

Robust Multiways Singlemode Connection

Singlemode fast-rate optic fiber for harsh environment available with ELIO® technology.

High optical performance



Ultra Physical Contact offering -55dB RL and low insertion loss.

Hybrid



Singlemode, multimode and electrical mix inside the same connector.

Scratch & FOD protected termini



The female contact is slightly recessed to prevent from touching (finger test).
Compliant with new termini inspection rules.

Easy to clean

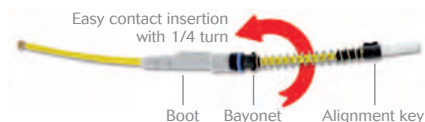


Large cavity aperture for female termini access with swab or pen.

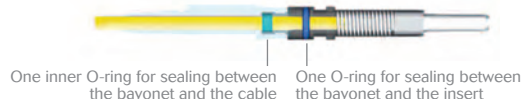
User friendly



No extra tool needed for insertion or extraction.



Sealed contact without backshell (IP67).



38999 & Arinc 600 Series ELIO® Singlemode Fiber Optic



ELIO® contact

- Robust spring-loaded butt-joint optical contact using ST style ferrule (diameter 2.5mm)
- Contact size equivalent to a #16 contact
- Anti-rotation of the contact for better vibration withstanding and optical performance
- Boot-grommet for rear sealing and protection of the cable against excessive bending
- Compatibility with loose and tight structure cables
- High level optical performance even after aging
- Bayonet locking system: no tool needed for mounting/dismounting
- Compatible with singlemode, multimode and POF cable

Technical features

Mechanical

- **Endurance:**
Minimum 500 mating / unmating operations
- **Shock:**
300 g, 3 ms as per EN 2591-6402 method A
- **Vibration:**
In MIL-DTL-38999 Series III/EN3645 connectors:
 - Sine 5Hz to 3000Hz as per EN2591-6403 method A
 - Random as per EN2591-6403 method B
- **Cable cyclic flexing*:**
100 cycles, load 40N as per EN2591-609
- **Cable pulling*:** 111N
- **Cable torsion*:**
100 cycles, load 40N as per EN2591-611

* With multimode EN4641-100 cable and following the cabling process described in the "Technical Bulletin N°204 - ELIO® assembly wiring instructions" and the maintenance procedure in the document "Technical Bulletin N°170 - Fiber optics installation and maintenance procedure"

Environmental

- **Salt spray:**
See the connector standard
- **Temperature range:**
- 65°C to +150°C (1000 hours)
- **Rapid temperature change:**
10 cycles - 65°C / +150°C (30min/30min)
- **Air leakage:**
Max leakage 16 cm³/h, 2 hours, 40kPa differential pressure
- **Damp heat and low temperature:**
5 cycles of 48h -65°C/+70°C with stage at 40°C with 95% of humidity as per EN2591- 6303 method A

Optical

- **Singlemode contact - Insertion Loss (IL):**
0.3dB typical
< 0.5dB over 95% of the samples as per EN2591-601,
< 0.9dB maximum on 100% of the samples after tests
- **Singlemode contact - Return Loss (RL):**
> 55dB typical and > 50dB minimum

Resistance to fluids as per MIL-DTL-38999/EN3645 standard

- **Fuel:** JP5
- **Mineral Hydraulic fluid:**
MIL-PRF-5606 (NATO H-515)
- **Synthetic hydraulic fluid:**
AS1241 (Skydrol 500B4, LD4)
- **Mineral lubricant:**
MIL-PRF-7870 (NATO O-142)
- **Synthetic lubricant:**
MIL-PRF-23699 (NATO O-156),
MIL-PRF-7808 (NATO O-148)
- **Cleaning fluid:**
MIL-PRF-87937 diluted, Propanol, white spirit, Azeotrope R113 + Methanol
- **De-icing fluid:**
AMS 1424 (NATO S-742)
- **Extinguishing fluid:**
Chlorobromethane
- **Cooling fluid:**
Coolanol

