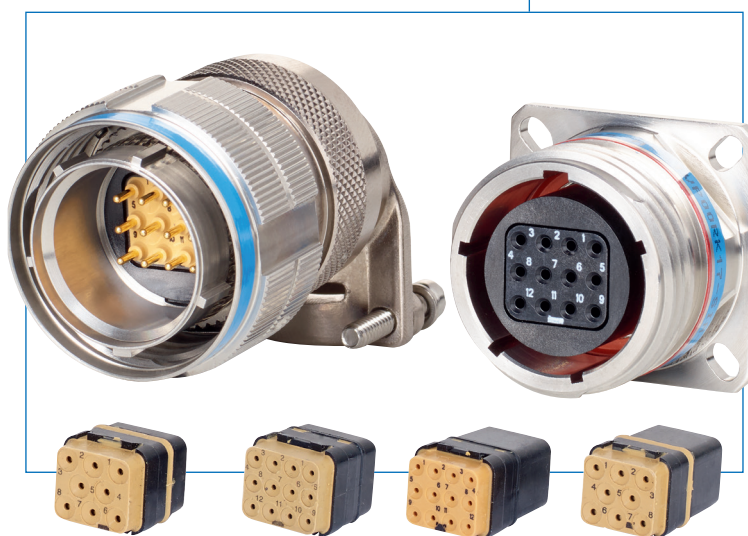


Amphenol

TV-SIM

Thread coupling modular



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TV-SIM

These connectors with thread coupling are based on MIL-DTL-38999 (for the shell) & EN4165 / VG96513 (for the inserts) standard.

Offering a high liability, they are coevally waterproof and resistant to vibrations and wear. They use the same installation dimensions as connectors according to MIL-DTL-38999.



Modules

The modules are made of thermoplastic and overmolded silicon elastomer.

The modules meet the standards of EN4165 and VG96513. There are two types of modules:

- Pin modules for pin contacts **P**
- Socket modules for socket contacts **S**

Modules are inserted by rear of receptacles and plugs, can be manually inserted in the shell cavities, but have to be extracted with a specific tool.

Contacts

P pin and **S** socket crimp contacts are complying with SAE-AS39029 and EN3155 standards (most popular contacts worldwide), and available from 23 to 8. Contacts are inserted through the rear elastomer surface. In the grommet are three elastic barriers ensuring excellent sealing onto the cable. On the mating side, sealing is ensured by the overmolded elastomer on the pin modules.

Material: Copper alloy

Plating: Gold over nickel

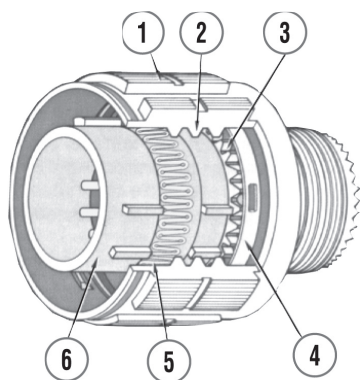
Contacts retention in insulator:

# Contacts AWG	23	22	20MIL	20ASNE	16	12	8
N	45		89	60	110	133	156

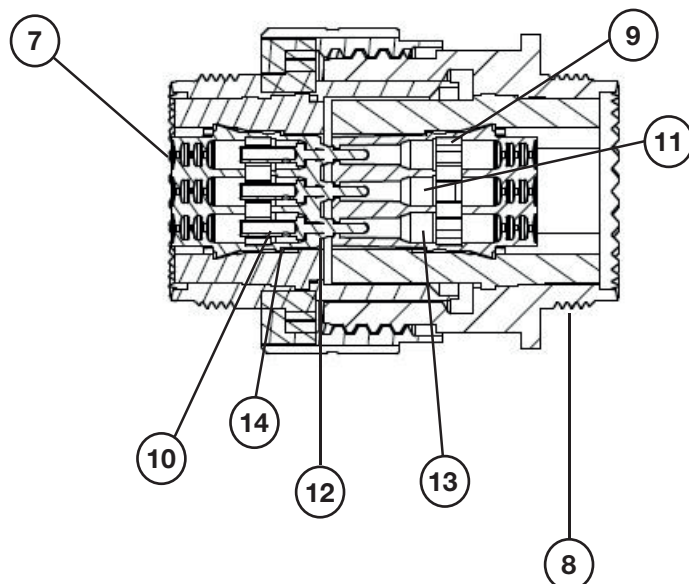
Insulation resistance: $\geq$ to 5000 M Ω

Max insulation resistance in altitude: $\geq$ to 1000 M Ω

# Contacts AWG	23	22	20	16	12	8	8
Withstanding voltage	1500V eff. 50 Hz		1800V eff. 50 Hz				
Max. Current Rating (A)	5		7,5	13	23	46	80



- 1 Coupling nut
- 2 Quick coupling thread
- 3 Ratchet
- 4 Anti decoupling device
- 5 Plug shell
- 6 Spring fingers (EMI)



- 7 Grommet
- 8 Receptacle shell
- 9 Contact retention clips
- 10 Crimping pin contact
- 11 Crimping socket contact
- 12 Interfacial seal
- 13 Socket insert
- 14 Pin insert

- Thermoplastic insert
- Silicone rubber back insert and interfacial seal

- **Durability:** 500 cycles
- **Shocks:** half sine wave of 300 G magnitude during 3ms per EIA364.27
- **Sine vibrations:** 60 g from - 55°C to + 175°C (olive drab cadmium finish)
- **Random vibrations per EIA364.28:**
 - 1 G² / Hz at 175°C olive drab cadmium finish
 - 1 G² / Hz at 175°C nickel finish and firewall version
 - 5 G² / Hz at ambient
- **Bending moment:** 67,8 Nm

• **Salt spray exposure and working temperature:**

• **Waterproof shells**

Shell material	Shell finish	Salt spray exposure	Class norm	Amphenol	Operating temperature		Shell to shell Conductivity
					mini	maxi	
Composite	Electroless Nickel O.D cadmium	2000 H 2000 H	M J	CTV-RF CTV-RW	-65°C -65°C	+175°C +175°C	3mΩ 3mΩ
Aluminium	Electroless Nickel O.D cadmium Black Zinc Nickel Zinc Tin	48 H 500 H 500 H per VG95319-1016	F	TVS-RF	-65°C	+175°C	1mΩ
			W	TV-RW	-65°C	+175°C	2.5mΩ
			Z	TV-ZN	-65°C	+175°C	2.5mΩ
			J	TV-RJ	-65°C	+175°C	2.5mΩ
Stainless steel	Nickel —	500 H 500 H	S	TVS-RS	-65°C	+175°C	1mΩ
			K	TVS-RK	-65°C	+175°C	10mΩ
Bronze	—	500 H		TVS-RB	-65°C	+175°C	5mΩ

• **Sealing:**

Interfacial: according to EN 2591 test 324 pressure = 11 hPa

Air leakage: a leak ≤ to 4cm³/h under differential pressure of 1 bar

Immersion at low air pressure: according to EN 2591 test 314 pressure = 11hPa

• **Electrical:**

Insulation resistance: ≥ to 5000MΩ

Max insulation resistance in altitude: ≥ to 1000MΩ

# Contacts	23	22	20	16	12	8	8
Withstanding voltage	1800 V eff. 50 Hz						
Max. Current Rating (A)	5	7,5	13	23	46	80	

• **Fluid resistance:**

- Fuels, Kerozene (NATO F35)
- Mineral hydraulic fluid, per MIL PRF 5606 (NATO H 515)
- Synthetic hydraulic fluid, per NSA 307.110 (Skydrol 500 B4)
- Mineral lubricant, per MIL PRF 7870 C (NATO 0142)
- Synthetic lubricant, per MIL-PRF-23699C (NATO 0156)
- Cleaning products, Propanol 25% / white spirit 25% v/v (NATO S 752)

- Cleaning products, Methylethyl ketone
- Cleaning products, per MIL PRF 87937D
- De-icing fluid (NATO S742)
- Extinguishing agents, Heptafluoropropane (HFC 227)
- Cooling fluid, Coolanol 25 R

TV-SIM METALLIC SHELLS

ALUMINIUM SHELLS

Presentation

Aluminium TV shell connectors are used in professional and international electronic defense programs in standard environmental conditions.

Main characteristics

- Material shell: Aluminium alloy
- Shell to shell continuity: Max resistance
 - 1 mΩ for F class
 - 2.5 mΩ for J-W-Z class
- Shell to contact continuity, for grounded inserts versions: Max resistance 10 mΩ
- EMI shielding effectiveness:
 - 1GHz: -85 dB (Class F, W-Z)
 - 10 GHz: -65 dB (Class F); -50 dB (Class W-Z)
- Standard MIL wiring tools

MARINE BRONZE SHELLS

Presentation

TVS-B bronze connectors are not defined in MIL-DTL-38999-III standard but they are based on its requirements.

TVS-B connectors conform to the European standard CECC 75.201.002. (deviation F485 to be added for plug)

This series was initially selected by the British Navy for a new generation of ships. By extension a lot of the NATO Navy choose this series as a standard of interconnection.

Main characteristics

- Material shell: Nickel aluminum bronze DGS 1043.
- EMI shielding effectiveness: < -65 dB from 100 MHz to 10 GHz.

STAINLESS STEEL SHELLS

Presentation

Stainless steel shell connectors are used in high temperature environments and in harsh vibration conditions. They provide FIREWALL capabilities.

Main characteristics

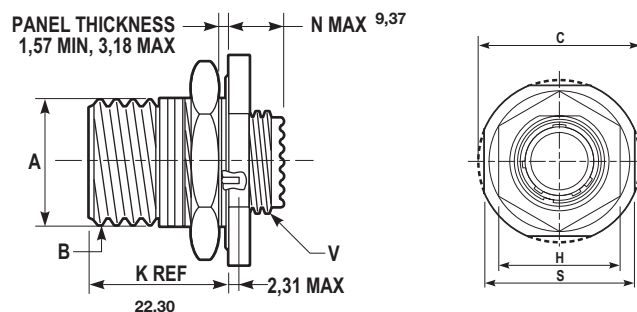
- Thermosetting insert
- Shell to shell continuity: Max resistance
 - 10 mΩ for Class K
 - 1 mΩ for Class S
- EMI shielding effectiveness:
 - 1 GHz: -65 dB (Class K); -85 dB (Class S)
 - 10 GHz: -45 dB (ClassK); -65 dB (Class S)

Shell size	MS	B Thread	L	M										
Amphenol	Shell Size Code	Class 2A 0.1P-0.3L-TS (inches)	Max (TV) mm	+0.000 -0.005 (TV)	R1	R2	S Max	T ±.008	Z. Max. (TV)	A1 Back Panel Mount	A2 Front Panel Mount	AA Max. Panel Thickness	LL +0.006 -0.000 (TV)	TT ±.008
17	E	1.1875	5.21	20.83	26.97	24.61	33.60	3.25	3.87	30.73	25.65	5.94	22.99	4.93

OVERALL DIMENSIONS / METALLIC VERSIONS

JAM NUT RECEPTACLE

TV07RJ
TV07RW
TV07ZN
TVS07RF
TVS07RB
TVS07RK
TVS07RS

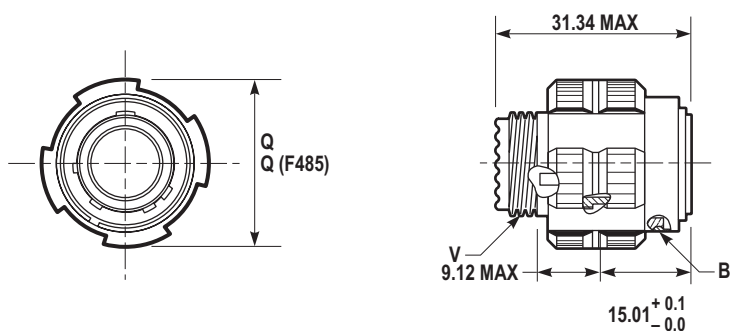


Shell size	B thread Class 2A 0.1P-0.3L-TS (inches)	A +0.10 -0.15 (mm)	C Max (mm)	H Hex +0.43 -0.41 (mm)	S +/-0.4 (mm)	V thread metric	Hex nut max torque N.m
Amphenol							
17	1.1875	30.15	44.73	36.52	41.28	M25x1-6g	9.8

For panel drilling, see page 42

STRAIGHT PLUG

TV06RJ
TV06RW
TV06ZN
TVS06RF
TVS06RB
TVS06RK
TVS06RS



Shell size	B thread Class 2A 0.1P-0.3L-TS	Q Max (mm)	V thread metric (mm)	Q (F485)* (mm)
Amphenol				
17	1.1875	35.33	M25x1-6g	36.5

CTV-SIM COMPOSITE SHELLS

PRESENTATION

The Amphenol composite TV-SIM connectors offers a lightweight corrosion resistant connector with the same high performance features as its metal counterpart. It also includes the following features:

- Lightweight (20 - 40% weight savings vs. aluminium, 60 - 70% weight savings vs stainless steel)
- High Corrosion resistance
- Durability

Note: Coupling nuts and hexagonal nuts are delivered without plating (black)

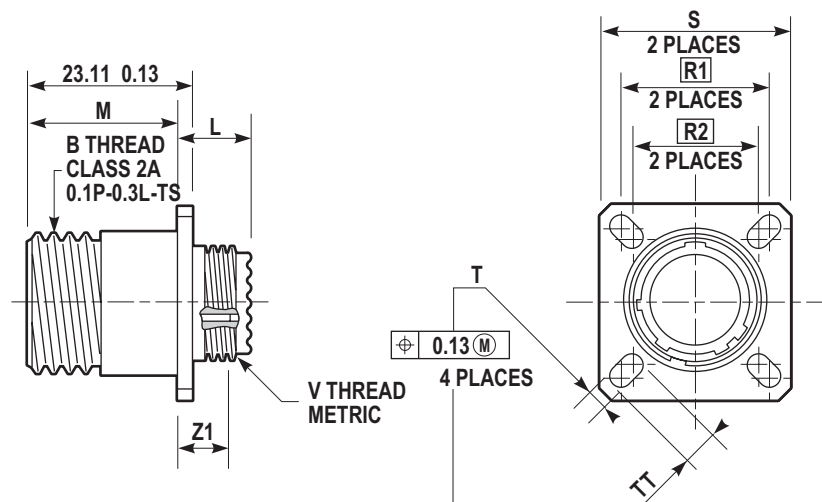
MAIN CHARACTERISTICS

- Shell to shell continuity: Max resistance
 - Class RF: 3 mΩ
 - Class RW: 3 mΩ
- Durability: - 500 cycles with standards contacts
- Ozone exposure: MIL-DTL-38999 § 4.5.28 / EIA 364.14.
- Fungus resistance conforms to: MIL-STD-810, method 508.
- EMI shielding effectiveness:
 - 1 GHz: -85 dB (Class RF, RW)
 - 10 GHz: -65 dB (Class RF), -50 dB (Class RW)

OVERALL DIMENSIONS - COMPOSITE VERSIONS

SQUARE FLANGE RECEPTACLE

CTVP00RW
CTVPS00RF



Shell size	B Thread (inches)	L Max (mm)	M +0.00 -0.13 (mm)	R1 (mm)	R2 (mm)	S ±0.25 (mm)	T +0.20 -0.13 (mm)	Z1 Max (mm)	TT +0.20 -0.13 (mm)	V thread metric
Amphenol										
17	1.1875	13.055	19.685	26.97	24.61	33.32	3.25	5.03	4.93	M25x1-6g

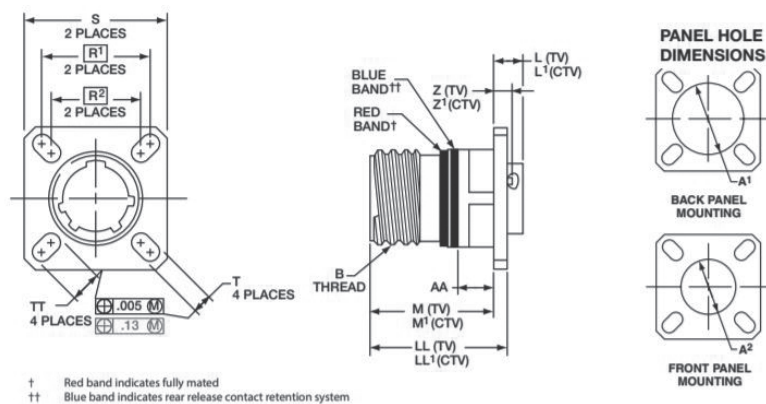
For panel drilling, see page 42

Maximum panel thickness for rear panel mounting: 5,8mm

OVERALL DIMENSIONS - COMPOSITE VERSIONS

BOX MOUNTING RECEPTACLE

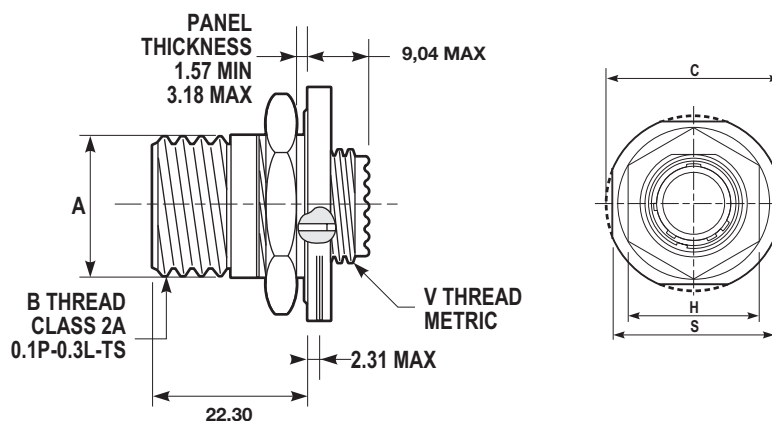
CTVP02 RW
CTVPS02 RF



Shell size	MS Shell Size Code	B Thread Class 2A 0.1P-0.3L-TS (inches)	L1 Max (CTV)	M1 +.000 - .005 (CTV)	R1	R2	S Max	T ±.008	Z1 Max. (CTV)	A1 Back Panel Mount	A2 Front Panel Mount	AA Max. Panel Thickness	LL1 ±.005 (CTV)	TT ±.008
Amphenol														
17	E	1.1875	6.35	19.63	26.97	24.61	33.60	3.25	5.03	30.73	25.65	5.94	23.06	4.93

