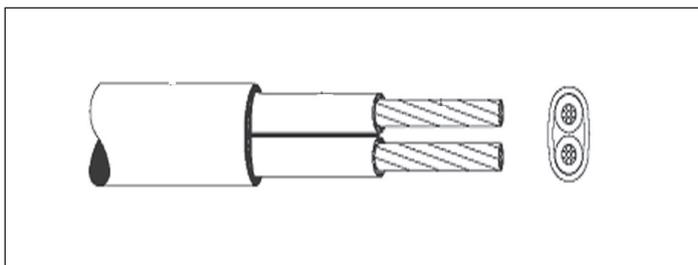


# GEFRAN TC/TR ACCESSORIES

## EXTENSION AND COMPENSATION CABLES FOR THERMOCOUPLES

### PVC CABLE



*Characteristics:* Flexible wire  
PVC isolation  
PVC sheathing

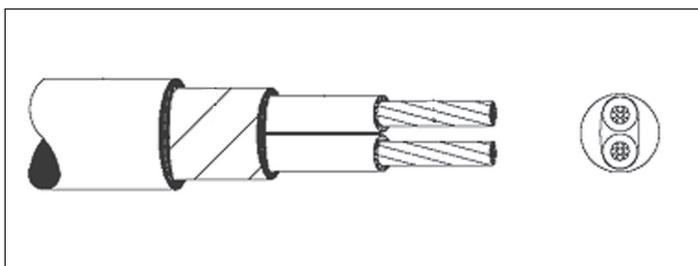
*Temperatura:* +95°C ÷ -30°C

*Fire resistance:* Does not propagate fire;  
self-extinguishing

*Impermeability:* Excellent water resistance

*Standards and color:* DIN 43710-43713  
43714 or ANSI MC 96.1

### PMP CABLE



*Characteristics:* Flexible wire  
PVC isolation  
Al/Mylar (aluminum alloy)  
shielding  
PVC sheathing

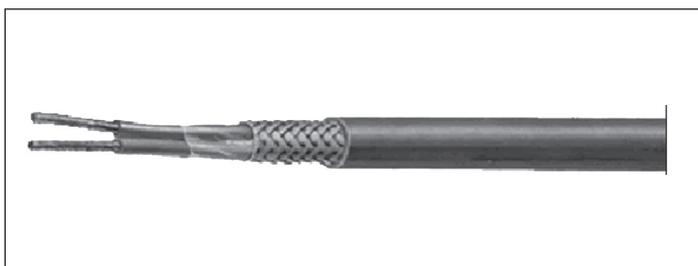
*Temperature:* +95°C ÷ -30°C

*Fire resistance:* Does not propagate fire;  
self-extinguishing

*Impermeability:* Excellent water resistance

*Standards and color:* DIN 43710-43713  
43714 or ANSI MC 96.1

### PSP CABLE



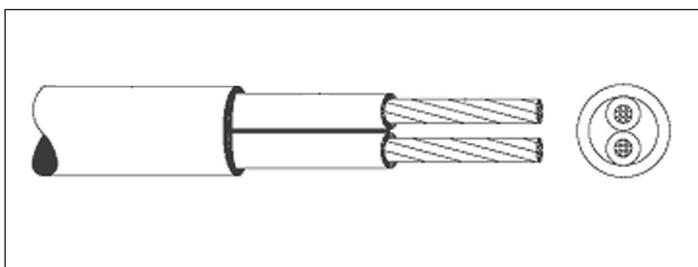
*Characteristics:* PVC isolation  
Stranding  
Cu sn shield  
Round PVC sheathing

*Temperature:* +105°C ÷ -25°C

*Fire resistance:* Does not propagate fire;  
self-extinguishing

*Standards and color:* DIN 43710-43713  
43714 or ANSI MC 96.1

### GSC CABLE



*Characteristics:* Flexible wire  
Silicone rubber isolation  
Silicone rubber sheathing

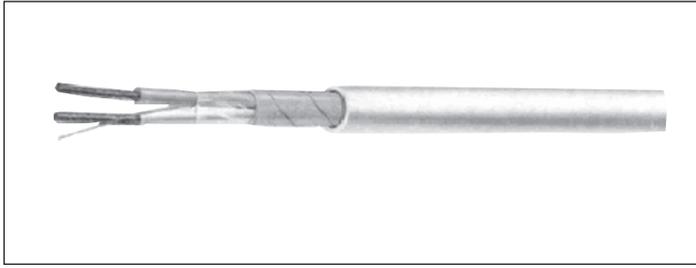
*Temperature:* +200°C ÷ -60°C

*Fire resistance:* Does not propagate fire;  
self-extinguishing

*Impermeability:* Excellent water resistance

*Standards and color:* DIN 43710-43713  
43714 or ANSI MC 96.1

## GSMYC CABLE



<i>Characteristics:</i>	Silicone isolation Stranding Al/Mylar (aluminum alloy) shielding Silicone sheathing
<i>Temperature:</i>	+180°C ÷ -30°C
<i>Fire resistance:</i>	Does not propagate fire; self-extinguishing
<i>Impermeability:</i>	Excellent water resistance
<i>Standards and color:</i>	DIN 43710-43713 43714 or ANSI MC 96.1

## GS CABLE



<i>Characteristics:</i>	Cu r / Cu sn wire Silicone rubber isolation
<i>Temperature:</i>	+180°C ÷ -30°
<i>Construction:</i>	wire made of elementary red, tinned, or nickel-plated copper strands, silicone rubber sheathing.
<i>Properties and uses:</i>	heat resistant, flexible.

For high temperatures of motors, transformers, generators, electrical equipment, wiring for home appliances and lighting.