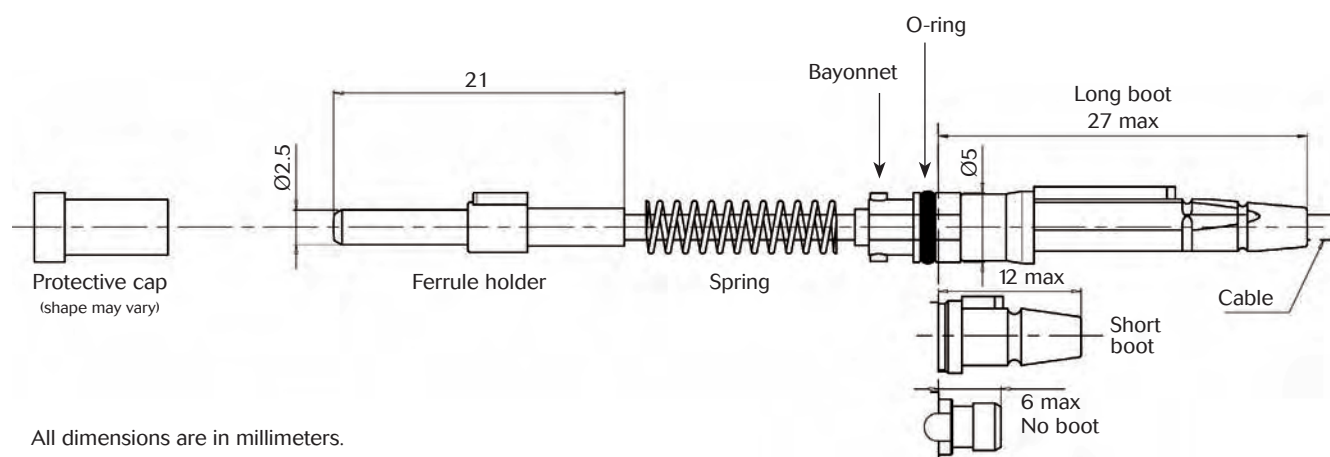
38999 & Arinc 600 Series ELIO® Singlemode Fiber Optic



Ordering information

	ELIO	09N	E	L	A
Cable external diameter & Contact sealing:					
09N: 0.9±0.1mm. Non waterproof					
18N: from 1.5mm to 1.9mm. Non waterproof					
18W: 1.8±0.1mm. Waterproof					
Fibre type:					
E: ELIO® Singlemode					
Boot type:					
L: Long boot					
S: Short boot					
N: No boot (non waterproof version only)					
Contact version index					

ELIO® contact dimensions



Recommended cables

SOURIAU can offer a wide range of cables in its assemblies, from low cost to high performance aeronautical cables.
 ELIO® contact is compatible with tactical and breakout cable.
 ELIO® contact is suitable with loose and tight structure cable.

Please consult us for more information.

38999 & Arinc 600 Series ELIO® Singlemode Fiber Optic



MIL-DTL-38999 Series III/EN3645 with ELIO® high density insert

- Standard MIL-DTL-38999/EN3645 shells without shielding ring (aluminum, composite, stainless steel, bronze)
- Environmental performance as per EN4531 based on MIL-DTL-38999/EN3645
- Temperature range: - 65°C to + 150°C (cable limitation)

Applications

- Fiber optic connector for all military and aeronautical applications wherever severe vibration or mechanical resistance are required.



