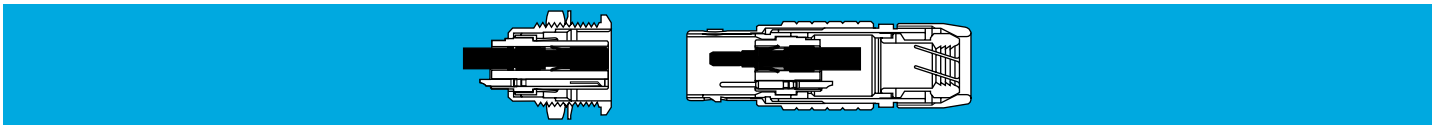
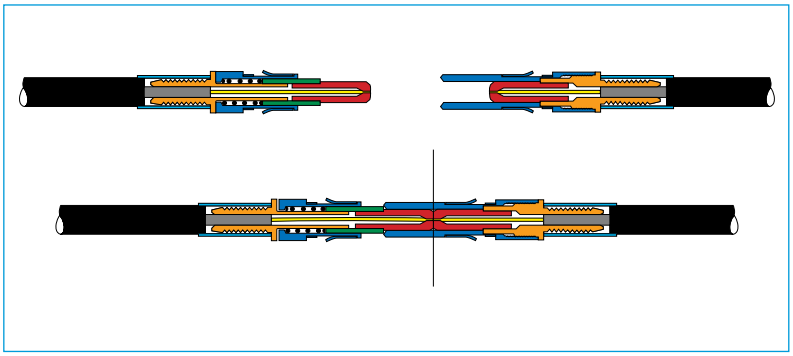


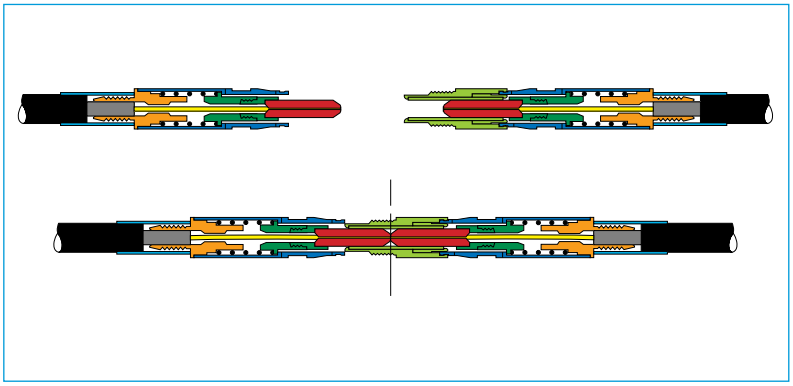
Fibre Optic Contacts

In order to ensure the highest technical performance and to provide the optimal solution for a diversity of applications, LEMO has developed the 4 types of fibre optic contacts designated F1, F2, F3, and F4.
F2 and F4 contacts are designed with fully floating pre-domed ceramic ferrule. Such contacts are mainly designed to operate with single-mode and multi-mode fibres with small core dimensions.
F1 and F3 contacts are using floating metallic or ceramic ferrules. They are ideal for use with multi-mode, silica or plastic fibres with large core diameters.



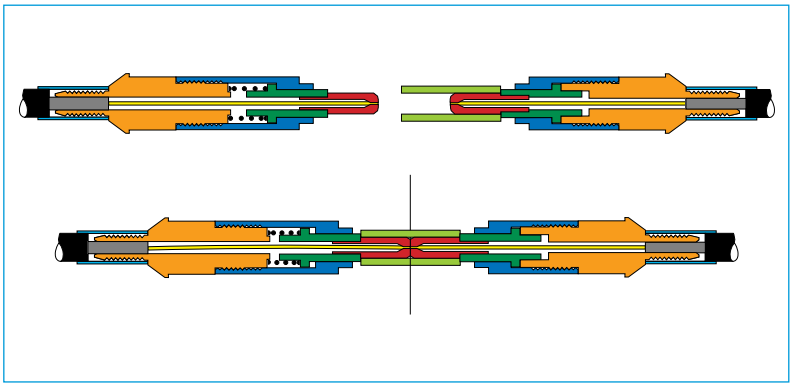
Contact F1

- Contact body: part ensuring the alignment of the two ferrules and retention of the contact into the insulator, made of rust-proof alloy. Clips is made of Cu-Be
- Crimp holder: provided for cable fixing, made of rustproof alloy
- Ferrule made of rustproof alloy or ceramic depending on the fibre diameter
- Ferrule holder made of rustproof alloy
- Stainless steel spring to guarantee mating precision of the two ferrules lengthwise
- Crimp ferrule made of Nickel-plated copper for fixing the cable onto the crimp holder
- Fibre
- Buffer
- Cable



