

T Series

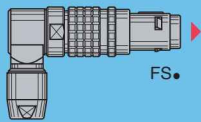
T series connectors have been specifically designed for outdoor applications. They include an inner sleeve and seals to prevent penetration of solids or liquids. This series is watertight when mated to give a protection index of IP68 as per IEC 60529 standard and have the following main features:

- IP68 mated
- Push-Pull self-latching system
- Mechanical key (FGG) with multiple keys to avoid cross-mating
- High packing density for space savings
- 360° shielding for full EMC shielding
- Compatible with existing B sockets
- Same mounting hole as B sockets
- Black-chrome plated brass and plastic outershell available
- Multipole types 2 to 32 contacts
- For cables 1.0 up to 10.5 mm
- Solder, crimp or print contacts

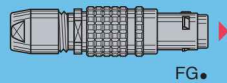
T series (standard models)

Standard models (page 61)

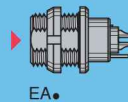
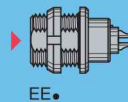
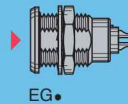
Elbow plug



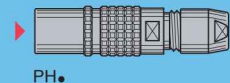
Straight plug



Sockets

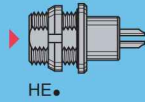


Free cable socket



Watertight or vacuumtight models (page 64)

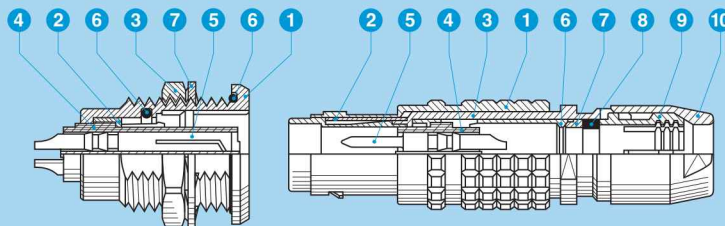
Sockets



Part section showing internal components

Fixed socket

- 1 outer shell
- 2 earthing crown
- 3 hexagonal nut
- 4 insulator
- 5 female contact
- 6 o-ring
- 7 locking washer



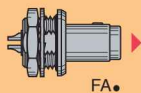
Straight plug

- 1 outer shell
- 2 latch sleeve
- 3 inner shell
- 4 insulator
- 5 male contact
- 6 split insert carrier
- 7 earthing cone
- 8 gasket
- 9 collet
- 10 collet nut

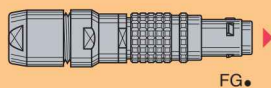
T series (special models)

Special models (page 65)

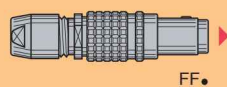
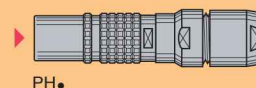
Fixed plug



Straight plugs



Free cable socket



Watertight or vacuumtight model (page 66)

Socket



Plastic housing models (page 67)