Ground army



Civil aircraft



Marine



Military aircraft

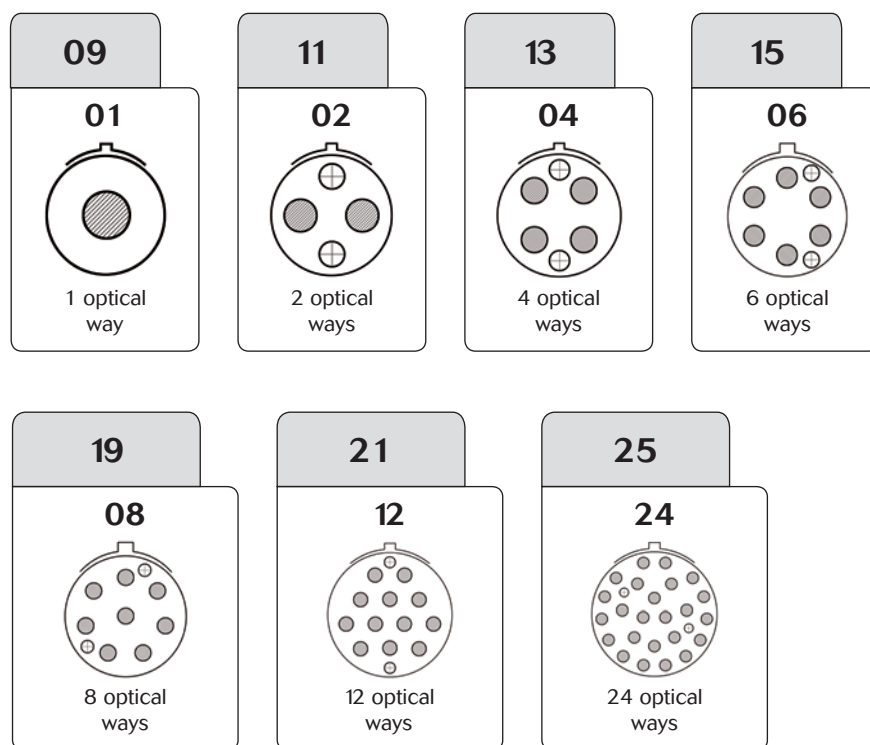


Rotary wing



Railway

Layouts



Note: Layouts 15-06 and 21-12 limited availability, please consult us.

38999 & Arinc 600 Series

ELIO® Singlemode Fiber Optic



Ordering information

ELIO® high density insert with singlemode contact

Composite, Aluminum & Stainless Steel

	8D	5	E	11	W	02	A	N	
	8D	5	E	11	W	02	B	N	674
Shell type: 5: Plug 0: Receptacle with 4-hole square flange fixing 7: Receptacle with single hole jam nut fixing (<i>aluminum & stainless steel</i>)									
Designation: E: ELIO® optical connector									
Shell size: 09 - 11 - 15 - 13 - 19 - 21 25 (<i>aluminum & stainless steel only</i>)									
Plating: <div> Aluminum: Z: Zinc nickel ZC: Zinc cobalt W: Olive green cadmium F: Nickel </div> <div> Composite: J: Olive green cadmium M: Nickel X: Without plating </div> <div> Stainless steel: K: Passivated S: Nickel </div>									
Layouts: See previous page									
Insert type: A: Male insert B: Female insert with ceramic alignment sleeves - Specification 674 mandatory									
Polarization: N, A, B, C, D, E U (universal connector for testing - mates with any other polarization)									
Specification: empty: Male insert type A 674: Female insert type B - mandatory									

JVS Bronze

	JVS	E	6	A	11	02	A	N	
	JVS	E	6	A	11	02	B	N	674
Designation: E: ELIO® optical connector									
Shell type: 6: Plug 0: Receptacle with 4-hole square flange fixing 7: Receptacle with single hole jam nut fixing									
Material: A: Bronze									
Shell size: 09 - 11 - 15 - 13 - 19 - 21									
Layouts: See previous page									
Insert type: A: Male insert B: Female insert with ceramic alignment sleeves - Specification 674 mandatory									
Polarization: N, A, B, C, D, E									
Specification: empty: Male insert type A 674: Female insert type B - mandatory									

38999 & Arinc 600 Series ELIO® Singlemode Fiber Optic



MIL-DTL-38999 Series III/EN3645 with ELIO® AQ

Adaptor for Quadrax #8 cavities



- ELIO® AQ is an adaptor to enable the ELIO® contact to fit in any #8 cavities
- Multiple possibilities to mix optical and electrical signals in the same insert
- Compatible with standard MIL-DTL-38999 Series III/EN3645 Souriau connectors (aluminum, composite, stainless steel, bronze)
- Design ensures ELIO® optical performance
- Environmental performance as per MIL-DTL-38999 and EN3645 standard
- Temperature range: - 65°C to +150°C (cable limitation)

Applications

- Fiber optic connector for all military and aeronautical applications wherever severe vibration or mechanical resistance are required.

