

00 NIM-CAMAC & 01 COAXIAL CONNECTORS

00
01
SERIES



LEMO coaxial 00 and 01 Series (50 Ω)

Fundamental research in particle physics as practised within CERN and other nuclear research establishments requires more and more complex equipment of high performance in order to achieve the objectives. The needs of such research contribute to the development of leading products for the whole of industry. For many years LEMO has participated in this evolution. This has resulted in a range of miniature coaxial connectors (50 Ω) with a push-pull self-latching system, the LEMO 00.250 series. These connectors now form the basis of the NIM-CAMAC CD/N 549 standard.

The plugs and sockets of the 01 series are amongst the smallest available 50 Ω coaxial connectors with a self-latching intermating capability. In spite of their small size and light weight, their technical characteristics remain excellent. Available in a wide range of housing configurations, they are especially useful when connecting onto printed circuit boards.

The LEMO 00 series and 01 are now used in many areas such as: telecommunications, sensors, medical equipment, space research, etc...

The program covered in this catalog now includes more than 50 models suitable for many cable types.

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Precision modular connectors to suit your application

Since its creation in Switzerland in 1946 the LEMO Group has been recognized as a global leader of circular Push-Pull connectors and connector solutions. Today LEMO and its affiliated companies, REDEL and COELVER, are active in more than 80 countries with the help of over 40 subsidiaries and distributors.

Over 50'000 connectors

The modular design of the LEMO range provides over 50'000 connectors from miniature \varnothing 3 mm to \varnothing 50 mm, capable of handling cable diameters up to 30 mm and for up to 106 contacts.

This vast portfolio enables you to select the ideal connector configuration to suit almost any specific requirement in most markets, including medical devices, test and measurement instruments, machinery, audio video broadcast, telecommunications and military.

LEMO's Push-Pull Self-Latching Connection System

This self-latching system is renowned worldwide for its easy and quick mating and unmating features. It provides absolute security against vibration, shock or pull on the cable, and facilitates operation in a very limited space.

The LEMO self-latching system allows the connector to be mated by simply pushing the plug axially into the socket.

F_v : average latching force

		Series	
Force		00	01
F_v		9N	5N

Once firmly latched, connection cannot be broken by pulling on the cable or any other component part other than the outer release sleeve.

F_a : average pull force with axial pull on the collet nut

		Series	
Force		00	01
F_a		120N	110N

When required, the connector is disengaged by a single axial pull on the outer release sleeve. This first disengages the latches and then withdraws the plug from the socket.

F_d : average unmating force with axial pull on the outer release sleeve.

		Series	
Force		00	01
F_d		7N	6N

1N = 0,102 kg.

Force measured according to the standard IEC 60512- test

UL Recognition

LEMO connectors are recognized by the Underwriters Laboratories (UL). The approval of the complete system (LEMO connector, cable and your equipment) will be easier because LEMO connectors are approved.

CE marking

CE marking means that the appliance or equipment bearing it complies with the protection requirements of one or several European safety directives. CE marking applies to complete products or equipment, **but not to electromechanical components, such as connectors.**

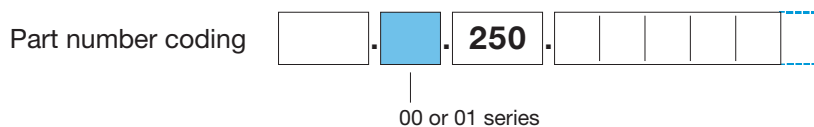
RoHS

LEMO connector specifications exceed the requirements of the RoHS directives (2011/65/EU) of the European Parliament and the latest amendments. This directive specifies the restrictions of the use of hazardous substances in electrical and electronic equipment marketed in Europe.

2 steps to select the right connector

● Step 1: Select connector series

Select the appropriate LEMO connector series according to the standard, the cable, according to the application or the mated connector already on your equipment.

