S Series Connectors 12G-SDI 4K UltraHD

LEMO

Precision modular connectors to suit your application

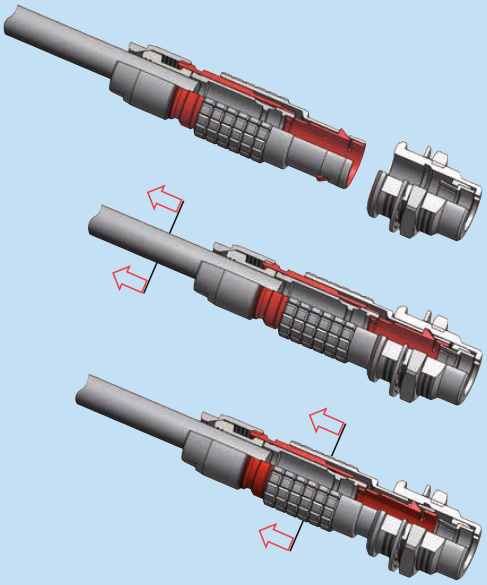
Since its creation in Switzerland in 1946 the LEMO Group has been recognized as a global leader of circular Push-Pull connectors and connector solutions. Today LEMO and its affiliated companies, REDEL and COELVER, are active in more than 80 countries with the help of over 40 subsidiaries and distributors.

Over 90000 connectors

The modular design of the LEMO range provides over 90000 connectors from miniature ø 3 mm to ø 50 mm, capable of handling cable diameters up to 30 mm and for up to 114 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.

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

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.

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 recognized.

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 conforms the requirements of the RoHS directive (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.

Product safety notice & disclaimers

Please read and follow all instructions specified on the last page or on our website carefully and consult all relevent national and international safety regulations for your application. Improper handling, cable assembly, or wrong use of connectors can result in hazardous situations.

LEMO products and services are provided "as is." LEMO makes no warranties or representations with regard to LEMO product & services or use of them, express, implied or statutory, including for accuracy, completeness, or security.

In no event shall LEMO be liable for any direct, indirect, punitive, incidental, special consequential damages, to property or life, whatsoever arising out of or connected with the use or misuse of LEMO's products.

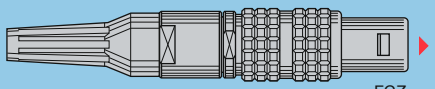
S Series

The 1S.275 is a robust push-pull connector series specially designed for 12G-SDI 4K UHD applications.
LEMO has developed these connectors in response to the rapidly advancing technology landscape and market demands for high transmission rates of 12 Gbit/s meeting the 12G-SDI transmission standards.
These products meets the 12G-SDI transmission standard using a compact single link connection, enabling higher panel density thus reducing the number of cables/connectors finding its main applications for UHD displays in the Audio Video Broadcasting (AVB) and medical imaging platforms such as endoscopy and laparoscopy, amongst others.

The main features are as follows:
– Security of the Push-Pull self-latching
– Compact design for space savings
– 360° screening for full EMC shielding
– Bend relief colour coding
– Crimp contacts
– SMPTE ST 2082-1 compliant
– Finger proof
– UL compliant
– Knurled crimping collet for improved cable retention
– Low VSWR/Return loss

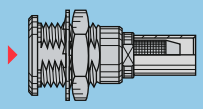
Metal housing models (page 3)