## GST CABLE

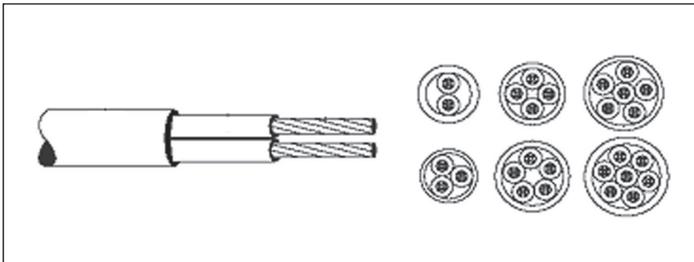


<i>Characteristics:</i>	Cu r / Cu sn wire Silicone rubber isolation Fiberglass isolation
<i>Temperature:</i>	+220°C ÷ -30°
<i>Construction:</i>	wire made of elementary red or tinned copper strands, silicone rubber sheathing, siliconed fibeR- glass braiding.
<i>Properties and uses:</i>	heat resistant, flexible.

For high temperatures of motors, transformers, generators, electrical equipment, wiring for home appliances and lighting.

Colors: GREY/GREEN, BLUE, BROWN, BLACK, WHITE, RED

## GSM CABLE



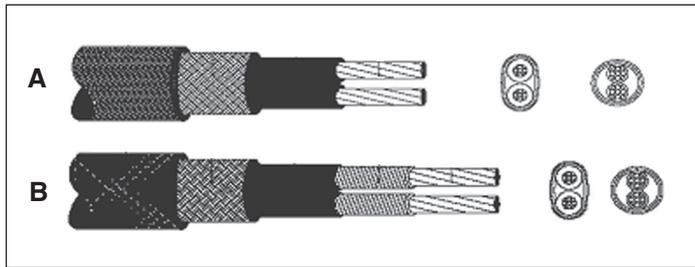
<i>Characteristics:</i>	- Flexible red (Cu r) or tinned (CU sn) copper wire - Silicone rubber isolation - Silicone rubber sheathing
<i>Temperature:</i>	+180°C ÷ -60°
<i>Peaks:</i>	+200°C
<i>Rated voltage:</i>	300/500 V
<i>Test voltage:</i>	2000 V
<i>Fire resistance:</i>	Good

<i>Oil resistance:</i>	Good
<i>Impermeability:</i>	Excellent
<i>Flexibility:</i>	Excellent

Colors: BRICK RED sheathing (BLACK on request); Color codes as per VDE 0293/10.77

2 wires:	brown – blue
3 wires:	yellow green – black – blue
4 wires:	yellow green – black – blue – brown
5 wires:	yellow green – black – blue - brown – black
6 wires and up:	black with printed number starting from inside with 1 yellow green in outer position

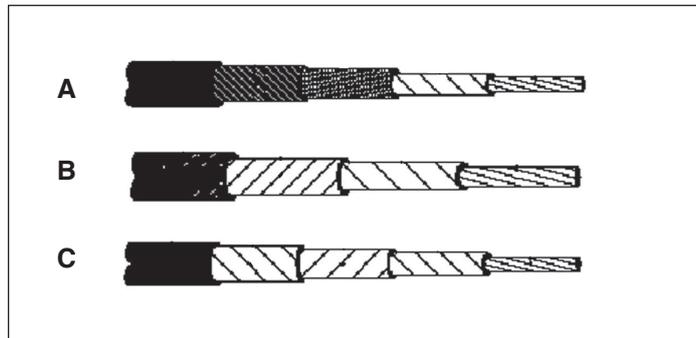
## TTS CABLE



**Characteristics:** Flexible wire  
 Conductive glass braiding impregnated with silicone rubber  
 Conductive glass braiding  
 Tinned copper braiding  
 Spiral made of conductive glass braiding impregnated with silicone rubber (version B only)

**Temperature:** +350°C ÷ -60°C  
**Fire resistance:** does not propagate fire; self-extinguishing  
**Impermeability:** low resistance to water  
**Standards and color:** DIN 43710-43713-43714 or ANSI MC 96.1

## NST CABLE



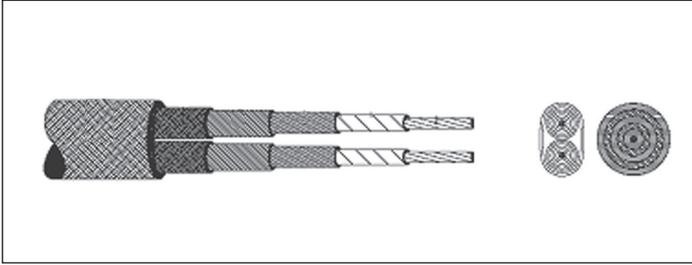
**A: Characteristics Sect. 1x1.5 - Sect. 1x2 - Sect. 1x2.5:**  
 - Red copper (Cu r), nickel-plated (Cu Ni) or nickel (Ni 99%) wire  
 - P.T.F.E. tape  
 - Conductive glass spiral impregnated with silicone rubber  
 - Conductive glass braiding impregnated with silicone rubber

**B: Characteristics Sect. 1x3 - Sect. 1x4 - Sect. 1x6:**  
 - Red copper (Cu r), nickel-plated (Cu Ni) or nickel (Ni 99%) wire  
 - P.T.F.E. tape  
 - Conductive glass tape impregnated with silicon rubber  
 - Conductive glass braiding impregnated with silicone rubber

**C: Characteristics Sect. 1x8 - Sect. 1x10 - Sect. 1x16 - Sect. 1x25:**  
 - Red copper (Cu r), nickel-plated (Cu Ni) or nickel (Ni 99%) wire  
 - Conductive glass tape  
 - P.T.F.E. tape  
 - Conductive glass tape impregnated with silicone rubber  
 - Conductive glass braiding impregnated with silicone rubber

**Working temperature:** +250°C ÷ -60°C  
**Peaks:** +280°C  
**Rated voltage:** 300/500V  
**Test voltage:** 2000V  
**Tape overlapping:** 50%  
**Max. T of copper wire:** 150°C  
**Max. T of 130 micron nickel-plated wire:** 350°C  
**Max. T of nickel wire: 99.20%:** 600°C  
**Fire resistance:** Excellent  
**Impermeability:** Good  
**Standards and color:** Color of standard cable with copper wire: black striped  
 Color of standard cable with nickel-plated copper wire: blue striped  
 Color of standard cable with nickel wire: green striped  
 On request, can be striped yellow, red, yellow-green, brown, combinations of above colors, or all white.