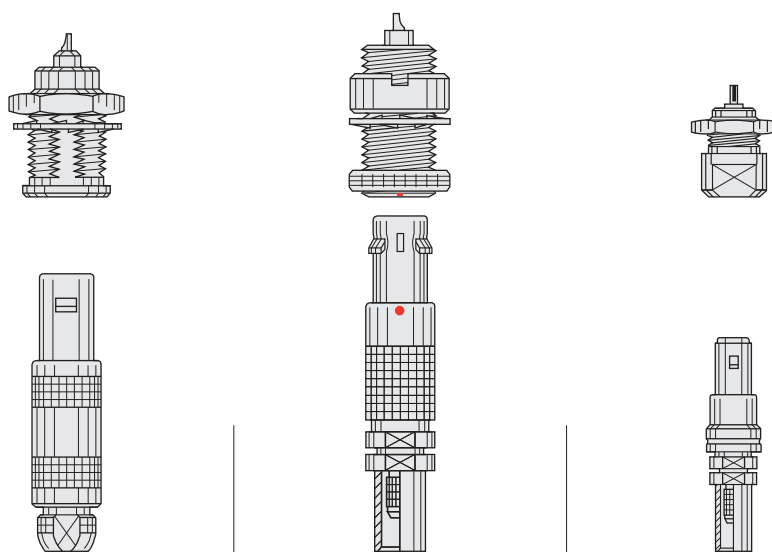


The NIM-CAMAC 00.250 series

The 00 series is coaxial (50 Ω). This connectors family was conceived for all applications where a high density of connectors is necessary, especially for patch panels. Because of LEMO's special self-latching system, it is possible to connect them with a simple axial push-pull thereby reducing the space needed to mount sockets to an absolute minimum, up to 50 sockets per square decimetre. LEMO 00 connectors served as the norm for NIM-CAMAC CD/N549 standard, used in nuclear physics as well as many other applications.

The miniature 01.250 series

The 01 series is coaxial (50 Ω). The plugs and sockets are amongst the smallest available 50 Ω coax connectors with a self-latching intermating capability. In spite of their small size and light weight, their technical characteristics remain excellent. Available in a wide range of housing configurations, they are especially useful when connecting onto printed circuit boards.



	00	00	01
Series	00	00	01
Standard	NIM-CAMAC	-	-
Environment	indoor	indoor	indoor
Ingress Protection ¹⁾	IP50	IP50	IP50
Ingress Protection ²⁾	IP64	IP50	IP64
Temperature range	- 55 to 260°C	- 55 to 260°C	- 55 to 230°C
Keying	-	Yes	-
Latching	Push-Pull self-latching		
Contact type	Solder, crimp or print	Solder, crimp or print	Solder or print
Cable fixing type	Clamping or crimping	Crimping	Crimping

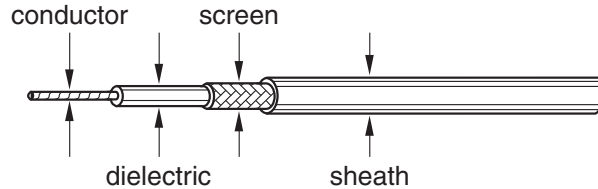
Note: ¹⁾ IP50 = Protection from the amount of dust that would interfere with the operation of the equipment
²⁾ Ingress protection between LEMO socket and your device (IP64 = protection from splashed water and dust tight)

Step 2: Complete the part number

Complete the part numbering by choosing the model depending on your cable and the application.

Part number coding . . **250** .

Verify the fitting to your cable and cable wire



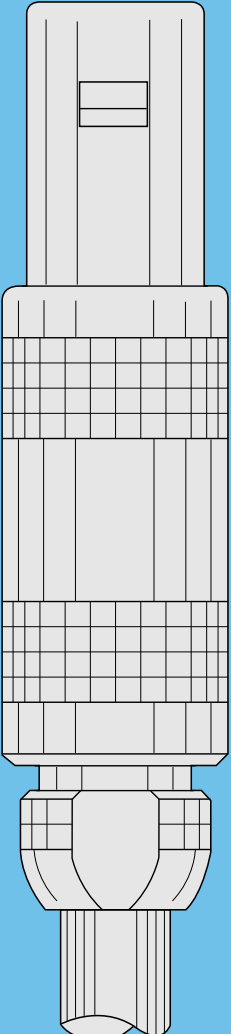
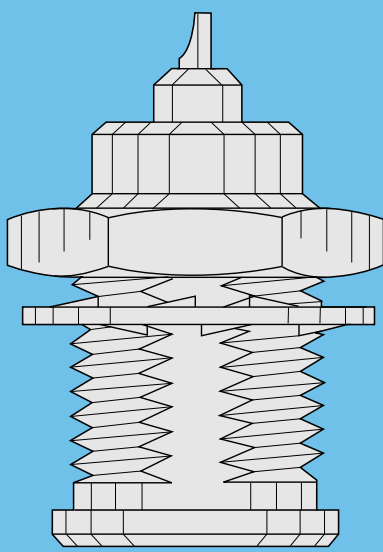
Recommended coaxial cables

