

Multimode Fiber Optics

Series B

The New Generation group of connectors includes fibre optics in the series B which can be used in a wide range of applications including communications and medical instruments.

This multimode fibre optic system is available for single fibres in the series 0B and for multifibre cables or mixed fibre optic/electric (high and low voltage and coaxial) contacts in the series 2B, 3B, 4B and 5B, as well as elements for electro-optic emitters and detectors.

Characterized by a termination method of polishing with epoxy, these fibre optic connectors are adapted to the most used types of multimode fibres. The fixed sockets for TO-18 shells are available fitted with emitters (LED IR Ga As or IR (GaAl) As) or photodiode detectors (Si-PIN) which permit connections up to 3 kilometers with a transmission band of 20 MHz. These connectors can also be ordered without these elements.

The guide on the outer shell eliminates alignment errors which ensures excellent mating repeatability.

Mixed connectors combining fiber optic and signal contacts are also available. Please see LEMO's B/S series catalog for more information.

Model description

Single fibre

- FGG** Straight plug with key (G) and cable collet
- PCG** Fixed socket, short model, two nuts and cable collet (back panel mounting) with key (G).
- PFG** Fixed socket, nut fixing, with key (G) and cable collet (back panel mounting).
- PHG** Free socket with key (G) and cable collet

Multifibre and Mixed

- EGG** Fixed socket, nut fixing, with key (G) or keys (code A . L)
- FGG** Straight plug with key (G) or keys (code A . M) and cable collet
- PFG** Fixed socket, two nuts with key (G) or keys (code A . L) and cable collet (back panel mounting)
- PHG** Fixed socket with key (G) or keys (code A . L) and cable collet
- PKG** Fixed socket, nut fixing, with key (G) or keys (code A . L) and cable collet

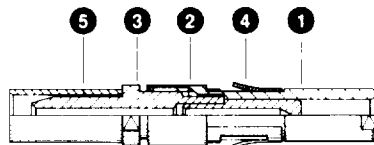
Electro - Optical Components

- EEG** Fixed socket, nut fixing (back panel mounting) with key (G).
- EGG** Fixed socket, nut fixing, with key (G)

Part section showing internal components of a fibre optic contact

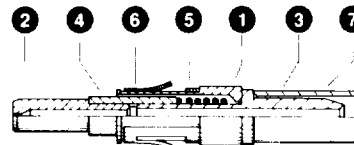
Female contact

- 1 alignment tube
- 2 alignment ferrule
- 3 crimp back nut
- 4 clip
- 5 crimp ferrule



Male contact

- 1 outer shell
- 2 alignment ferrule
- 3 crimp back nut
- 4 sprung sleeve
- 5 spring
- 6 clip
- 7 crimp ferrule



Technical characteristics

Material and treatment

Component	Material (standard)	Surface treat (µm)		
		Cu	Ni	Cr
Outer shell and collet nut	Brass (ASTM C 385)	0.5	3	0.3
Latching sleeve	Special Brass	0.5	3	
Spring	Stainless steel	no treatment		
Alignment ferrule	CuNiZn alloy	no treatment		
Alignment sleeve	CuNiZn alloy	no treatment		
Crimp ferrule	PEEK (MIL-P-46183)	no treatment		
Locking washer	Brass (ASTM C 345)	0.5	3	
Other metallic parts	Bronze (ASTM C 521)	0.5	3	
Strain relief	Brass (ASTM C 385)	0.5	3	
	Polyurethane			

Surface treatment standards are as follows:
 - Nickel FS-QQ-N-290A
 - Chrome FS-QQ-C-320B

Mechanical and climatical

Characteristics	Value	Standard	Method
Cable retention force	>100 N	MIL-STD-1344A	2009.1
Endurance	> 500 cycles	MIL-STD-1344A	2016
Fibre diameter	125 µm min.		
Temperature range	- 20°C + 80°C (- 2°F + 176°F) *		

1N = 0.102 kg

* Based on epoxy to be used.