Straight plug

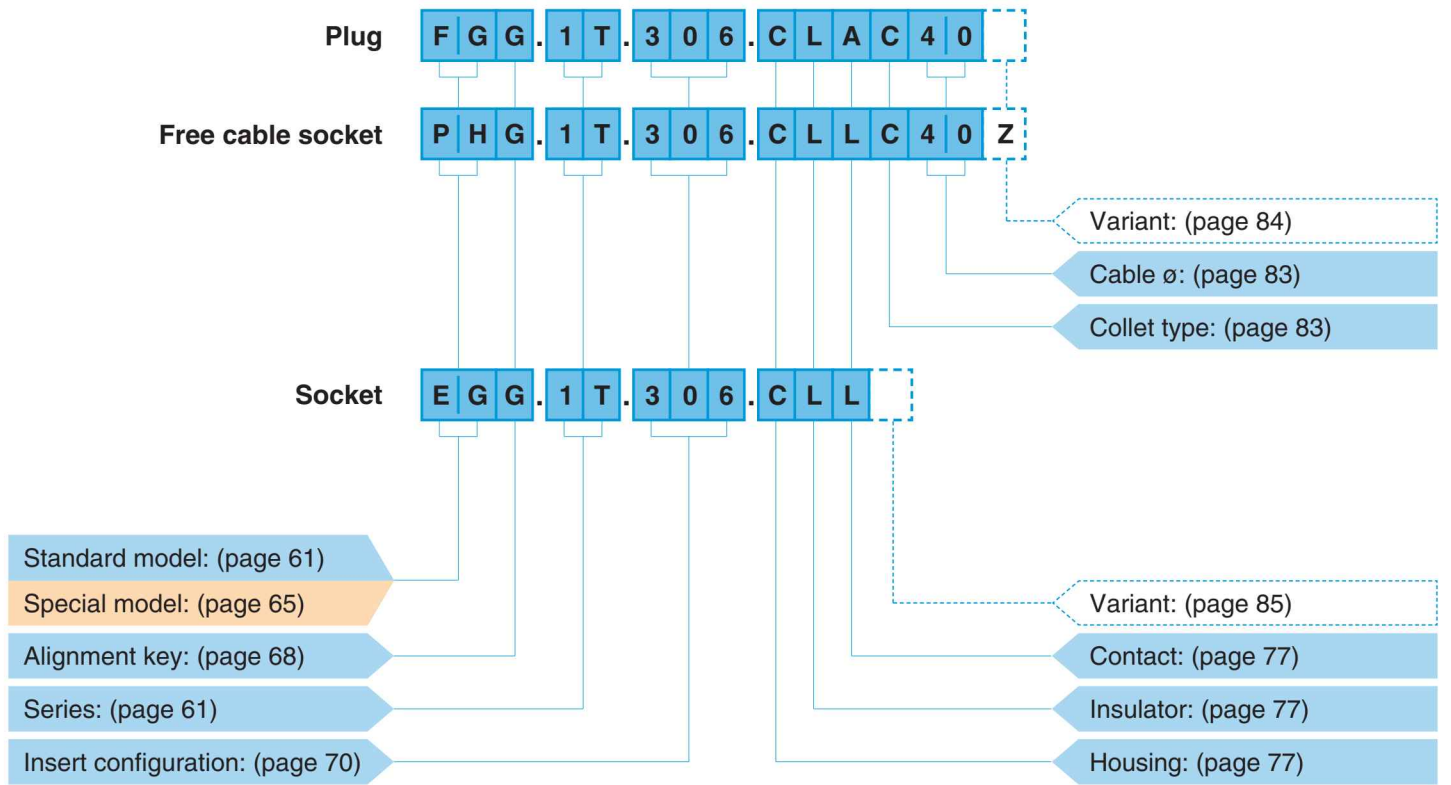


Socket



Part numbering system

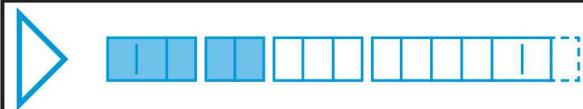
Standard models part numbering system



FGG.1T.306.CLAC40 = straight plug with key (G) and cable collet for bend relief, 1T series, multipole type with 6 contacts, outer shell in chrome-plated brass, PEEK insulator, male solder contacts, C type collet for 4.0 mm diameter cable.

PHG.1T.306.CLLC40Z = free cable socket with key (G) and cable collet, 1T series, multipole type with 6 contacts, outer shell in chrome-plated brass, PEEK insulator, female solder contacts, C type collet for 4.0 mm diameter cable and nut for fitting a bend relief.

EGG.1T.306.CLL = socket, nut fixing, with key (G), 1T series, multipole type with 6 contacts, outer shell in chrome-plated brass, PEEK insulator, female solder contacts.



Standard models

Technical characteristics

Mechanical and environmental

Characteristics	Value	Standard
Endurance ¹⁾	> 3000 cycles	IEC 60512-5 test 9a
Humidity	up to 95% at 60°C	
Temperature range ²⁾	- 55°C, + 200°C ⁷⁾ / (- 20°C, + 80°C)	
Resistance to vibrations	10-2000 Hz, 15g	IEC 60068-2-6 test Fc
Shock resistance	100 g, 6 ms	IEC 60068-2-6 test Ea
Salt spray corrosion test ⁶⁾	> 1000h	IEC 60068-2-11 test Ka
Protection index (mated) ³⁾	IP68/IP66	IEC 60529
Latching retention force ^{4) 5)}	From 85 N up to 300 N	
Climatical category	50/175/21	IEC 60068-1

Note:

- ¹⁾ see page 133, contact resistance after mating cycles. See page 131, mechanical endurance latching force.
- ²⁾ operating temperature is -20°C, +80°C for watertight or vacuumtight models fitted with an FPM O-ring and Epoxy.
- ³⁾ IP68 achieved providing that the cable is perfectly circular and that assembly process ensures a high integrity seal.
- ⁴⁾ average value.
- ⁵⁾ depending of the size.
- ⁶⁾ for chrome plated product (« C » material code).
- ⁷⁾ maximum temperature valid for short periods of use.