## FTA CABLE



### Characteristics:

- Red copper (Cu r), nickel-plated (Cu Ni) or nickel (Ni 99%) wire
- P.T.F.E. tape
- Conductive glass spiral impregnated with silicone rubber
- Conductive glass braiding impregnated with silicone rubber
- Galvanized iron or tinned copper braiding

*Working temperature:* +250°C ÷ -60°C

*Peaks:* +280°C

*Rated voltage:* 300/500 V

*Test voltage:* 2000 V

*Tape overlapping:* 50%

*Max. T of copper wire:* 150°C

*Max. T of 130 micron nickel-plated wire:* 350°C

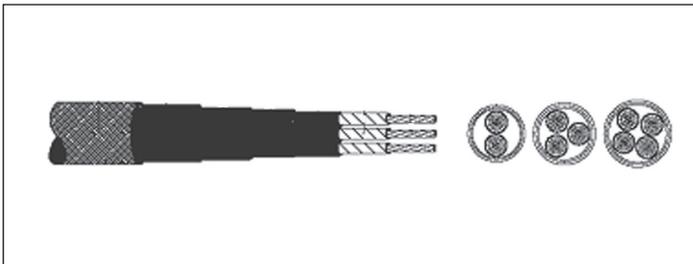
*Max. T of nickel wire:* 99.20%: 600°C

*Fire resistance:* excellent

*Impermeability:* good

*Standards and color:* color of unipolar or bipolar cable: subject to availability.

## NSTTS CABLE



### Characteristics:

- Red copper (Cu r), nickel-plated (Cu Ni) or nickel (Ni 99%) wire
- P.T.F.E. tape
- Conductive glass spiral impregnated with silicone rubber
- Conductive glass braiding impregnated with silicone rubber
- Galvanized iron braiding

*Working temperature:* +260°C ÷ -60°C

*Peaks:* +290°C

*Rated voltage:* 300/500 V

*Test voltage:* 2000 V

*Tape overlapping:* 50%

*Max. T of copper wire:* 150°C

*Max. T of 130 micron nickel-plated wire:* 350°C

*Max. T of nickel wire:* 99.20%: 600°C

*Fire resistance:* excellent

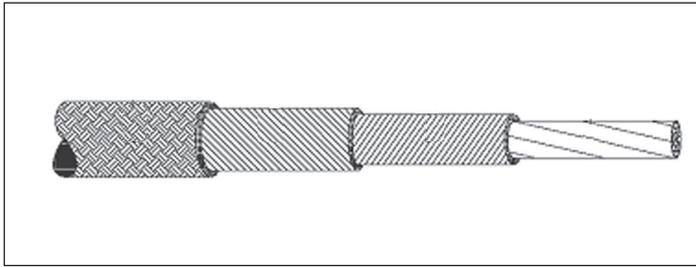
*Impermeability:* good

*Standards and color:* color of bipolar cable: subject to availability.

Color of tripolar cable: 1<sup>st</sup> cable yellow-green; 2<sup>nd</sup> cable white, 3<sup>rd</sup> cable as per table

Color of quadripole cable: 1<sup>st</sup> cable yellow-green; 2<sup>nd</sup> cable white, 3<sup>rd</sup> cable crossed black, 4<sup>th</sup> cable as per table

## SST CABLE



**Characteristics:**

- Red copper (Cu r), nickel-plated (Cu Ni) or nickel (Ni 99%) wire or alloys
- Conductive glass spiral impregnated with silicone rubber
- Conductive glass braiding impregnated with silicone rubber

*Working temperature:* +220°C ÷ -60°C

*Peaks:* +250°C

*Rated voltage:* 300/500 V

*Test voltage:* 1000 V

*Tape overlapping:* 50%

*Max. T of copper wire:* 150°C

*Max. T of 130 micron nickel-plated wire:* 350°C

*Max. T of nickel wire: 99.20%:* 600°C

*Fire resistance:* excellent

*Impermeability:* good

*Standards and color:*

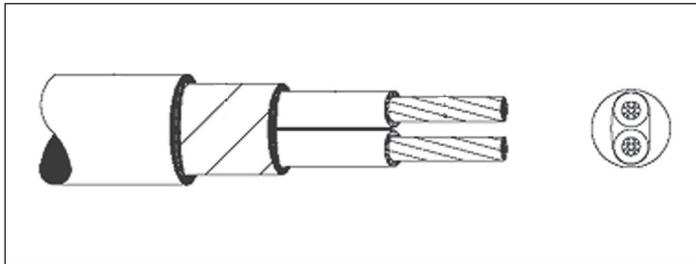
Color of standard cable with copper wire: white

Color of standard cable with nickel-plated copper wire: blue striped

Color of standard cable with nickel wire: green striped

On request, can be striped yellow, red, yellow-green, brown, combinations of above colors, or all white

## GSC-SCH CABLE



**Characteristics:**

- Flexible wire
- Silicone rubber isolation
- Silicone rubber sheathing
- Tinned copper braiding

