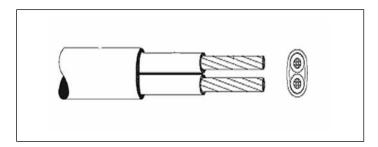
# **GEFRAN** TC/TR ACCESSORIES

## **EXTENSION AND COMPENSATION CABLES FOR THERMOCOUPLES**

#### **PVC CABLE**



Characteristics: Flexible wire

**PVC** isolation

**PVC** sheathing +95°C ÷ -30°C Temperatura:

Fire resistance: Does not propagate fire;

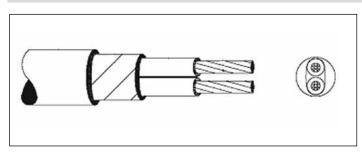
self-extinguishing

Excellent water resistance Impermeability:

Standards and color: DIN 43710-43713

43714 or ANSI MC 96.1

#### **CABLE PMP**



Characteristics: Flexible wire

PVC isolation

Al/Mylar (aluminum alloy)

shielding PVC sheathing

Temperature: +95°C ÷ -30°C

Does not propagate fire; Fire resistance:

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

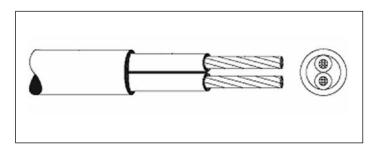
Temperature: +105°C ÷ -25°C Fire resistance:

Does not propagate fire; self-extinguishing

Standards and color: DIN 43710-43713

43714 or ANSI MC 96.1

#### **CABLE** GSC



Characteristics: Flexible wire

Silicone rubber isolation

Silicone rubber sheathing

Temperature: +200°C ÷ -60°C

Fire resistance: Does not propagate fire;

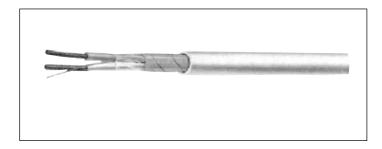
self-extinguishing

Impermeability: Excellent water resistance

Standards and color: DIN 43710-43713

43714 or ANSI MC 96.1

## **GSMYC CABLE**



Characteristics: Silicone isolation

Stranding

Al/Mylar (aluminum alloy)

shielding

Silicone sheathing

Temperature: +180°C ÷ -30°C

Fire resistance: Does not propagate fire;

self-extinguishing

Impermeability:

Excellent water resistance

Standards and color: DIN 43710-43713

2714 or ANGLMC 06 1

43714 or ANSI MC 96.1

## GS CABLE



Characteristics: Cu r / Cu sn wire

Silicone rubber isolation

Temperature: +180°C ÷ -30°

Construction: wire made of elementary

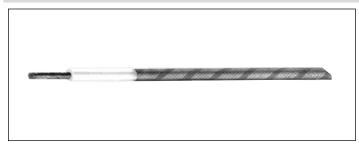
red, tinned, or nickel-plated copper strands, silicone

rubber sheathing.

Properties and uses: heat resistant, flexible.

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

#### GST CABLE



Characteristics: Cu r / Cu sn wire

Silicone rubber isolation

Fiberglass isolation

Temperature: +220°C ÷ -30°

Construction: wire made of elementary

red or tinned copper strands, silicone rubber sheathing, siliconed fibeR-

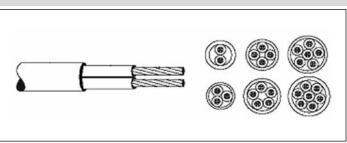
glass braiding.