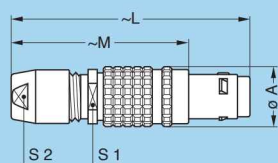
Electrical

Characteristics	Value	Standard	
Shielding efficiency	at 10 MHz	> 75 dB	IEC 60169-1-3 test 9a
	at 1 GHz	> 40 dB	IEC 60169-1-3 test 9a

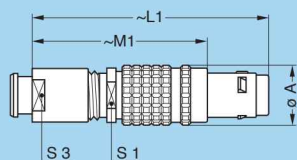
Note:

the various tests have been carried out with FGG and EGG connector pairs, with chrome-plated brass shell and PEEK insulator. Detailed electrical characteristics, as well as materials and treatment are presented in the chapter Technical characteristics on page 130.

FG● Straight plug, key (G or A to L), cable collet



Cable collet and nut for fitting a bend relief ¹⁾

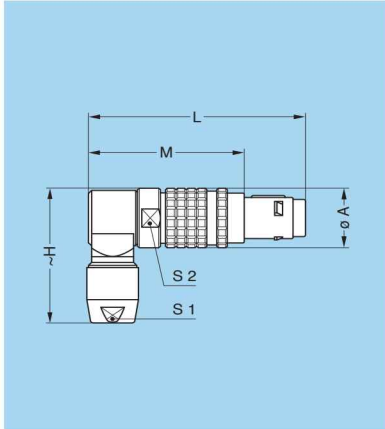


Reference		Dimensions (mm)								Cable ϕ	
Model	Series	A	L	L1	M	M1	S1	S2	S3	min.	max.
FG●	TT	7.0	33.2	32.7	25.2	24.7	5.5	5	6	2.4	3.0
FG●	0T	9.5	39.0	38.0	29.0	28.0	7.5	7	7	1.0	4.5
FG●	1T	12.0	46.0	45.0	35.0	34.0	11.0	9	9	1.3	6.5
FG●	2T	15.0	55.0	54.0	43.0	42.0	14.0	12	12	1.3	8.5
FG●	3T	18.8	64.0	62.0	49.0	47.0	16.0	14	15	2.6	10.5

M1 Cable assembly (page 129)

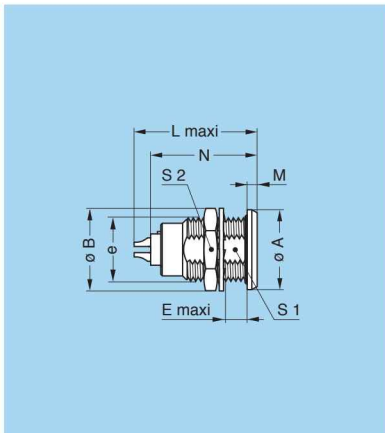
● Standard ● Special

Note: ¹⁾ to order, add a «Z» at the end of the reference. The bend relief must be ordered separately (see page 105).

FS● Adjustable right angle plug, key (G or A to L), cable collet


Reference		Dimensions (mm)						Cable ø	
Model	Series	A	H	L	M	S1	S2	min.	max.
FS●	TT	8	20.0	28.5	20.5	5	7.5	2.4	3.0
FS●	0T	10	23.0	36.0	26.0	7	9.5	1.0	4.5
FS●	1T	13	30.0	43.5	32.5	9	12.0	1.3	6.5
FS●	2T	17	37.5	54.0	42.0	12	16.0	1.3	8.5
FS●	3T	20	40.9	63.9	48.9	14	19.0	2.6	10.5

● Standard ● Special

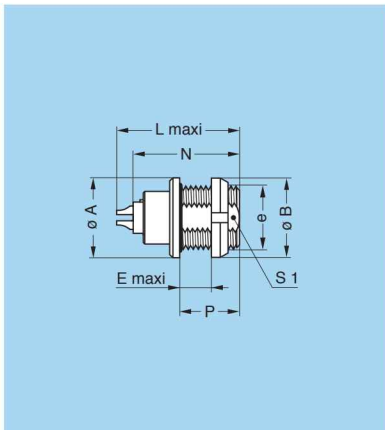
EG● Socket, nut fixing, key (G or A to L)


Reference		Dimensions (mm)								
Model	Series	A	B	e	E	L	M	N ¹⁾	S1	S2
EG●	TT	10.0	10.2	M7x0.5	5.5	16.0	1.2	13.5	6.3	9
EG●	0T	12.0	12.5	M9x0.6	6.0	21.0	1.5	19.1	8.2	11
EG●	1T	15.5	16.0	M12x1.0	6.0	23.0	1.8	21.5	10.5	14
EG●	2T	18.5	19.6	M15x1.0	7.5	26.5	1.8	24.6	13.5	17
EG●	3T	23.5	25.1	M18x1.0	9.6	30.1	2.5	25.0	16.5	22

P1 Panel cut-out (page 117)

Note: ¹⁾ maximum length with crimp contacts.