*Temperature:*

+200°C ÷ -60°C

*Fire resistance:*

Does not propagate fire; self-extinguishing

*Impermeability:*

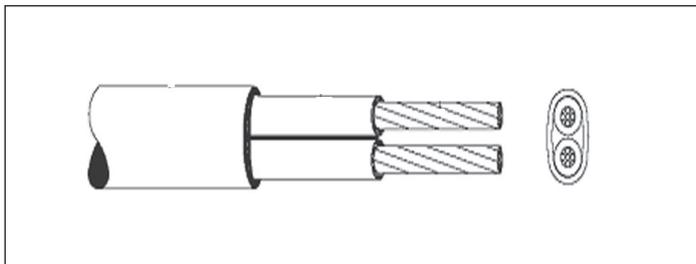
Excellent water resistance

*Standards and color:*

DIN 43710-43713

43714 or ANSI MC 96.1

## TES CABLE



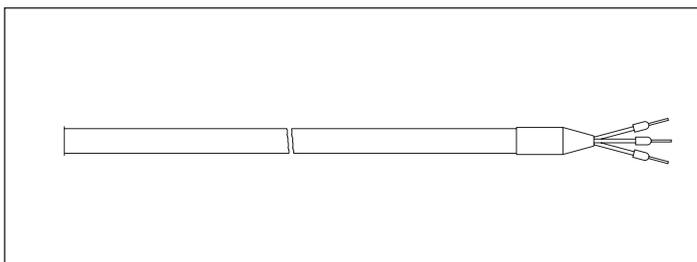
**Characteristics:**

- Flexible wire
- Teflon® isolation
- Fiberglass braiding

*Temperature:*

+250°C ÷ -60°C

## FG40HG4 CABLE



**Characteristics:**

- 4 Cu-Sn wires
  - Silicone rubber isolation
  - Aluminum-Mylar shielding
  - Continuity wire
- Outer sheathing made of black silicone rubber

*Temperature:*

+200°C ÷ -60°C

# PROTECTIVE SHEATHINGS

## *METAL SHEATHINGS*

### ◆ AISI 304

[ 10% nickel 19% chromium – 0.08% max. carbon - 2% max. manganese - 1% silicon – traces of sulfur and phosphorus – balance iron]

Working temperature: up to 899°C in oxidizing atmosphere.

Resists corrosion in a wide range of industrial applications.

Mechanical properties are good at temperatures from -184°C to +788°C.

Principal sectors for protection of thermocouples: chemical; food; plastics; petrochemical.

---

### ◆ AISI 310

[ 19-22% nickel - 24-26% chromium – 0.75% max. silicon - 15% max. carbon – 0.40% max. phosphorus - 2% max. manganese – 0.30% max. sulfur – balance iron]

Working temperature: 1149°C.

Good resistance to oxidation and carbonous atmosphere.

Good resistance to thermal shock; widely used in presence of 15% max. sulfurous gases.

---

### ◆ AISI 316

[ 12% nickel - 17% chromium - 2% molybdenum - 2% max. manganese – 0.08% max. carbon - 1% max. silicon – traces of sulfur and phosphorus – balance iron]

Working temperature: up to 927°C in oxidizing atmosphere.

Principal sectors for protection of thermocouples: chemical; food; plastics; petrochemical.

---

### ◆ AISI 446

[ 27% chromium – 0.25% max. nitrogen – 0.20% carbon – 1.5% max. manganese - 1% silicon - traces of sulfur and phosphorus – balance iron]

Working temperature: up to 1093°C in oxidizing atmosphere.

Excellent resistance to corrosion and oxidation.

Principal sectors of use: treatment and annealing furnaces; salt baths; lead casting; sulfurous atmosphere; asphalt mixing; coffee roasting; waste incineration furnaces.

Not used in casehardening atmosphere.

---

### ◆ INCONEL 600

[ 76% nickel - 16% chromium - 8% iron]

Working temperature: up to 1140°C in oxidizing atmosphere; up to 1038°C in reducing atmosphere.

Not used in sulfurous atmosphere at temperature exceeding 538°C.

Principal sectors of use: cyanide salt baths; waste incineration furnaces.

---

### ◆ CAST IRON

Working temperature: up to 740°C in oxidizing atmosphere.

Principal sector of use: casting of non-ferrous metals.

Can be used at 871°C in reducing atmosphere.

---

### ◆ CARBON STEEL

[ 0.17% carbon – 0.75% manganese – 0.035% max. phosphorus – 0.045% max. sulfur – balance iron]

Working temperature: up to 538°C in non-oxidizing atmosphere.

Principal sectors of use: casting of lead, manganese, zinc; fission furnaces.

## *CERAMIC SHEATHINGS*

### ◆ **KER 710**

[ **Aluminum 710 Al<sub>2</sub>O<sub>3</sub>** 99.7% recrystallized]

Resistant to gases containing hydrofluoric acid, to alkaline fumes, to oxidizing, reducing, neutral atmospheres, and to temperature changes.

Offers higher mechanical strength than any other type of ceramic.

Maximum working temperature: 1900°C.

---

### ◆ **KER 610**

[ **Dimulit 610 - Pythagoras 610** ]

The most used of all non-porous ceramic minerals; used to build internal, external, and isolation pipes.

Offers good resistance to hydrofluoric acid gases, sudden temperature changes, and mechanical agents.

Reacts with basic slag.

Maximum working temperature: 1600°C.

---

### ◆ **KER 530**

[ **Sillimantite 530** ]

Seldom used; normally used as external sheathing in combination with a gas-tight internal sheathing.

Porous ceramic, resistant to thermal shock, reacts with basic slag.

Maximum working temperature: 1600°C.

## *CARBIDE SHEATHINGS*

### ◆ **Carborundum**

[ 90% silicon carbide - 9% silicon oxide - 1% aluminum oxide]

Working temperature: up to 1650°C.

Porous sheathing used as added protection for aluminum sheathing.

Resistant to thermal shock; can be used to cast non-ferrous metals.