Electrical and general properties

	MIL-C-17	IEC 60096-2	CCTU 10-01A	LEMO Part-No	LEMO Cable group	Impedance Ohm	Capacitance pF/m	Attenuation dB/100 m at 100 MHz	Operating voltage U max. KV eff.	Temperature °C		Series	
										from	to	00	01
Standard	RG 58 C/U	50.3.1	KX 15	CCX.50.RG5.8CU50N	6	50 ± 2	101	23	1.90	-25	+70	•	
	RG 142 B/U			CCX.50.RG1.42BU50M	7	50 ± 2	95	12.8	1.50	-70	+200	•	
	RG 174 /U	50.2.1	KX 38	CCX.50.RG1.74U25N	3	50 ± 2	101	35	2.50	-40	+75	•	•
	RG 174 A/U	50.2.1	KX 3A	CCX.50.RG1.74AU27N	8	50 ± 2	101	31.5	1.50	-25	+70	•	•
	RG 178 B/U	50.1.1	KX 21A	CCX.50.RG1.78BU18M	1	50 ± 2	96	48	0.70	-90	+205	•	•
	RG 179 B/U	75.2.1		CCX.75.RG1.79BU26M	2	75 ± 3	64	33	1.20	-90	+205	•	•
	RG 187 A/U	75.2.2		CCX.75.RG1.87AU26B	2	75 ± 3	64	33	1.20	-50	+205	•	•
	RG 188 A/U	50.2.3		CCX.50.RG1.88AU24B	4	50 ± 2	96	33	1.20	-50	+205	•	•
	RG 195 A/U			CCX.95.RG1.95AU37B	5	95 ± 5	49	17	1.50	-90	+205	•	
	RG 196 A/U	50.1.2		CCX.50.RG1.96AU20B	1	50 ± 2	96	48	0.70	-50	+205	•	•
RG 316 /U	50.2.2	KX 22A	CCX.50.RG3.16BU26M	4	50 ± 2	96	33	1.20	-90	+205	•	•	
Non standard	Huber+Suhner	G02232D-60			8	50 ± 2	101	24	1.50	-40	+105	•	
	Huber+Suhner	K01152-07			9	50 ± 5	96	72	0.45	-45	+165	•	
	Storm	421-099			8	50 ± 2	96	72	2.50	-40	+75	•	

Mechanical properties

	Type	Conductor			Dielectric		Screen		Sheath			Weight
		Mat.	Stranding	ø mm	Mat.	ø mm	Mat.	ø mm	Mat.	Colour	ø mm	kg/100m.
Standard	RG 58 C/U	CuSn	19 x 0.18	0.90	PE	2.92	CuSn	3.6	PVC	black	4.95	3.80
	RG 142 B/U	CuStAg	solid	0.95	PTFE	2.95	CuAg CuAg	1 st : 3.53 2 nd : 4.20	FEP		4.95	6.60
	RG 174 U	CuSt	7 x 0.16	0.48	PE	1.50	CuSn	2.0	PVC1	black	2.55	
	RG 174 A/U	CuSt	7 x 0.16	0.48	PE	1.50	CuSn	2.0	PVC2	black	2.80	1.10
	RG 178 B/U	CuStAg	7 x 0.10	0.30	PTFE	0.87	CuAg	1.4	FEP	brown	1.80	0.85
	RG 179 B/U	CuStAg	7 x 0.10	0.30	PTFE	1.50	CuAg	2.0	FEP	brown	2.60	1.50
	RG 187 A/U	CuStAg	7 x 0.10	0.30	PTFE	1.50	CuAg	2.0	PFA	white	2.60	1.60
	RG 188 A/U	CuStAg	7 x 0.18	0.54	PTFE	1.50	CuAg	2.0	PFA	white	2.60	1.60
	RG 195 A/U	CuStAg	7 x 0.10	0.30	PTFE	2.52	CuAg	3.1	PFA	white	3.70	2.80
	RG 196 A/U	CuStAg	7 x 0.10	0.30	PTFE	0.87	CuAg	1.37	PFA	white	2.00	1.10
RG 316 /U	CuStAg	7 x 0.18	0.54	PTFE	1.50	CuAg	2.1	FEP	brown	2.60	1.60	
Non standard	G02232D-60	Cu	7 x 0.16	0.50	PE	1.50	CuAg CuSn	1 st : 1.95 2 nd : 2.40	PVC	grey	3.10	2.10
	K01152-07	CuAg	7 x 0.06	0.19	PFA	0.52	CuAg	0.9	PFA	white	1.25	0.90
	421-099	CuStAg	7 x 0.16	0.50	PTFE	1.52	CuAg CuAg	1 st : 2.00 2 nd : 2.50	FEP		3.05	1.95