Straight plug

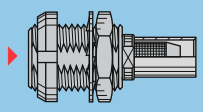


FGZ

Fixed sockets

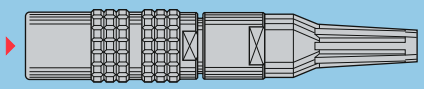


ERA



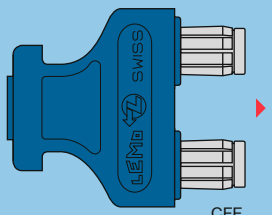
ECP

Free socket



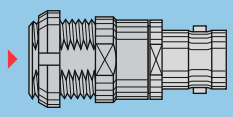
PGZ

Bridge-plug



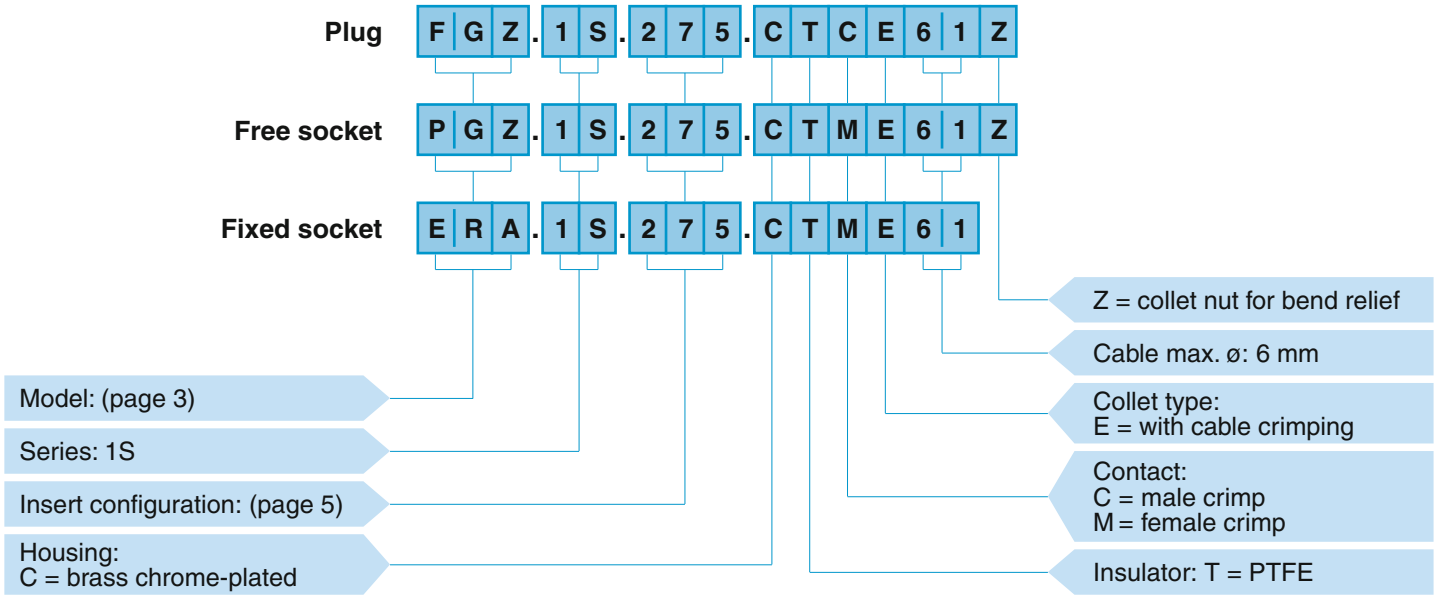
CFF

Adaptor



ABB

Part Numbering System



FGZ.1S.275.CTCE61Z = straight plug with cable crimping, 1S series, coaxial 75Ω, outer shell in chrome-plated brass, PTFE insulator, male crimp contact, E type collet for a 6.1 mm diameter cable and nut for fitting a bend relief.

PGZ.1S.275.CTME61Z = free socket with cable crimping, 1S series, coaxial 75Ω, outer shell in chrome-plated brass, PTFE insulator, female crimp contact, E type collet for a 6.1 mm diameter cable and nut for fitting a bend relief.

ERA.1S.275.CTME61 = fixed socket with cable crimping, nut fixing, 1S series, coaxial 75Ω, outer shell in chrome-plated brass, PTFE insulator, female crimp contact, E type collet for a 6.1 mm diameter.