# SLIDING COMPRESSION FITTINGS



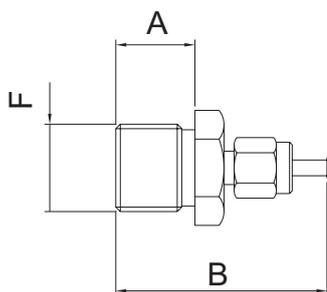
Stainless steel compression fittings  
Brass compression fittings

## Available stainless steel models

	ø 1	ø 1,5	ø 2	ø 3	ø 4	ø 4,5	ø 5	ø 6	ø 8	ø 10	ø 12	ø 14
1/8 NPT	RAC101	RAC102	RAC103	E0301238	RAC105	E0301239	RAC107	E0301240				
1/4 NPT				RAC112	RAC113	E0301241	RAC115	E0301236	E0301221			
3/8 NPT					RAC121	E0301242		E0301223	E0301224	RAC126		
1/2 NPT				RAC129		E0301243		E0301225	E0301226	E0301235	RAC136	
3/4 NPT												
1 NPT												
G 1/8	RAC143	E0301247	RAC145	RAC146	RAC147	RAC148	RAC149	RAC150				
G 1/4			RAC153	E0301244	RAC155	E0301262	RAC157	E0301227	E0301228			
G 3/8						RAC164		E0301229	E0301230	RAC168		
G 1/2				RAC171		E0301234		E0301231	E0301232	E0301233	E0301257	RAC278
G 3/4								E0301245	E0301246			
G 1												

## Available brass models

	ø 1	ø 1,5	ø 2	ø 3	ø 4	ø 4,5	ø 5	ø 6	ø 8	ø 10	ø 12	ø 14
1/8 NPT	RAC185	RAC186	RAC187	E0325052	E0325053	RAC190	E0325055	E0325056				
1/4 NPT				RAC196	RAC197	RAC198	E0325060	E0325061	E0325062			
3/8 NPT					RAC205		E0325066	E0325067	E0325068	RAC210		
1/2 NPT												
3/4 NPT												
1 NPT												
G 1/8	RAC227	RAC228	RAC229	E0325102	E0325103	RAC232	E0325105	E0325106				
G 1/4				E0325109	E0325113	RAC240	E0325110	E0325111	E0325112			
G 3/8						RAC248		E0325117	E0325118	RAC252		
G 1/2			RAC254	RAC255				E0325123	E0325124	E0325125	E0325127	
G 3/4												
G 1												



Mechanical dimensions of fitting (F)		
FITTING (F)	A (mm)	B (mm)
G 1/8	10	35
G 1/4	12	35
G 3/8	15	40
G 1/2	15	40
1/8 NPT	11	35
1/4 NPT	16	40
3/8 NPT	16	40
1/2 NPT	20	45

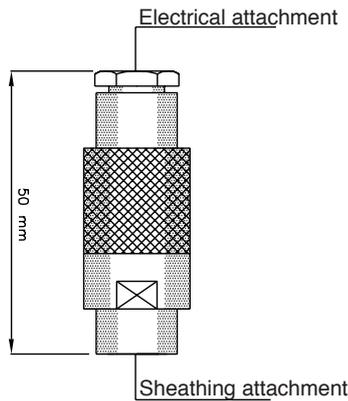
# CONNECTION HEADS



## Available models

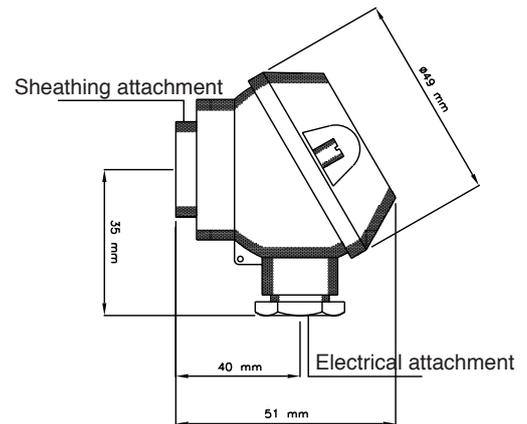
head	MIGNON		<b>E2225020</b>
head	BUZ-H	G1/2 - M20X1,5	<b>E2229045</b>
head	BUZ-H	M24X1,5 - M20X1,5	<b>E2229044</b>
head	DIN-A	D.22,3 - M20X1,5	<b>E2229031</b>
head	DIN-A	G1/2 - M20X1,5	<b>E2229032</b>
head	DIN-B	G1/2 - M20X1,5	<b>E2229007</b>
head	DIN-B	M24x1,5 - M20X1,5	<b>E2229010</b>
head	DIN BUS	G1/2 - M20X1,5	<b>E2229069</b>
head	DIN BUS	M24x1,5 - M20X1,5	<b>E2229068</b>
head	DIN J	G1/4 - M16X1,5	<b>E2229003</b>
head	EEX	d II C 2 GD/M20X1,5	<b>E2229034</b>
head	CEAA	G1/2 - M20X1,5	<b>E2229022</b>
head	CEAA	M24x1,5 - M20X1,5	<b>E2229043</b>

**Mignon**



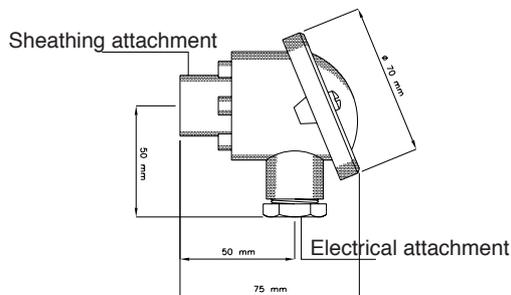
*Electrical attachment: 1/4 GAS*  
*Protection level: IP54*  
*Material: nickel-plated brass*

**DIN J**



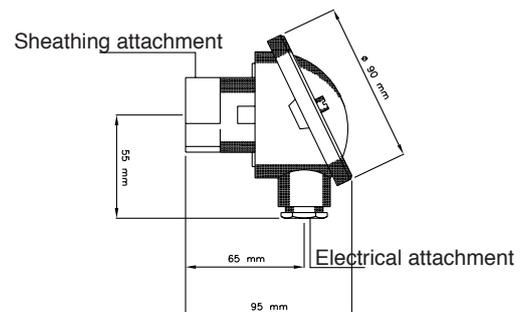
*Electrical attachment: M16X1,5*  
*Protection level: IP54*  
*Material: Aluminum alloy, gray epoxy paint*