Properties and uses:

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



Characteristics: - Flexible red (Cu r) or

tinned (CU sn) copper wire
- Silicone rubber isolation
- Silicone rubber sheathing

Temperature: +180°C ÷ −60° Peaks: +200°C Rated voltage: 300/500 V Test voltage: 2000 V

Fire resistance: Good

Oil resistance: Good
Impermeability: Excellent
Flexibility: Excellent

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

2 wires: brown – blue

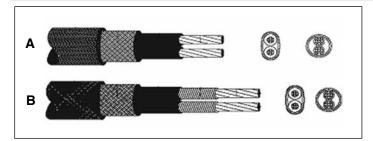
3 wires: yellow green – black – blue

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)

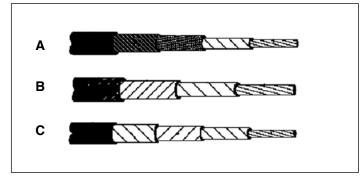
Temperature: +350°C ÷ -60°C

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



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: 1st cable yellow-green; 2nd cable white, 3rd cable as per table

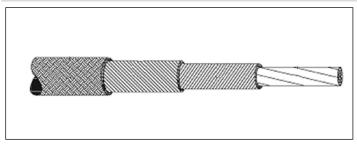
Color of quadripole cable:  $1^{\text{st}}$  cable yellow-green;  $2^{\text{nd}}$  cable white,  $3^{\text{rd}}$  cable crossed black,  $4^{\text{th}}$  cable

as per table

#### 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

## 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

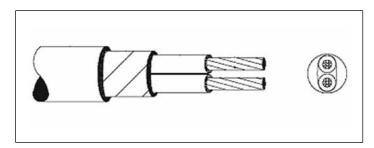
Color of standard cable with nickel-plated copper wire: blue striped

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 isolationSilicone rubber sheathingTinned copper braiding

Temperature: +200°C ÷ -60°C

Fire resistance: Does not propagate fire;

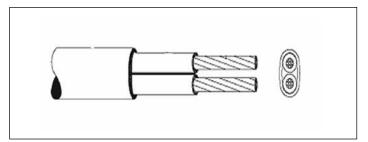
self-extinguishing

Impermeability: Excellent water resistance

Standards and color: DIN 43710-43713

43714 or ANSI MC 96.1

## TES CABLE



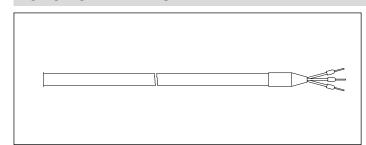
Characteristics: - Flexible wire

- Teflon® isolation

- Fiberglass braiding

Temperature: +250°C ÷ -60°C

## FG40HG4 CABLE



Characteristics: - 4 Cu-Sn wires

Silicone rubber isolationAluminum-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  $^{\circ}\text{C}.$ 

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 Al2O3 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 - Pytagoras 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

[ Sillimantin 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**



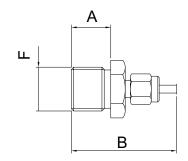
Stainless steel compression fittings Brass compression fittings

## Available stainless steel models

	ø1	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												



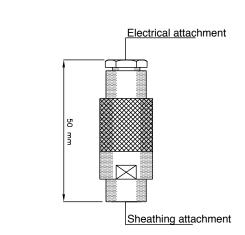
Mechanical dimensions of fitting (F)				
FITTING (F)	A (mm)	B (mm)		
G 1/8	10	35		
G 1/4	12	35		
G 3/8	15	40		
G 1/2	15	40		
1/8 NPT	11	35		
1/4 NPT	16	40		
3/8 NPT	16	40		
1/2 NPT	20	45		