00 SERIES (NIM-CAMAC)

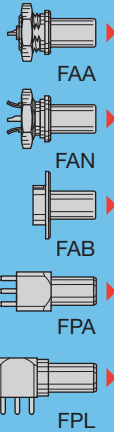
00 Series (NIM-CAMAC CD/N 549)

The 00 series is a range of 50 Ω coaxial connectors. They are suitable for a wide variety of applications particularly in measurement, control system and nuclear physics, having formed the basis for the NIM-CAMAC CD/N 549 standard. LEMO 00 connectors offer customers many benefits including:

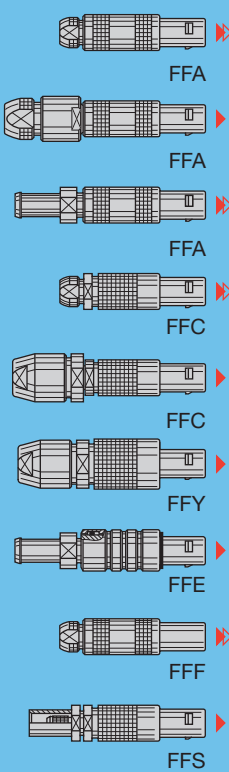
- Self-latching push-pull system
- Aesthetically pleasing appearance
- Small size
- High packing density
- Rugged construction
- Ease of use
- Low weight
- Reliable performances
- Wide choice to suit application

Metal housing models (page 8)

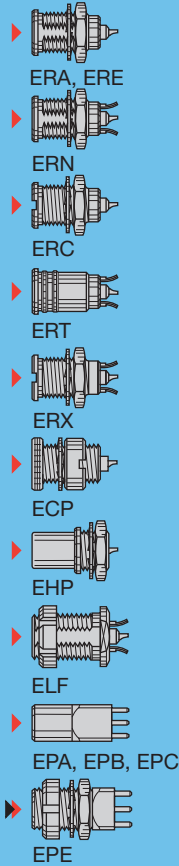
Fixed plugs



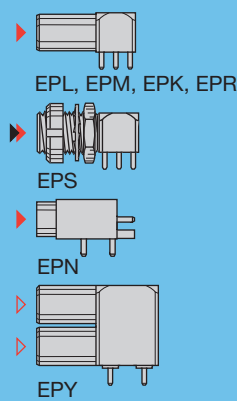
Straight plugs



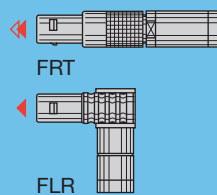
Fixed sockets



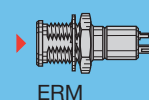
Elbow sockets



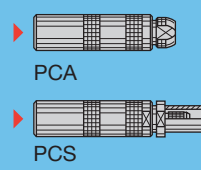
Plugs with resistor



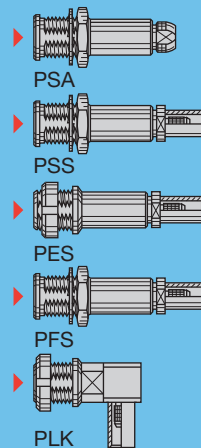
Socket with microswitch



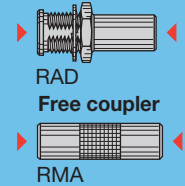
Free sockets



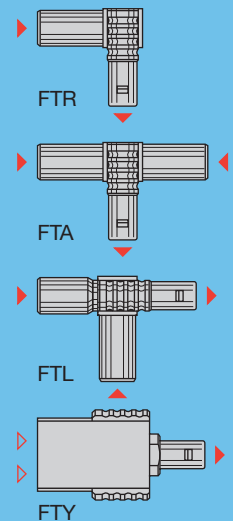
Fixed sockets



Fixed coupler

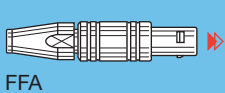


Straight and elbow plugs with socket

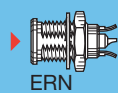


Plastic housing models* (page 21)

Straight plug

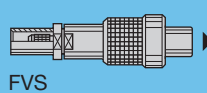


Fixed socket



Threaded latching models* (page 26)

Straight plug

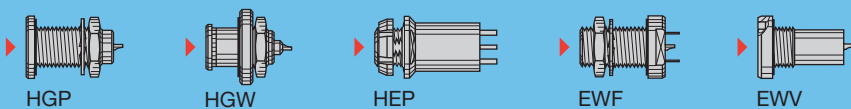


Adaptors

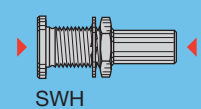
(See page 27)

Watertight or vacuumtight models (page 22)