**DIN B**



*Electrical attachment: M20X1,5*  
*Protection level: IP54*  
*Material: Aluminum alloy, gray epoxy paint*

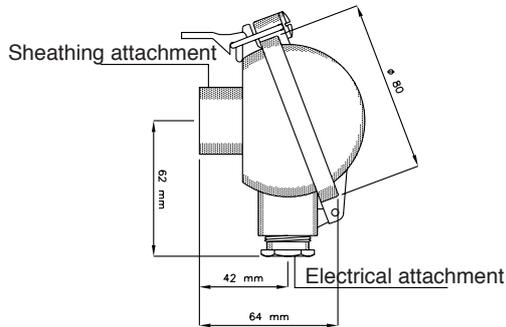
**DIN A**



*Electrical attachment: M20X1,5*  
*Protection level: IP54*  
*Material: Aluminum alloy, gray epoxy paint*

# CONNECTION HEADS

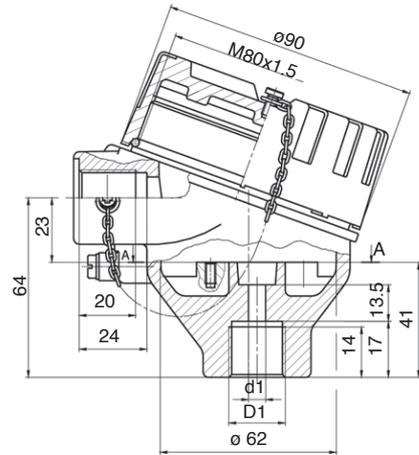
**DIN BUS**



Electrical attachment: M20X1,5  
 Protection level: IP54/IP65\*  
 Material: Aluminum alloy, gray epoxy paint

\* IP65 on Request

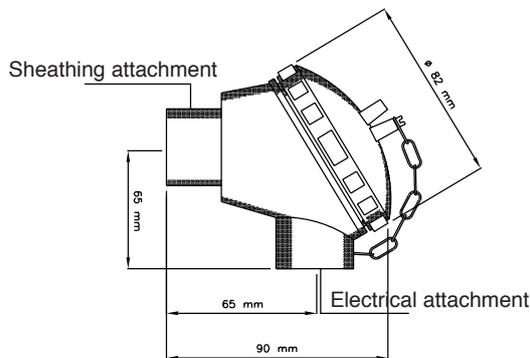
**EEX**



Electrical attachment: M20X1,5  
 Protection level: IP54/IP68\*  
 Material: Die-cast aluminum  
 Protection: Chrome plating and chemical resistant paint  
 Execution: EEX - d - IIc - 2GD

\* IP68 on Request

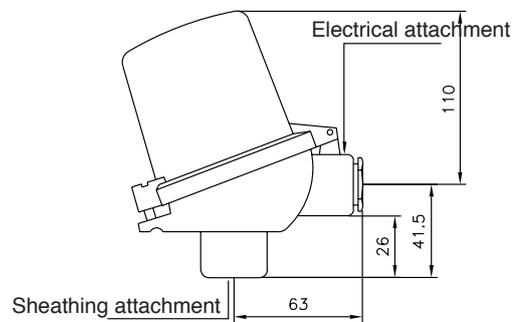
**CEAA**



Electrical attachment: M20X1,5  
 Protection level: IP54/IP65\*  
 Material: Aluminum alloy, gray epoxy paint

\* IP65 on Request

**BUZH**



Electrical attachment: M20X1,5  
 Protection level: IP54/IP65\*  
 Material: Aluminum alloy, gray epoxy paint

\* IP65 on Request

## 4-20mA SIGNAL AMPLIFIERS



### Available models

4-20mA amplifier for Pt100	<b>ETMIC201</b>
4-20mA amplifier for Thermocouple	<b>ETMZ5506</b>
Inor 4-20mA amplifier for Thermocouple and Pt100 programmable from PC	<b>ETMZ5506</b>
Datexel 4-20mA amplifier for Thermocouple and Pt100 programmable from PC	<b>ETMD1015</b>

## ADAPTER FOR 4-20mA SIGNAL AMPLIFIERS



### Available models

DIN rail adapter for 4-20mA - INOR head amplifiers	<b>ETMA0001</b>
DIN rail adapter for DATEXEL head amplifiers	<b>ETMD0001</b>

## DISPLAY



### Available models

Plug-in display with open collector	<b>TDP-1001</b>
Plug-in display Eex ib IIC T4	<b>TDP-2000</b>
Adapter with cable clamp PG-11	<b>TDP-PG11</b>
Adapter with cable clamp PG-13.5	<b>TDP-PG13</b>
Adapter with cable clamp PG-16	<b>TDP-PG16</b>

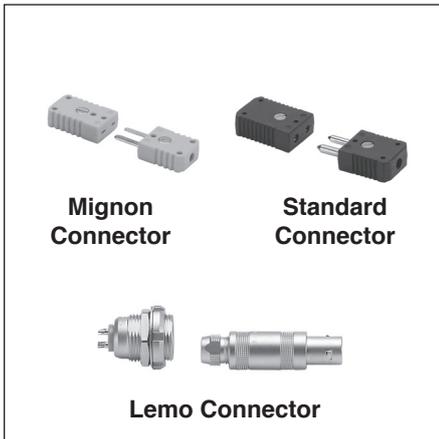
## IP67 REMOTE TEMPERATURE INPUTS ON CANOPEN FIELDBUS



### Available models

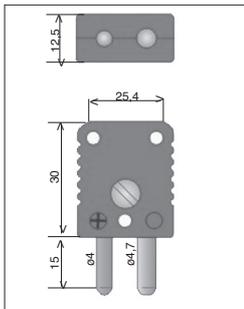
For plate mounting	<b>GLK67-BRTC</b>
For mounting with Harting connector	<b>GLK67-IRTC</b>