JAM NUT RECEPTACLE

CTV07 RW
CTVS07 RF



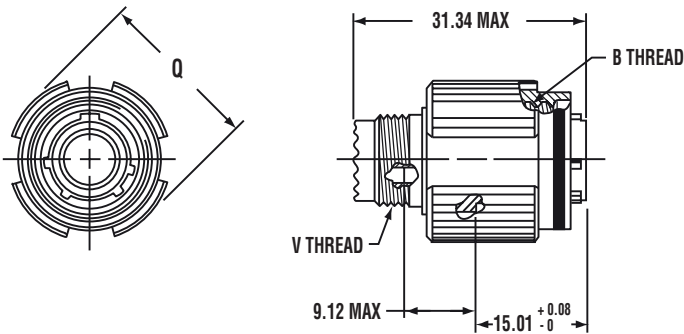
Shell size	A +0.00 -0.25 (mm)	B Thread (inches)	C Max (mm)	H Hex +0.43 -0.41 (mm)	S +0.28 -0.25 (mm)	V thread metric	Hex nut max torque N.m
Amphenol							
17	30.68	1.1875	44.73	36.52	41.28	M25x1-6g	9.8

For panel drilling, see page 42

OVERALL DIMENSIONS - COMPOSITE VERSIONS

STRAIGHT PLUG

CTV06 RW
CTVS06 RF



Shell size	B Thread 0.1P-0.3L-TS-2B (inches)	Q Max (mm)	V thread metric (mm)
Amphenol			
17	1.1875	35.69	M25x1-6g

AMPHENOL DESIGNATION

Series	TV	P00	RW	17-SIM	P	A
TV: Metallic shell						
CTV: Composite shell						
Shell type						
P00: Square flange receptacle: 175°C (O.D. cadmium, g.zinc cobalt, ni-PTFE, b.zinc nickel)						
PS00: Square flange receptacle: 175°C *** (nickel, s.steel, bronze)						
07: Jam nut receptacle: 175°C (O.D. cadmium, g.zinc cobalt, ni-PTFE, b.zinc nickel)						
S07: Jam nut receptacle: 175°C *** (nickel, s.steel, bronze)						
06: Straight plug: 175°C (O.D. cadmium, g.zinc cobalt, ni-PTFE, b.zinc nickel)						
S06: Straight plug: 175°C *** (nickel, s.steel, bronze)						
01: In line receptacle 175°C (O.D. cadmium, g.zinc cobalt, ni-PTFE, b.zinc nickel)						
S01: In line receptacles 175°C *** (nickel, s.steel, bronze)						
P02: P00 without rear thread (no poss. for backshell) 175°C (O.D. cadmium, g.zinc cobalt, ni-PTFE, b.zinc nickel)						
PS02: PS00 without rear thread (no poss. for backshell) 175°C *** (nickel, s.steel, bronze)						
Class						
RW: Olive Drab Cadmium plating (on aluminium or composite)						
RJ: Tin Zinc plating ✓						
RF: Nickel Plating (on aluminium or composite) ✓						
RK: Passivated Stainless Steel ✓						
RS: Nickel plated Stainless Steel ✓						
RB: Marine Bronze (copper aluminium alloy) ✓						
ZN: Black Zinc Nickel plated aluminium ✓						
Shell size & Insert						
17-SIM						
Contact type						
P: Pin (500 cycles)						
S: Socket (500 cycles)						
Polarization						
Blank for normal or A, B, C, D, E						

*** Temperature indications do not concern fiber optics

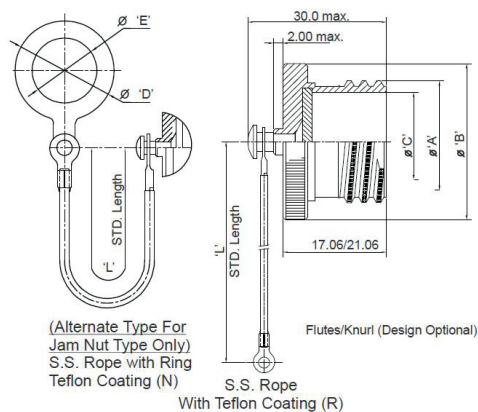
✓: RoHS compliant

- To order the accessories go to page 13-24
- To order the inserts go to page 25-42
- To order the tools go to page 43

METALLIC CAPS

PLUG METAL CAP

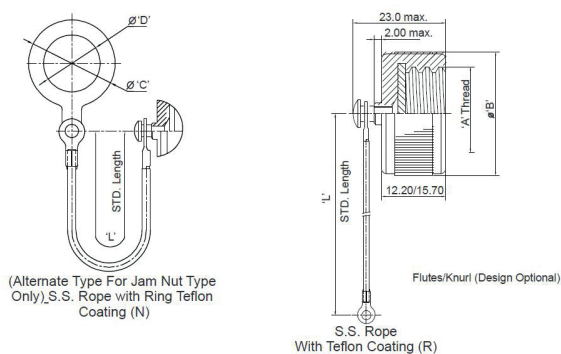
D38999/32



Shell size	A thread -2A-0.1P-0.3L-TS (inches)	B Dia Max (mm)	C +0.0 -0.15 (mm)	D Max (mm)	E Dia Min	L Max (mm)
Amphenol						
17	1.1875	37.0	25.88	37.0	26.0	140

RECEPTACLE METAL CAP

D38999/33



Shell size	A thread -2A-0.1P-0.3L-TS (inches)	B Dia Max (mm)	C Max (mm)	D Dia Min (mm)	L Max (mm)
Amphenol					
17	1.1875	37.0	44.0	32.0	140

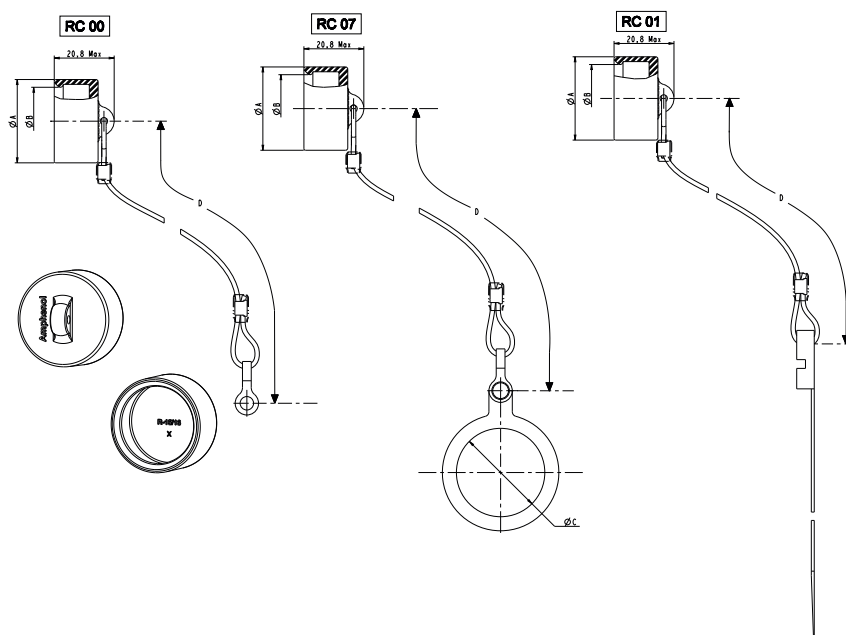
ORDERING INFORMATION - PROTECTIVE CAPS

Standard Metallic Caps	D38999/	32	F	17	R
Protection cap type					
32: For plug					
33: For receptacle					
Class					
F: Electroless nickel finish					
W: Aluminium, 500 hrs cadmium olive drab					
Z: Black Zinc Nickel finish					
Shell Size					
17					
Style					
R: Rope					
N: With rope & ring					

RUBBER CAPS

PLUG & RECEPTACLE RUBBER CAPS

RC



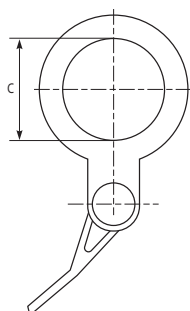
Sizes	ØA Max	ØB Max	ØC Max $+0,25$ 0	D Max
17	32,75	27,4	32,16	140

HOW TO ORDER

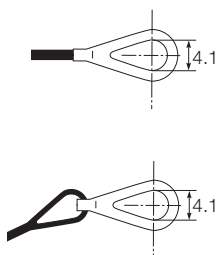
Cap Series	RC	00	N	TV	17
Protection cap type					
00: For square flange receptacle					
07: For jam nut receptacle					
01: For line receptacle					
Wire type					
N: Nylon cord					
Connector type					
TV					
Shell size					
17					

PROTECTIVE CAPS - TERMINATION TYPE

For both standard Metallic Caps & Rubber Caps

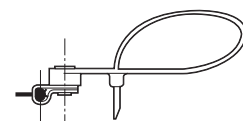


Termination of the chain, rope (RO type) or cord for jam nut receptacle protection caps



Termination of the cord or rope (R type) for square flange receptacle protection caps

Termination of the chain for square flange receptacle and plug protection caps

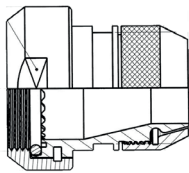


Termination of the cord for plugs protection caps

METALLIC BACKSHELLS

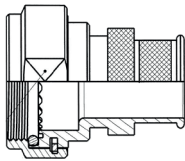


SHIELDING



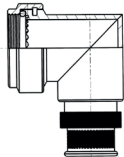
VG95319-1011C

- Electrical continuity between cable and connector by clamping the braid with a screwing system
- Free inner ring to avoid twisting of the braid when screwing
- Sealing ensured by straight or right angle heat-shrink molded piece



VG95319-1011G / M85049/88

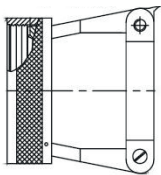
- MIL standardized band backshell
- Full 360° termination
- Sealing ensured by straight or right angle heat-shrink molded piece



VG95319-1011B / M85049/90

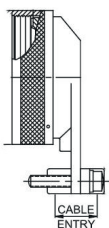
- MIL standardized band backshell
- Full 360° termination
- Sealing ensured by straight or right angle heat-shrink molded piece
- 45° version available M85049/89

MECHANICAL RETENTION



M85049/38 - M85049/124

- MIL standardized strain relief clamp
- Mechanical retention of the cable
- Easy maintenance or reparability
- Self locking option available



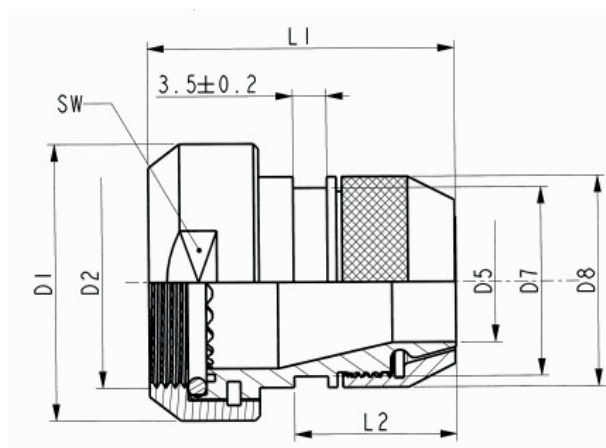
M85049/39 - M85049/126

- MIL standardized right angle strain relief clamp
- Mechanical retention of the cable
- Easy maintenance or reparability
- Self locking option available

METAL CONNECTORS - SHIELDING

SQ Adapter / VG95319

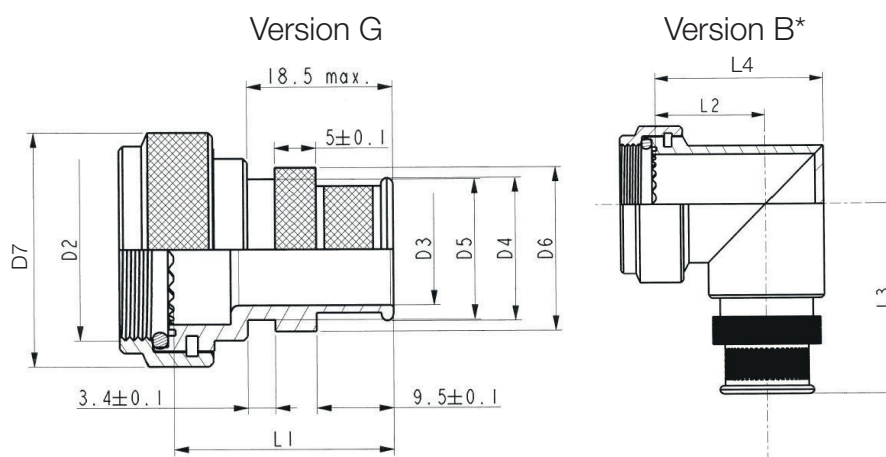
- Mil qualified shielding backshell VG95319-1011C
- Electrical continuity between cable and connector by clamping the braid with a screwing system
- Free inner ring to avoid twisting of the braid when screwing
- Sealing ensured by straight or right angle heat-shrink boots



VG Designation	Shell size	D1 ± 0,2	D2	D5 min.	D7 0 -0,3	D8 +0,5 0	L1 max.	L2 max.	SW 0 -0,2
Aluminum, cadmium-plated : VG95319-1011C009A	17	32	M25 x 1	15,5	23,0	25,0	36,0	18,2	30
J-Version : VG95319-1011C009J	17	32	M25 x 1	15,5	23,0	25,0	36,0	18,2	30
Marine bronze : VG95319-1011C009B	17	32	M25 x 1	15,5	23,0	25,0	36,0	18,2	30
Stainless steel : VG95319-1011C009S	17	32	M25 x 1	15,5	23,0	25,0	36,0	18,2	30

Band Backshell / VG95319

- MIL standardized band backshells (VG and MIL qualified options)
- Full 360° screen termination
- Sealing ensured by straight or right angle heat-shrink boots
- VG Parts: Available in straight version VG95319-1011G and right angled version VG95319-1011B
- MIL parts: Available in straight version M85049/88, 45° version M85049/89 and 90° version M85049/90

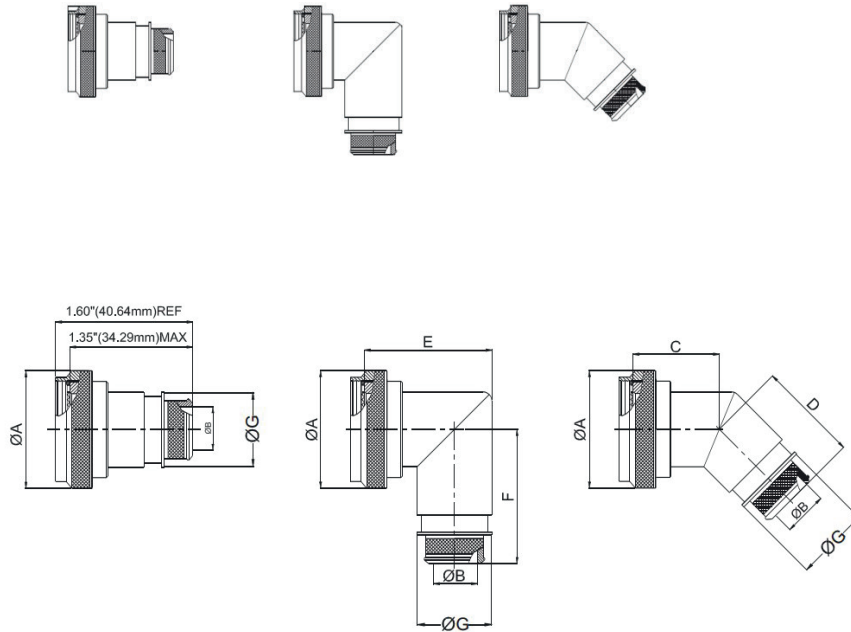


VG Designation	Shell size	D7 max	D2	D3 ±0,025	D4 ±0,1	D5 ± 0,1	D6 ± 0,1	L1 ± 0,8	L2 max	L3 max	L4 max
Aluminum, cadmium-plated : VG95319-1011G006A (straight) VG95319-1011B006A (angle)	17	33,0	M25 x 1	23,5	27,3	26,9	29,8	38,0	22,8	37,8	37,7
J-Version : VG95319-1011G006J (straight) VG95319-1011B006J (angle)	17	33,0	M25 x 1	23,5	27,3	26,9	29,8	38,0	22,8	37,8	37,7
Marine bronze : VG95319-1011G006B (straight) VG95319-1011B006B (angle)	17	33,0	M25 x 1	23,5	27,3	26,9	29,8	38,0	22,8	37,8	37,7
Stainless steel : VG95319-1011G006S (straight) VG95319-1011B006S (angle)	17	33,0	M25 x 1	23,5	27,3	26,9	29,8	38,0	22,8	37,8	37,7

*Further dimensions are specified in Version G

METAL CONNECTORS - SHIELDING

Band Backshell / M85049



HOW TO ORDER

MIL Series	M85049 /	88 -	17	A	02
Slash sheet					
88: Straight, self lock					
89: 45deg, self lock					
90: 90deg, self lock					
Shell size					
17					
Finish					
A: Anodize, Black*					
N: Electroless Nickel					
W: Cadmium, Olive drab over Electroless Nickel					
Zn: Black Zinc Nickel					
Entry size					
See Table-A					