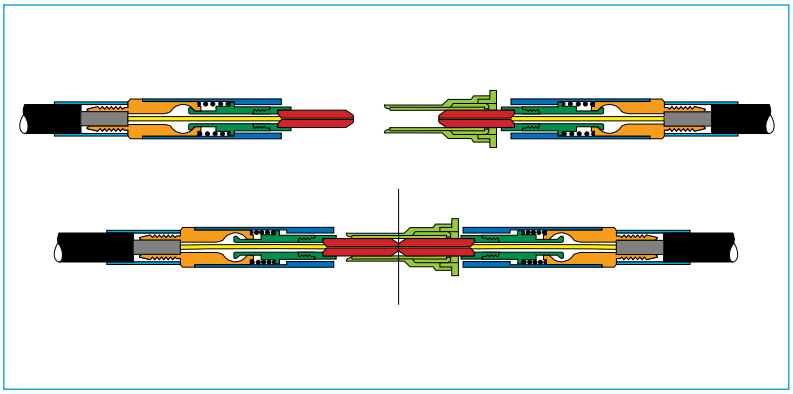
Contact F2

- Contact body: part ensuring the retention of the contact into the insulator, made of PEEK
- Crimp holder: provided for cable fixing, made of Nickel-plated brass
- Ferrule made of ceramic
- Ferrule holder made of rustproof alloy
- Stainless steel spring to guarantee physical contact of the two ferrules with correct pressure
- Crimp ferrule made of Nickel-plated copper for fixing the cable onto the crimp holder
- Alignment tube to guarantee the alignment of the two ferrules when mated, made of ceramic and rustproof alloy
- Fibre
- Buffer
- Cable



Contact F3

- Contact body: part ensuring the alignment of the contact into connector shell, made of Nickel-plated brass
- Crimp holder: provided for cable fixing, made of Nickel-plated brass
- Ferrule made of rustproof alloy or ceramic depending on the fibre diameter
- Ferrule holder made of rustproof alloy
- Stainless steel spring to guarantee mating precision of the two ferrules lengthwise
- Crimp ferrule made of Nickel-plated copper for fixing the cable onto the crimp holder
- Alignment tube to guarantee the alignment of the two ferrules when mated, made of rustproof alloy
- Fibre
- Buffer
- Cable



Contact F4

- Contact body: part ensuring the alignment of the contact into connector shell, made of rustproof alloy
- Crimp holder: provided for cable fixing made of Nickel-plated brass
- Ferrule made of ceramic
- Ferrule holder made of rustproof alloy
- Stainless steel spring to guarantee physical contact of the two ferrules with correct pressure
- Crimp ferrule made of Nickel-plated copper for fixing the cable onto the crimp holder
- Alignment tube to guarantee the alignment of the two ferrules when mated (always fitted into the fixed or free socket) made of ceramic and rustproof alloy
- Fibre
- Buffer
- Cable

Optical Performance for F1, F2, F3, and F4 Type Contacts

The optical performance for the fibre optic contacts relates to the insertion and return losses measured at the junction of the fibre to fibre interface. These losses are caused mainly by minute geometrical effects of the critical alignment components and deviations in the fibre core and cladding dimensions.

The insertion loss results for multi-mode and single-mode fibres are given whereas the return loss values are provided for single-mode fibres only.

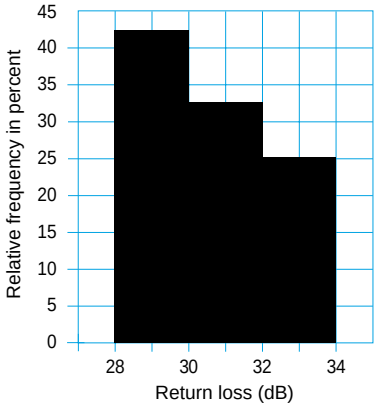
Insertion and return losses are expressed in decibels (dB). The data shown in the diagrams below correspond to numerous matings using various batches of optical fibres and connectors.

Measurements with Single-mode Fibre for F2 and F4 Contacts.