## **CONNECTION HEADS**

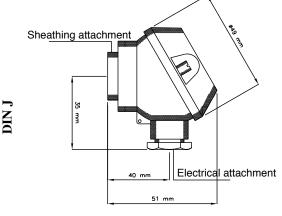


#### **Available models**

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



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



Electrical attachment: M16X1,5 Protection level: IP54

Material: Aluminum alloy, gray epoxy paint

Sheathing attachment

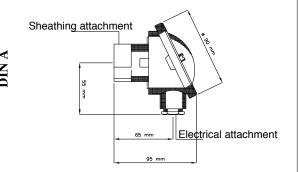
Sheathing attachment

Sheathing attachment

Electrical attachment

Electrical attachment: M20X1,5 Protection level: IP54

Material: Aluminum alloy, gray epoxy paint



Electrical attachment: M20X1,5

Protection level: IP54

Material: Aluminum alloy, gray epoxy paint

## **CONNECTION HEADS**

DIN BUS

Sheathing attachment

A2 mm Electrical attachment

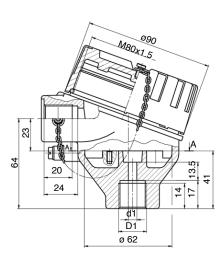
64 mm

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

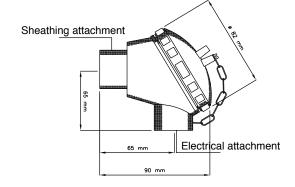
Protection: Chrome plating and chemical

resistant paint

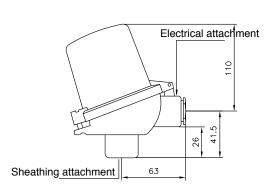
Execution: EEX - d - IIc - 2GD

\* IP68 on Request

EAA



UZ H



Electrical attachment: M20X1,5 Protection level: IP54/IP65\*

Material: Aluminum alloy, gray epoxy paint

\* IP65 on Request

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	ETMX4505
4-20mA amplifier for Pt100 certified Atex II	
1G Eex ia IIB T4/T5/T6	ETMX4506
4-20mA amplifier for Thermocouple certificated	
Atex II 1G Eex ia IIB T4/T5/T6	ETMZ5504
4-20mA amplifier for Thermocouple	ETMZ5505
Inor 4-20mA amplifier for Thermocouple and Pt100	
programmable from PC	ETMZ5506
Software Inor 4-20mA 20mA amplifier programmable	
from DO complete with competence le	
from PC, complete with connector cable	
Datexel 4-20mA amplifier for Thermocouple and	<del></del>
<del>-                                   </del>	
Datexel 4-20mA amplifier for Thermocouple and	
Datexel 4-20mA amplifier for Thermocouple and Pt100 programmable from PC	

# **ADAPTER FOR 4-20mA SIGNAL AMPLIFIERS**



#### **Available models**

DIN rail adapter for 4-20mA head amplifiers	

## **DISPLAY**



## Available models

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

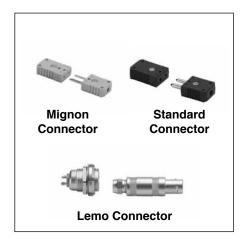
## **IP67 REMOTE TEMPERATURE INPUTS ON CANOPEN FIELDBUS**



## Available models

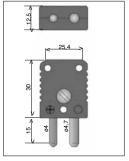
For plate mounting	GLK67-BRTC
For mounting with Harting connector	GLK67-IRTC

## **CONNECTORS**

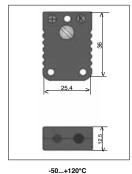


#### **Available models**

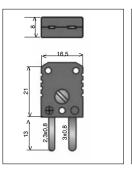
Standard compensated male connector for TC J black	E1827106
Standard compensated female connector for TC J black	E1827107
Compensated panel connector for TC J black	E1827108
Mignon compensated male connector for TC J black	E1927106
Mignon compensated female connector for TC J black	E1927107
Standard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



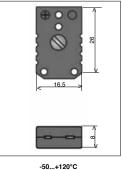
-50...+120°C Standard compensated male connector



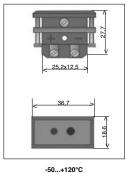
Standard compensated female connector



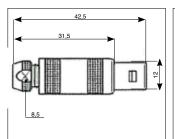
-50...+120°C Mignon compensated male connector