* Non conductive coatings

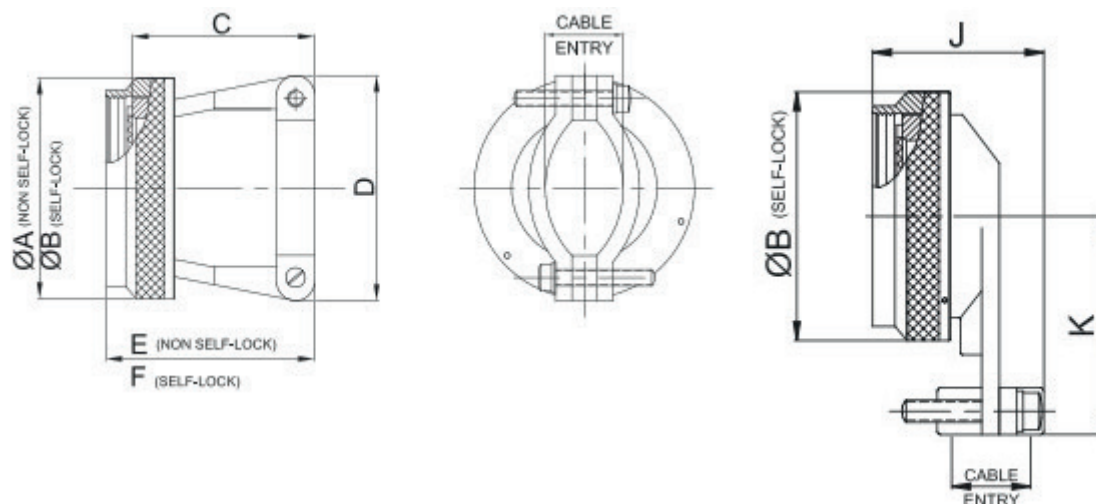
TABLE - A

MIL PART NUMBER DESIGNATOR		Connector Shell Size/Code	A DIA. (MAX)	B DIA.		C (MAX)	D (MAX)	E (MAX)	F (MAX)	G (MAX)
				+0.00 -0.02	+0.00 -0.50					
Connector shell size	Entry size		MM	MM		MM	MM	MM	MM	MM
17	02	17/E	35.71	12.95		28.19	32.00	44.45	42.62	20.83
	03			16.26						24.13

METAL CONNECTORS - MECHANICAL RETENTION

Strain Relief Clamp / M85049

- MIL standardized according to M85049
- Mechanical retention of the cable
- Easy maintenance or repairability
- Self locking option available
- Available in straight version M85049/38(S) and right angled version M85049/39(S)
- Available with finish: Black Zinc Nickel (M85049/124 for straight version and M85049/126 for right angled version)



HOW TO ORDER

MIL Series	M85049 /	38	S	17	A
Slash sheet					
38: Straight					
39: 90deg					
124: Straight					
126: 90deg					
Coupling					
S: Self lock					
“-”: Non self lock					
Shell size					
17					
Finish					
A: Anodize, Black*					
N: Electroless Nickel					
W: Cadmium, Olive drab over Electroless Nickel					
Zn: Black Zinc Nickel					

* Non conductive coatings

TABLE - A							
MIL PART NUMBER DESIGNATOR	Connector Shell Size/Code (Ref.)	A DIA. (MAX)	B DIA. (MAX)	C (MAX)	D (MAX)	E (MAX)	F (MAX)
Connector shell size		MM	MM	MM	MM	MM	MM
17	17/E	31.75	35.71	29.46	33.02	34.44	36.83
Continuation TABLE - A							
MIL PART NUMBER DESIGNATOR	Connector Shell Size/Code (Ref.)	G (MAX)	H (MAX)	J (MAX)	K (MAX)	Cable Entry	
Connector shell size		MM	MM	MM	MM	MIN	MAX
						MM	MM
17	17/E	40.28	25.17	43.43	33.02	7.19	15.60

COMPOSITE BACKSHELLS



SHIELDING

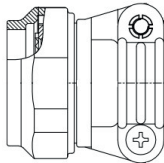
**ABS2216**

- Composite EMI shielding backshell
- Light weight solution
- Quick and easy installation
- Anti-decoupling system to withstand shocks and vibrations in harsh environment

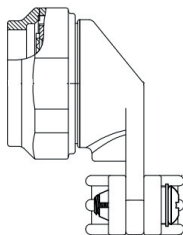
**ABS2216**

- Composite EMI shielding angle backshell
- Light weight solution
- Quick and easy installation
- Anti-decoupling system to withstand shocks and vibrations in harsh environment

MECHANICAL RETENTION

**M85049/91**

- MIL standardized strain relief clamp composite
- Mechanical retention of the cable
- Easy maintenance or repairability
- Including self locking system

**M85049/92**

- MIL standardized right angle strain relief clamp composite
- Mechanical retention of the cable
- Easy maintenance or repairability
- Including self locking system

**ABS2216**

- Composite strain relief backshell
- Light weight solution
- Quick and easy installation
- Anti-decoupling system to withstand shocks and vibrations in harsh environment

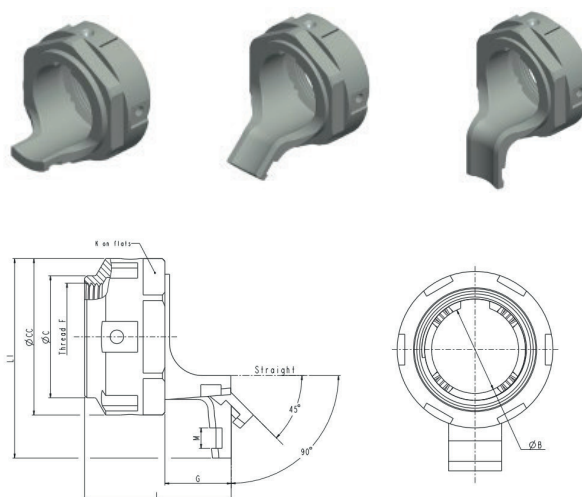
**ABS2216**

- Composite angle strain relief backshell
- Light weight solution
- Quick and easy installation
- Anti-decoupling system to withstand shocks and vibrations in harsh environment

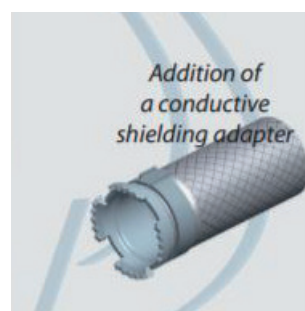
COMPOSITE CONNECTORS - SHIELDING

Shielding Backshell / ABS2216

- ABS2216 composite EMI shielding straight and angled backshell
- Light weight solution
- Quick and easy installation
- Handling temperature from -65°C to 200°C
- Anti-decoupling system to withstand shocks and vibrations in harsh environment
- Available in 3 different solutions: Straight, 45° and 90° version



Size	ØB ⁰ _{-0.1} mm	ØC Max mm	ØCC Max mm	Thread F	G Max mm			K ⁰ _{-0.2} mm	L Max mm			L I Max mm			M ^{+0.2} mm
					Droit	45°	90°		Droit	45°	90°	Droit	45°	90°	
17	21.21	28.12	35.71	M25x1.0-6H R0.100	16	21	15	31.75	40	37	32.5	35.71	39	50	4.2



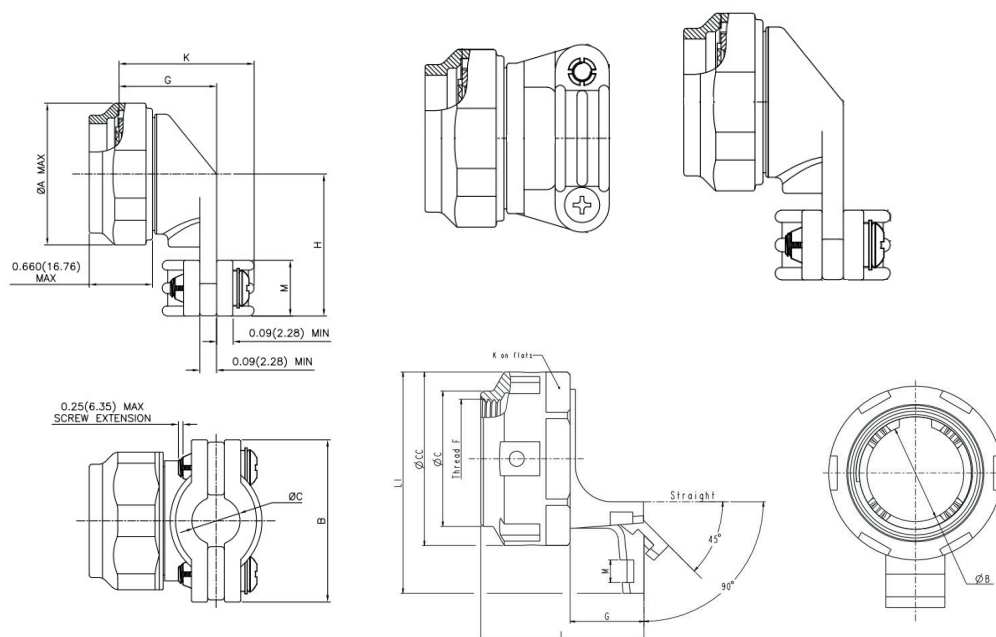
HOW TO ORDER

Series	ABS2216	A	17	W
Type of backshell				
A: Straight backshell				
B: 45° backshell				
C: 90° backshell				
Size of backshell				
17 (same as connector size)				
EMI protection				
W: EMI shielding backshell (delivered with 200 mm metallic braid)				

COMPOSITE CONNECTORS - MECHANICAL RETENTION

Strain Relief Clamp Composite / M85049

- MIL standardized according to M85049
- Mechanical retention of the cable
- Easy maintenance or reparability
- Including self locking system
- Available in straight version M85049/91 and right angled version M85049/92



HOW TO ORDER

MIL-Series	M85049/	91	-	17	T
Specification sheet					
91: Straight					
92: 90°					
Detented self locking					
-					
Shell size					
17					
Composite without plating					
T					

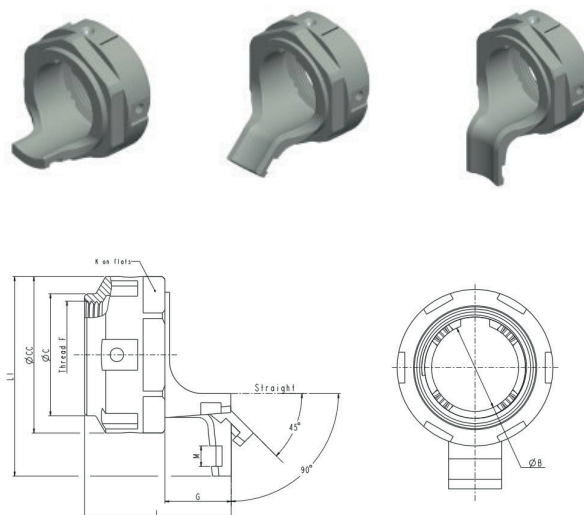
TABLE - A

Shell Size	A DIA. Max	B Max	C DIA ± 0.031(0.78)	L Max	H ± 0.062(1.57)	K Max	M ± 0.03(0.76)	G Max	Screw Size
	MM	MM	MM	MM	MM	MM	MM	MM	
17	35.71	36.07	13.84	31.24	33.32	35.05	10.31	23.90	6-32

COMPOSITE CONNECTORS - MECHANICAL RETENTION

Strain Relief Backshell / ABS2216

- ABS2216 composite strain relief backshell
- Light weight solution
- Quick and easy installation
- Handling temperature from -65°C to 200°C
- Anti-decoupling system to withstand shocks and vibrations in harsh environment
- Available in 3 different solutions: Straight, 45° and 90° version



Size	ØB ⁰ _{-0.1} mm	ØC Max mm	ØCC Max mm	Thread F	G Max mm			K ⁰ _{-0.2} mm	L Max mm			L I Max mm			M ^{+0.2} mm
					Droit	45°	90°		Droit	45°	90°	Droit	45°	90°	
17	21.21	28.12	35.71	M25x1.0-6H R0.100	16	21	15	31.75	40	37	32.5	35.71	39	50	4.2

HOW TO ORDER

Series	ABS2216	A	17	P
Type of backshell				
A: Straight backshell				
B: 45° backshell				
C: 90° backshell				
Size of backshell				
17 (same as connector size)				
EMI protection				
P: non-EMI shielding backshell				



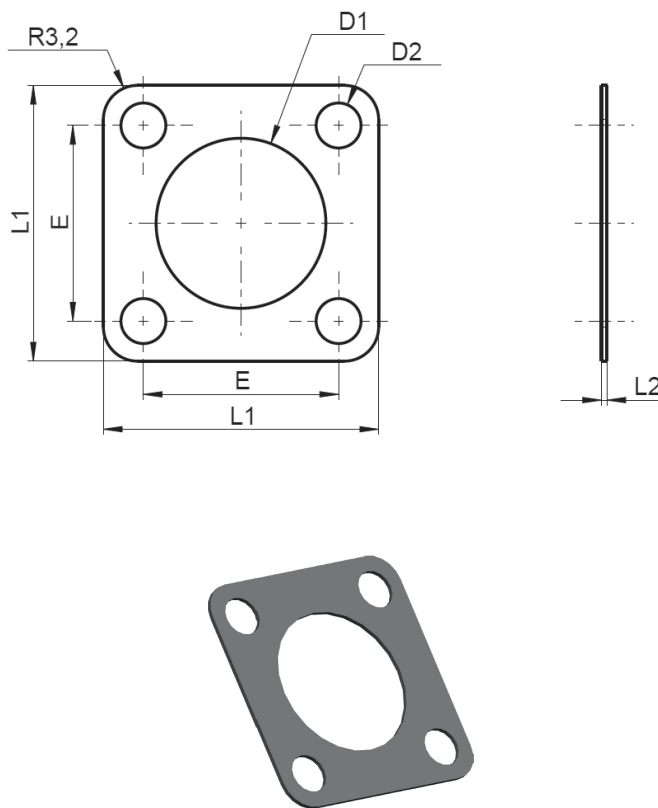
CONDUCTIVE GASKETS

We offer a comprehensive range of electrically conductive gaskets for receptacles and accessories according to VG 96940, which are suitable for the highest standards such as military, aerospace and industrial applications.

Our gaskets are made of fluorosilicone and a homogeneous mixture of conductive materials such as silver-coated aluminum particles (Version A) or nickel-carbon-particles (Version B). In addition to the excellent shielding properties (frequency range 15 KHz - 100 MHz / higher frequencies on demand), our gaskets provide maximum protection against moisture and dirt. They are also resistant to aggressive fluids such as oil, hydraulic or kerosene.

Both material versions are subject to environmental testing in accordance with IEC 60068-2-52 / DIN EN 60068-2-52 (salt fog, cyclic).

For receptacle



Version A :

Admissible ambient temperature: -55 °C to 160 °C
 Fluor silicone with Ag/Al conductive filler
 Hardness (65 ± 10) Shore A according to DIN EN ISO 868
 Colour: light green
 Shielding effectiveness: ≥ 80 dB.

Version B:

Admissible ambient temperature: -55 °C to 160 °C
 Fluor silicone with Ni/C conductive filler
 Hardness (75 ± 7) Shore A according to DIN EN ISO 868
 Colour: dark-green
 Shielding effectiveness: ≥ 70 dB.

Version	VG number for frequency range from 15KHz - 100MHz	Size	D1 (+0,4)	D2 (-0,3)	L1 (±0,25)	L2 (±0,1)	E (±0,25)
A	VG96940-06C006A	17	30,16	3,50	34,80	0,51	27,00
B	VG96940-06C006B	17	30,16	3,50	34,80	0,51	27,00

CONDUCTIVE GASKETS

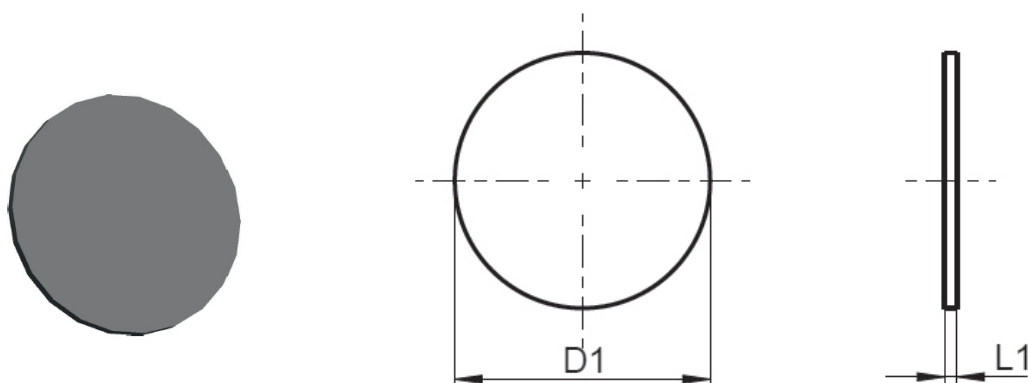
For caps

These gaskets correspond to Form E of VG96940-6.

They are suitable for the following protective caps:

Size 1: VG95319-1013D/F/H / MIL-DTL-38999 Serie III (Typ 32)

Size 2: VG95319-1013C/E/G / MIL-DTL-38999 Serie III (Typ 33)



Version A :

Admissible ambient temperature: -55 °C to 160 °C

Fluor silicone with Ag/Al conductive filler

Hardness (65 ± 10) Shore A according to DIN EN ISO 868

Colour: light green

Shielding effectiveness: ≥ 80 dB.