Straight sockets

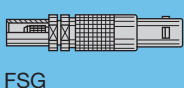


Straight coupler

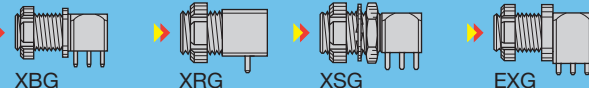


Metal housing models with mechanical keying* (page 24)

Straight plug



Elbow sockets

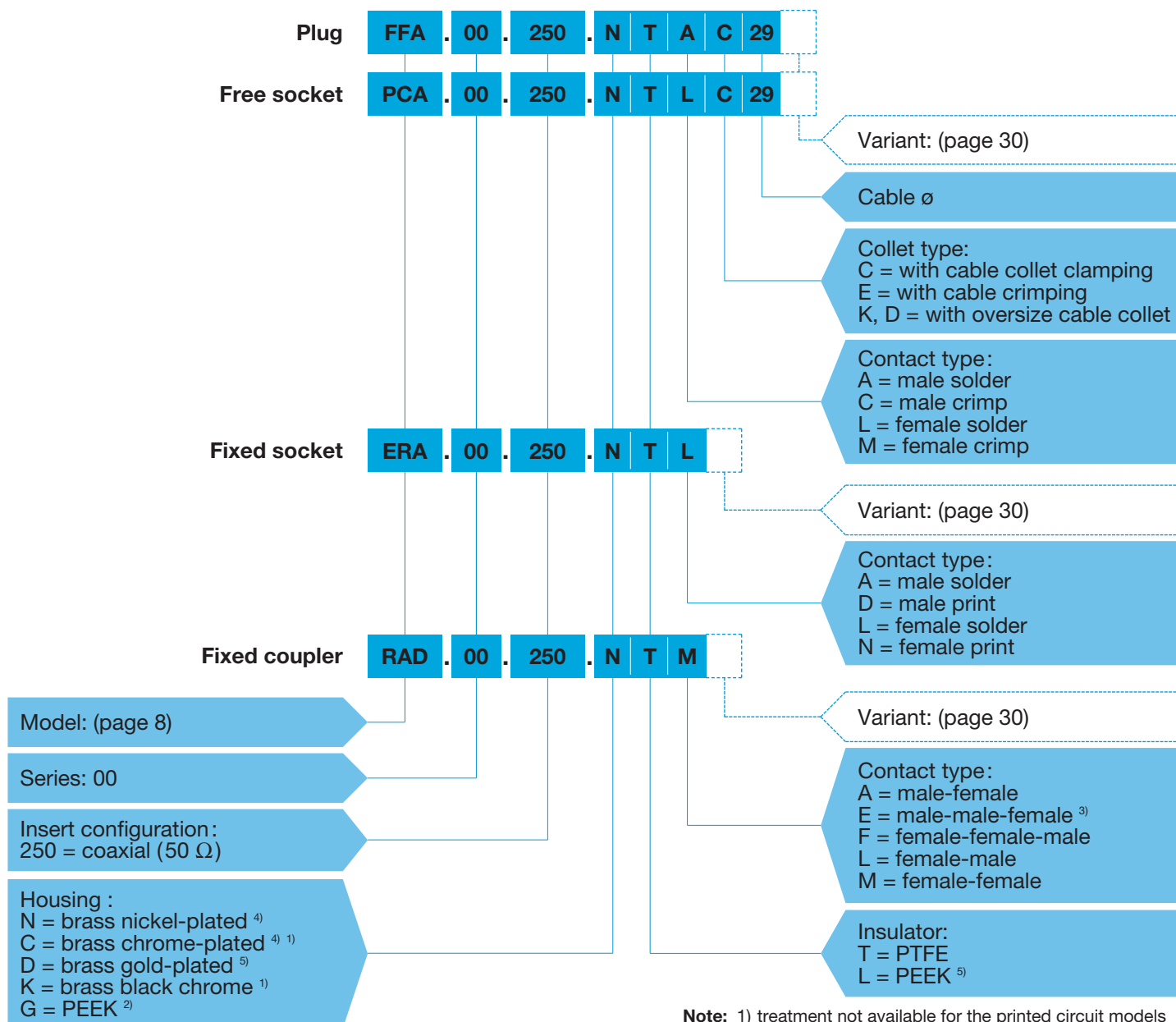


Fixed sockets



* not included in NIM-CAMAC standard

Part Numbering System

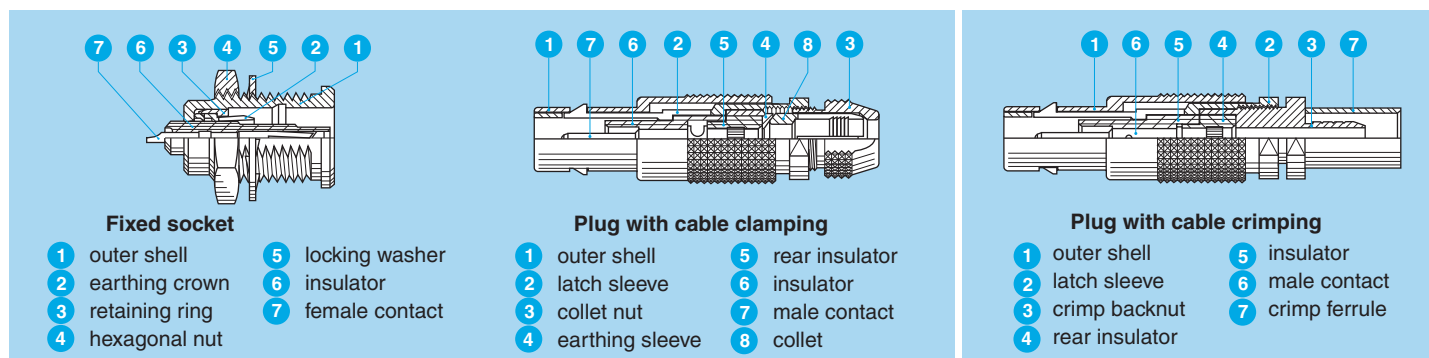


Note: 1) treatment not available for the printed circuit models
 2) available for the FFA and ERN model only
 3) used only for models: FTA, FTL and FTY.
 4) standard
 5) non-standard, on request only

Part Number Example

FFA.00.250.NTAC29 = straight plug with cable collet, series 00, coaxial type (50 Ω), outer shell in nickel-plated brass, PTFE insulator, male solder contact, C type collet of 2.9 mm diameter.

Part Section Showing Internal Components