Technical Characteristics

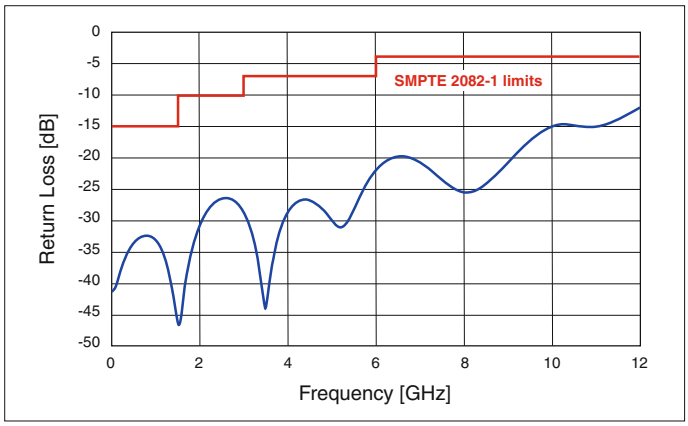
Mechanical and Climatical

Characteristics	Value	Standard
Endurance	> 5000 cycles	IEC 60512-5 test 9a
Humidity	up to 95% at 60°C	
Temperature range	- 55°C, + 260°C[1)]	
Salt spray corrosion test	> 1000h	IEC 60512-6 test 11f
Protection index (mated)	IP 50	IEC 60529
Climatical category	55/175/21	IEC 60068-1
Latch retention force (average)	250 N	

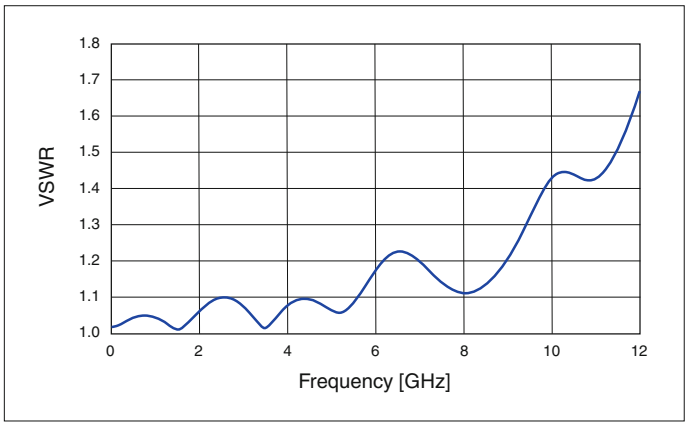
Electrical

Characteristics	Value
Impedance	75 Ω
Central contact resistance	≤ 8 mΩ
Insulation	> 10^{12} Ω
Test voltage (Ue)	1.7 kV DC
Rated current	3 A
Shell electrical continuity	≤ 3.5 mΩ

Note: 1) operating temperature for CFF.1S.275.PTCA12G: - 20°C, + 90°C.



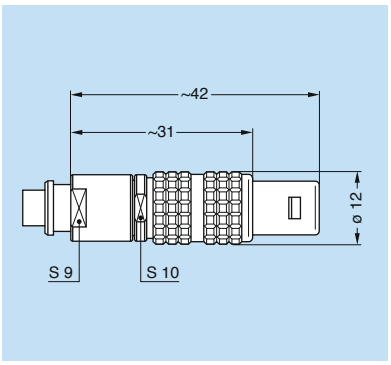
Measured return Loss against frequency curve for fixed socket and plug



Measured voltage Standing Wave Ratio against frequency curve for fixed socket and plug

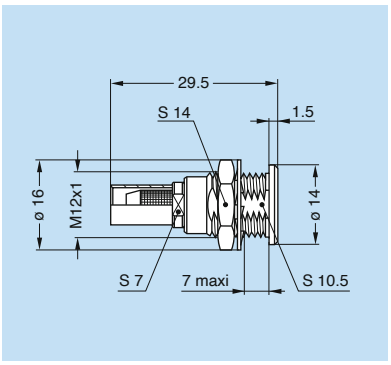
Models

FGZ Straight plug, cable crimping and nut for fitting a bend relief



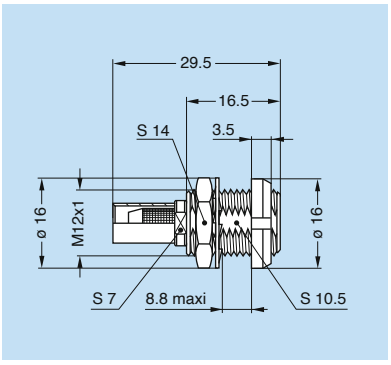
Part number
FGZ.1S.275.CTCE61Z

ERA Fixed socket, cable crimping and nut fixing



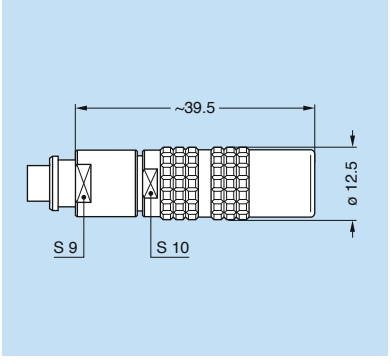
Part number
ERA.1S.275.CTME61

ECP Fixed socket with two nuts, long threaded shell (back panel mounting)