ELIO® AQ

Adaptor for Quadrax #8 cavities

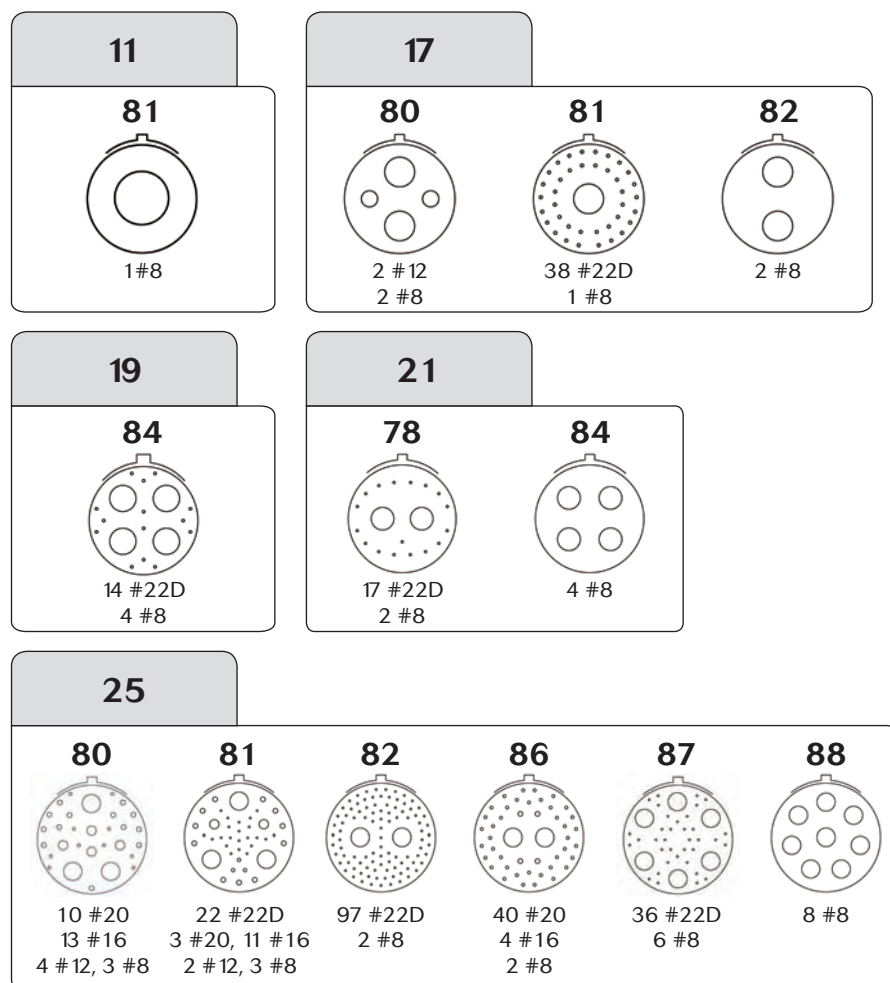
Insert type	Part Number
Male Insert	 ELIOAQ6PB
female Insert	 ELIOAQ6SB674

Delivered with alignment boot.

Ordering information

- See Souriau MIL-DTL-38999 Series III catalog.