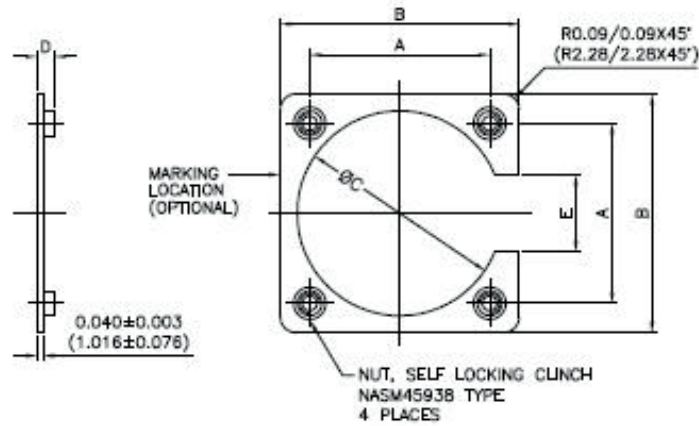
Important: The gasket will be inserted afterwards over the cap's gasket

Version	VG number for frequency range from 15KHz - 100MHz	Size 1	Size 2	D1 (±0,2)	L1 (±0,1)
A	VG96940-06E006A	17	-	25,90	0,8
A	VG96940-06E007A	-	17	30,80	

NUT PLATE

For flange mount receptacle

- 3/4 perimeter nut plate for flange mount receptacle
- Perimeter plate - Aluminium alloy as per ASTM B 209 alloy 5052-H32/2024-T3
- Clinch nut - Stainless steel as per AMS 5640 type1 (SS303)



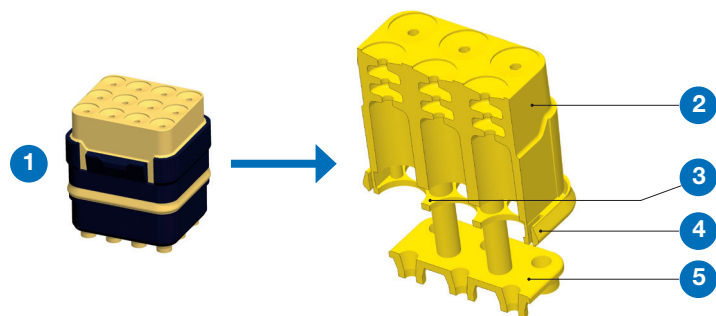
HOW TO ORDER

MIL Series	M85049 /	95	- 18A	- A
Specification sheet				
95				
Dash number (See table A)				
18A				
Finish				
A: Polyamide primer coating as per MIL-PRF-23377 type 1				
Omit for chemical conversion coating per MIL-DTL-5541 Class 1A				

TABLE - A								
Dash number	Class	Thread UNJC-38	A	B MAX	C	D		E
			± 0.127		± 0.38	MIN	MAX	± 0.76
			MM	MM	MM	MM	MM	MM
18	A	4-40	26.97	36.09	30.99	2.69	4.22	19.81

INSERTS AND CONTACTS

Amphenol designed a broad range of overmolded inserts to optimize the sealing (with or without peripheral sealing) and improve the with-standing voltage.



Inserts are designed to use contacts to crimp, according to the SAE-AS39029, EN3155 and BACC47 standards.

Description:

- 1 – Insert (Module)
- 2 – Grommet
- 3 – Intercavity seal
- 4 – Peripheral seal
- 5 – Interfacial seal

Inserts for straight or angled PCB contacts are available.

Inserts to accommodate fiber optic contacts are also available.

PART NUMBERING SYSTEM

Inserts for crimped contacts

MODULE

Without peripheral sealing
With peripheral sealing

M
E

CONTACT LAYOUTS

30 contacts size 23
20 contacts size 22
12 contacts size 20
8 contacts size 16
4 contacts size 12
1 contact size 8
1 ct quadrax anti-rotate on polarizer side
1 ct quadrax anti-rotate on polarizer opposite side
5 contacts size 22 + 6 contacts size 16
6 contacts size 22 + 3 contacts size 20
8 contacts size 20 + 2 contacts size 16
12 contacts size 20
6 cts #16 + 2 cts #22 + 8 cts #26

3023
2022
1220
0816
0412
0108
0118
0128
9901
0936
0910
0912
1602

CONTACTS

Pin
Socket

P
S

POLARIZATION

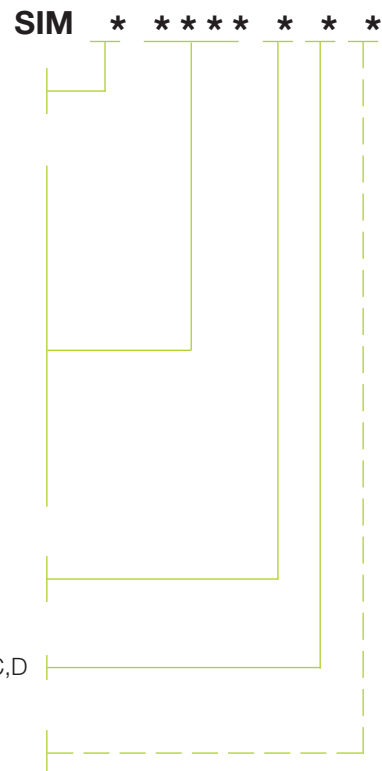
N polarization - No function within TV-SIM

N,A,B,C,D

OPTIONS

Module supplied without contact
Module supplied with crimping contacts (p38)

Nothing
C



Inserts with straight/angled PCB contacts

MODULE

Without peripheral sealing
With peripheral sealing

M
E

CONTACT LAYOUTS

30 contacts size 23
20 contacts size 22
12 contacts size 20
8 contacts size 16
4 contacts size 12
1 contact size 8
1 ct quadrax anti-rotate on polarizer side
1 ct quadrax anti-rotate on polarizer opposite side
5 contacts size 22 + 6 contacts size 16
6 cts #16 + 2 cts #22 + 8 cts #26

3023
2022
1220
0816
0412
0108
0118
0128
9901
1602

CONTACTS

Pin
Socket

P
S

POLARIZATION

N polarization - No function within TV-SIM

N,A,B,C,D

CONTACTS PLATING

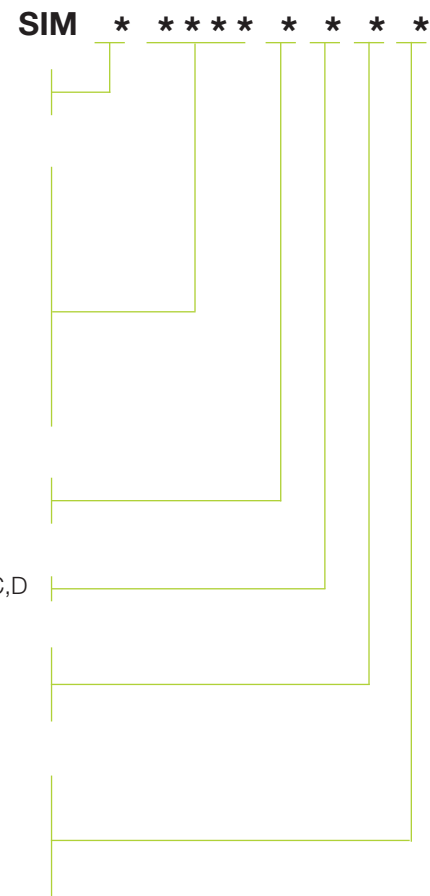
Tin-plated with Lead (Pb)
Tin-plated without Lead (RoHS)
Gold-plated (RoHS)

P
F
G

PCB CONTACT TYPE / ORIENTATION

Angled PCB contacts, standard orientation⁽¹⁾
(for SIM 2&4 modules)
Angled PCB contacts, reversed orientation
(for SIM monomodule)
Straight PCB contacts

BS
BR
Nothing

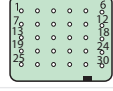
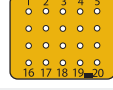
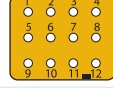
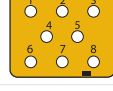
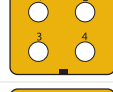
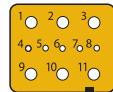
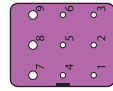
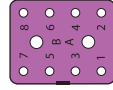


⁽¹⁾ Not available with layout 1602
Other P/N: please contact us

INSERTS FOR CRIMPED CONTACTS

CAPTION

- Green module = High contact density
- Purple modules are designed for EN3155-014 & 015 contacts (formerly ASNE0395 & 0396)

Pin rear view	Pin front view	Layout	Pin module	Socket module
		Rigid Protective Cap	SIM 201	
		30 contacts size 23	SIM * 3023 P **	SIM * 3023 S **
		20 contacts size 22	SIM * 2022 P **	SIM * 2022 S **
		12 contacts size 20	SIM * 1220 P **	SIM * 1220 S **
		8 contacts size 16	SIM * 0816 P **	SIM * 0816 S **
		4 contacts size 12	SIM * 0412 P **	SIM * 0412 S **
		1 contact size 8	SIM * 0108 P **	SIM * 0108 S **
		1 quadrax contact anti-rotate on polarizer side	SIM * 0118 P **	SIM * 0118 S **
		1 quadrax contact anti-rotate on polarizer opposite side	SIM * 0128 P **	SIM * 0128 S **
		5 contacts size 22 & 6 contacts size 16	SIM * 9901 P **	SIM * 9901 S **
		6 contacts size 22 & 3 contacts size 20	SIM * 0936 P **	SIM * 0936 S **
		8 contacts size 20 & 2 contacts size 16	SIM * 0910 P **	SIM * 0910 S **
		12 contacts size 20	SIM * 0912 P **	SIM * 0912 S **
		Sealing module	SIM * L0000 P N	/

Seal for
Peripheral
Sealing



Without
Peripheral
Sealing



Peripheral sealing
E : Sealed
M : Not Sealed

With or without contact: see on p.27

Polarization: see on p.27

INSERTS FOR FIBER OPTICS TERMINI

Amphenol Air LB extends its range of modules with solutions for many types of fiber optics termini:

- **Luxcis®** and **Amphelux®** conforming to **Arinc 801** and **EN4639** standards
- **Elio®, Lumiere®** and **Elix®** conforming to **EN 4531-101** standard
- **MPO/MTP** conforming to **IEC61754-7**

Module with Luxcis Contacts®



These solutions provide High Speed data transmission (Mbits/s to Gbits/s) without EMI/RFI disturbances.

Hermaphrodite contacts can be mounted in both male and female modules.

Fiber optics termini modules can indifferently be mounted in SIM II series plugs ⁽¹⁾ or receptacles ⁽¹⁾.

⁽¹⁾Plugs and receptacles fitted with modules for fiber optics terminal can not be used with the standard SIM backshell range. If a backshell for SIM plugs or receptacles fitted with those modules is required, please contact us.

LUXCIS® AND AMPHELUX® (ARINC 801)

Module standard: EN4830

Contact standard: EN4639-10x (Multimode)

EN4639-30x (Singlemode)

Optical measurements according EN2591-6xxx

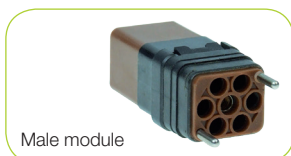
This module can be fitted with 6 fiber optics termini.

Contacts are inserted / extracted thanks to the standard tool for size 16 contacts - P/N: 001112 300 25 (see page 43).

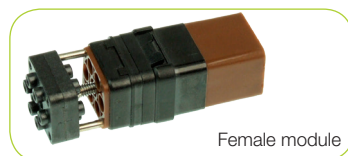
Cavities of modules are the same for single or multi mode contacts.

«Gender» of module is defined by the sleeve-holder.

Technical Data	Multimode (PC)	(UPC) Singlemode	(APC) Singlemode
IL	0,10 dB typical	0,15 dB typical	0,20 dB typical
IL deviation	0,07 dB	0,10 dB	0,12 dB
RL	> 20 dB	> 50 dB	> 60 dB
VRT	-65 à / to +125°C		
Module endurance	500 full mating/unmating cycles 10 contacts insertion in module cycles		



Male module



Female module

Amphelux® et Luxcis® modules	
Male	Female
SIM * O 06LU P *	SIM * O 06LU S *

Peripheral sealing
E : Sealed
M : Not Sealed

Polarization: see on p.27

INSERTS FOR FIBER OPTICS TERMINI

ELIO®

Module standard: EN4701

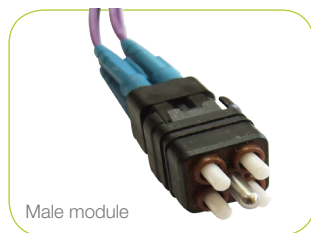
Contact standard: EN4531-101

Optical measurements according EN2591-6xxx

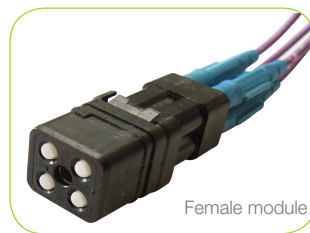
This contact can be fitted with 4 fiber optics termini.

Contacts are inserted / extracted by quarter-turn thanks to a specific tool - PN: 006101 009 00 (see page 43).

Technical Data	Multimode (PC)
IL	0,30 dB
IL deviation	0,20 dB
RL	> 30 dB
VRT	-65 to +125°C
Module endurance	500 full mating/unmating cycles 10 contacts insertion in module cycles



Male module



Female module

Elio® modules	
Male	Female
SIM * O 04EL P *	SIM * O 04EL S *

Peripheral sealing
E : Sealed
M : Not Sealed

Polarization: see on p.27

INSERTS FOR MPO / MTP CONNECTOR

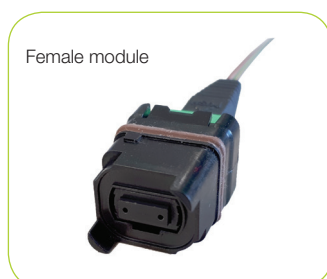
Connector standard: IEC61754-7

Optical measurements according EN2591-6xxx

Technical Data	Multimode	(APC) Singlemode
Number of optical ways	12	8
IL	0,20 dB typical	0,10 dB typical
IL deviation	0,60 dB	0,35 dB
RL	> 20 dB	> 60 dB
VRT	-65 to +125°C	
Module endurance	500 full mating/unmating cycles 10 contacts insertion in module cycles	



Male module



Female module

SIM modules for MPO® connectors
SIM E O MPO * *

Polarization: see on p.27

Type
P : Male module
S : Female module

INSERTS FOR FIBER OPTICS TERMINI

SIMTAC® 01 et 02 connectors

Optical measurements according EN2591-6xxx

Connector for MT ferrules

SIMTac® 01: Interface side unlockable with tool (see on page 43)

SIMTac® 02: Opposite interface side unlockable

	Multimode	(APC) Singlemode
Number of optical ways	12 (2 connectors)	
IL	0,20 dB typical	0,25 dB typical
IL deviation	0,40 dB	0,50 dB
RL	> 20 dB	> 60 dB
VRT	-65 to +85°C	



References modules
SIMTAC E * *

- Polarization: see on p.27
- Type
 - P : Male module
 - S : Female module

References connecteurs
3565 8 * * * 000

- Polarization :
 - 1, 2
- Type
 - 0 : Male module
 - 1 : Female module
- Connector type
 - 0 : SIMTac® 01
 - 1 : SIMTac® 02

FIBER OPTICS TERMINI

ARINC Termini

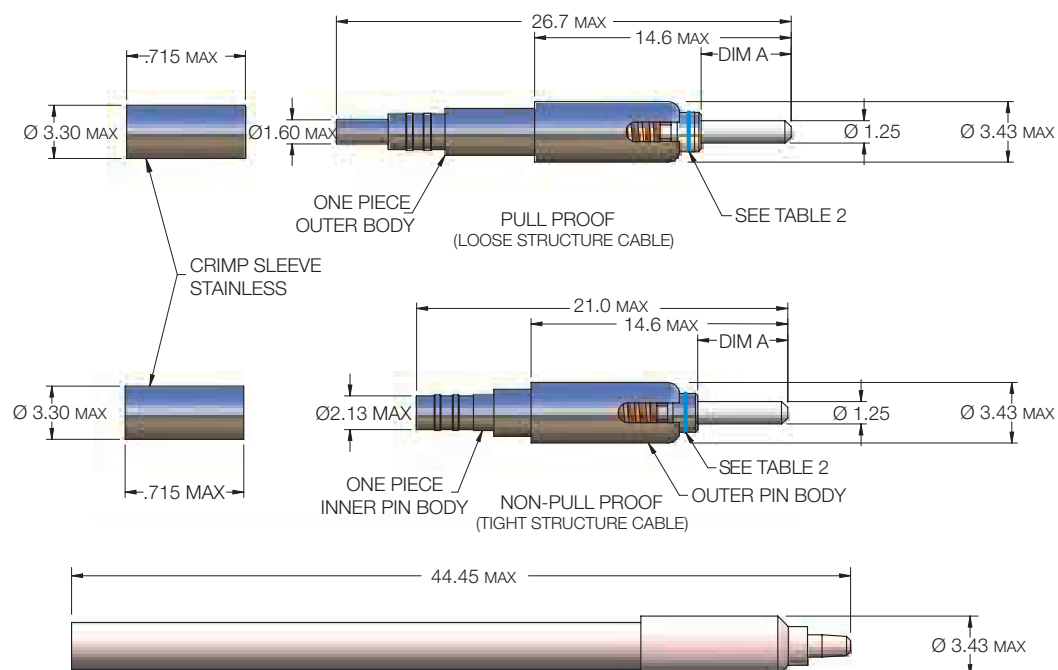


Table 1 – ARINC Termini Product Numbers

	UPC	APC	MM127	MM140	MM230
Pull proof	M801-SU2P	M801-SA2P	M801-MS1P	M801-MS3P	M801-MS8P
Non Pull proof	M801-SU2N	M801-SA2NP	M801-MS1N	M801-MS3N	M801-MS8N
DIM A	4.93	5.03	4.93	4.93	4.93
Ferrule I.D.	.1255+-.0005/-.0000		127+1/-0	140+2/-0	230+2/-0