Metal housing models

Technical Characteristics

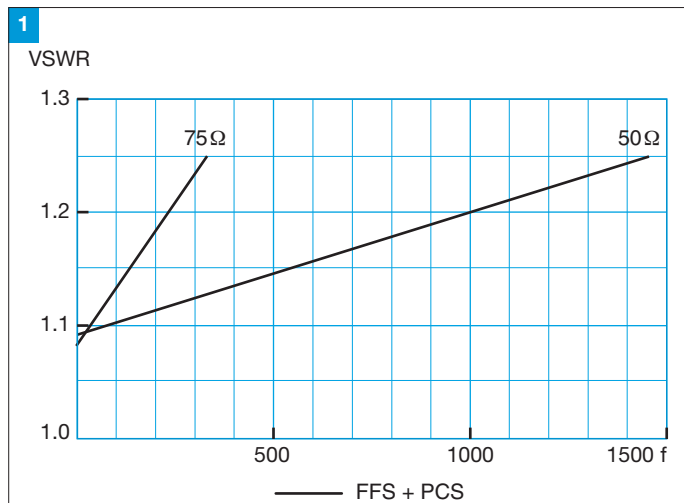
Mechanical and climatical

Characteristics	Value	Standard	Test
Contact retention force	> 18 N	IEC 60512-8	15a
Cable pull off force ¹⁾	> 100 N	IEC 60512-9	17c
Connector pull off force	> 90 N	IEC 60512-8	15f
Endurance	> 5000 cycles	IEC 60512-5	9a
Operating temperature	- 55°C + 260°C		

Note: ¹⁾ depending on cable design

Voltage Standing Wave Ratio

The VSWR (Voltage Standing Wave Ratio) is the value representing the power reflected in a connection. The VSWR varies with frequency, in most cases, the working frequency range is where VSWR is ≤ 1.25 .



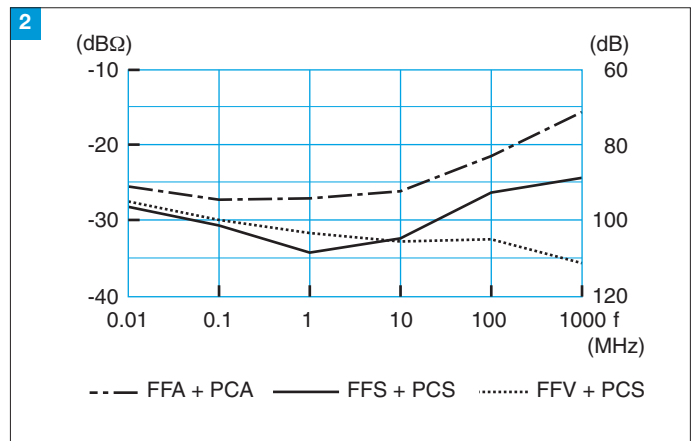
Note: value for connectors with PTFE insulator. VSWR measured 50 Ω with a RG-174 A/U cable and 75 Ω with a RG-179 B/U cable. Measured according to IEC-60169-1-1.