● Standard ● Special

EE● Socket, nut fixing, key (G or A to L) (back panel mounting)


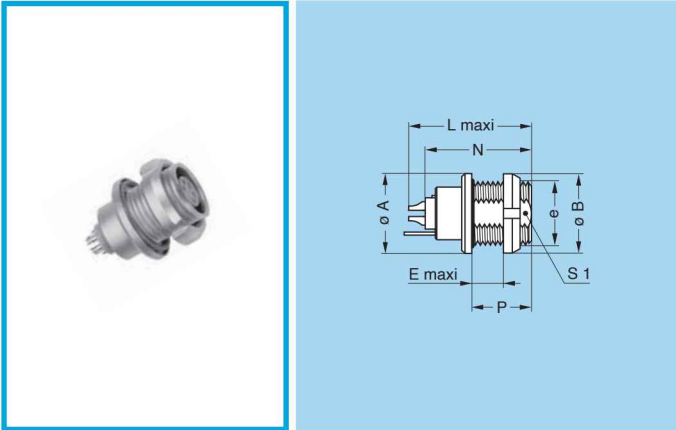
Reference		Dimensions (mm)								
Model	Series	A	B	e	E	L	N ¹⁾	P	S1	
EE●	TT	10.0	10.0	M7x0.5	4.5	16.0	13.5	7	6.3	
EE●	0T	12.0	12.0	M9x0.6	6.5	21.0	19.1	9	8.2	
EE●	1T	15.5	16.0	M12x1.0	6.5	23.0	21.5	10	10.5	
EE●	2T	18.5	20.0	M15x1.0	7.5	26.5	24.6	11	13.5	
EE●	3T	23.5	24.0	M18x1.0	7.5	30.1	25.0	12	16.5	

P1 Panel cut-out (page 117)

Note: ¹⁾ maximum length with crimp contacts.

● Standard ● Special

EA Socket with earthing tag, nut fixing, key (G or A to L) (back panel mounting)



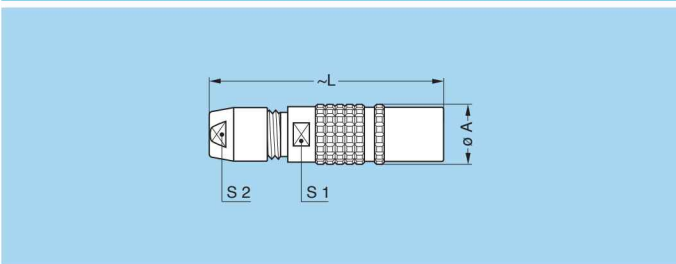
Reference		Dimensions (mm)							
Model	Series	A	B	e	E	L	N ¹⁾	P	S1
EA	TT	10.0	10.0	M7x0.5	4.5	16.0	13.5	7	6.3
EA	0T	12.0	12.0	M9x0.6	6.5	21.0	19.1	9	8.2
EA	1T	15.5	16.0	M12x1.0	6.5	23.0	21.5	10	10.5
EA	2T	18.5	20.0	M15x1.0	7.5	26.5	24.6	11	13.5
EA	3T	23.5	24.0	M18x1.0	7.5	30.1	25.0	12	16.5

P1 Panel cut-out (page 117)

Note: ¹⁾ maximum length with crimp contacts.

● Standard ● Special

PH Free cable socket, key (G or A to L), cable collet

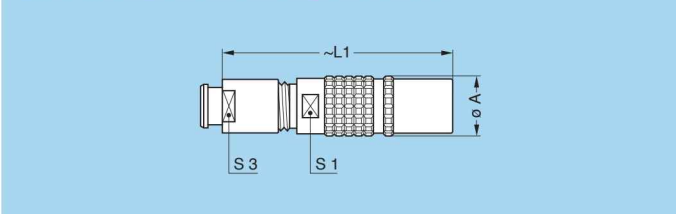


Reference		Dimensions (mm)						Cable ø	
Model	Series	A	L	L1	S1	S2	S3	min.	max.
PH	TT	7.0	32.0	31.5	5.5	5	6	2.4	3.0
PH	0T	9.5	38.0	37.0	8.0	7	7	1.0	4.5
PH	1T	12.0	43.5	42.5	10.0	9	9	1.3	6.5
PH	2T	15.0	52.0	51.0	13.0	12	12	1.3	8.5
PH	3T	18.8	61.5	60.0	16.0	14	15	2.6	10.5

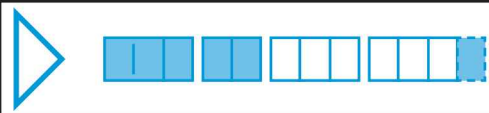
M1 Cable assembly (page 129)

● Standard ● Special

Cable collet and nut for fitting a bend relief ¹⁾



Note: ¹⁾ to order, add a «Z» at the end of the reference. The bend relief must be ordered separately (see page 105).