Table 2 – Color Designation

MM =	No Line
SM (PC) =	Blue Line
SM (APC) =	Green Line

Lumière Termini

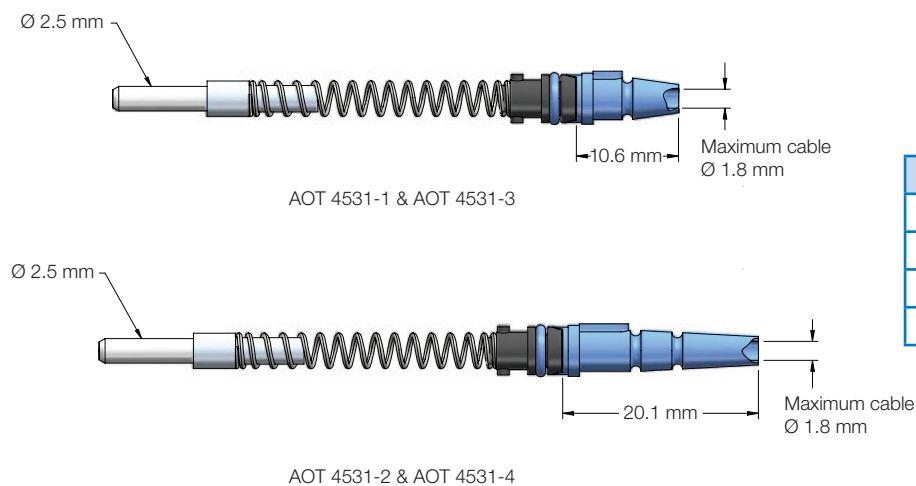
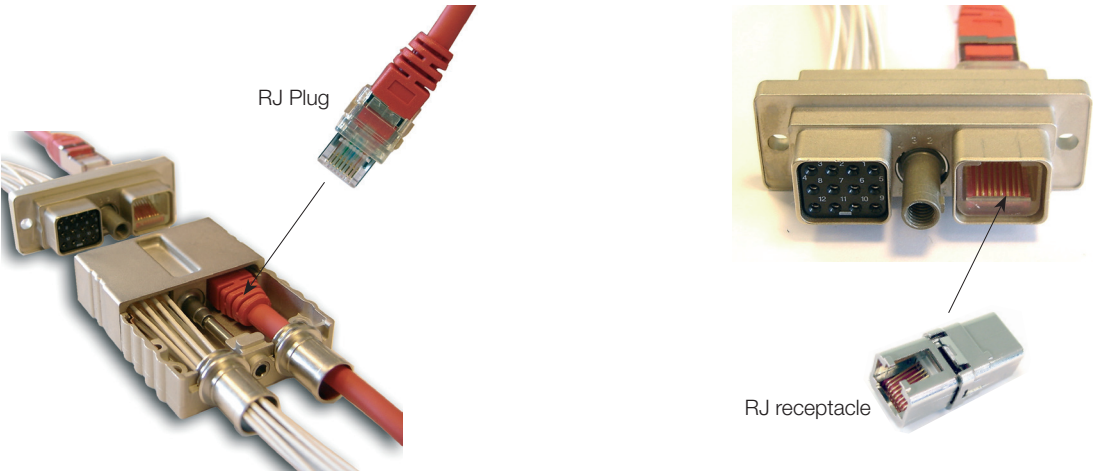


Table 1 – Color Designation

AOT 4531-1	Short boot	Sealed
AOT 4531-2	Long boot	Sealed
AOT 4531-3	Short boot	Not Sealed
AOT 4531-4	Long boot	Not Sealed

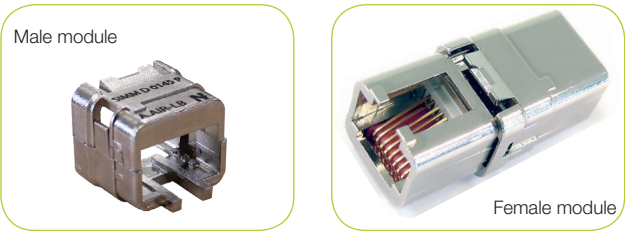
INSERTS FOR ETHERNET

Inserts RJ 45 Ethernet



Technical Data	Modules RJ45 Ethernet
Shell	Thermoplastic
Locking	Sensitiv and audible clic
VRT	-40 to +100°C
Cable handling in the plug	100 N in the axis

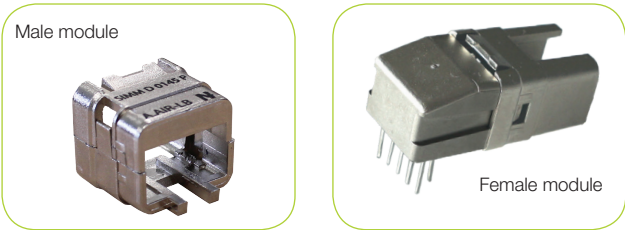
Standard version



The socket module is not compatible with the back accessories.

	P/N	
	Male	Female
Class Ea (category 6A)	SIM M D 0145 E P N	SIM M D 0145 E S N
Class C (category 3)	SIM M D 0145 P N	SIM M D 0145 S N

Angled PCB contacts version



	P/N	
	Male	Female
Ethernet IEEE 10G base T	SIM M D 0145 E P S	SIM M D 0145 E S S

INSERTS FOR ETHERNET

Test report RJ 45 Classe C

Headroom: 20,4 dB (NEXT 36-45)

Test limit: ISO11801 Channel Classe C

Cable type: Cat 6A FTP

Length (m)	[Pair 36]	26,9
Prop. Delay (ns) Lim. 555	[Pair 12]	130
Delay skew (ns) Lim. 50	[Pair 12]	2
Resistance (ohms) Lim. 40.0	[Pair 12]	4,6
Insertion Loss Margin (dB)	[Pair 12]	12,3
Frequency (MHz)	[Pair 12]	16,0
Limit (dB)	[Pair 12]	14,4

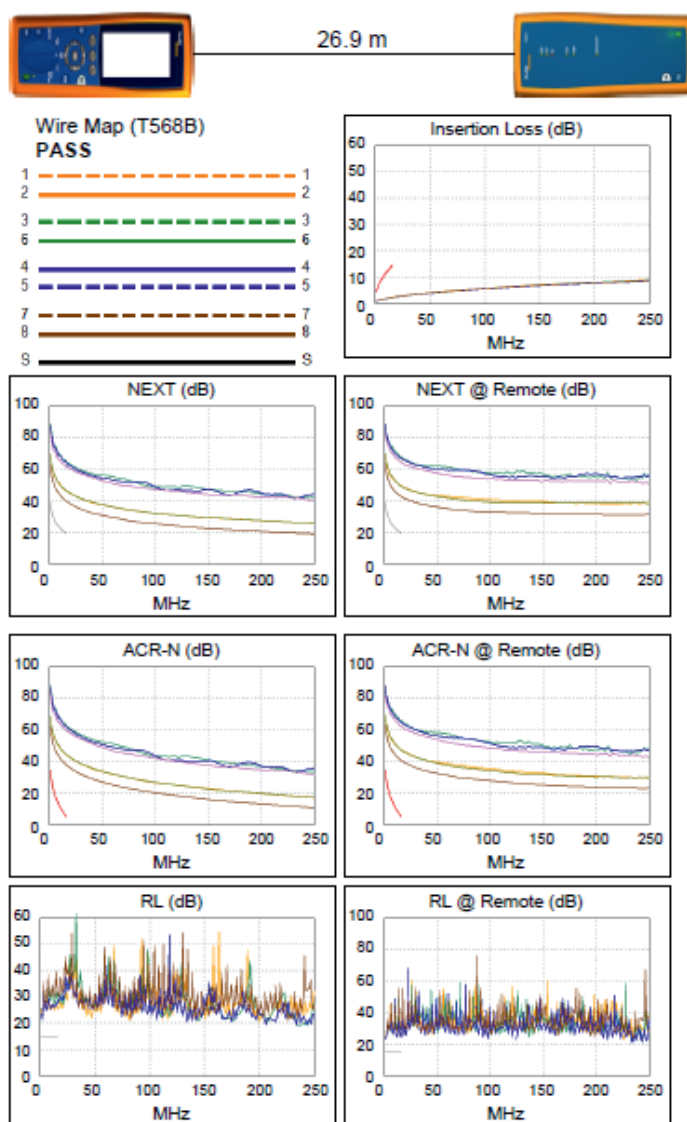
	Worst case margin		Worst case value	
N/A	Main	SR	Main	SR
Worst pair	36-45	36-45	36-45	36-45
NEXT (dB)	20,4	23,2	20,4	23,3
Frequency (MHz)	16,0	8,5	16,0	15,9
Limit (dB)	19,4	23,9	19,4	19,4

N/A	Main	SR	Main	SR
Worst pair	36-45	36-45	36-45	36-45
ACR-N (dB)	27,2	28,3	32,7	35,6
Frequency (MHz)	1,0	1,0	16,0	16,0
Limit (dB)	34,9	34,9	5,0	5,0

N/A	Main	SR	Main	SR
Worst pair	45	12	45	12
RL (dB)	7,0	8,2	7,0	8,2
Frequency (MHz)	1,6	1,4	1,6	1,4
Limit (dB)	15,0	15,0	15,0	15,0

Compliant network standards :

10BASE-T 100BASE-T4 ATM-25
ATM-51 TR-4



INSERTS FOR ETHERNET

Test report RJ 45 Classe Ea

Test limit: ISO11801 Channel Classe Ea

Cable type: Cat 6 UTP

Length (m)	[Pair 45]	25,3
Prop. Delay (ns) Lim. 555	[Pair 12]	126
Delay skew (ns) Lim. 50	[Pair 12]	3
Resistance (ohms) Lim. 25.0	[Pair 12]	4,8
Insertion Loss Margin (dB)	[Pair 36]	36,8
Frequency (MHz)	[Pair 36]	500,0
Limit (dB)	[Pair 36]	49,3

	Worst case margin		Worst case value	
N/A	Main	SR	Main	SR
Worst pair	36-45	36-78	36-45	36-45
NEXT (dB)	5,0	8,3	5,0	13,5
Frequency (MHz)	498,0	98,0	498,0	483,0
Limit (dB)	27,9	40,1	27,9	28,1
Worst pair	36	36	36	36
PS NEXT (dB)	5,4	10,3	5,4	15,9
Frequency (MHz)	498,0	97,5	498,0	483,0
Limit (dB)	24,9	37,3	24,9	25,1

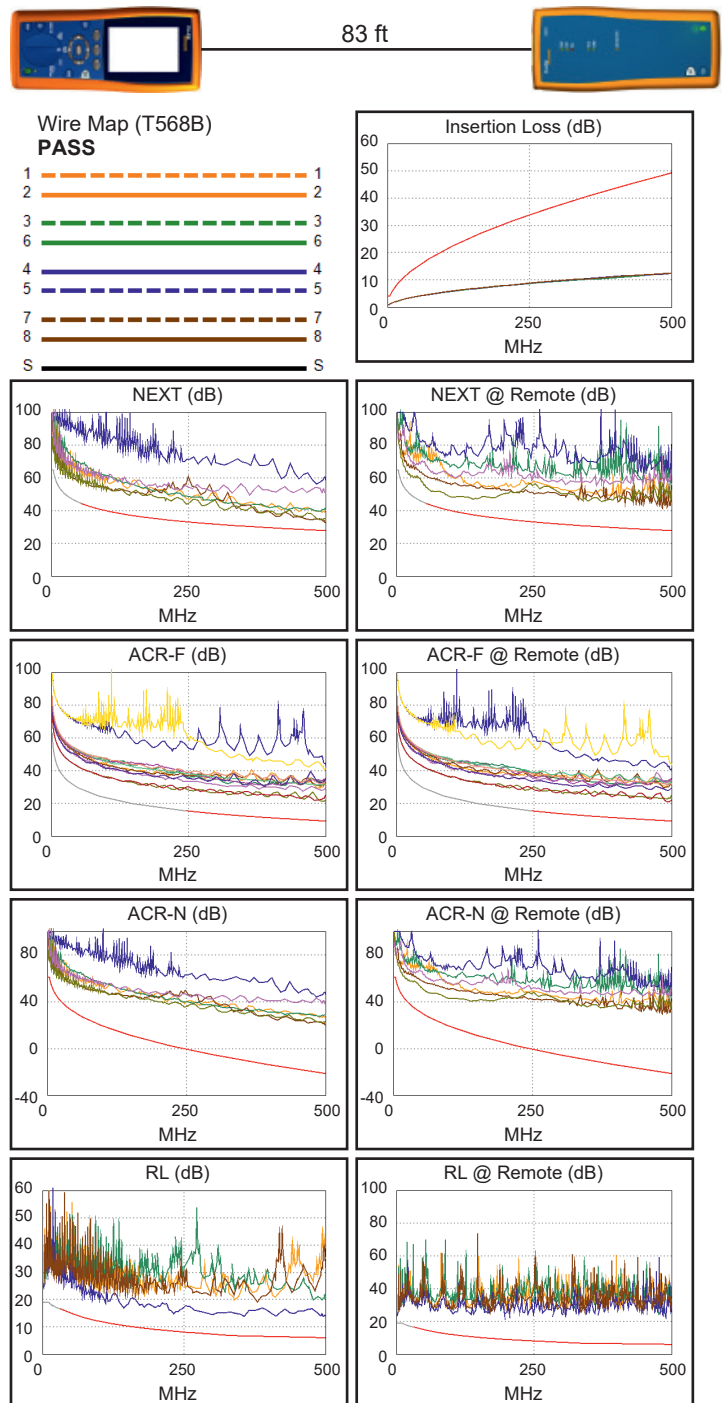
N/A	Main	SR	Main	SR
Worst pair	45-36	45-36	36-45	45-36
ACR-F (dB)	11,8	11,7	11,9	11,7
Frequency (MHz)	483,0	490,0	495,0	491,0
Limit (dB)	9,6	9,5	9,4	9,4
Worst pair	36	36	36	36
PS ACR-F (dB)	13,5	13,5	14,0	13,7
Frequency (MHz)	2,5	2,5	483,0	495,0
Limit (dB)	52,3	52,3	6,6	6,4

N/A	Main	SR	Main	SR
Worst pair	36-78	36-78	36-45	36-45
ACR-N (dB)	13,4	17,5	41,8	49,8
Frequency (MHz)	6,5	17,0	500,0	483,0
Limit (dB)	54,4	44,4	-21,4	-20,2
Worst pair	36	36	36	36
PS ACR-N (dB)	14,5	18,7	42,3	52,2
Frequency (MHz)	3,3	12,0	498,0	483,0
Limit (dB)	58,0	45,6	-24,3	-23,3

N/A	Main	SR	Main	SR
Worst pair	45	45	45	45
RL (dB)	6,3	12,1	7,1	16,5
Frequency (MHz)	231,0	101,5	357,0	489,0
Limit (dB)	8,4	11,9	6,5	6,0

Compliant network standards :

10BASE-T **100BASE-TX** **100BASE-T4**
1000BASE-T **10GBASE-T** **ATM-25**
ATM-51 **ATM-155** **100VG-AnyLan**
TR-4 **TR-16 Active** **TR-16 Passive**



INSERTS FOR ETHERNET

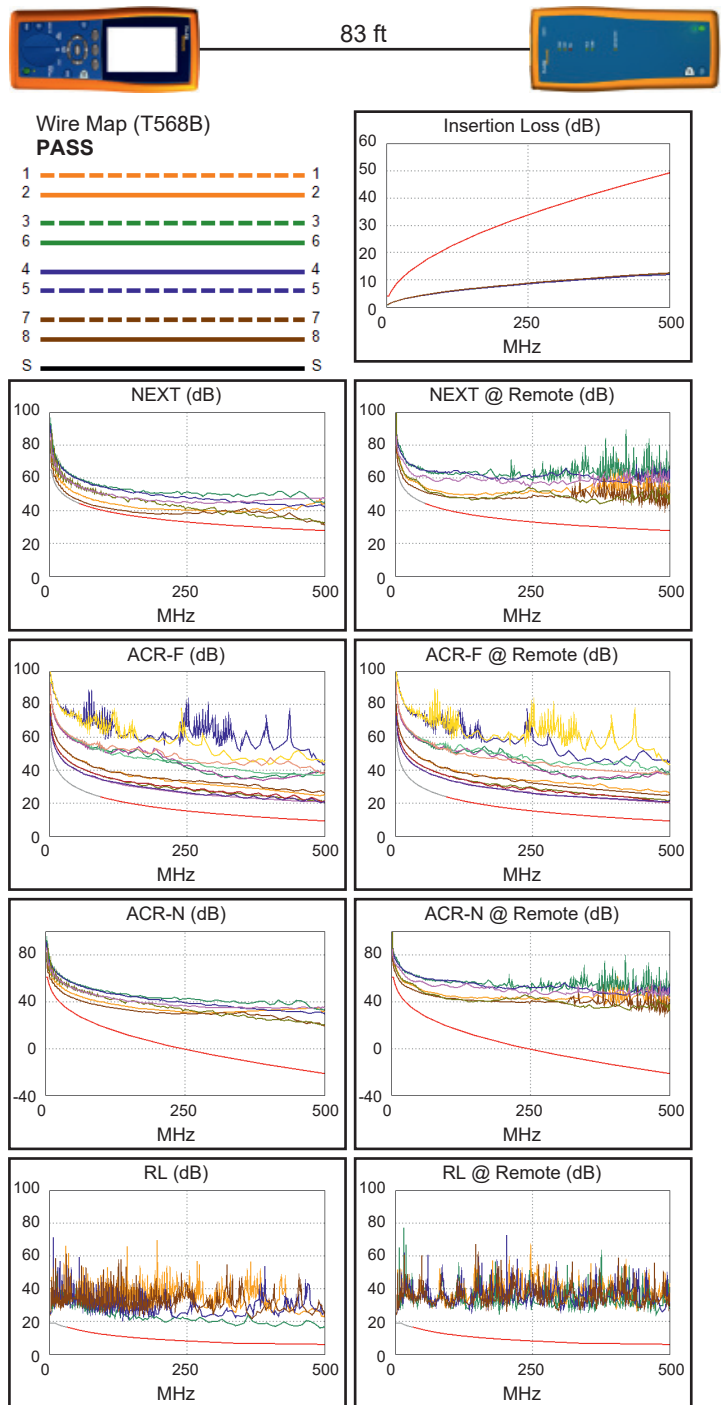
Test report angled PCB contacts RJ 45 Classe Ea