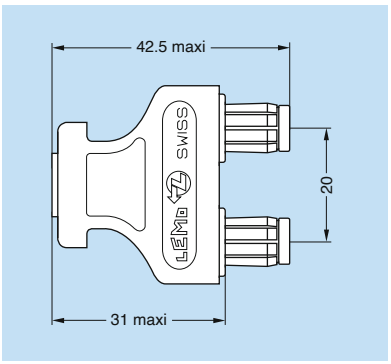
Part number
ECP.1S.275.CTME61

PGZ Free socket, cable crimping and nut for fitting a bend relief



Part number
PGZ.1S.275.CTME61Z

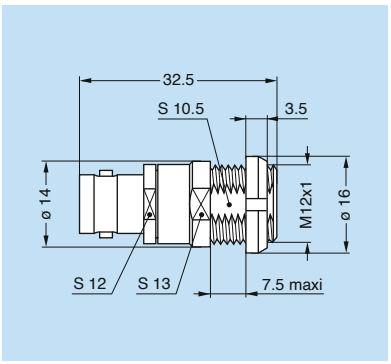
CFF Bridge-plug without monitoring socket



Part number
CFF.1S.275.PTCA12G

Note: In order to provide the user with a coding system, the bridge plug housing is available in several colours.
The letter «A» of the part number indicates the blue colour of the bridge plug. For ordering a bridge plug with another colour, see table on page 9 and replace the letter «A» by the letter of the required colour.

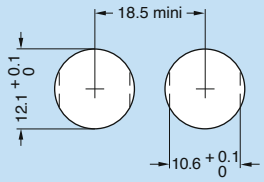
ABB Adaptor from LEMO fixed socket to BNC socket



Part number
ABB.1S.275.NTM

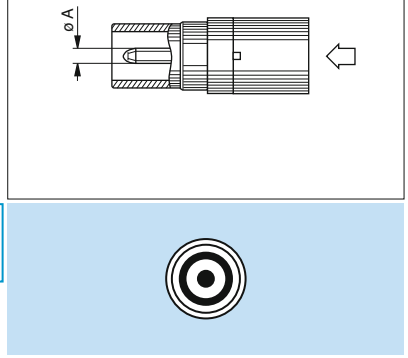
Panel cut-out

ERA - ECP - ABB



Insert configuration

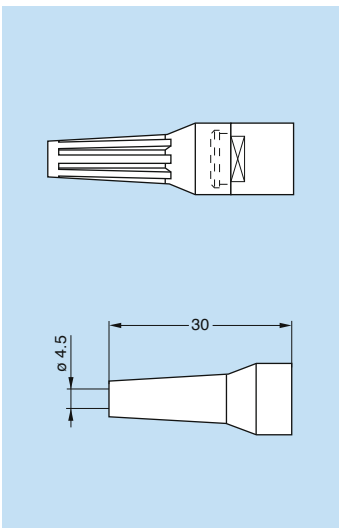
Coaxial

		Reference	Impedance (Ω)	ø A (mm)	Conductor ø maximum	Dielectric ø maximum	Sheath ø maximum	VSWR (f=GHz)	Test voltage (kV DC)	Rated current (A)
1S		**275**	75	0.6	0.73	2.93	6.1	1)	1.7	3

Note: 1) see VSWR graph on page 2.

Accessories

GMA Bend relief



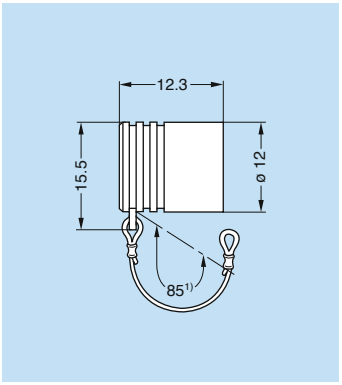
- Material: TPU (Thermoplastic Polyurethane)
- Temperature range in dry atmosphere: -40°C +80°C

The cable entry of plug and socket models with cable collet can be protected by a grey sleeve made of polyurethane. This accessory can be supplied according to the part number below.