# CONNECTORS

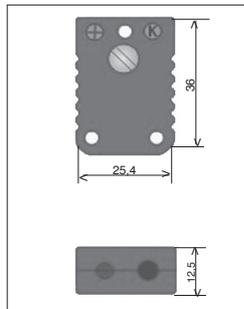


## Available models

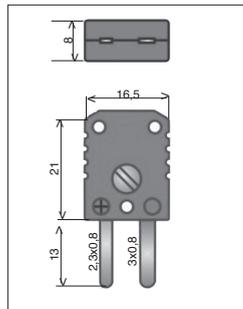
Standard compensated male connector for TC J black	<b>E1827106</b>
Standard compensated female connector for TC J black	<b>E1827107</b>
Compensated panel connector for TC J black	<b>E1827108</b>
Mignon compensated male connector for TC J black	<b>E1927106</b>
Mignon compensated female connector for TC J black	<b>E1927107</b>
Standard compensated male connector for TC K yellow	<b>E1827116</b>
Standard compensated female connector for TC K yellow	<b>E1827117</b>
Compensated panel connector for TC K yellow	<b>E1827118</b>
Mignon compensated male connector for TC K yellow	<b>E1927116</b>
Mignon compensated female connector for TC K yellow	<b>E1927117</b>
Standard compensated male connector for TC T blue	<b>E1827101</b>
Standard compensated female connector for TC T blue	<b>E1827102</b>
Compensated panel connector for TC T blue	<b>E1827103</b>
Mignon compensated male connector for TC T blue	<b>E1927125</b>
Mignon compensated female connector for TC T blue	<b>E1927126</b>
Standard compensated male connector for TC E violet	<b>E1827125</b>
Standard compensated female connector for TC E violet	<b>E1827126</b>
Compensated panel connector for TC E violet	----
Mignon compensated male connector for TC E violet	<b>E1927131</b>
Mignon compensated female connector for TC E violet	<b>E1927132</b>
Lemo connector ERD-1S-302-C-L-L	<b>CON850</b>
Lemo connector ERD-1S-303-C-L-L	<b>CON851</b>
Lemo connector ERD-1S-304-C-L-L	<b>CON852</b>
Lemo connector ERD-2S-302-C-L-L	<b>CON853</b>
Lemo connector ERD-2S-303-C-L-L	<b>CON854</b>
Lemo connector ERD-2S-304-C-L-L	<b>CON855</b>
Lemo connector FFA-1S-302-C-L-A-L-47	<b>CON856</b>
Lemo connector FFA-1S-303-C-L-A-L-47	<b>CON857</b>
Lemo connector FFA-1S-304-C-L-A-L-52	<b>CON858</b>
Lemo connector FFA-2S-302-C-L-A-L-47	<b>CON859</b>
Lemo connector FFA-2S-303-C-L-A-L-47	<b>CON860</b>
Lemo connector FFA-2S-304-C-L-A-L-47	<b>CON861</b>



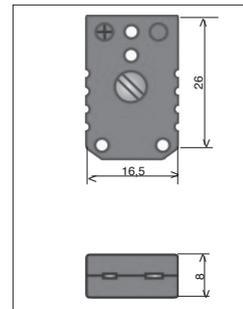
-50...+120°C  
**Standard compensated male connector**



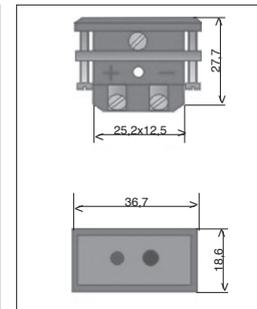
-50...+120°C  
**Standard compensated female connector**



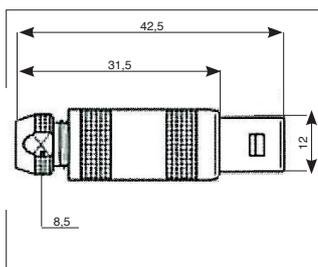
-50...+120°C  
**Mignon compensated male connector**



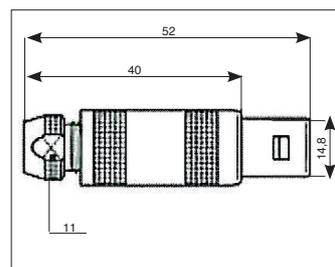
-50...+120°C  
**Mignon compensated female connector**



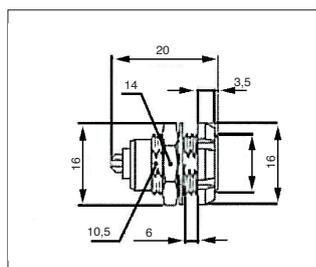
-50...+120°C  
**Panel compensated connector**



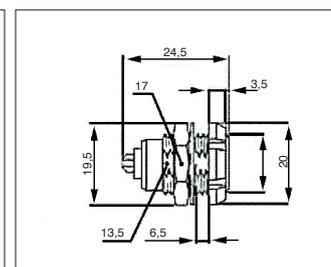
**Lemo connector modell FFA serie 1S**



**Lemo connector modell FFA serie 2S**



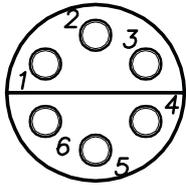
**Lemo connector modell ERD serie 1S**



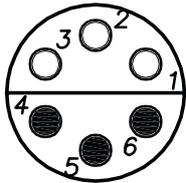
**Lemo connector modell ERD serie 2S**

# CONNECTION DIAGRAMS FOR LEMO AND Pt100 CONNECTORS

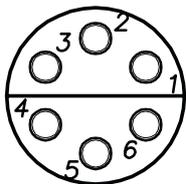
## 6-wire connection



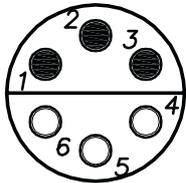
Soldering side (ERO)