Test limit: 10GBASE-T

Cable type: Cat 6A FTP

Length (m)	[Pair 45]	25,3
Prop. Delay (ns) Lim. 555	[Pair 12]	126
Delay skew (ns) Lim. 50	[Pair 12]	3
Resistance (ohms)	[Pair 78]	4,8
Insertion Loss Margin (dB)	[Pair 36]	36,8
Frequency (MHz)	[Pair 36]	500,0
Limit (dB)	[Pair 36]	49,3

	Worst case margin		Worst case value	
N/A	Main	SR	Main	SR
Worst pair	36-45	36-45	36-45	36-45
NEXT (dB)	1,5	6,8	3,4	13,7
Frequency (MHz)	63,5	57,0	499,0	491,0
Limit (dB)	43,3	44,1	27,9	28,0
Worst pair	36	36	36	36
PS NEXT (dB)	2,2	6,0	3,9	15,9
Frequency (MHz)	71,8	58,0	499,0	491,0
Limit (dB)	39,6	41,1	24,9	25,0
N/A	Main	SR	Main	SR
Worst pair	78-36	36-78	78-36	36-78
ACR-F (dB)	9,9	9,8	11,0	11,0
Frequency (MHz)	1,8	1,8	490,0	490,0
Limit (dB)	58,4	58,4	9,5	9,5
Worst pair	36	36	36	36
PS ACR-F (dB)	10,5	10,5	10,5	11,2
Frequency (MHz)	2,0	2,5	494,0	496,0
Limit (dB)	54,2	52,3	6,4	6,3
N/A	Main	SR	Main	SR
Worst pair	36-45	36-45	36-45	36-45
ACR-N (dB)	6,2	9,6	40,7	50,7
Frequency (MHz)	3,8	3,8	498,0	491,0
Limit (dB)	59,5	59,5	-21,3	-20,8
Worst pair	36	36	36	36
PS ACR-N (dB)	6,9	9,9	40,8	52,3
Frequency (MHz)	3,8	3,8	499,0	491,0
Limit (dB)	57,0	57,0	-24,4	-23,8
N/A	Main	SR	Main	SR
Worst pair	36	36	36	36
RL (dB)	9,9	12,8	10,0	17,3
Frequency (MHz)	338,0	40,0	491,0	480,0
Limit (dB)	6,7	16,0	6,0	6,0



Compliant network standards :

10BASE-T **100BASE-TX** **100BASE-T4**
1000BASE-T **10GBASE-T** **ATM-25**
ATM-51 **ATM-155** **100VG-AnyLan**
TR-4 **TR-16 Active** **TR-16 Passive**

INSERTS FOR HIGH SPEED

GIGABIT Inserts / ARINC800

Modules for high speed Cat 5E Ethernet data transmission and power.

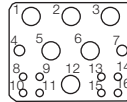
This design allows Ethernet links as well as power supply in one single EN4165 form factor insert.

Configuration:

- 6 contacts size 16
- 2 contacts size 22
- 8 contacts size 26

3 modules types:

- Modules for crimped contacts
- Modules with straight PCB contacts
- Modules with angled PCB contacts



Pin and socket contacts in copper alloy.

Contacts sizes: #26, #22, #16

Technical Data			
Withstanding voltage	1500 V eff. 50 Hz		
Insulation resistance	> 5000 MΩ		
Max current rating	Contact #26 : 3 A	Contact #22 : 5,4 A	Contact #16 : 15 A
VRT	-55 to +175°C		

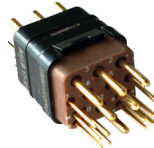
Male module for crimped contacts



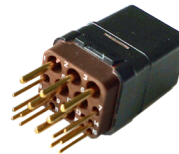
Female module for crimped contacts



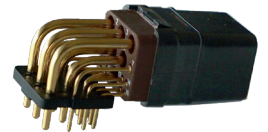
Male module with straight PCB contacts



Female module with straight PCB contacts



Female module with angled PCB contacts



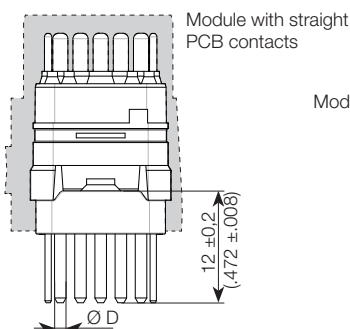
Module type	P/N	
	Male	Female
For crimped contacts	SIM * 1602 P * *	SIM * 1602 S * *
With straight PCB contacts	SIM * 1602 P * *	SIM * 1602 S * *
With angled PCB contacts, reversed orientation (SIM monomodule)	SIM * 1602 P * * BR	SIM * 1602 S * * BR

With or without contact : p27

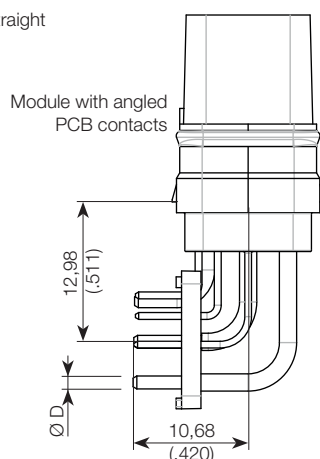
Peripheral sealing
E : Sealed
M : Not sealed

Polarization
N, A, B, C, D

Contacts plating
P : Tin-plated with Lead (Pb)
F : Tin-plated without Lead (RoHS)
G : Gold-plated (RoHS)



Ø D : 6 x 1,2 (.047)
2 x 0,64 (.025)
8 x 0,64 (.025)



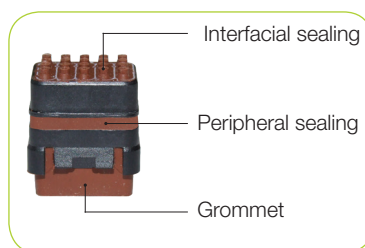
PCB layout	
Module with straight PCB contacts	Module with angled PCB contacts

INSERTS FOR DISTRIBUTION

Shunt inserts

Electrical system is printed on the grommet.

These modules are only available in male version.



Male module	Drawing	Layout	Peripheral Sealing	Without peripheral sealing
		20 contacts size 22 [5 x 4] shunted contacts	SIM EZ 2022 P *	SIM MZ 2022 P *
		20 contacts size 22 [3 x 4] + [4 x 2] shunted contacts	SIM EZ 2A22 P *	SIM MZ 2A22 P *
		20 contacts size 22 [10 x 2] shunted contacts	SIM EZ 2B22 P *	SIM MZ 2B22 P *
		8 contacts size 16 [1 x 3] + [1 x 2] shunted contacts	SIM EZ 0816 P *	SIM MZ 0816 P *

Polarization: see on p.27

For any other layouts, please contact us.

CRIMPED CONTACTS

PIN

P



Peep hole



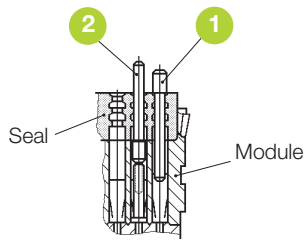
S

SOCKET

Contacts					Cable			Crimping tooling		Tools Insertion Extraction
EN 3155 spec.	Others spec.	P/N	Type	Size	AWG	Sections mm²	Ø Sheath dia. mm (inch)	Crimping tool	Locator	
/	/	001704 001 02	S	23	26-24-22	0,38 - 0,14	0,71 - 1,20 (.028 - .047)	M22520/2-01	K1461 (Daniels)	001112 010 25
/	/	001704 001 50								
/	/	001714 001 02	P							
/	/	001714 001 50								
/	M39029/57-354	001704 100 02	S	22	26-24-22	0,38 - 0,14	0,71 - 1,37 (.028 - .054)	M 22520/2-01 M 22520/7-01	M 22520/2-06 M 22520/7-06	M 81969/14-01 001112 100 25 or 001112 130 25
003 F 2222	/	001704 100 50	P							
/	M39029/58-360	001714 100 02							P	
008 M 2222	/	001714 100 50								
/	M39029/57-357	001704 203 02	S	20	24-22-20	0,21 - 0,60	1,01 - 2,10 (.039 - .082)	M 22520/1-01 M 22520/2-01 M 22520/7-01	M 22520/1-04 M 22520/2-10 M 22520/7-08	M 81969/14-10 001112 250 25
003 F 2020	/	001704 203 50	P							
/	M39029/58-363	001714 203 02								
008 M 2020	/	001714 203 50								
/	M39029/57-358	001704 301 02	S	16	20-18-16	0,30 - 1,34	1,31 - 2,62 (.051 -.103)	M 22520/1-01 M 22520/7-01	M 22520/1-04 M 22520/7-04	M 81969/14-03 001112 300 25
003 F 1616	/	001704 301 50	P							
/	M39029/58-364	001714 301 02								
008 M 1616	/	001714 301 50								
/	M39029/57-359	001704 400 02	S	12	14-12	1,91 - 3,18	1,93 - 3,70 (.074 - .145)	M22520/1-01	M22520/1-04	M 81969/14-04 001112 400 25
003 F 1212	/	001704 400 50	P							
/	M39029/58-365	001714 400 02								
008 M 1212	/	001714 400 50								
/	M39029/78-432	001704 500 02	S	micro coax 16	MIL 17/113 KX 22 RG 316			int : M 22520/2-01 ext : M 22520/4-01	int : M 22520/2-35 ext : M 22520/4-02	M 81969/14-03 001112 300 25
	/	M39029/76-424	001714 500 02							
/	/	001704 700 02	S	8 ⁽¹⁾	10-8	5,3 - 8,98	3,8 - 5,15 (.149 - .202)	M300 BT	SP593	Extract. only M 81969/14-06 001112 700 25
/		001714 700 02	P							
/		001704 740 02	S							
083 F 0810 A		/	3021 2067 000 CTF		S	10				
065 M 0810 A	3020 2067 000 CTM		P							
083 F 0808 A	/	3021 2068 000 CTF	S	8	8,98					
065 M 0808 A		3020 2068 000 CTM	P							
/	M39029/91-530	001704 701 02	S	8 triax	M17/176-00002			ctr : M 22520/2-01 int : M 22520/5-01 ext : M 22520/5-01	ctr : K709 int : Y631-mors B ext : Y631-mors A	
/	M39029/90-529	001714 701 02	P							
/	/	001704 709 02	S	8 twinax differential	TENSOLITE 24463/9PO25X-2 (LT) or equivalent			int : M 22520/2-01 ext : M 22520/5-01	int : K709 ext : M 22520/5-45	
		001714 709 02	P							
075 F 08 A	/	001704 705 02	S	8 quadrax	ABS 0972-KB24 ABS 1503-KD24					
074 M 08 A		001714 705 02	P							
/	E0825LW0800	001704 780 03	S	8 80A	8	8,98	5,2 - 5,6 (.205 - .22)	M22520/23-01 +.../23-02 414 DA8N die set	4664-2	
	E0824KV0800	001714 780 03	P					M22520/23 + 414DA8N die set	4664-1	
/	M39029/63-368	001704 201 02	S	20	24-22-20	0,21 - 0,60	0,85 - 1,73 (.033 - .068)	M 22520/2-01	M 22520/2-08	M 81969/39-01 001112 210 25
015 F 2020	/	001704 201 50								
/	M39029/64-369	001714 201 02	P							
014 M 2020	/	001714 201 50								
015 F 2018	/	001704 202 02	P							
014 M 2018	/	001714 202 02								

⁽¹⁾ Contact size 8: supplied with sealing sleeve.

SEALING PLUGS

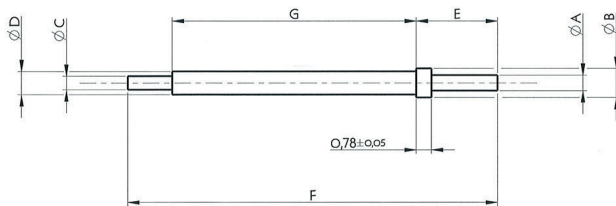
**CAPTION**

- 1 - Assembly without pin contact
2 - Assembly with a pin contact

Size	Colour	PTFE (-55° to +175°C)	Aluminum alloy
23	Black	001109 190 38	/
22			
20	Red	001109 200 42	
16	Blue	001109 300 40	
12	Yellow	001109 400 41	001109 705 49
8	Grey	/	

Sets of 100 or 500 parts

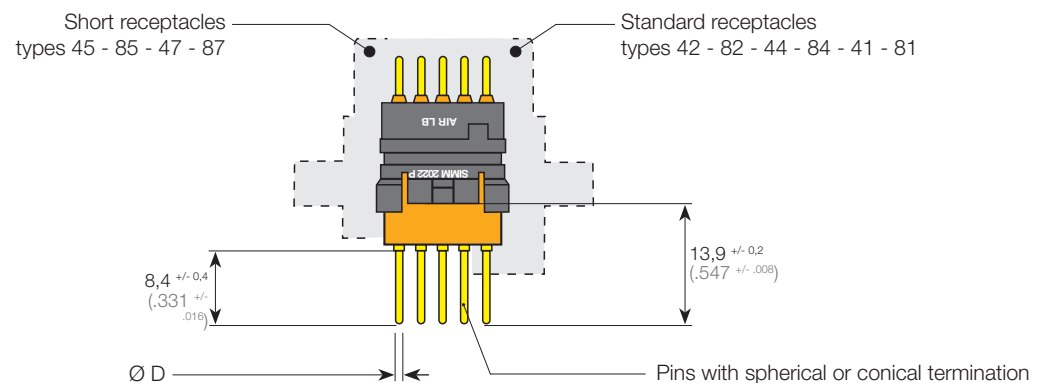
DUMMY CONTACTS



Size	Colour	P/N	Dimensions (mm / inch)						
			Ø A maxi	Ø B maxi	Ø C mini	Ø D ±0,1	E maxi	F ±1	G maxi
22	Green	001109 191 38	0,80 (.031)	1,50 (.059)	0,70 (.028)	1,20 (.047)	4,20 (.165)	19,10 (.752)	12,60 (.496)
20	Red	001109 201 42	1,05 (.041)	2,20 (.087)	1,10 (.043)	1,75 (.069)	4,20 (.165)	26,10 (1.028)	12,60 (.496)
16	Blue	001109 301 40	1,65 (.065)	3,10 (.122)	1,80 (.071)	2,60 (.102)	4,20 (.165)	26,10 (1.028)	12,60 (.496)
12	Yellow	001109 401 41	2,45 (.096)	4,30 (.169)	2,55 (.100)	3,80 (.150)	4,20 (.165)	26,10 (1.028)	12,60 (.496)
8	Black	001109 701 49	5,60 (.220)	8,05 (.317)	3,65 (.144)	7,00 (.276)	4,60 (.181)	32,50 (1.280)	18,50 (.728)

PCB CONTACTS

INSERTS WITH STRAIGHT PCB CONTACTS



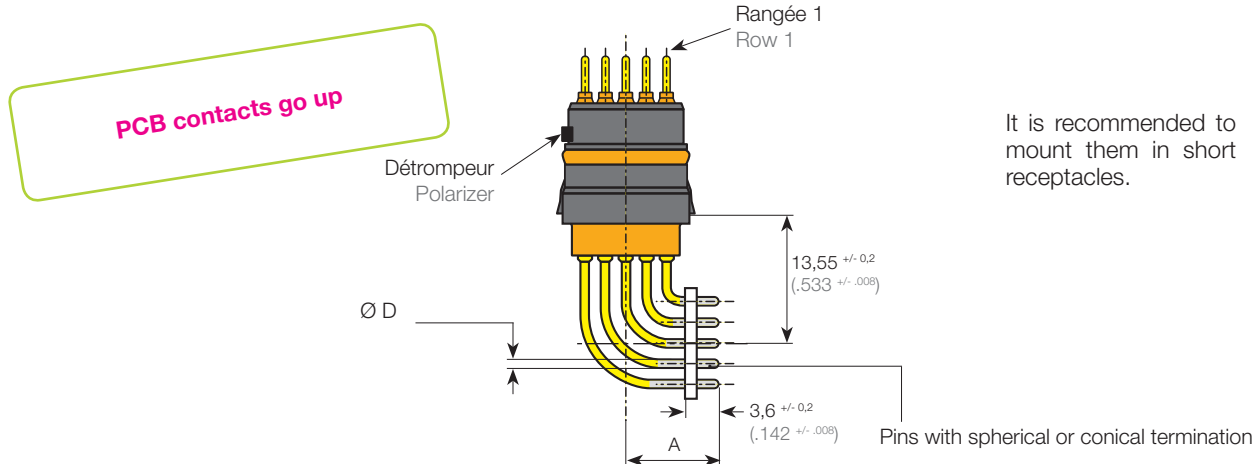
Size	Ø D maxi (mm / inch)	Modules fitted with straight tin-plated PCB pin contacts	Pin spare contacts (not tin-plated)	Modules fitted with straight tin-plated PCB socket contacts	Socket spare contacts (not tin-plated)
23	0,7 (.028)	SIM * 3023 P**	001714 063 02	SIM * 3023 S**	001704 063 02
22	0,8 (.031)	SIM * 2022 P**	001714 163 02	SIM * 2022 S**	001704 163 02
20	1,0 (.039)	SIM * 1220 P**	001714 263 02	SIM * 1220 S**	001704 263 02
16	1,4 (.055)	SIM * 0816 P**	001714 363 02	SIM * 0816 S**	001704 363 02
12	2,1 (.083)	SIM * 0412 P**	001714 463 02	SIM * 0412 S**	001704 463 02
8	3,8 (.149)	SIM * 0108 P**	/	SIM * 0108 S**	/
5 contacts #22 + 6 contacts #16	/	SIM * 9901 P**	001714 163 02 + 001714 363 02	SIM * 9901 S**	001704 163 02 + 001704 363 02

Peripheral sealing
E : Sealed
M : Not Sealed

Contacts plating
P : Tin-plated with Lead (Pb)
F : Tin-plated without Lead (RoHS)
G : Gold-plated (RoHS)

Polarization: see on p.27

INSERTS WITH ANGLED PCB CONTACTS



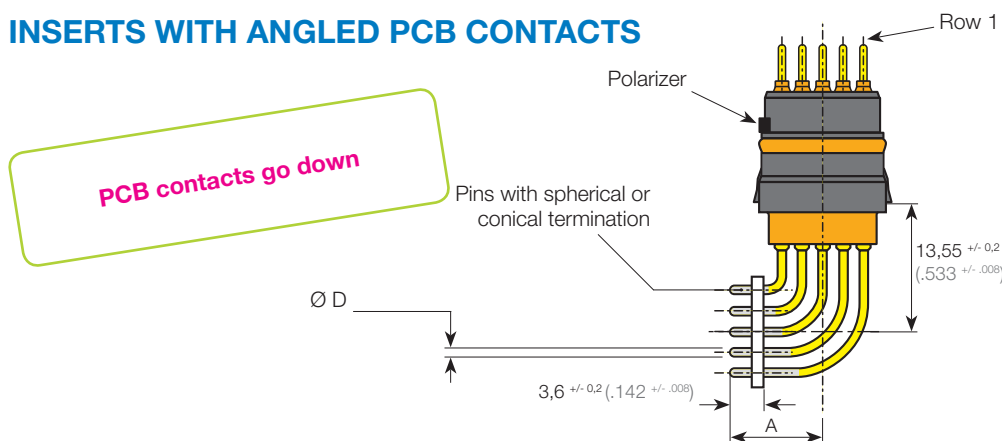
It is recommended to mount them in short receptacles.