Watertight or vacuumtight models

Watertight models are identified by a letter «P» at the end of the reference. Most of these models are also available in a vacuumtight version. Such models are identified by the letters «PV» at the end of the part number (certificate on request).

Part number example

HGG.0T.305.CLLP (5 contacts, resin potted) / HGG.0T.305.CLLPV (5 contacts, resin potted and vacuumtight tested)

Technical characteristics

Mechanical and environmental

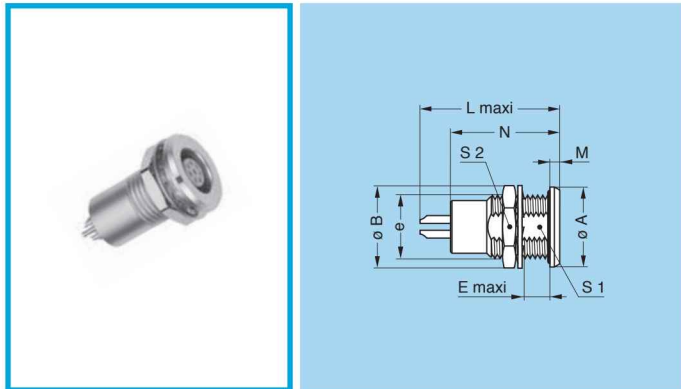
Characteristics	Value	Standard
Endurance ¹⁾	> 3000 cycles	IEC 60512-5 test 9a
Humidity	up to 95% at 60°C	
Temperature range ²⁾	-20°C, +80°C	
Resistance to vibrations	10-2000 Hz, 15g	IEC 60068-2-6 test Fc
Shock resistance	100 g, 6 ms	IEC 60068-2-27 test Ea
Salt spray corrosion test ⁶⁾	> 1000h	IEC 60068-2-11 test Ka
Protection index (mated) ³⁾	IP68/IP66	IEC 60529
Latching retention force ^{4) 5)}	From 85 N up to 300 N	
Climatical category	50/175/21	IEC 60068-1
Leakage rate (He)	< 10 ⁻⁷ mbar.l.s ⁻¹	IEC 60512-2-17 test Qk

Characteristics	Value	Standard	
Maximum operating pressure ⁷⁾	TT	60 bar	IEC 60512-7 test 14d
	0T	60 bar	IEC 60512-7 test 14d
	1T	60 bar	IEC 60512-7 test 14d
	2T	40 bar	IEC 60512-7 test 14d

Note:

- ¹⁾ see page 133, contact resistance after mating cycles. See page 131, mechanical endurance latching force.
- ²⁾ operating temperature is -20°C, +80°C for watertight or vacuumtight models fitted with an FPM O-ring and Epoxy.
- ³⁾ IP68 achieved providing that the cable is perfectly circular and that assembly process ensures a high integrity seal.
- ⁴⁾ average value.
- ⁵⁾ depending of the size.
- ⁶⁾ for chrome plated product («C» material code).
- ⁷⁾ this value corresponds to the maximum allowed pressure difference for the assembled socket.

HG● Socket, nut fixing, key (G or A to L), watertight or vacuumtight

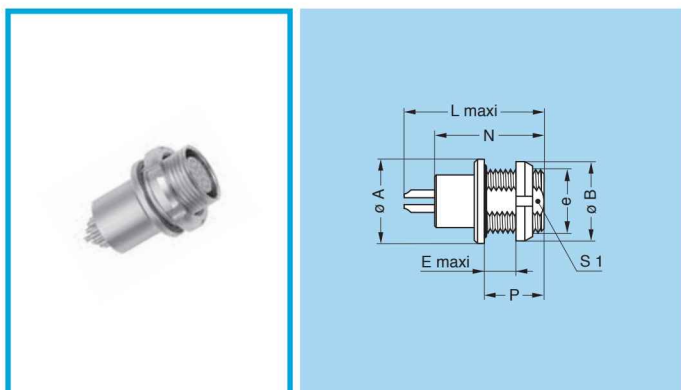


Reference		Dimensions (mm)								
Model	Series	A	B	e	E	L	M	N ¹⁾	S1	S2
HG●	TT	10.0	10.2	M7x0.5	5.5	18.0	1.2	15.0	6.3	9
HG●	0T	12.0	12.5	M9x0.6	6.5	22.0	1.5	18.5	8.2	11
HG●	1T	15.5	16.0	M12x1.0	6.0	26.0	1.8	21.5	10.5	14
HG●	2T	18.5	19.6	M15x1.0	8.0	30.5	1.8	25.0	13.5	17