Electrical

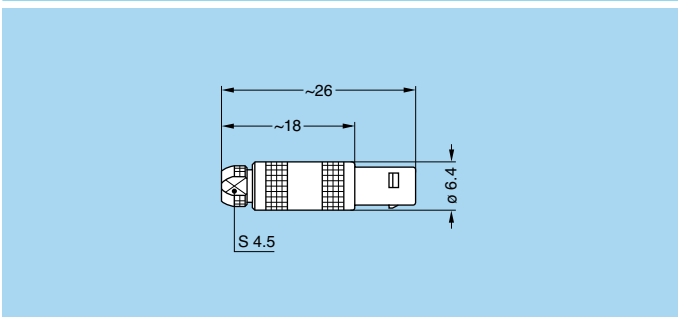
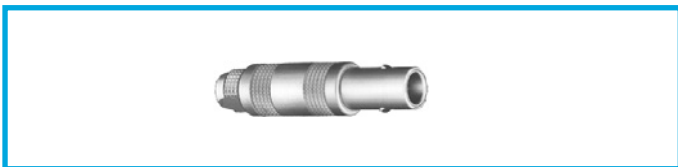
Characteristics	Value	Standard	Test
Impedance	50 Ω	-	
Operating voltage (50 Hz)	0.7 kV rms	-	
Test voltage (50 Hz)	2.1 kV rms	IEC 60512-2	4a
Rated current	4 A	IEC 60512-3	5a
Contact resistance	< 6 m Ω	IEC 60512-2	2a
Shell electrical continuity	< 3.5 m Ω	IEC 60512-2	2f
Insulating resistance	> 10 ¹² Ω	IEC 60512-2	3a
VSWR	see chart N°1 below		
Shielding efficiency	see chart N°2 below		

Shielding efficiency (EMC properties) in dB (transfer impedance in dB Ω)

The shielding efficiency is the ratio between the electromagnetic field inside the connector and a power source at the outside of the connector (or vice versa).



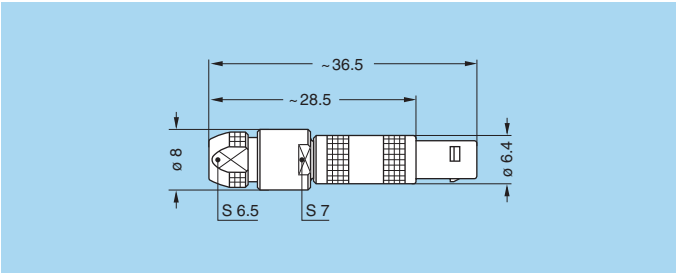
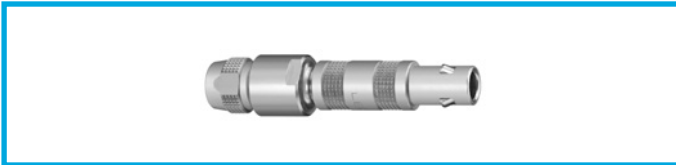
Note: measured according to IEC-60169-1-3 standard.



FFA Straight plug with cable collet

Part number	Cable group	Cond. \varnothing max.	Dielectric \varnothing max.	Sheath \varnothing	
				min.	max.
FFA.00.250.NTAC15	9	0.55	1.45	1.1	1.4
FFA.00.250.NTAC17	-	0.55	1.45	1.3	1.7
FFA.00.250.NTAC22	1	0.55	1.95	1.8	2.2
FFA.00.250.NTAC27	2-3-4	0.55	1.95	2.3	2.7
FFA.00.250.NTAC31	8	0.55	1.95	2.8	3.1

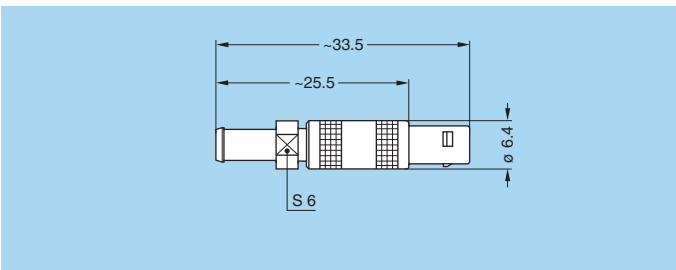
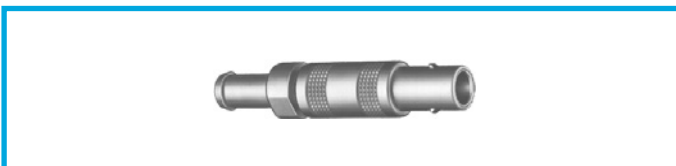
M1 Cable assembly, solder contact (page 39)