Size	Ø D maxi (mm / inch)	A	Modules fitted with angled tin-plated PCB pin contacts	Modules fitted with angled tin-plated PCB socket contacts
23	0,7 (.028)	9,75 $\pm 0,2$ (.384 $\pm 0,008$)	SIM * 3023 PN * BS	SIM * 3023 SN * BS
22	0,8 (.031)		SIM * 2022 PN * BS	SIM * 2022 SN * BS
20	1,0 (.039)		SIM * 1220 PN * BS	SIM * 1220 SN * BS
16	1,4 (.055)		SIM * 0816 PN * BS	SIM * 0816 SN * BS
12	2,1 (.083)		SIM * 0412 PN * BS	SIM * 0412 SN * BS
8	3,8 (.149)	12,35 $\pm 0,25$ (.486 $\pm 0,009$)	SIM * 0108 PN * BS	SIM * 0108 SN * BS
5 contacts #22 + 6 contacts #16	/	9,75 $\pm 0,2$ (.384 $\pm 0,008$)	SIM * 9901 PN * BS	SIM * 9901 SN * BS

Peripheral sealing
E : Sealed
M : Not Sealed

Contacts plating
P : Tin-plated with Lead (Pb)
F : Tin-plated without Lead (RoHS)
G : Gold-plated (RoHS)

INSERTS WITH ANGLED PCB CONTACTS



It is recommended to mount them in short receptacles.

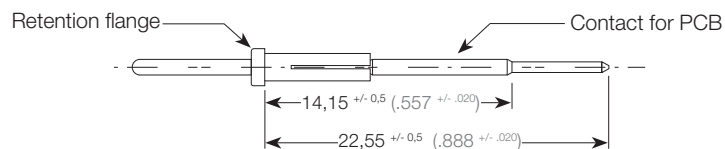
Size	Ø D maxi (mm / inch)	A	Modules fitted with angled tin-plated PCB pin contacts	Modules fitted with angled tin-plated PCB socket contacts
23	0,7 (.028)	9,75 $\pm 0,2$ (.384 $\pm 0,008$)	SIM * 3023 PN * BR	SIM * 3023 SN * BR
22	0,8 (.031)		SIM * 2022 PN * BR	SIM * 2022 SN * BR
20	1,0 (.039)		SIM * 1220 PN * BR	SIM * 1220 SN * BR
16	1,4 (.055)		SIM * 0816 PN * BR	SIM * 0816 SN * BR
12	2,1 (.083)		SIM * 0412 PN * BR	SIM * 0412 SN * BR
8	3,8 (.149)	12,35 $\pm 0,25$ (.486 $\pm 0,009$)	SIM * 0108 PN * BR	SIM * 0108 SN * BR
5 contacts #22 + 6 contacts #16	/	9,75 $\pm 0,2$ (.384 $\pm 0,008$)	SIM * 9901 PN * BR	SIM * 9901 SN * BR

Peripheral sealing
E : Sealed
M : Not Sealed

Contacts plating
P : Tin-plated with Lead (Pb)
F : Tin-plated without Lead (RoHS)
G : Gold-plated (RoHS)

FRONT REMOVABLE PCB CONTACTS

By fitting your PCB modules with that type of contacts, the maintenance in case of damaged contacts is made easier: just unsolder the damaged contact, extract it by the module interface side and replace it by a new one.



Size	Modules fitted with removable straight tin-plated PCB pin contacts	Pin spare contacts without flange (not tin-plated)
23	SIM * 3023 P*R	3020 2150 021
22	SIM * 2022 P*R	3020 2151 021
20	SIM * 1220 P*R	3020 2152 021
16	SIM * 0816 P*R	3020 2153 021
12	SIM * 0412 P*R	3020 2154 021
22 + 16	SIM * 9901 P*R	3020 2151 021 + 3020 2153 021

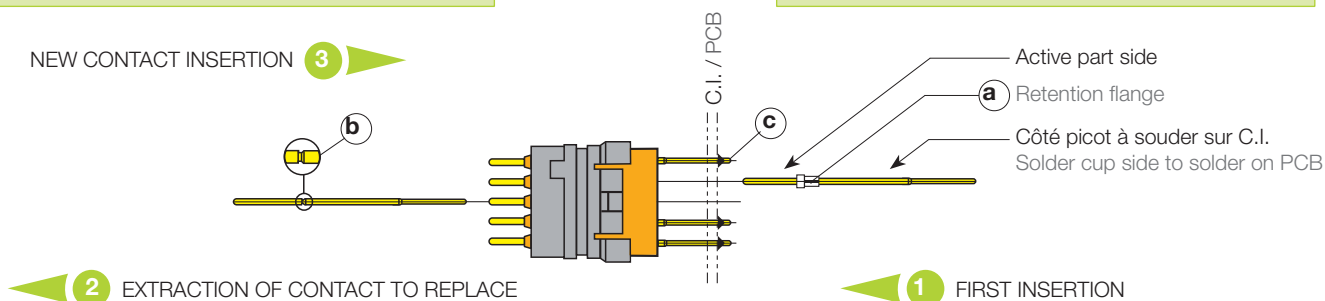
Peripheral sealing
E : Sealed
M : Not Sealed

Polarization: see on p.27

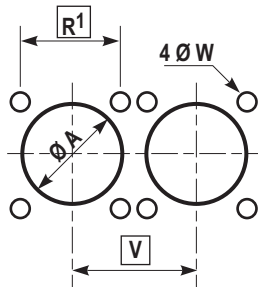
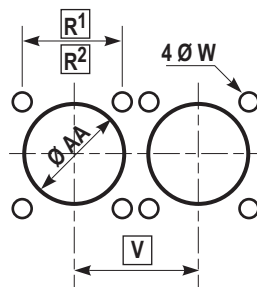
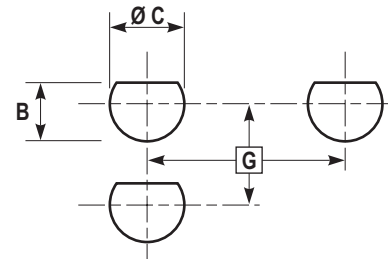
CONTACT WITHOUT FLANGE

CONTACT WITH FLANGE

NEW CONTACT INSERTION 3



SIM Connectors

Square flange receptacle
rear panel mountingSquare flange receptacle
front panel mountingJam nut receptacle
rear panel mounting

Shell size	R ¹ (mm)	R ² (mm)	V Mini (mm)	ØD Min (mm)	ØDD Min (mm)	ØW +0 -0.25 (mm)	G Mini (mm)	ØC +0.25 0 (mm)	B +0 -0.25 (mm)
Amphenol									
17	26.97	24.61	36.50	30.96	25.81	3.25	43.30	32.01	30.73

SIM Inserts

# 23	# 22	# 20	# 16
3,225 (.127) → ← 5,375 (.212) → ← → ← 1,075 (.042) ↓ ↑ 4,30 (.169) ↑ 2,15 (.085) Ø 0,8 (.031 dia)	5,08 (.200) → ← → ← 2,54 (.100) ↓ ↑ 3,81 (.150) ↑ 1,27 (.050) Ø 0,9 (.035 dia)	5,07 (.199) → ← → ← 1,69 (.067) ↓ ↑ 3,89 (.153) ↑ 1,1 (.043 dia)	4,62 (.182) → ← → ← 2,31 (.091) ↓ ↑ 3,77 (.148) ↑ 1,5 (.059 dia)
# 12	# 8	# 16 + # 22	
3,475 (.137) → ← ↓ ↑ 2,975 (.117) ↑ 2,2 (.087 dia)	Ø 3,8 (.149 dia)	2,62 (.103) → ← 5,24 (.206) → ← → ← 4,4 (.173) ↓ ↑ 3,5 (.138) ↑ 1,5 (.059 dia) Ø 0,9 (.035 dia)	

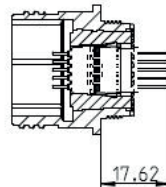
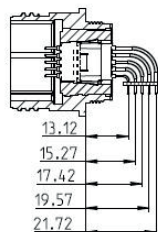
PCB Inserts

90° PIN

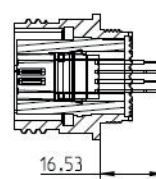
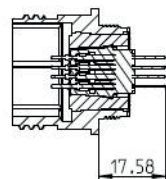
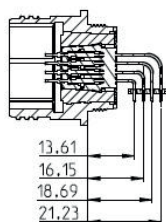
STRAIGHT PIN

STRAIGHT SOCKET

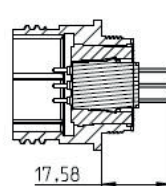
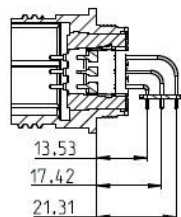
30 x AWG23



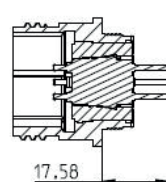
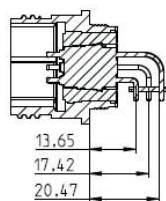
20 x AWG22



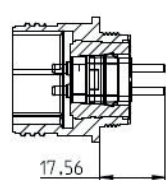
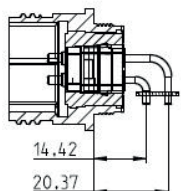
12 x AWG20



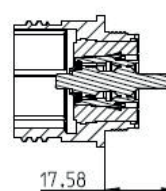
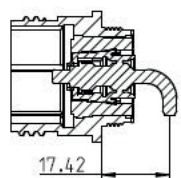
8 x AWG16



4 x AWG12



1 x AWG8



FOR CONTACTS

Insertion / extraction tool for contact size 23



P/N : 001112 010 25

Insertion / extraction tool for contact size 22



P/N : 001112 100 25
Norm: M 81969 / 14-01

Strengthened insertion / extraction tool for contact size 22



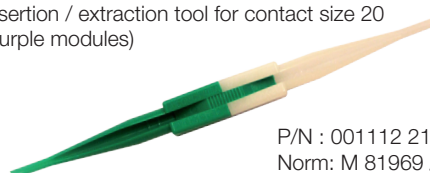
P/N : 001112 130 25

Insertion / extraction tool for contact size 20



P/N : 001112 250 25
Norm: M 81969 / 14-10

Insertion / extraction tool for contact size 20
(purple modules)



P/N : 001112 210 25
Norm: M 81969 / 39-01

Insertion / extraction tool for contact size 16



P/N : 001112 300 25
Norm: M 81969 / 14-03

Insertion / extraction tool for contact size 12



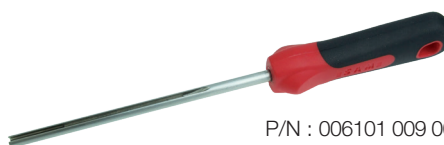
P/N : 001112 400 25
Norm: M 81969 / 14-04

Extraction tool for contact size 8, Quadrax, Twinax, Triax



P/N : 001112 700 25
Norm: M 81969 / 14-06

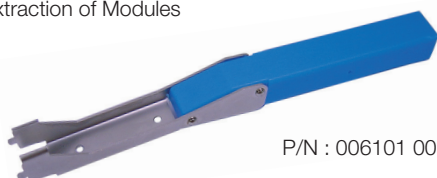
Insertion / extraction of Elio® contacts



P/N : 006101 009 00

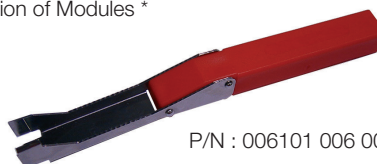
FOR MODULES

Extraction of Modules



P/N : 006101 000 00

Insertion of Modules *



P/N : 006101 006 00

* Recommended for modules with peripheral sealing.

Unlocking of SIMTac® 01

Visual coming soon

P/N : SIMTAC 01 OUT

Extraction of RJ45 and Luxcis® Modules



P/N : 006101 008 00

INSTRUCTIONS FOR MODULES INSERTION IN THE CONNECTOR

The modules are fixed in position thanks to a mechanical locking system

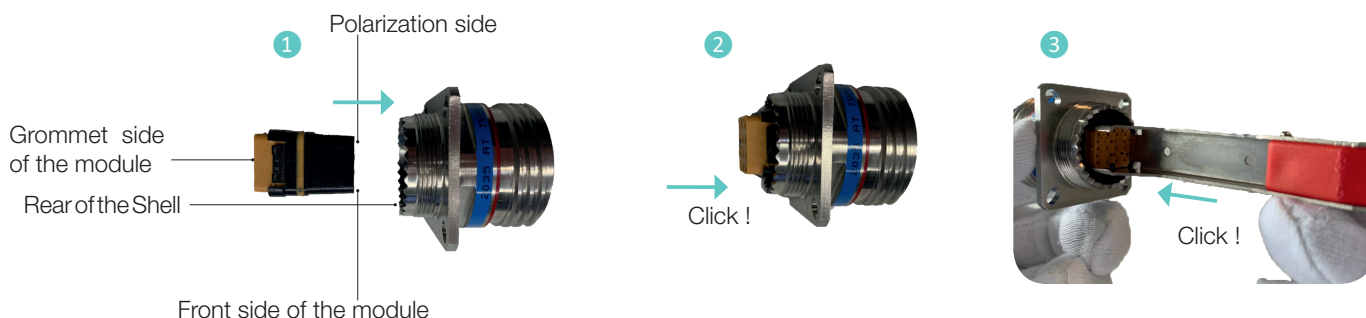
All Pin Modules [equipped with Pin Contacts]

All Socket Modules [equipped with Socket Contacts]

can be mounted into both

Plugs

Receptacles



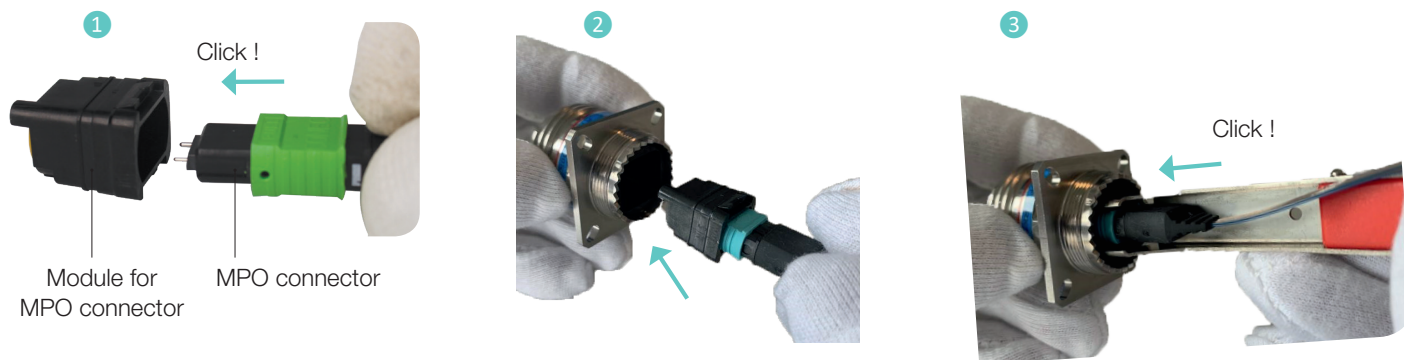
① Place the front side of the module by the rear of the SIM shell in front of the proper cavity (module A in cavity A, module B in cavity B, ... the « neutral » module, with N polarization, can be inserted in all cavities).

② Insert the module in the shell cavity until the retention spring clicks into place and locks the module.

③ Regarding the sealed modules (SIM E), use the insertion tool P/N 006101 006 00 (page 43).

NOTE: In order to make the insertion of the module easier, we recommend to use fatty alcohol on peripheral sealing.

INSTRUCTIONS FOR MPO MODULES INSERTION IN THE CONNECTOR



① Place the MPO connector well oriented in front of the module and push it into the cavity.

② Then place the module by the rear of the SIM shell in front of the proper cavity (the « neutral » module, with N polarization, can be inserted in all cavities).