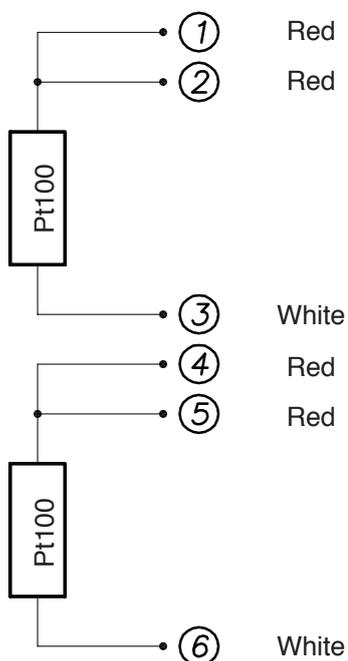
Connector side (ERO)



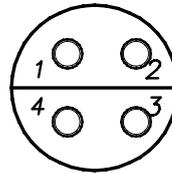
Soldering side (FFA)



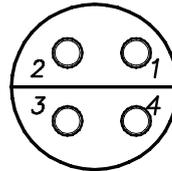
Connector side (FFA)



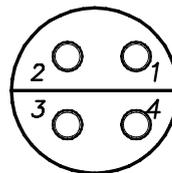
## 4-wire connection



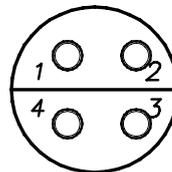
Soldering side (ERO)



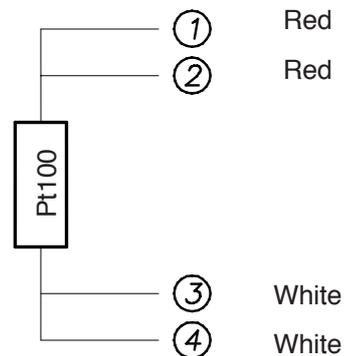
Connector side (ERO)



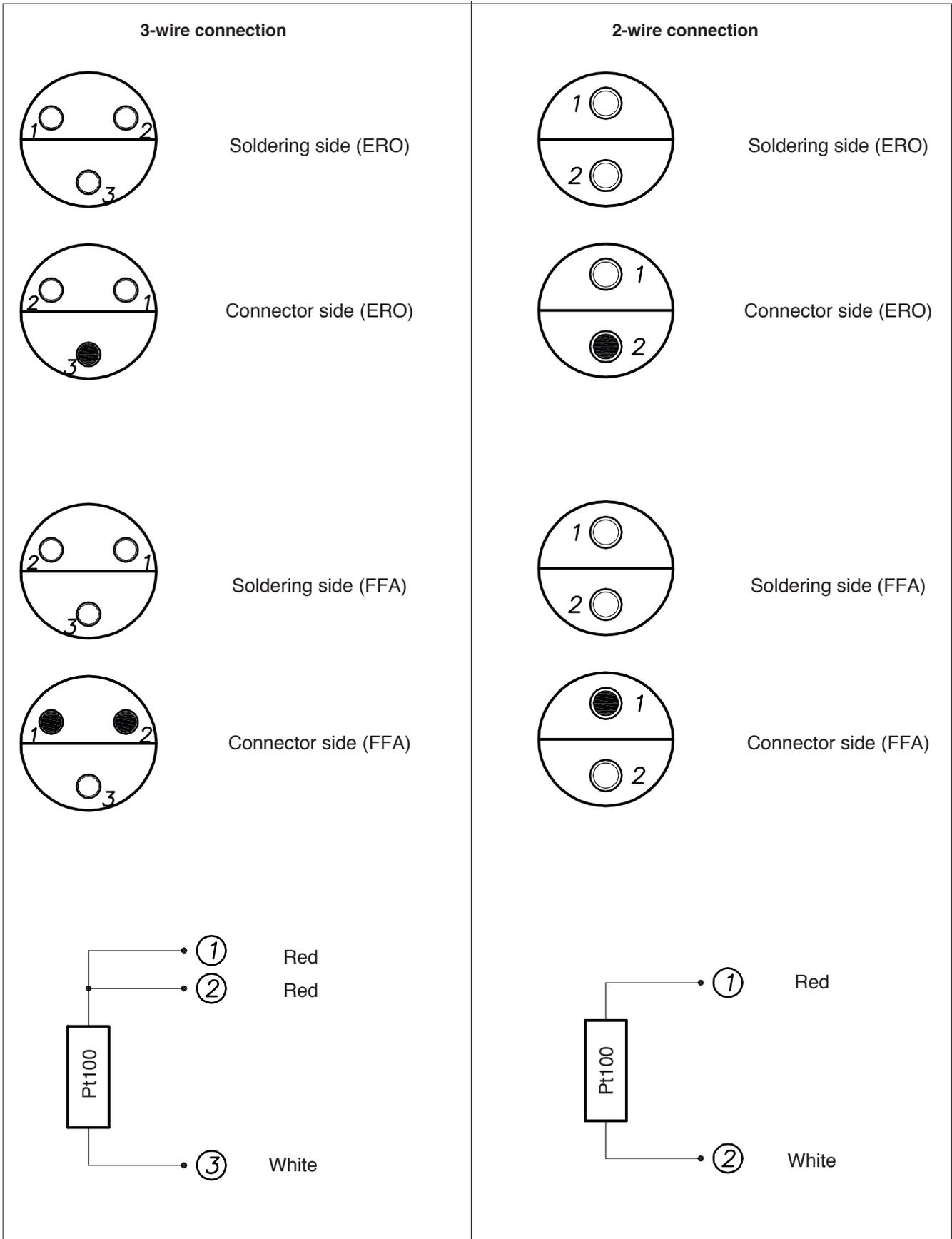
Soldering side (FFA)



Connector side (FFA)



# CONNECTION DIAGRAMS FOR LEMO AND Pt100 CONNECTORS



GEFRAN spa reserves the right to make any kind of design or functional modification at any moment without prior notice

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