FFA Straight plug with oversize cable collet

Part number	Cable group	Cond. Ø max	Dielectric Ø maxi	Sheath Ø	
				mini	maxi
FFA.00.250.NTAK37	8	0.55	1.95	3.0	3.6
FFA.00.250.NTAK42	-	0.55	1.95	3.3	4.1

M1 Cable assembly, solder contact (page 39)

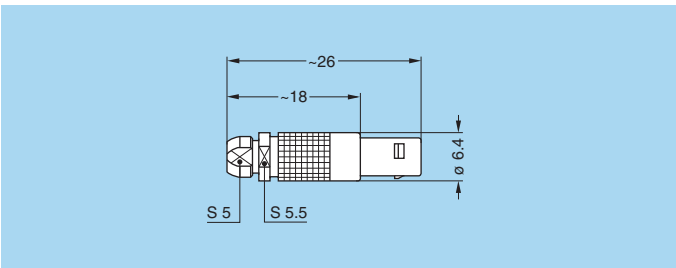
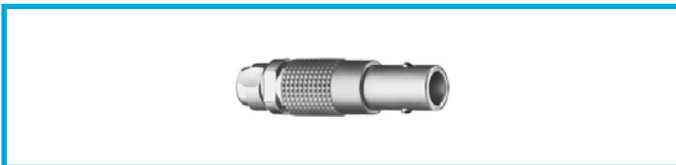


FFA Straight plug with cable collet and nut for fitting a bend relief

Part number	Cable group	Cond. Ø max	Dielectric Ø maxi	Sheath Ø	
				mini	maxi
FFA.00.250.NTAC15Z	9	0.55	1.45	1.1	1.4
FFA.00.250.NTAC17Z	-	0.55	1.45	1.3	1.7
FFA.00.250.NTAC22Z	1	0.55	1.95	1.7	2.1
FFA.00.250.NTAC27Z	2-3-4	0.55	1.95	2.3	2.7
FFA.00.250.NTAC31Z	8	0.55	1.95	2.8	3.1

M1 Cable assembly, solder contact (page 39)

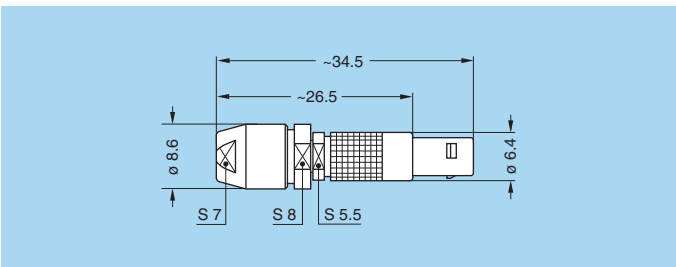
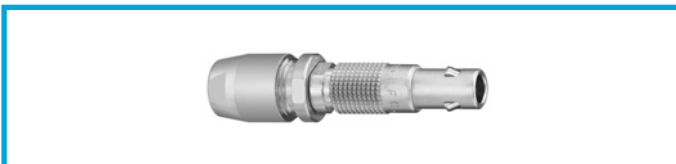
Note: the bend relief must be ordered separately (see page 30).



FFC Straight plug with flats on latch sleeve and cable collet

Part number	Cable group	Cond. Ø max	Dielectric Ø maxi	Sheath Ø	
				mini	maxi
FFC.00.250.CTAC22	1	0.60	1.55	1.7	2.1
FFC.00.250.CTAC27	2-3-4	0.60	1.95	2.3	2.7
FFC.00.250.CTAC31	8	0.60	1.95	2.8	3.1

M3 Cable assembly, solder contact (page 39)



FFC Straight plug with flats on latch sleeve and oversize cable collet

Part number	Cable group	Cond. Ø max	Dielectric Ø maxi	Sheath Ø	
				mini	maxi
FFC.00.250.CTAD42	5	1.05	3.05	3.1	4.0
FFC.00.250.CTAD52	6-7	1.05	3.05	4.1	5.0
FFC.00.250.CTAD56	-	1.05	3.05	5.1	5.5

M3 Cable assembly, solder contact (page 39)