Layouts



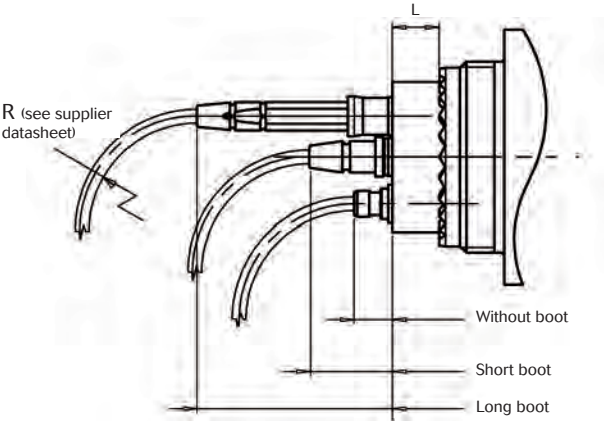
38999 & Arinc 600 Series

ELIO® Singlemode Fiber Optic

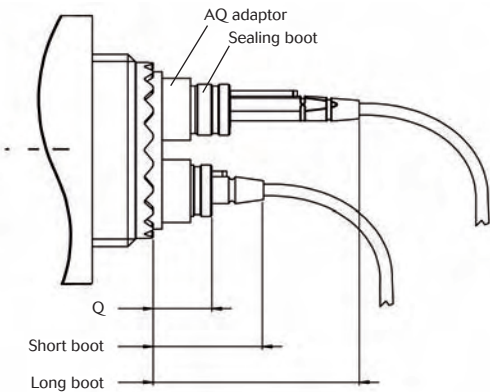


Dimensions

38999 Series III/EN3645 with ELIO® contacts in ELIO® high-density insert



38999 Series III/EN3645 with ELIO® contacts in ELIO® AQ adaptors



	ELIO® high density insert					ELIO® AQ adaptors			
	L		Contact length			Q		Contact length	
	Male insulator	Female insulator	Without boot	Short boot	Long boot	Male insulator	Female insulator	Short boot	Long boot
Plug						11.80 Max	9.10 Max		
Square flange receptacle	4 Max	6.60 Max	6 Max	12 Max	27 Max	12 Max	9.30 Max	17.60 Max	32.60 Max
Jam nut receptacle						11.60 Max	8.90 Max		

Filler plug

MIL-DTL-38999 Series III/EN3645 - for high density cavities

Male filler plug
ELIO AFPP

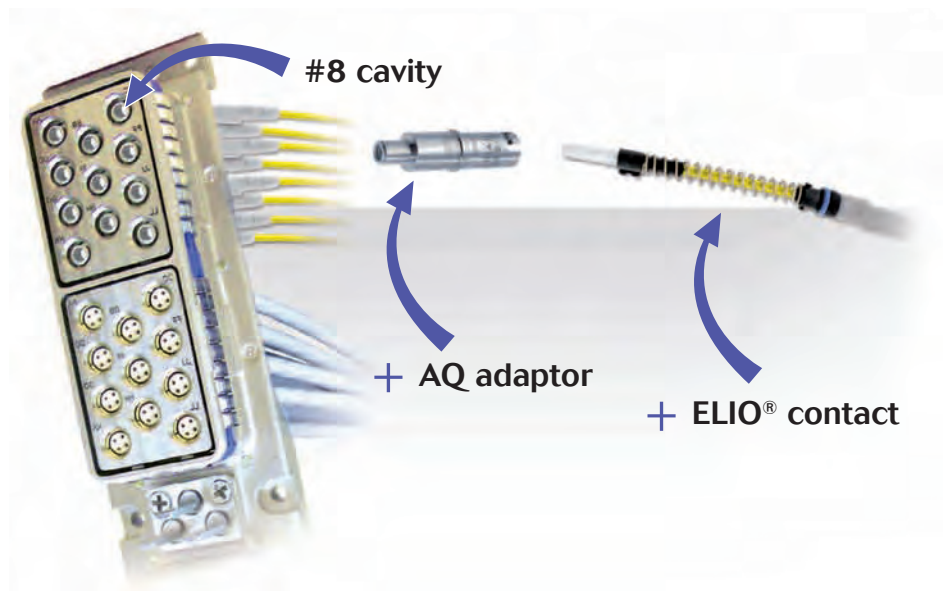


Female filler plug
ELIO AFPS



All dimensions are in millimeters.

38999 & Arinc 600 Series ELIO® Singlemode Fiber Optic



Arinc 600 Series with ELIO® AQ

Adaptor for Quadrax #8 cavities




- ELIO® AQ is an adaptor to enable the ELIO® contact to fit in any #8 cavities
- Compatible with standard ARINC 600 Souriau connector
- Designed to ensure ELIO® contact optical performances
- Many possibilities to mix optical and electrical contact
- Temperature range: -65°C to +125°C (cable limitation)

Applications

- Fiber optic connector for all military and aeronautical applications wherever severe vibration or mechanical resistance are required.

ELIO® AQ

Adaptor for Quadrax #8 cavities




Insert type	Part Number
Male Insert	 ELIOAQ0P (rear release - delivered with alignment boot)
	 ELIOAQ1P (front release)
Female Insert	 ELIOAQ0S674 (rear release)






Ordering information

- See Souriau Arinc 600 Series catalog.