P5 Panel cut-out (page 117)

● Standard ● Special

HE● Socket, nut fixing, key (G or A to L), watertight or vacuumtight (back panel mounting)



Reference		Dimensions (mm)							
Model	Series	A	B	e	E	L	N	P	S1
HE●	TT	10.0	10.0	M7x0.5	4.5	18.0	15.0	7	6.3
HE●	0T	12.0	12.0	M9x0.6	6.5	22.0	18.5	9	8.2
HE●	1T	15.5	16.0	M12x1.0	6.5	26.0	21.5	10	10.5
HE●	2T	18.5	20.0	M15x1.0	7.5	30.5	25.0	11	13.5

P5 Panel cut-out (page 117)

● Standard ● Special



Special models

Technical characteristics

Mechanical and environmental

Characteristics	Value	Standard
Endurance ¹⁾	> 3000 cycles	IEC 60512-5 test 9a
Humidity	up to 95% at 60°C	
Temperature range ²⁾	- 55°C, + 200°C ⁷⁾ / (- 20°C, + 80°C)	
Resistance to vibrations	10-2000 Hz, 15g	IEC 60068-2-6 test Fc
Shock resistance	100 g, 6 ms	IEC 60068-2-6 test Ea
Salt spray corrosion test ⁶⁾	> 1000h	IEC 60068-2-11 test Ka
Protection index (mated) ³⁾	IP68/IP66	IEC 60529
Latching retention force ^{4) 5)}	From 85 N up to 300 N	
Climatical category	50/175/21	IEC 60068-1

Note:

- ¹⁾ see page 133, contact resistance after mating cycles. See page 131, mechanical endurance latching force.
- ²⁾ operating temperature is -20°C, +80°C for watertight or vacuumtight models fitted with an FPM O-ring and Epoxy.
- ³⁾ IP68 achieved providing that the cable is perfectly circular and that assembly process ensures a high integrity seal.
- ⁴⁾ average value.
- ⁵⁾ depending of the size.
- ⁶⁾ for chrome plated product (« C » material code).
- ⁷⁾ maximum temperature valid for short periods of use.

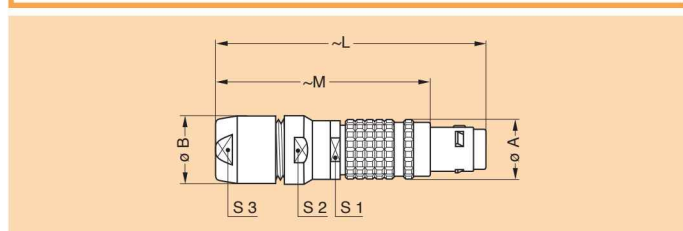
Electrical

Characteristics	Value	Standard	
Shielding efficiency	at 10 MHz	> 75 dB	IEC 60169-1-3 test 9a
	at 1 GHz	> 40 dB	IEC 60169-1-3 test 9a

Note:

the various tests have been carried out with FGG and EGG connector pairs, with chrome-plated brass shell and PEEK insulator. Detailed electrical characteristics, as well as materials and treatment are presented in the chapter Technical characteristics on page 130.

FG● Straight plug, key (G or A to L), cable collet and oversize cable collet ¹⁾

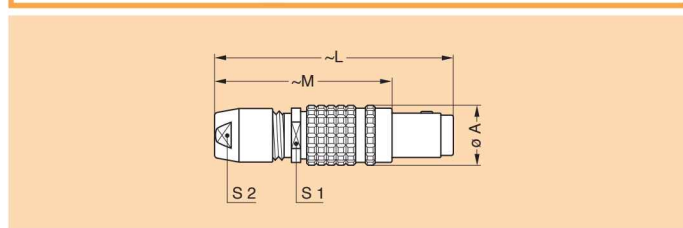


Reference		Dimensions (mm)							Cable ø	
Model	Series	A	B	L	M	S1	S2	S3	min.	max.
FG●	0T	9.5	10.9	50.7	40.9	8.5	10	9	4.6	6.5
FG●	1T	12.0	13.9	60.2	49.1	11.0	13	12	6.6	8.5
FG●	2T	15.0	16.5	69.1	57.0	14.0	15	14	8.6	10.5
FG●	3T	18.8	23.0	87.7	72.7	16.0	20	20	10.6	15.0

M2 Cable assembly (page 129)