Insertion loss

Mean = 0.10 dB
Tested at 1300 nm
Tested according to the standard IEC 61300-03-04, Insertion Method B.
Fibre = 9/125 µm
Ferrule bore diameter = 125 µm

Return loss

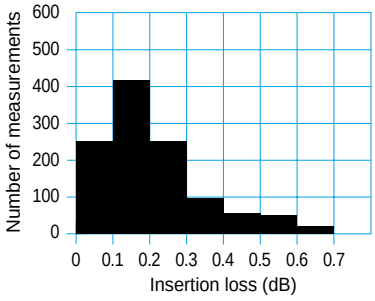


Mean = 30.42 dB
Tested at 1300 nm
Tested according to the standard IEC 61300-03-06, Branching Device Method
Fibre = 9/125 µm, Hand Polishing

Note: It is possible to obtain return losses better than 45 dB with UPC polishing techniques.
Please consult LEMO for more detailed information.

Measurements with Multi-mode Fibre for F2 and F4 Contacts

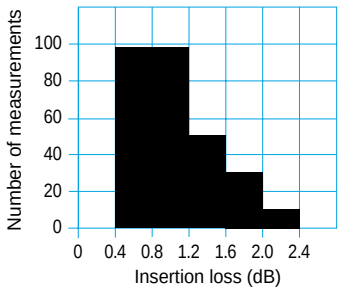
Insertion loss



Mean = 0.25 dB
Tested at 1300 nm
Tested according to the standard IEC 61300-03-04, Insertion Method B.
Fibre = 50/125 µm
Ferrule bore diameter = 126 µm

Measurements with Multi-mode Fibre for F1 and F3 Contacts

Insertion loss



Mean = 1.13 dB
Tested at 850 nm
Tested according to the standard IEC 61300-03-04, Insertion Method B.
Fibre = 200/230 µm
Ferrule bore diameter = 235 µm

Change in attenuation vs. environmental and mechanical conditions

Characteristic	Value	Standard	Change in attenuation [1]	
			F2-F4 Contacts	F1-F3 Contacts
High temperature	+ 80°C	IEC 61300-02-18	< 0.20 dB	< 0.20 dB
Low temperature	- 40°C	IEC 61300-02-17	< 0.20 dB	< 0.20 dB
Change of temperature (7 cycles)	Diagram 1 below	IEC 61300-02-22	< 0.20 dB	< 0.20 dB
Damp heat steady state	Up to 95 % RH, 60°C	IEC 61300-02-19	< 0.20 dB	< 0.15 dB
Mating cycles (contact F1; F2; F3)	1000	IEC 61300-02-02	< 0.15 dB	< 0.15 dB
Mating cycles (contact F4)	500	IEC 61300-02-02	< 0.15 dB	–
Cable retention [2]	100 N	IEC 61300-02-04	< 0.10 dB	–
Impact (Method A)	1 m onto concrete floor	IEC 61300-02-12	< 0.10 dB	< 0.15 dB
Shock (3 cycles in 2 directions)	100 g, 10-50 ms; 20 g, 6-9 ms	IEC 61300-02-09	< 0.10 dB	< 0.20 dB
Vibration (7 cycles)	Diagram 2 below	IEC 61300-02-01	< 0.20 dB	< 0.25 dB

Note:
[1] The insertion loss variations were measured during the entire environmental and mechanical tests respectively.
[2] Value quoted is for 2.5 mm tight jacket cable. In practice the cable retention depends on many factors including the cable construction.

Diagram 1: Temperature cycles

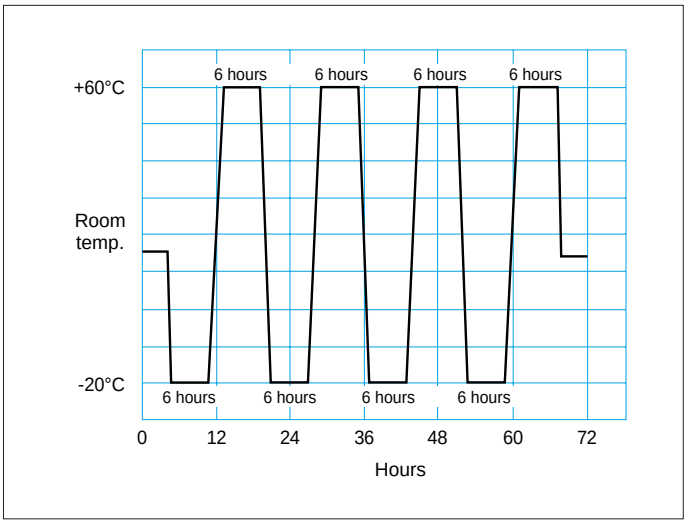


Diagram 2: Vibration