Layouts

Arinc 600 shell size 2 & 3

Cavity A, B, D & E		
		
Q11*	118Q2	C12Q6*
11 #8	118 #22 2 #8	12 #12 6 #8
* Grounded metal insert		

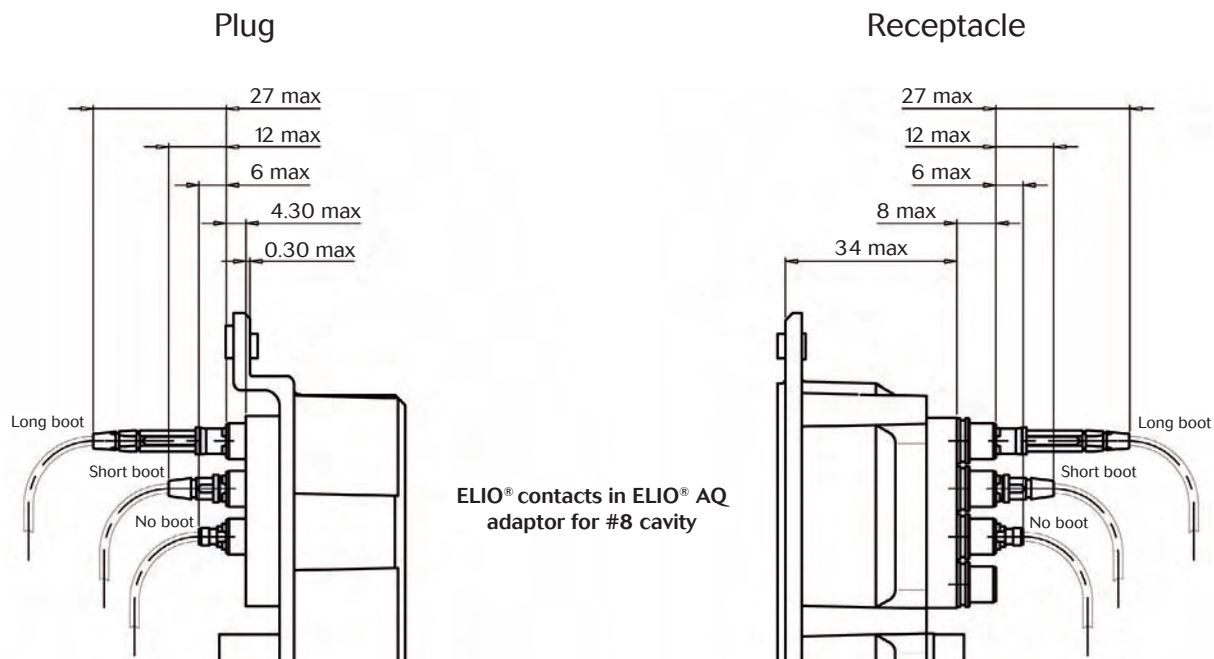
Cavity C & F				
				
Q6*	68Q2	11Q2	62Q2	20Q4
6 #8	68 #22 2 #8	4 #20, 3 #16 4 #12, 2 #8	60 #22 2 #16, 2 #8	20 #20 4 #8

38999 & Arinc 600 Series ELIO® Singlemode Fiber Optic



Dimensions

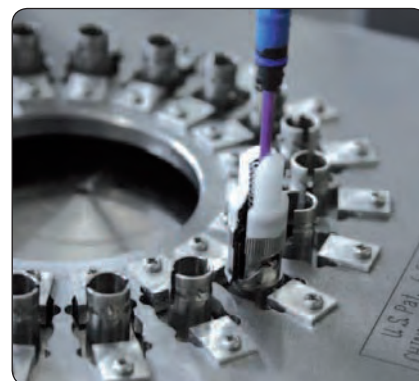
Arinc 600 with ELIO® contacts in ELIO® AQ adaptors



ELIO® adaptor for ST polishing fixture

With this adaptor, turn your ELIO® contact into an ST contact and save costs using standard ST polishing fixture.

Part Number: ELIOAST



All dimensions are in millimeters.

38999 & Arinc 600 Series ELIO® Singlemode Fiber Optic



ELIO® end face inspection tool



SOURIAU and JDSU teamed to develop a contact end face inspection tool suitable for use with ELIO® / EN4531 / ARINC801 technology.

Inspect before you connect.

Proactive inspection and cleaning can prevent poor signal performance and permanent damage to the contact end face.