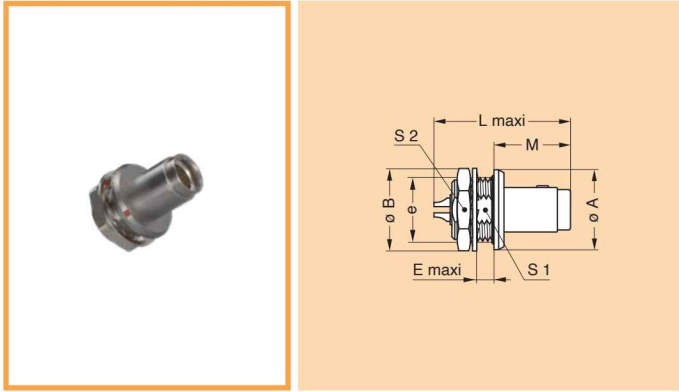
Note: ¹⁾ correspond to K type of collet, the fitting of oversize collets onto this model allows them to be fitted to the cables that can be accommodated by the next housing size up (see page 83).

FF● Straight plug, key (G or A to L), non latching, cable collet



Reference		Dimensions (mm)					Cable ø	
Model	Series	A	L	M	S1	S2	min.	max.
FF●	TT	7.0	33.2	25.2	5.5	5	2.4	3.0
FF●	0T	9.5	39.0	29.0	8.0	7	1.0	4.5
FF●	1T	12.0	46.0	35.0	10.0	9	1.3	6.5
FF●	2T	15.0	55.0	43.0	13.0	12	1.3	8.5
FF●	3T	18.8	64.0	49.0	16.0	14	2.6	10.5

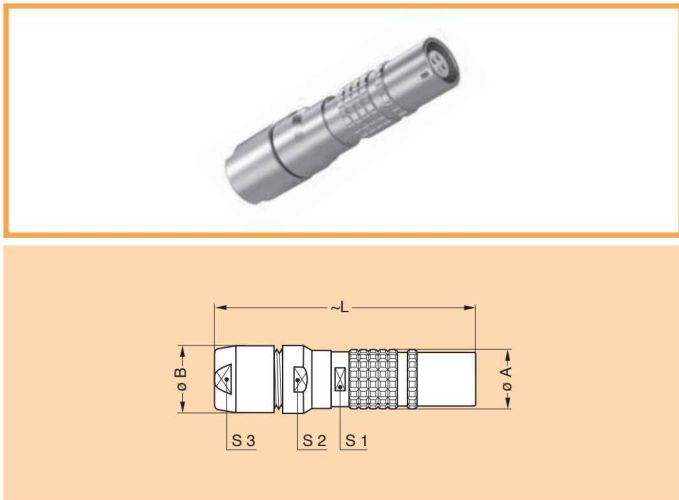
M1 Cable assembly (page 129)

FA● Fixed plug, key (G or A to L), non-latching, nut fixing


Reference		Dimensions (mm)							
Model	Series	A	B	e	E	L	M	S1	S2
FA●	TT	10.0	10.2	M7x0.5	2.6	17.2	9.2	6.3	9
FA●	0T	12.0	12.5	M9x0.6	3.2	21.5	11.6	8.2	11
FA●	1T	15.5	16.0	M12x1.0	4.0	24.4	12.9	10.5	14
FA●	2T	18.5	19.6	M15x1.0	5.7	28.8	13.9	13.5	17
FA●	3T	23.5	25.1	M18x1.0	5.3	32.3	17.5	16.5	22

P1 Panel cut-out (page 117)

Note: ¹⁾ maximum length with crimp contacts

PH● Free cable socket, key (G or A to L), cable collet and oversize cable collet ¹⁾


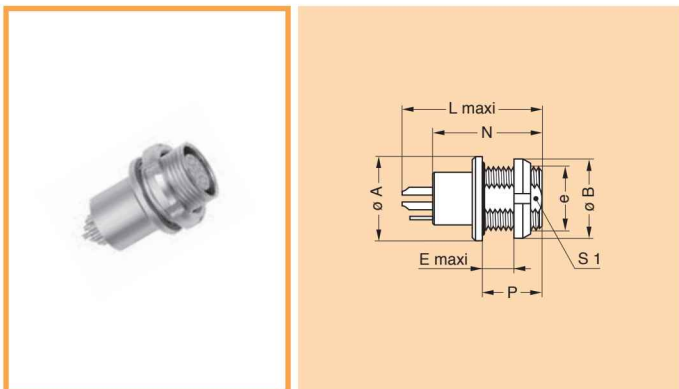
Reference		Dimensions (mm)						Cable ø	
Model	Series	A	B	L	S1	S2	S3	min.	max.
PH●	0T	9.5	10.9	49.7	8	10	9	4.6	6.5
PH●	1T	12.0	13.9	58.2	10	13	12	6.6	8.5
PH●	2T	15.0	16.5	66.6	13	15	14	8.6	10.5
PH●	3T	18.8	23.0	85.5	16	20	20	10.6	15.0

M2 Cable assembly (page 129)

Note: ¹⁾ correspond to K type of collet, the fitting of oversize collets onto this model allows them to be fitted to the cables that can be accommodated by the next housing size up (see page 83).

