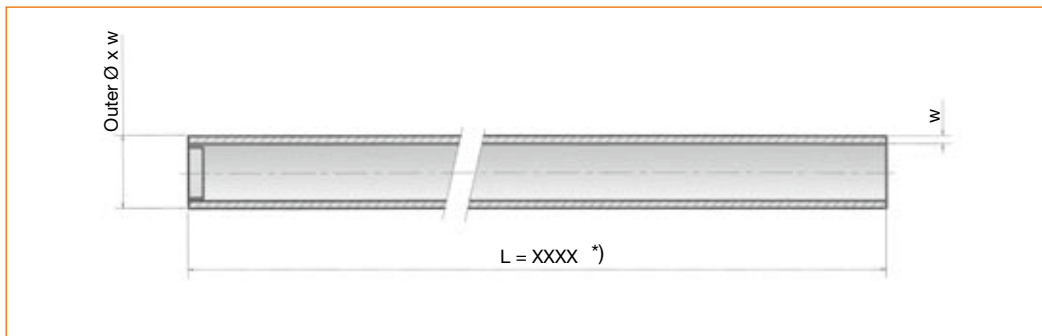


The metal thermowells specified in this section are limited to those made of the most-widely used materials. Tubes of this kind are used for standard temperature measurements, mainly in gaseous and liquid media. The choice of thermowell will depend on the space available, the type of fastening and stresses 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
<b>1.0305 - Tube with a welded base, seamlessly extruded</b>	Mostly air case-hardened; low resistance to sulphurous gases, medium resistance to nitrogenous gases. Thermal stability up to 550°C
15 x 2 mm	<b>82-50041500-xxxx.0200 *)</b>
22 x 2 mm	<b>82-50042200-xxxx.0200</b>
<b>1.4541 - Tube with welded base, seamlessly extruded</b>	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	<b>82-50101100-xxxx.0100</b>
15 x 2 mm	<b>82-50101500-xxxx.0200</b>
22 x 2 mm	<b>82-50102200-xxxx.0200</b>
<b>1.4571 - Tube with a welded base, seamlessly extruded</b>	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	<b>82-50010900-xxxx.0100</b>
10 x 1.5 mm	<b>82-50011000-xxxx.0150</b>
11 x 1 mm	<b>82-50011100-xxxx.0100</b>
11 x 2 mm	<b>82-50011100-xxxx.0200</b>
15 x 2 mm	<b>82-50011500-xxxx.0200</b>
15 x 3 mm	<b>82-50011500-xxxx.0300</b>
22 x 2 mm	<b>82-50012200-xxxx.0200</b>

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



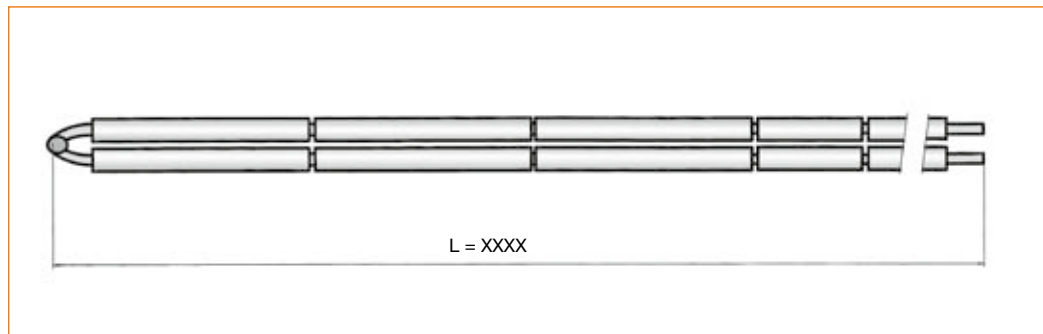


Material / Dimensions / Model	Properties / Article number
<b>1.4762 - Tube with semi-circular closed base, welded joints</b>	Good resistance properties to sulphurous gases; low resistance to nitrogenous gases, up to 1200°C
15 x 2 mm	<b>82-30021500-xxxx.0200</b> *)
22 x 2 mm	<b>82-30022200-xxxx.0200</b>
<b>1.4762 - Tube with welded base, welded joints</b>	Good resistance properties against sulphurous gases; low resistance to nitrogenous gases, up to 1200°C
15 x 2 mm	<b>82-20021500-xxxx.0200</b>
22 x 2 mm	<b>82-20022200-xxxx.0200</b>
<b>1.4841 - Tube with semi-circular closed base, welded joints</b>	Good resistance properties when used in nitrogenous gases; low resistance to sulphurous gases, operation temperature up to 1150°C
15 x 2 mm	<b>82-30031500-xxxx.0200</b>
22 x 2 mm	<b>82-30032200-xxxx.0200</b>
<b>1.4841 - Tube with welded base, welded joints</b>	Good resistance properties when used in nitrogenous gases; low resistance to sulphurous gases, operation temperature up to 1150°C
15 x 2 mm	<b>82-30031500-xxxx.0200</b>
15 x 2 mm	<b>82-20031500-xxxx.0200</b>
22 x 2 mm	<b>82-20032200-xxxx.0200</b>
<b>1.4893 - Tube with semi-circular closed base, welded joints</b>	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	<b>82-60072400-xxxx.0300</b>
26 x 4 mm	<b>82-60072600-xxxx.0400</b>
<b>2.4816 - Tube with welded base, seamlessly extruded</b>	Good general corrosion resistance properties, resistant to stress corrosion cracking. Excellent resistance properties against oxidation. Not recommendable for gases containing CO <sub>2</sub> and sulphur above 550°C and sodium above 750°C. Stable in air up to 1100°C.
14 x 2 mm	<b>82-50081400-xxxx.0200</b>
22 x 2 mm	<b>82-50082200-xxxx.0200</b>