Optical

Characteristics	Value
Insertion loss ¹⁾	< 1.5 dB
Repeatability	better than ± 0.2 dB

1) Depends on fibre type

Part number examples

Single Fiber

FGG 0B 051 C A B E 30

Model: page 3

Series: 0B

Type: page 3

Housing:
C=chrome plated brass

Alignment termination:
A=CuNiZn alloy

Variant ¹⁾

ØCrimp ferrule
30= Ø 2.5 à 3.5 mm
35= Ø 3.5 à 4.0 mm
45= Ø 4.0 à 4.5 mm

Cable fixing Type:
E=crimp

Contact Type:
B=male
S=female

FGG.0B.051.CABE30R Straight plug with key (G) and cable collet, series 0B, single fibre for a silica/silica (50/125µm) fibre type, chrome plated brass housing, CuNiZn alloy alignment termination, male contact, for crimping to a cable with an OD ranging from 2.5 to 3.5 mm, red strain relief.

Note:

1) The bend reliefs are available in nine colors. The relationship between part number letter and color is to be found in the 'Accessories' section.

Multifiber and Mixed

PKG 3B 97C C 4 M D 92

Model: page 3

Series: page 3

Type: page 3

Housing:
C=chrome plated brass

Type of fiber: page

Variant ¹⁾

ØCollet: page 5

Cable fixing Type:
D = Cable colletcrimp

Contact Type: page 4

PKG.3B.97C.C4MD92 Fixed socket, nut fixing, with key (G) and cable collet, series 3B, mixed type with 2 optical fibres and 4 low voltage contacts, chrome plated brass housing, female fibre optic contacts for HCS (200/230µm) type fibre, and female crimp low voltage contacts, type D collet of 9.2 mm diameter.

Note:

1) The plugs and sockets with cable collet can be supplied with a collet nut for fitting a cable bend relief. For ordering add a 'Z' in the variant position of the part number and order the bend relief separately as explained in the 'Accessories' section.

Electro-optical components

EGG 0B 061 C L S

Model: page 3

Series: 0B

Type: page 3

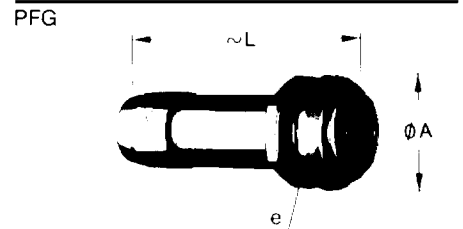
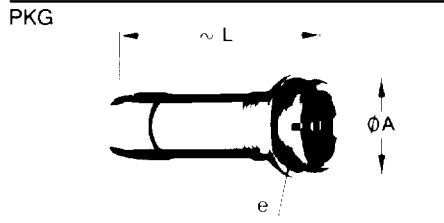
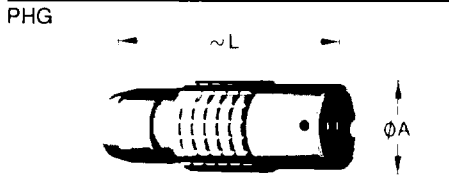
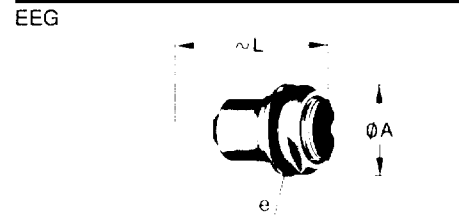
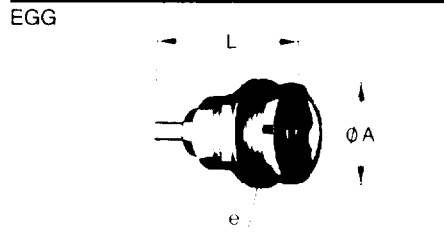
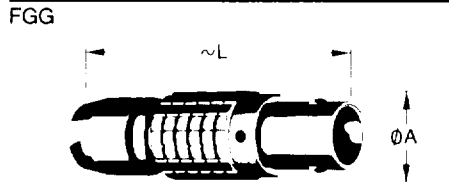
Contact Type:
B = male
S = female

Alignment termination:
L = PEEK

Housing:
C = Chrome plated brass

EGG.0B.061.CLS Fixed socket, nut fixing, with key (G), series 0B fitted with a IR (GaAl) As LED, chrome plated brass housing, PEEK alignment termination, female contact.