Watertight or vacuumtight models

Watertight models are identified by a letter «P» at the end of the reference. Most of these models are also available in a vacuumtight version. Such models are identified by the letters «PV» at the end of the part number (certificate on request). See page 64 for technical characteristics.

HM● Socket with earthing tag, nut fixing, key (G or A to L), watertight or vacuumtight (back panel mounting)


Reference		Dimensions (mm)							
Model	Series	A	B	e	E	L	N	P	S1
HM●	TT	10.0	10.0	M7x0.5	4.5	18.0	15.0	7	6.3
HM●	0T	12.0	12.0	M9x0.6	6.5	22.0	18.5	9	8.2
HM●	1T	15.5	16.0	M12x1.0	6.5	26.0	21.5	10	10.5
HM●	2T	18.5	20.0	M15x1.0	7.5	30.5	25.0	11	13.5

P5 Panel cut-out (page 117)



Plastic housing models

These connectors are particularly recommended for all applications requiring maximum electrical insulation when mated. The design, including a latch sleeve and a metal earthing crown, guarantees EMC screening efficiency to meet most requirements.

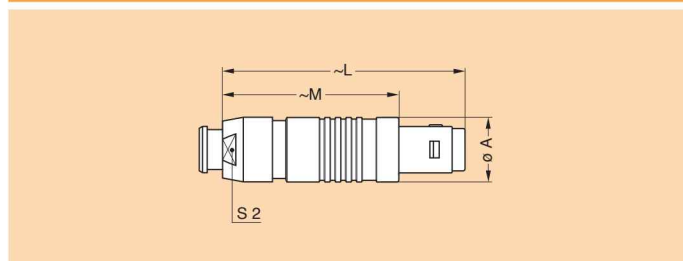
Technical characteristics

Mechanical and climatical

Characteristics	Value	Standard
	POM	
Colour	black	–
Endurance ¹⁾	> 3000 cycles	IEC 60512-5 test 9a
Humidity	up to 95% at 60°C	–
Temperature range	- 40°C, + 115°C	–
Sterilization resistance ²⁾	none	IEC 60601-1 § 44.7
Resistance to organic solvents	very good	–

Note: ¹⁾ see page 133, contact resistance after mating cycles. See page 131, mechanical endurance latching force. ²⁾ Steam sterilization.

FG● Straight plug, key (G or A to L), cable collet and nut for fitting a bend relief, POM outer shell ¹⁾

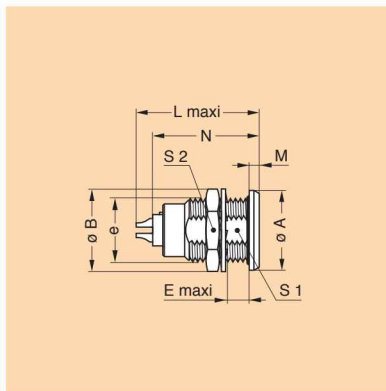


Reference		Dimensions (mm)				Cable ø	
Model	Series	A	L	M	S2	min.	max.
FG●	0T	9.7	38.5	28.5	8	1.0	4.5
FG●	1T	13.0	45.0	34.0	10	1.3	6.5

M1 Cable assembly (page 129)

Note: ¹⁾ to order, add a «Z» at the end of the reference. The bend relief must be ordered separately (see page 105).

EG● Socket, nut fixing, key (G or A to L), POM outer shell



Reference		Dimensions (mm)								
Model	Series	A	B	e	E	L	M	N ¹⁾	S1	S2
EG●	0T	12.0	12.5	M9x0.6	6.0	21.0	1.5	19.1	8.2	11
EG●	1T	15.5	16.0	M12x1.0	6.0	23.0	1.8	21.5	10.5	14

P1 Panel cut-out (page 117)

Note: ¹⁾ maximum length with crimp contacts.

Alignment key

Alignment key and polarized keying system

T series connector model part numbers are composed of three letters. The LAST LETTER indicates the key position and the contact type (male or female).

Front view of a socket

Ref.	Nb of spurs	Contact type	
		Plug	Socket
G	1	male	female
A	2	male	female
D	2	male	female
J	2	female	male
L	2	female	male

- Standard
- Special

Note: ¹⁾ for 2T and 3T series.