\*) 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

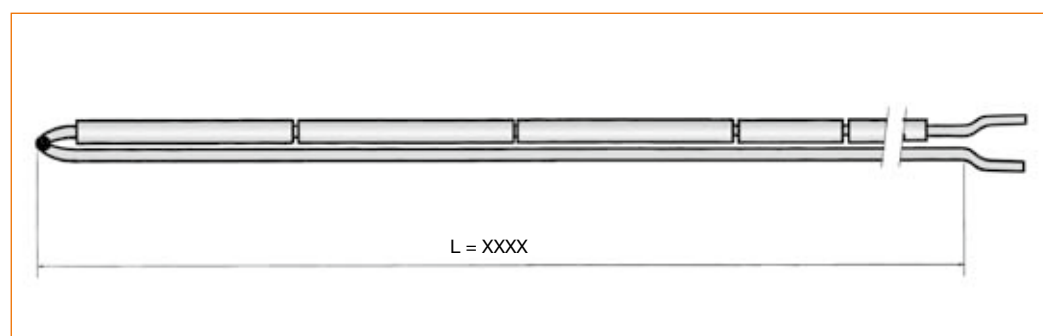
#### Type Fe-CuNi/L DIN 43710

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

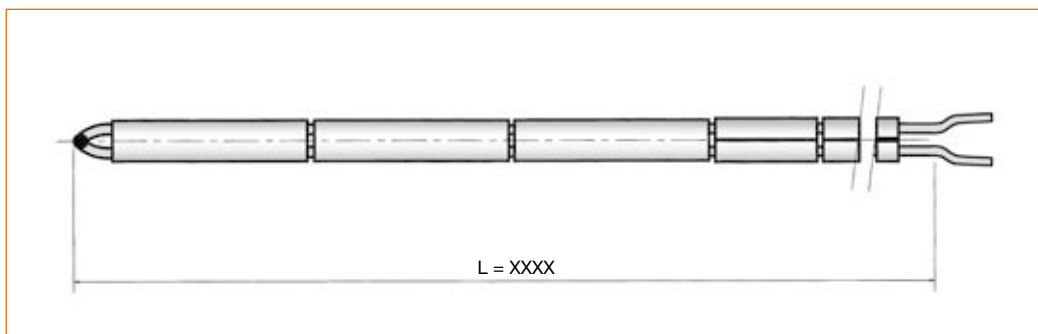


#### Type NiCr-Ni/K DIN IEC 584

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**

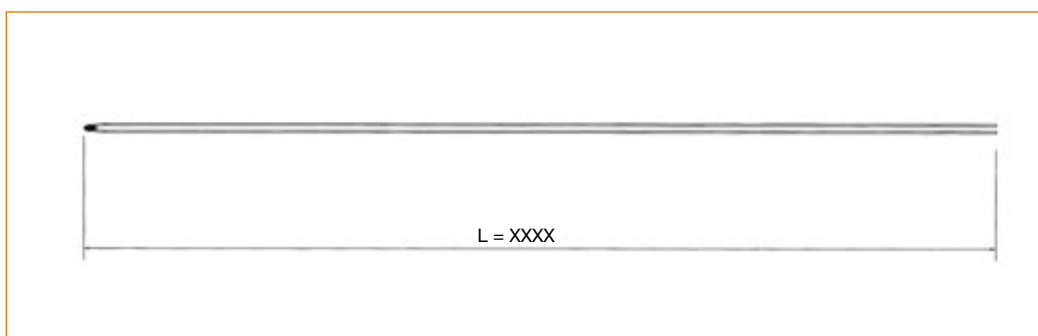
Diameter	Insulation	Max. temp.	Continuous temp.	Article number
1.0 mm	2-hole tube C610	1000°C	800°C	On request
1.38 mm	2-hole tube C610	1100°C	900°C	94-211382xx-xxxx
1.5 mm	2-hole tube C610	1100°C	900°C	94-211502xx-xxxx
2.0 mm	2-hole tube C610	1200°C	1000°C	94-212002xx-xxxx
3.0 mm	2-hole tube C610	1200°C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

