S Series Connectors 12G-SDI 4K UltraHD

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Leme

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.



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 $C \in$

CE marking $\zeta \in$ means that the appliance or equipment bearing it complies with the protection requirements of one or several European safety directives. CE marking $\zeta \in$ 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 <u>website</u> 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.

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L. LEMD.

Part Numbering System



FGZ.1S.275.CTCE61Z = straight plug with cable crimping, 1S series, coaxial 75 Ω , 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 75 Ω , 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 75 Ω , 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 | | | | |
| Humidity | up to 95% at 60°C | | | | |
| Temperature range ^{1) 2)} | - 55°C, + 260°C | | | | |
| 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 |





Measured return Loss against frequency curve for fixed socket and plug



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

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



ERA Fixed socket, cable crimping and nut fixing



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



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





Bridge-plug without monitoring socket CFF



ABB Adaptor from LEMO fixed socket to BNC socket



Panel cut-out



| 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.





Insert configuration

Coaxial



Accessories

GMA Bend relief



Material: TPU (Thermoplastic Polyurethane) Temperature range in dry atmosphere: $-40^{\circ}C + 80^{\circ}C$

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



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.



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.



Note: ¹⁾ the tolerance on this dimension is \pm 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



- Body material: Polyoxymethylene (POM) grey (or black) Cord material: Polypropylene core and PVC coat, grey (or black) Gasket material: Silicone rubber Ó
- 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



- 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

| Part number |
|-----------------|
| BRA.1B.200.PCSG |

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 ${}^{\rm e}$ G» of the part number by ${}^{\rm e}$ N».

BRE Blanking caps for fixed sockets



- 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



- 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

GRA Insulating washers





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».



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».

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.



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



Panel cut-out for mounting with insulating washer



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 double panel washer



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

| Ref. | Colour | Ref. | Colour | Ref. | Colour |
|------|--------|------|--------|------|--------|
| Α | blue | М | brown | S | orange |
| G | grey | Ν | black | V | green |
| J | yellow | R | red | | |

Tooling







Note: tool used for contact and tube crimping.



| Part number | Dimensions (mm) | | | Part number | |
|----------------|-----------------|------|------|---------------|--|
| | Α | L | Ν | of the nut | |
| DCM.65.141.AZ4 | 18.4 | 41.5 | 14.2 | GEG.1S.240.LC | |

DCP Set of flat spanners for collet nuts



| Dort number | Dimensions (mm) | | | | | | |
|---------------|-----------------|-----|----|------|------|--|--|
| Part number | L | М | Ν | S1 | S2 | | |
| | 95 | 2.5 | 21 | 8.1 | 7.1 | | |
| DCP.91.001.1N | 95 | 2.5 | 25 | 10.1 | 9.1 | | |
| DCD 01 022 TN | 115 | 3.0 | 30 | 13.1 | 12.1 | | |
| DCP.91.023.1N | 115 | 3.0 | 35 | 15.1 | 14.1 | | |

Material: blackened steel

Note: for standard 1/4 inch tools adaptor.

L. LEMD.

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 $C \in$

CE marking **C** emeans 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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