Models (see page 1 for model descriptions)



Model	Dim.	Series				
		0B ¹⁾	2B	3B	4B	5B
FGG	A	9.5	15.0	18.0	25.0	35.0
	L	58.0	49.0	59.0	76.0	104.0
EGG	A	10.0	18.0	22.0	28.0	40.0
	e	M9x0.6	M15x1	M18x1	M25x1	M35x1
EEG	L	27.0	25.0	30.0	34.5	45.5
	A	12.0	-	-	-	-
PHG	e	M9x0.6	-	-	-	-
	L	27.0	-	-	-	-
PKG ²⁾	A	9.5	16.5	19.0	26.0	36.0
	L	57.0	47.0	56.0	73.0	99.0
PFG	A	12.0	18.0	22.0	28.0	40.0
	e	M9x0.6	M15x1	M18x1	M25x1	M35x1
PFG	L	27.0	47.0	56.0	73.0	99.0
	A	12.0	20.0	24.0	30.0	-
PFG	e	M9x0.6	M15x1	M18x1	M25x1	-
	L	57.0	47.0	56.0	73.0	-

- 1) The 0B connectors with cable collet are always delivered with a strain relief. The colour of which is to be specified in the 'variant' position of the part number
- 2) The part number for this model in the series 0B is PCG. This model has been specially designed to have pig tails (back panel mounting)

On request the PFG model is also available in the 5B series

Note: All dimensions are in millimetres

Types

Single fibre



Ref.	Series	Type	Ø (µm)	
			core	cladding
051		Si/Si	50.0	125
052	00	Si/Si	62.5	125
053	0B	Si/Si	100	140
054		PCS	200	200
055		HCS	200	230
		Si/Si	200	280

Note: On request alignment terminations for other types of fibre can be developed

Emitting diodes and receiving photodiodes

Ref.	Series	Component
060		LED IR Ga As
061	0B	LED IR (GaAl) As
066		photodiode Si PIN
099		empty shell TO-18

Note: All dimensions are in millimetres

Multifibre and Mixed: optical fibre + LV



Reference	Series	Optical fibre No	Contact No	Cont. Ø (mm)	Low voltage						Rated Cur. (A)
					Contact type		Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	
					Solder	Crimp					
96A	2B	1	2	0.9	●	●	0.33	0.50	1.0	1.50	8
96C		1	4	0.7	●	●	0.40	0.60	1.2	1.80	5
96E		1	6	0.7	●	●	0.30	0.40	0.8	1.20	4
07A	3B	2	-	-	●	●	-	-	-	-	-
97C		2	4	0.9	●	●	0.40	0.60	1.2	1.80	8
97J		2	10	0.7	●	●	0.20	0.28	0.6	0.85	5
07C	4B	4	-	-	●	●	-	-	-	-	-
97L		2	12	0.9	●	●	0.40	0.60	1.2	1.80	4
97R		2	16	0.9	●	●	0.40	0.60	1.2	1.80	4
97T		2	18	0.7	●	●	0.50	0.70	1.5	2.10	2
98L		3	12	0.7	●	●	0.30	0.50	1.0	1.50	2
07J		5B	10	-	-	●	●	-	-	-	-

● Available: male and female contacts

○ On request: male and female contacts

Type of fibre - Contacts

Type of fibre

Ref.	type	O (µm)	
		core	cladding
1	Si/Si	50.0	125
	Si/Si	62.5	125
2	Si/Si	100	140
3	PCS	200	
4	HCS	200	230
5	Si/Si	200	280

Note: On request alignment terminations for other types of fibre can be developed

Contact type

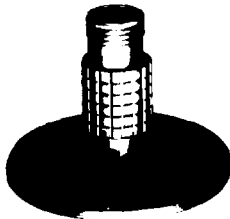
In the case of mono and multifibre connectors, the reference letter in the part number indicates the optical fibre contact. This letter refers to the low voltage contact in the case of mixed type connectors.