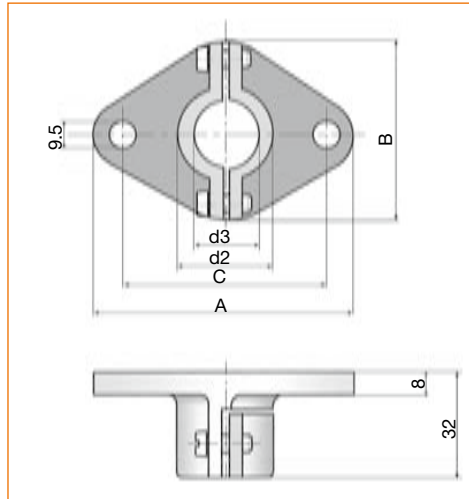
b) Precious-metal thermocouples, not insulated, for thermocouples in product groups 00-TMT and 05-TKT



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

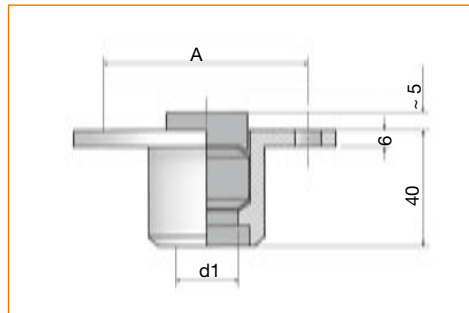


- Material: grey cast iron
- Movable
- Not gasproof

	A	B	C	d <sub>2</sub>	d <sub>3</sub>	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.



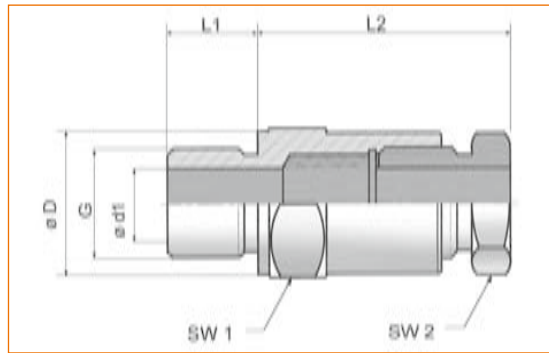
- Material: steel

	A	B	C	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	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

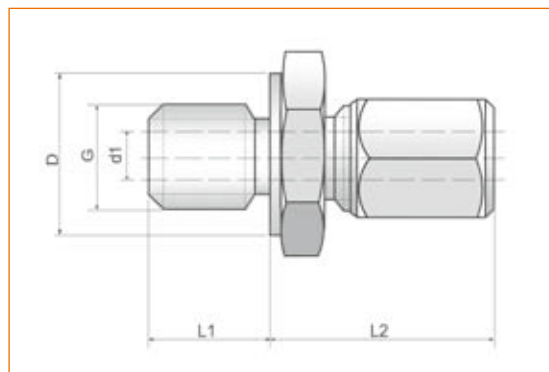


Tube-Ø d1	Thread G	Length L1 [mm]	Length L2 [mm]	Collar D [mm]	SW1 [mm]	SW2 [mm]	Material/ Surface	Article number
12	G ½ A	16	60	27	27	27	Steel / zinc-coated	89-34212001-G012
15	G ½ A	16	60	30	30	27	Steel / zinc-coated	89-34215001-G012
15	G ½ A	16	60	27	27	27	Stainless steel	89-36115001-G012
15	G ¾ A	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 1¼ A	25	75	49	50	46	Steel / burnished	89-33132001-G114
32	G 1½ 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.

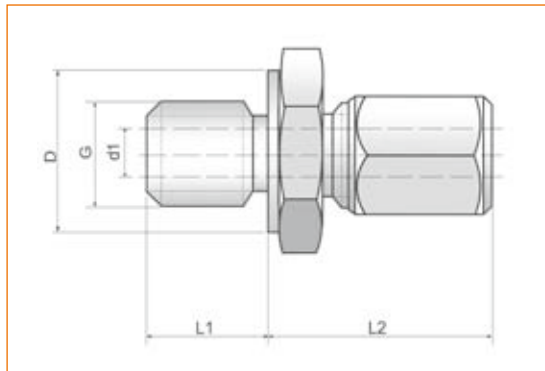
Diameter d1	Thread G	Length L1 [mm]	Length L2 [mm]	Collar D [mm]	Material/ Surface	Article number
Ø 1.0 Clamping ring, Teflon	M 8 x 1	8	20	11,5	zinc-coated	89-44501001-MF08
Ø 1.5 Clamping ring, stainless steel	M 8 x 1	8	20	11,5	Stainless steel	89-46401501-MF08
Ø 2.0 Clamping ring, Teflon	M 8 x 1	8	20	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 4.5 Clamping ring, stainless steel	G ½ A	12	25	18	zinc-coated	89-44404501-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.

**Günter PT**

Günter Art. no.: 88-01900011-0000

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

**Günter PCP**

Günter Art. no.: 88-01900002-0000

- 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

**Günter PCP-HART**

Günter 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<sup>®</sup>. The HART<sup>®</sup>-protocol serves mainly for a more convenient operation in combination with the 4...20 mA analog measured signal.