Part number	Cable ø (mm)		Collet nut for bend relief
	min	max	
GMA.1B.045.DG	4.5	4.9	FFM.1B.131.LC

Note: The last letter «G» of the part number indicates the grey colour of the bend relief. For ordering a bend relief with another colour, see table on page 9 and replace the letter «G» by the letter of the required colour.

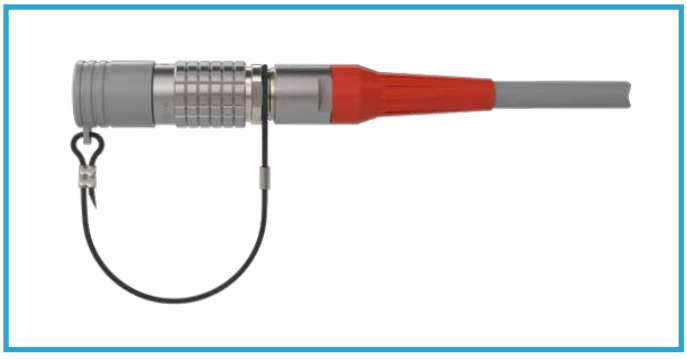
BFG Plug caps



- Body material: Polyoxymethylene (POM) grey (or black)
- Cord material: Polypropylene core and PVC coat, grey (or black)
- Gasket material: Silicone rubber
- Maximum operating temperature: 100°C
- Watertightness: IP51 according to IEC 60529

Part number
BFG.1B.100.PCZG

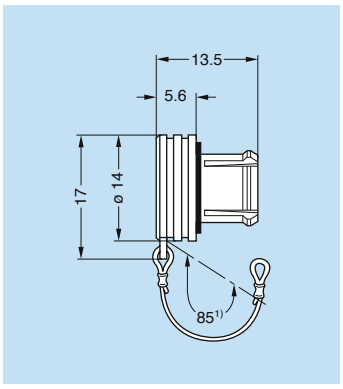
Note: [1)] the tolerance on this dimension is ± 5 mm.
This cap is available only with an alignment key (G). Upon request this cap can be supplied in black and the last letter «G» of the part number should be replaced with «N».



Fitting the cord

Slide the plug into the loop of the cord.
Place the loop into the groove in front of the collet nut and tighten the loop.

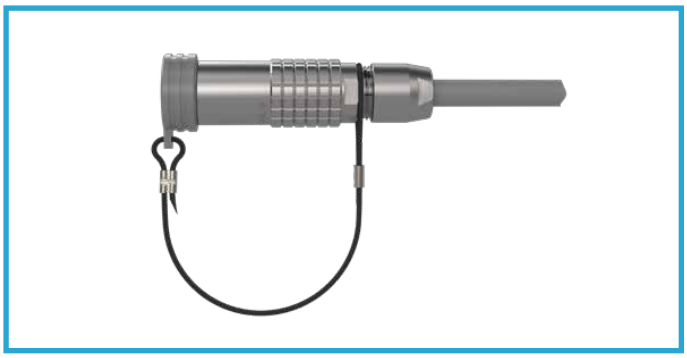
BRD Blanking caps for free sockets



Part number
BRD.1B.200.PCSG

- Body material: Polyoxymethylene (POM) grey (or black)
- Cord material: Polypropylene core and PVC coat, grey (or black)
- Gasket material: Silicone rubber
- Maximum operating temperature: 100°C
- Watertightness: IP61 according to IEC 60529

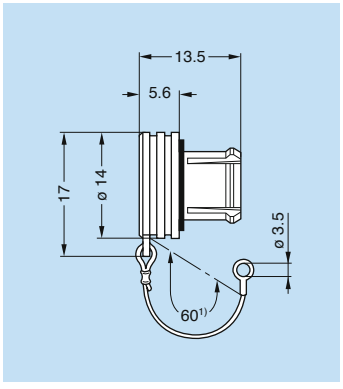
Note: 1) the tolerance on this dimension is ± 5 mm.
On request this cap is available in black. If required, replace the last letter «G» of the part number by «N».