Mono & multifibre connectors Mixed connectors

Ref.	Contact type	Ref.	Contact type
B	male for plugs	A	male solder
S	female for sockets	C	male crimp
		L	female solder
		M	female crimp

Tooling

Polishing base for OB optical fibre contacts

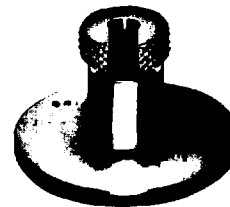


Part Number

DCS.91.236.0LC¹⁾
DCS.91.156.0LC²⁾

1) for FGG, PHG et PFG
2) for PCG

Polishing base for 2B-5B optical fibre contacts



Part Number

DCS.91.124.0LC

Crimping tool with dies for OB optical fibre contacts



Part Number

DPA.99.445.2K

Crimping tool with dies for 2B-5B optical fibre contacts



Part Number

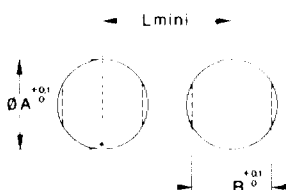
DPA.99.173.8K

Other tooling as well as accessories are available for fibre optic connectors. Please refer to the corresponding sections.

Note: All dimensions are in millimetres

Cut-out and mounting nut torque

Panel cut-out



Series	Dimensions			Torque (Nm)
	A	B	L	
0B	9.1	8.3	13.5	5
2B	15.1	13.6	21.5	9
3B	18.2	16.7	27.0	18
4B	25.2	23.6	34.0	25
5B	35.2	33.6	44.0	35

1N = 0.102 Kg

Collets

(Series B)



Reference		Series	Cable OD	
Type	Ø		max.	min.
D	21	0B	2.0	1.5
D	25		2.5	2.1
D	31		3.0	2.1
D	35		3.5	3.0
D	42		4.0	3.1
D	52		5.0	4.1
D	56		5.5	5.1
M	21	2B	2.0	1.5
M	31		3.0	2.1
M	42		4.0	3.1
D	52		5.0	4.1
D	62		6.0	5.1
D	72		7.0	6.1
D	82		8.0	7.1
D	92		9.0	8.1
D	99		9.7	9.1
M	52		5.0	4.1
D	62	3B	6.0	5.1
D	72		7.0	6.1
D	82		8.0	7.1
D	92		9.0	8.1
D	10		10.0	9.1
D	11		11.0	10.1
D	12		11.7	11.1

Reference		Series	Cable OD	
Type	Ø		max.	min.
M	62	4B	6.0	5.1
M	72		7.0	6.1
M	82		8.0	7.1
M	92		9.0	8.1
D	10		10.5	9.1
D	12		12.0	10.6
D	13		13.5	12.1
D	15	15.0	13.6	
D	16	16.0	15.1	
D	11	5B	11.5	9.6
D	13		13.5	11.6
D	15		15.5	13.6
D	17		17.5	15.6
D	19		19.5	17.6
D	21		21.5	19.6
D	23		23.5	21.6
D	25		25.0	23.6

Accessories Bend Relief

Part Number	Series	Cable OD	
		max	min
GMA.0B.025.DG	0B	2.9	2.5
GMA.0B.030.DG		3.4	3.0
GMA.0B.035.DG		3.9	3.5
GMA.0B.040.DG		4.4	4.0
GMA.0B.045.DG		5.2	4.5
GMA.2B.040.DG	2B	4.5	4.0
GMA.2B.045.DG		5.0	4.5
GMA.2B.050.DG		5.5	5.0
GMA.2B.060.DG		6.5	6.0
GMA.2B.070.DG		7.5	7.0
GMA.2B.080.DG		9.0	8.0
GMA.3B.050.DG		3B	5.2
GMA.3B.070.DG	7.9		7.0
GMA.3B.080.DG	8.9		8.0
GMA.3B.090.DG	10.0		9.0
GMA.4B.080.DG	4B	9.0	8.0
GMA.4B.010.DG		10.9	10.0
GMA.4B.011.DG		11.9	11.0
GMA.4B.012.DG		13.0	12.0
GMA.4B.013.DG		14.5	13.0

Ref.	Color	Ref.	Color
A	blue	N	black
B	white	R	red
G	grey	S	orange
J	yellow	V	green
M	brown		

The last letter 'G' of the part number indicates a grey cable sleeve. For other colours, see adjacent table and replace letter 'G' by the letter of the colour required.

Note:
The diameters quoted for these parts are those of the tapered internal bore.