③ Insert the module in the shell cavity until the locking click.

Regarding the sealed modules (SIM E), use the insertion tool P/N 006101 006 00 (page 43).

INSTRUCTIONS FOR MODULES EXTRACTION FROM THE CONNECTOR

The module extraction is carried out using a blue tool P/N 006101 000 00, except RJ45 and EN4830 optic modules using a green tool P/N 006101 008 00 (page 43).

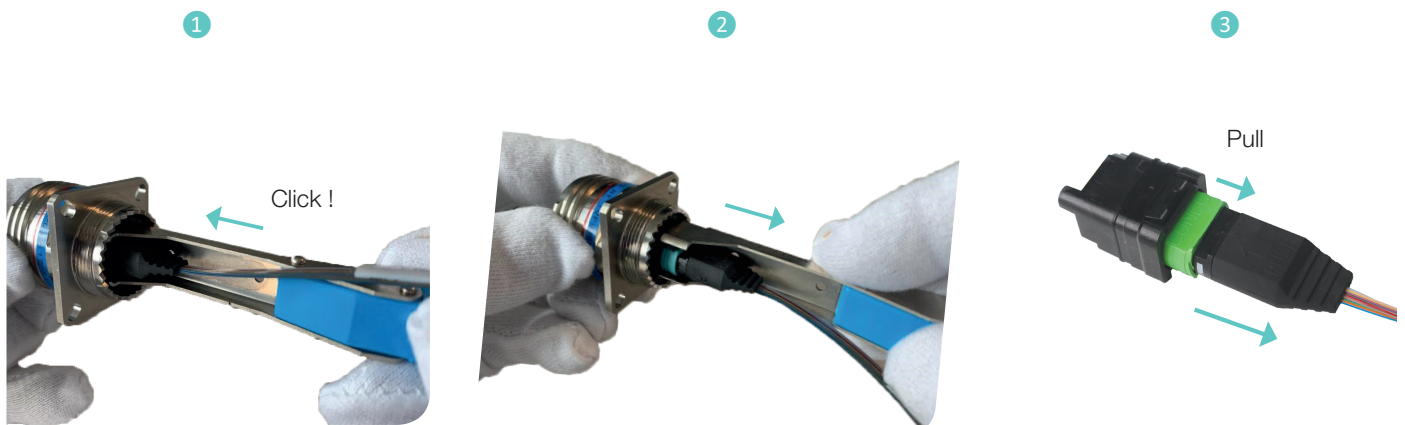


1 Place the tool at the rear of the shell. Push the tool gently along the side of the module until it meets a clear resistance, at this point the locking clips have been released.

2 Keep the tool in place and remove the module by the rear while holding the cables on the handle.

INSTRUCTIONS FOR MPO MODULES EXTRACTION FROM THE CONNECTOR

The MPO module extraction is carried out using a blue tool P/N 006101 000 00 (page 43).



1 Place the tool at the rear of the shell. Push the tool gently along the side of the module until it meets a clear resistance, at this point the locking clips have been released.

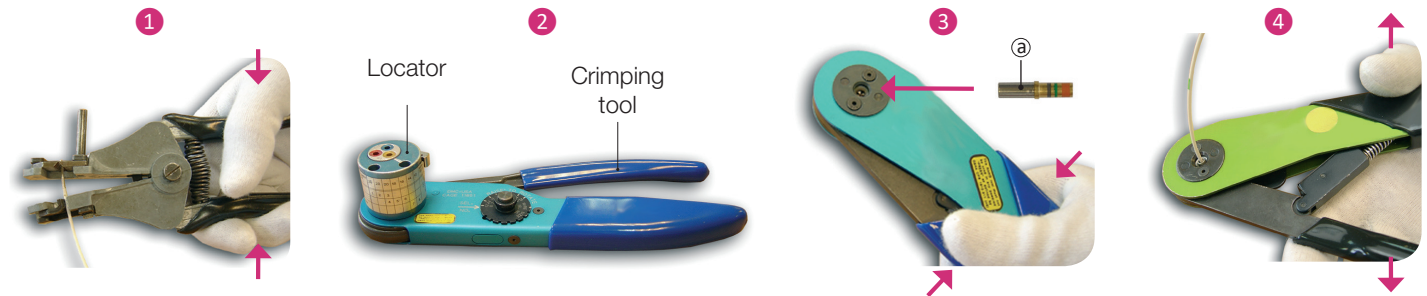
2 Keep the tool in place and remove the module by the rear.

3 Pull the green tab and extract the MPO connector from the module.

WIRING INSTRUCTIONS FOR ELECTRICAL CONTACTS

Wiring tools are most important. It is imperative that they are in good condition. A chipped or badly adjusted tool will affect the quality as well as the characteristics of Amphenol Air LB products. Insertion and extraction of contacts are done with plastic or metallic tools.

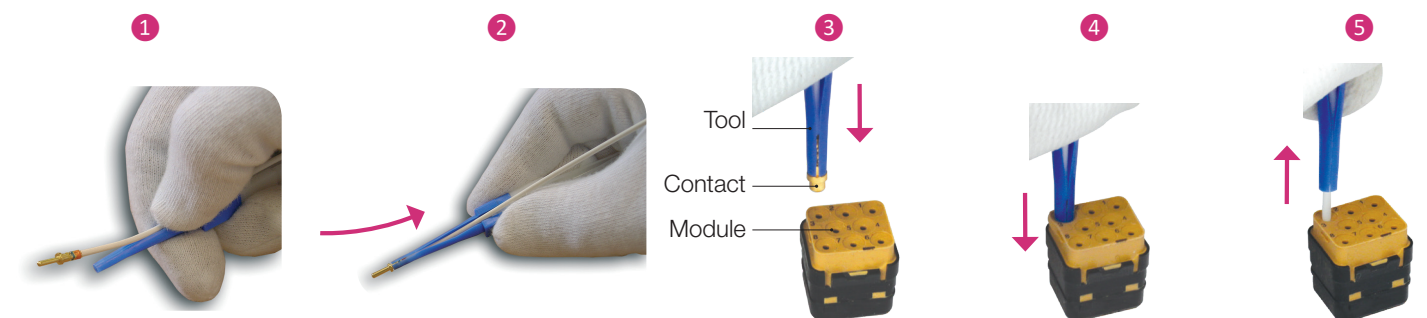
CRIMPING



- ① The cables must be striped with a suitable tool to avoid damaging the core and the insulating sheath. Strip the cable over a length corresponding to the drilling dimension of the cup.
- ② Contacts crimping on the cable is done with a crimping tool completed with a locator corresponding to the contact size. The tool must comply with MIL C 22520 standard.
- ③ According to the space between the cable diameter and the cup diameter, one of two ways of crimping must be chosen:
 - I - important space: place the contact in the jaws of the tool with the cup toward the operator. Insert the stripped cable in the contact cup.
 - II - low space: place the cable in the contact cup and insert the group in the jaws of the tool.
- ④ The tool will not release the contact until the crimping process is fully completed.
 - Ⓐ The cable must be visible through the peep hole thus ensuring that it is correctly crimped.

CONTACT INSERTION

The contact insertion is made with the tool color side, the tool depending on the contact size (see page 43).

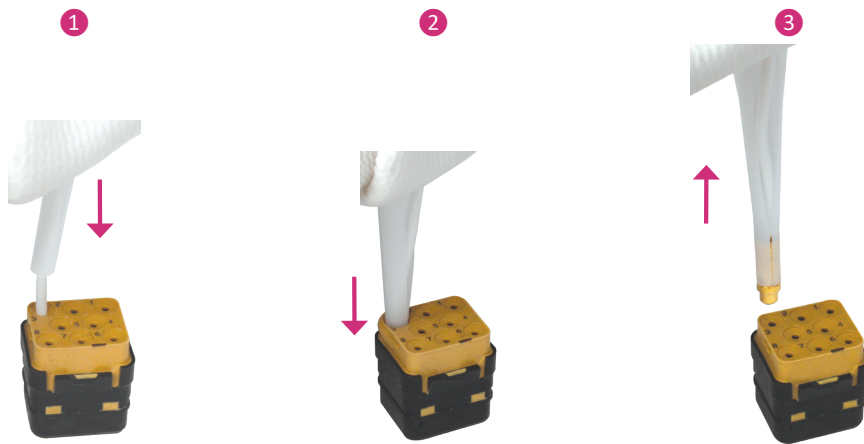


- ① Hold the tool and insert the cable into the longitudinal groove.
- ② Pull the cable to the rear of the tool until the end of the tool is in contact with the contact flange.
- ③ Place the contact in the cavity of the module.
- ④ With the tool, slowly push the contact in the cavity. You will feel a clear stop once the contact is in position in the cavity.
- ⑤ Release the cable and pull out the tool. Proceed to a gentle pull on the cable to ensure that the contact is properly locked in.

WIRING INSTRUCTIONS FOR ELECTRICAL CONTACTS

CONTACT EXTRACTION

The contact extraction is made with the tool WHITE side, the tool depending on the contact size (see page 43).

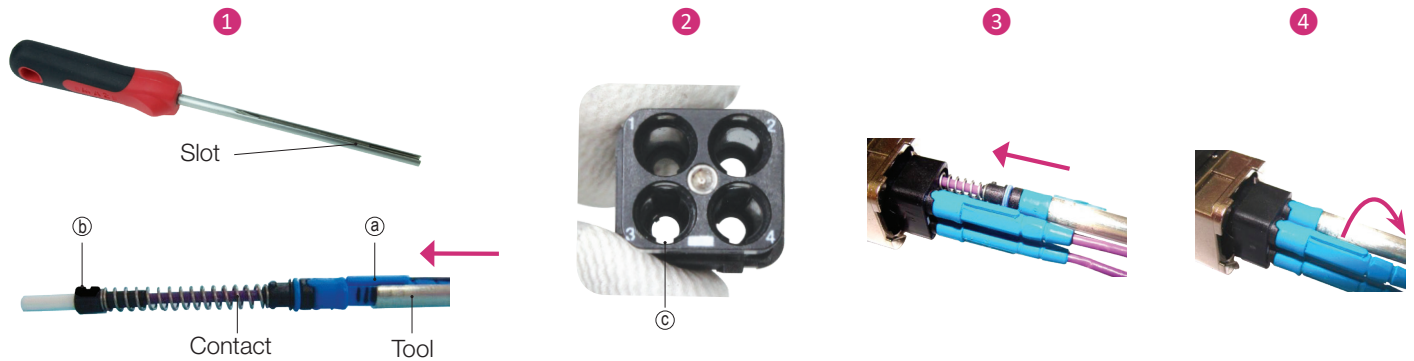


- ❶ Put the contact cable to be extracted in the longitudinal groove of the tool.
- ❷ Gently slide the tool down along the cable in the cavity until a mechanical stop is reached. At this point, the contact retention clip is unlocked.
- ❸ Press the cable to be extracted against the grooves of the tool and pull out. The contact is extracted.

INSERTION/EXTRACTION INSTRUCTIONS FOR ELIO® OPTICAL TERMINI

INSERTION OF ELIO® OPTIC CONTACTS

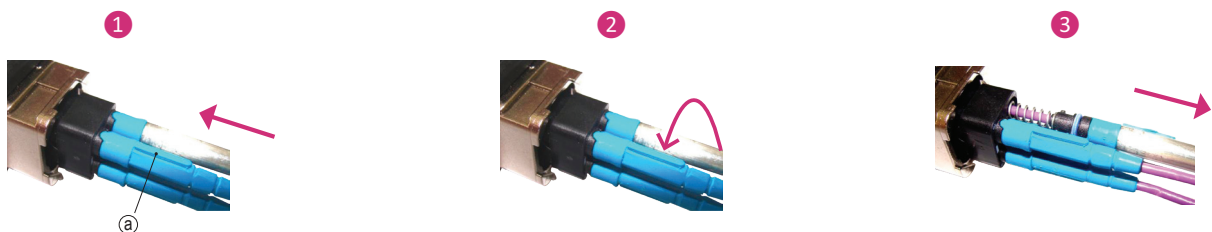
Optic insertion tool P/N 006101 009 00 (page 43) is recommended to insert Elio ® contacts in optic modules.



- 1 Slide the tool along the optic cable until the (a) insert locator of the Elio® contact is position in the slot of the tool.
- 2 Put the (b) insertion key in front of (c) the connector cupping.
- 3 Slowly push the optic contact in the cupping. The spring mechanism must be compressed by the tool.
- 4 When you feel a firm stop, use the tool to operate a quarter turn clockwise to lock the Elio® contact onto the cupping of the connector.
- 5 Slide the tool down along the cable to remove it.

EXTRACTION OF ELIO® OPTIC CONTACTS

Optic extraction tool P/N 006101 009 00 (page 43) is recommended to insert Elio ® contacts in optic modules.

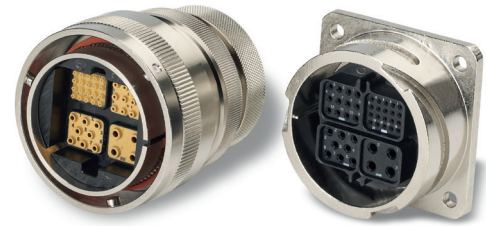


- 1 Slowly slide the tool down along the cable and position the (a) insert locator of the contact in the slot of the tool.
- 2 With the tool, operate a quarter turn counter-clockwise, then take off it. Without the spring force, the contact locking system is inactive.
- 3 Pull both the cable and the tool out of the cupping to extract the Elio® contact.

GCB-M

Reverse Bayonet Modular

These connectors with reverse bayonet coupling are compliant to the VG95234 standard. Offering a high liability, they are coevally waterproof and resistant to vibrations and wear. They use the same installation dimensions as connectors according to MIL-C-5015, however they are provided with reverse bayonet coupling and ondular washer, wish vibrations. Connectors are standardly delivered with grounding finger.



Modules

The modules are made of thermoplastic and overmolded silicon elastomer. The modules include a polarization system in addition, the modules meet the standards of EN4165 and VG96513. There are two types of modules:

- Pin modules for pin contacts
- Socket modules for socket contacts

Modules are inserted by rear of receptacles and plugs, can be manually inserted in the shell cavities, but have to be extracted with a specific tool.

Contacts

P pin and S socket crimp contacts are complying with SAE-AS39029 and EN3155 standards (most popular contacts worldwide), and available from 23 to 8. Contacts are inserted through the rear elastomer surface. In the grommet are three elastic barriers ensuring excellent sealing onto the cable. On the mating side, sealing is ensured by the overmolded elastomer on the pin modules.

This circular connector provides over 230.000 different contact configurations including Signal, Power, RJ Field, different Fiber Optic options and High Frequencies.

CAT7 ETHERNET CABLE

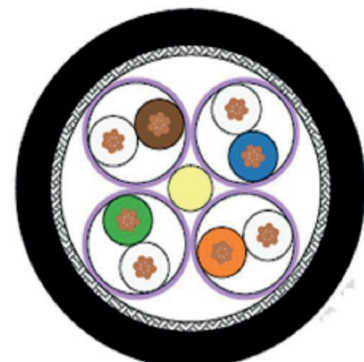
VG95218T031

Type B001; Type C001 and Type C002

CAT7 Ethernet cable with VG95218T031 approval (Type B001; Type C001 and Type C002) for secure data transmission in all defense, marine, aviation and industrial applications.

Characteristics:

- For mobile or stationary installation as per VG up to 90 m
- UV-resistant and halogen-free copolymer cable jacket, D=7.3 mm
- AWG26 wires (4 x 2 x 0.14 mm²)
- Operating temperature: -40°C to + 85°C
- Approved for data connectors up to CAT6A as per VG96912
- Available by the meter, starting at 1 m



J-PLATING

Situation within VG-Countries

According to the VG standard, cadmium-plated versions may no longer be used for new designs after December 31, 2018. Version J is, however, a full replacement for cadmium-plated versions and can therefore be used for all existing projects and also for repairs.

What is J-Version? **

The connector has a zinc-tin-coated and electrically conductive shield connection system, which fully complies with the values of a cadmium-plated design in terms of corrosion resistance, conductivity and shielding capability. A compatibility to cadmium or other listed platings has been checked according to the table below. The corrosion test is carried out in the same way as the cadmium version according to VG95319-2 / test 5.50 (this is a dynamic 5d test according to DIN EN 60068-2-52, test Kb).

**RoHS compliant to Directive 2011/65/EU + Directive (EU) 2015/863

**REACH SVHC declaration on request

Already approved Series:

- VG95234 / GCB-B
- VG95328 / PT
- VG96912 / SJT
- VG95319-1011 / Backshells

Series in progress (Approval expected in January 2021):

- VG95319-1016 / TV (38999 III)

Further series in planning



VG95234 / GCB-B



VG95328 / PT



VG96912 / SJT

Oberflächen Kompatibilität / Plating compatibility

Ausführung Version	ohne Kenn- buchstabe without code letter	B	H	H1	H2	J	N	S	S1	T
ohne Kenn- buchstabe without code letter	✓ ^a		✓	✓	✓	✓				✓
B		✓ ^a						✓ ^a	✓ ^a	
H	✓		✓ ^a	✓ ^a	✓ ^a	✓	✓ ^a			
H1	✓		✓ ^a	✓ ^a	✓ ^a	✓	✓ ^a			✓ ^a
H2	✓		✓ ^a	✓ ^a	✓ ^a	✓	✓ ^a			✓ ^a
J	✓		✓	✓	✓	✓ ^a	✓			✓
N			✓ ^a	✓ ^a	✓ ^a	✓	✓ ^a			✓ ^a
S		✓ ^a						✓ ^a		
S1		✓ ^a							✓ ^a	
T	✓			✓ ^a	✓ ^a	✓	✓ ^a			✓ ^a
^a Die Prüfung der Kreuzbarkeit ist nicht notwendig. ^a The test of the compatibility is not necessary.										

For more Information visit our homepage www.amphenol-airlb.de or consult us.

Amphenol

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