Fitting the cord

Slide the socket into the loop of the cord.
Place the loop into the groove in front of the collet nut and tighten the loop.

BRA Blanking caps for fixed sockets and free straight sockets

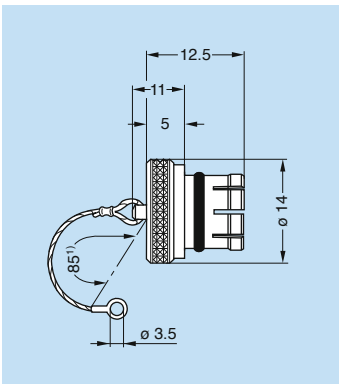


Part number
BRA.1B.200.PCSG

- Body material: Polyoxymethylene (POM) grey (or black)
- Cord material: Polypropylene core and PVC coat, grey (or black)
- Gasket material: Silicone rubber
- Maximum operating temperature: 100°C
- Watertightness: IP61 according to IEC 60529

Note: 1) the tolerance on this dimension is ± 5 mm.
These caps are suitable for use with any alignment key configuration. On request this cap can be supplied in black. If so, replace the last letter «G» of the part number by «N».

BRE Blanking caps for fixed sockets

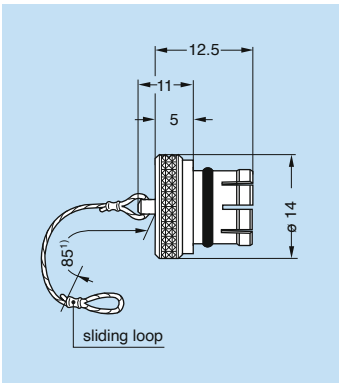


Part number
BRE.1S.200.NAS

- Body material: Nickel-plated brass (Ni 3 µm)
- Lanyard material: Stainless steel
- Crimp ferrule material: Nickel-plated brass + polyolefin
- O-ring material: Silicone rubber or FPM
- Operating temperature: -50°/135°C (Silicone rubber & Polyolefine)
- Watertightness: IP61 according to IEC 60529 for S series

Note: 1) the tolerance on this dimension is ± 5 mm.
These caps are suitable for use with any alignment key configuration. The last letter «S» of the part number stands for the O-ring material (silicone rubber). O-ring's made from FPM are also available; if required, replace the letter «S» by «V».

BRF Blanking caps for free sockets

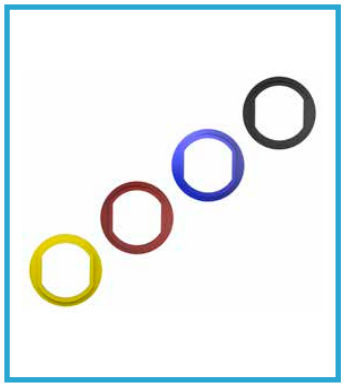


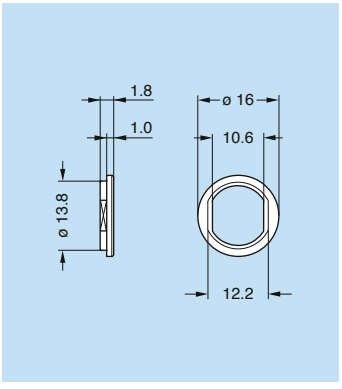
Part number
BRF.1S.200.NAS

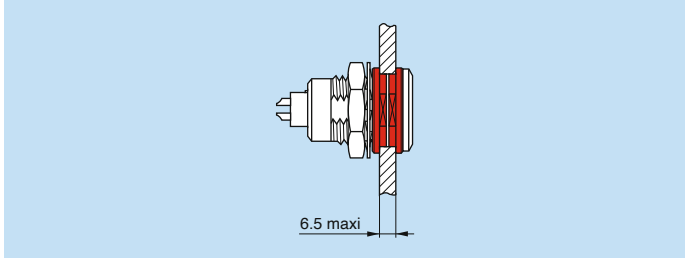
- Body material: Nickel-plated brass (Ni 3 µm)
- Lanyard material: Stainless steel
- Crimp ferrule material: Nickel-plated brass + polyolefin
- O-ring material: Silicone rubber or FPM
- Operating temperature: -50°/135°C (Silicone rubber & Polyolefine)
- Watertightness: IP61 according to IEC 60529 for S series

Note: 1) the tolerance on this dimension is ± 5 mm.
These caps are suitable for use with any alignment key configuration. The last letter «S» of the part number stands for the O-ring material (silicone rubber). O-ring's made from FPM are also available; if required, replace the letter «S» by «V».