ELIO® female tip



Part Number: 80WL0040A

To inspect female singlemode ELIO® contacts in all connector styles (adaptors to be used with barrel assembly FBPP-BAP3)



ELIO® female tip for AQ adaptor

Part Number: 80WL0042A

To inspect female singlemode ELIO® contact in all AQ adaptor cavities (adaptors to be used with barrel assembly FBPP-BAP3)



ELIO® male tip

Part Number: FBPT-U25M-N

To inspect male singlemode & multimode ELIO® male contacts in all connector styles, ELIO® male contact in AQ adaptor & ELIO® patchcords (adaptors to be used with barrel assembly FBPP-BAP3)



Barrel assembly

Part Number: FBPP-BAP3

Accessory to adapt ELIO® adaptors on the probe.

ELIO® cleaning pen



Standard cleaning pen for 2.5mm ceramic termini

- Simple pushing motion to engage tool
- Audible CLICK to alert operator when tool is fully engage
- Dry & large cleaning strand eliminates the need for solvents to be effective
- Contaminates such as alcohol, water, skin oil, vegetable and hand lotion residue as well as graphite and t-shirt lint are lifted from the connector end face

Souriau recommends IBC™ Brand Cleaner M250 from USConec for cleaning the ELIO® termini.

ELIO® blind inspection tool



The **blind inspection tool** is developed for faster and safer termini inspection in mass production environment and field use. It enables blind inspection thanks to a long guiding. There is no risk of damaging with the probe tip the close-by termini or a ferrule.

Partnumbering for inspection kits (male and female inserts) dedicated to MIL-DTL-38999 Series III/EN3645 with ELIO® high density insert:

Layout	Kit PN
11-02	80WL-0036
13-04	80WL-0037
19-08	80WL-0038
25-24	80WL-0039

38999 & Arinc 600 Series ELIO® Singlemode Fiber Optic



Test jumpers

Cable description

Application: Harsh
Cable code: FCABLE43
Fiber type: 9/125
Cable diameter (mm): 1.8
Temperature range: -40 to +85°C
Tensile strength (N): 130
Number of ways: 1
Bandwidth Limit (MHz.km): No limit

Attenuation (dB.km): 0.5 - 0.5
Min bend radius (mm): 25
Weight (Kg.km): 2.2
Structure: Loose

Ordering information

	HA02	XXXX	XXX	M	A
Patchcord combination code: XXXX: See table below					
Patchcord length: In meter when possible. Examples: - for a 3 meter assembly, use 003(M) and not 300(CM) - for a 3.5 meter assembly, use 350(CM)					
Length unit: M: Meter CM: Centimeter					
Patchcord version index					

Patchcord combination code

	ELIO18NESA	ELIO18WELA	ELIO18WESA	FC/APC	FC/UPC	LC Simplex / APC	LC Simplex / UPC	SC/APC	SC/UPC	ST/UPC
ELIO18NESA	0411	0424	0427	0431	0435	0439	0445	0451	0459	0466
ELIO18WELA	0424	0356	0428	0432	0408	0440	0353	0452	0460	0467

Standard length tolerances

Patchcord from 30 cm to 1 m	0 / + 5 cm
Patchcord from 1 m to 4 m	0 / + 10 cm
Patchcord from 4 m to 15 m	0 / + 20 cm
Patchcord > 15 m	0 / + 30 cm

Harnessing and services

While deploying a fibre optic based solution, most of the concerns are focused on the harshest environments.

Military or aerospace jumpers, highly exposed to extreme acceleration, deceleration with shock, vibration and environmental constraints like dust and contaminant, are a perfect example where know-how and experience are key to providing a cost-efficient and sustainable solution.

The dedicated R&D optical team supports your specific needs from pre-project to full industrial release with adapted solutions: Technical and economical analysis with the customer, design and development of optical solution, deployment support (work instruction, field training, installation procedure) and robust after sales support. There is a strong relationship between the optical connector, fibre termination and harness assembly; Thanks to its in house fibre optics assembly line, Souriau supports our customers from the design stage to supplying a wide range of fibre optic assemblies.



For further information contact us at fiberoptics@souriau.com
or visit our web site www.optical-connectors.com