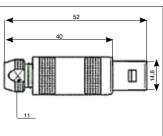
Mignon compensated female connector



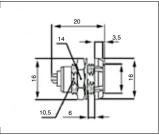
Panel compensated connector



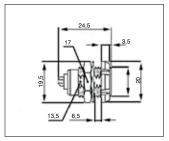
Lemo connector modell FFA serie 1S



Lemo connector modell FFA serie 2S

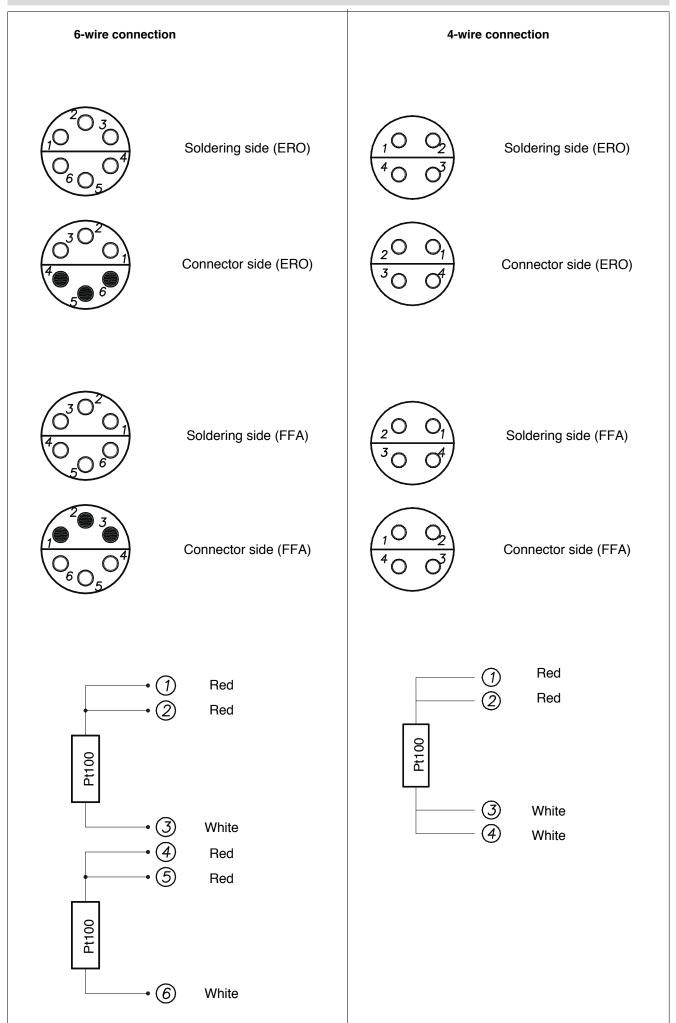


Lemo connector modell ERD serie 1S

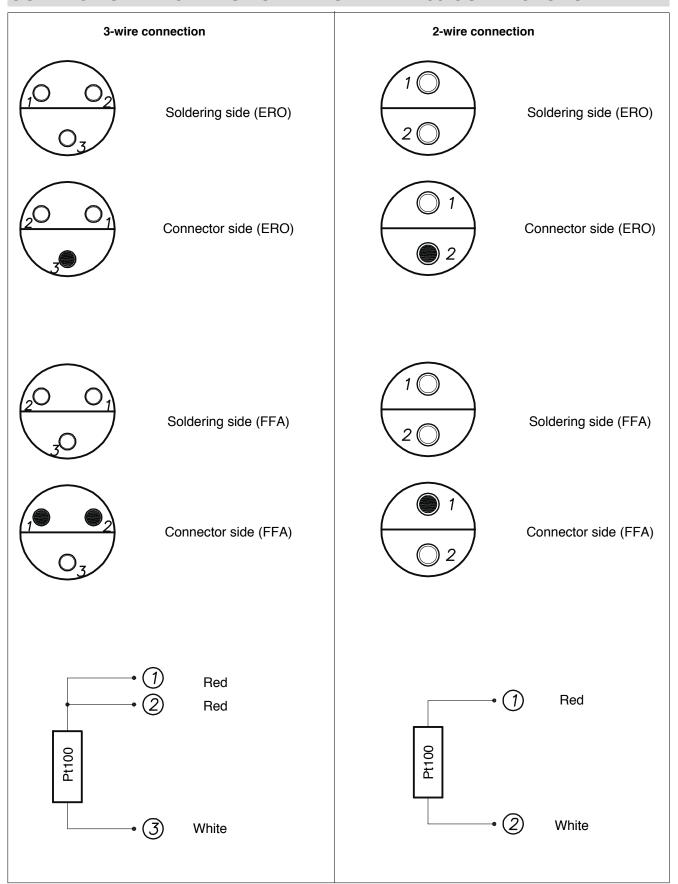


Lemo connector modell ERD serie 2S

## **CONNECTION DIAGRAMS FOR LEMO AND Pt100 CONNECTORS**



## 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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