GRA Insulating washers







Sockets or plugs mounted on panels can be fitted with insulating washers. The nine colours available combined with those for the bend reliefs makes colour coding possible.

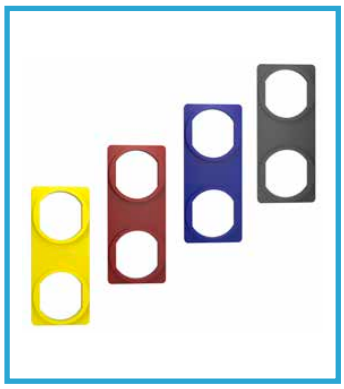
Part number
GRA.1S.269.GG

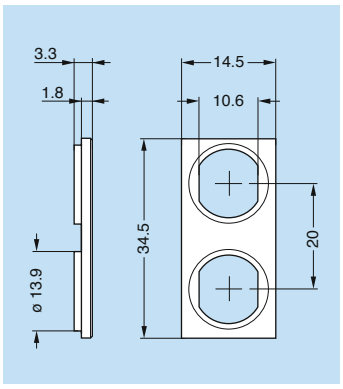
Caution: These insulating washers can be used with fixed and free sockets with across flat dimension S1 equivalent to the S dimension of the washer.

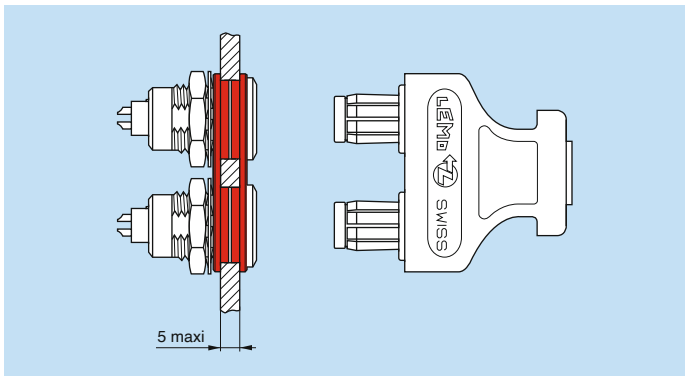
- Material: Polyamide
- Maximum operating temperature: 90°C

Note: The last letter «G» of the part number indicates the grey colour of the insulating washer. For ordering an insulating washer with another colour, see table on page 9 and replace the letter «G» by the letter of the required colour.

GRC Double panel washers







Double panel washers have been designed to make the drilling of panel holes easier for mounting fixed and free sockets. The combination of the nine different colours of the double panel washers and of the bend reliefs makes colour coding possible.

Part number
GRC.1B.260.HG

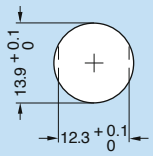
Caution: These double panel washers can be used with fixed or free sockets with across flat dimension S1 equivalent to the S dimension of the washer.

- Material: Polyamide
- Maximum operating temperature: 90°C

Note: The last letter «G» of the part number indicates the grey colour of the double panel washer. For ordering an double panel washer with another colour, see table on page 9 and replace the letter «G» by the letter of the required colour.

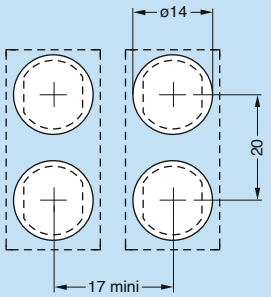
Panel cut-out for mounting with insulating washer

GRA



Panel cut-out for mounting with double panel washer

GRC



Colour table for bridge plug, bend relief, insulating washers and double panel washers

Ref.	Colour
A	blue
G	grey
J	yellow

Ref.	Colour
M	brown
N	black
R	red

Ref.	Colour
S	orange
V	green

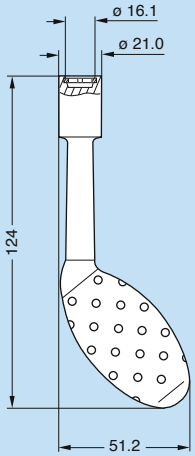
Tooling

DPE Crimping tool with dies for coax cables

Part number
DPE.99.127.0K

Note: tool used for contact and tube crimping.

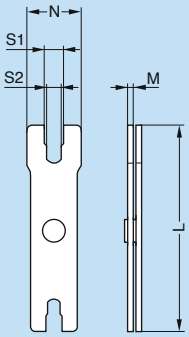
DCH Spanners for notched nuts



Part number	Part number of the nut
DCH.91.161.PA	GEG.1S.240.LC

- Material: blue polyurethane

DCP Set of flat spanners for collet nuts



Part number	Dimensions (mm)				
	L	M	N	S1	S2
DCP.91.001.TN	95	2.5	21	8.1	7.1
	95	2.5	25	10.1	9.1
DCP.91.023.TN	115	3.0	30	13.1	12.1
	115	3.0	35	15.1	14.1

- Material: blackened steel

Recommended cable

To guarantee an optimum performance for the cable-conncector solution at high frequencies, LEMO recommends to use 12G-SDI cables which are specifically designed for 12 Gbit/s, 4K (SMPTE 2082) ultra high definition transmission (UHD).

Matrix to determine max. transmission length

Video cables	Single link 12 Gb/s (m)	Dual link 6 Gb/s (m)	Quad link 3 Gb/s (m)	OD (mm)
BELDEN 4855R-4K UHD[1)]	45	66	94	4.04
DRAKA ULTRA HD PRO 50 UHD[1)]	50	74	108	4.50

Note: 1) the maximum transmission distances are based on 40 dB maximum loss at half clock frequency.

Connector assembly and installation should only be carried out by properly trained personnel. Proper tools must be used during installation and / or assembly in order to obtain safe and reliable performance.
LEMO is specialized in cable assemblies and is available to provide wired and certified solutions. Please don't hesitate to contact us for quotes.

Product safety notice

PLEASE READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY AND CONSULT ALL RELEVENT NATIONAL AND INTERNATIONAL SAFETY REGULATIONS FOR YOUR APPLICATION.
IMPROPER HANDLING, CABLE ASSEMBLY, OR WRONG USE OF CONNECTORS CAN RESULT IN HAZARDOUS SITUATIONS.

1. **SHOCK AND FIRE HAZARD**
   Incorrect wiring, the use of damaged components, presence of foreign objects (such as metal debris), and / or residue (such as cleaning fluids), can result in short circuits, overheating, and / or risk of electric shock.
   Mated components should never be disconnected while live as this may result in an exposed electric arc and local overheating, resulting in possible damage to components.

2. **HANDLING**
   Connectors and their components should be visually inspected for damage prior to installation and assembly. Suspect components should be rejected or returned to the factory for verification.
   Connector assembly and installation should only be carried out by properly trained personnel. Proper tools must be used during installation and / or assembly in order to obtain safe and reliable performance.

3. **USE**
   Connectors with exposed contacts should never be live (or on the current supply side of a circuit). Under general conditions voltages above 30 VAC and 42 VDC are considered hazardous and proper measures should be taken to eliminate all risk of transmission of such voltages to any exposed metal part of the connector.

4. **TEST AND OPERATING VOLTAGES**
   The maximum admissible operating voltage depends upon the national or international standards in force for the application in question. Air and creepage distances impact the operating voltage; reference values are indicated in the catalog however these may be influenced by PC board design and / or wiring harnesses.
   The test voltage indicated in the catalog is 75% of the mean breakdown voltage; the test is applied at 500 V/s and the test duration is 1 minute.

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

6. **PRODUCT IMPROVEMENTS**
   The LEMO Group reserves the right to modify and improve to our products or specifications without providing prior notification.

7. ⚠ **WARNING (Prop 65 State of California)**
   Proposition 65 requires businesses to provide warnings to Californians about significant exposures to chemicals that cause cancer, birth defects or other reproductive harm. LEMO products are exempt from proposition 65 warnings because they are manufactured, marketed, and sold solely for commercial and industrial use. For further information, please visit https://www.lemo.com/quality/LEMO-Prop-65-compliance-declaration.pdf.

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