A Furukawa Company

Avionics Optical Cables
for Commercial and Defense Aircraft

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OFS avionics cables offer optimal performance in the challenging conditions found in aircraft, where requirements commonly include:

- High reliability
- Long lifetime
- High strength
- Light weight
- Wide temperature ranges

This brochure highlights three key avionic product families:

- FlightLink Cables – commercial aircraft
- FlightGuide Cables – for military aircraft
- Avioptics Cables – for high performance aircraft and military vehicles

Typical Avionic Applications for OFS cables:

- In-flight Entertainment Systems
- In-flight Networking Systems
- Display Systems
- Data Transmission
- Communication Systems
- High-temperature Environments
- Corrosive Chemical Environments

Customization

OFS staff is available to recommend and assist in fiber and cable design decisions, and OFS can build and test a cable customized to your specifications.

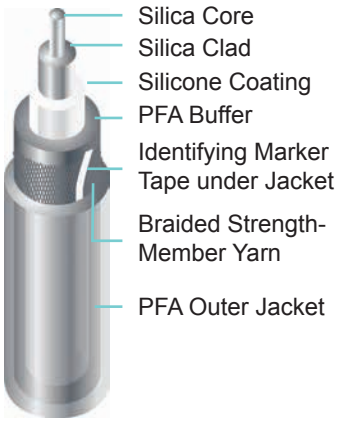
FlightLink

Designed for use in commercial aircraft, FlightLink 62.5 Cable meets or exceeds the requirements of ARINC 802, Appendix C (MGT) for tight buffered cables used in commercial aircraft.

For increased bandwidth OFS now offers FlightLink 50 µm OM3 Cable and FlightLink Bend Optimized SM Cable with identical construction.

		FlightLink 50 µm OM3	FlightLink 62.5 µm	FlightLink Bend Optimized Single-mode
Buffered Fiber Properties				
Operating wavelength				1310 / 1550 nm
Modefield diameter	@ 1310 / 1550 nm			8.9 ± 0.4 µm / 10.0 ± 0.5 µm
Core diameter		50 ± 3 µm	62.5 ± 3 µm	
Cladding diameter		125 ± 1 µm	125 ± 1 µm	125 ± 1 µm
Numerical aperture		0.200 ± 0.015	0.275 ± 0.015	
Fiber cutoff wavelength				1260 ± 50 nm
Coating material		Silicone	Silicone	Silicone
Coating diameter		400 ± 25 µm	400 ± 25 µm	400 ± 25 µm
Buffer material		Black PFA	Black PFA	Black PFA
Buffer diameter (Tight Buffer)		900 ± 50 µm	900 ± 25 µm	900 ± 50 µm
Cable Optical Properties				
Attenuation	@ 850 / 1300 nm @ 1310 / 1550 nm	≤ 5.0 / 3.0 dB/km	≤ 4.0 / 2.0 dB/km	≤ 1.0 / 0.70 dB/km
Bandwidth	@ 850 nm @ 1300 nm	≥ 2000 MHz-km EMB ≥ 500 MHz-km EMB	≥ 160 MHz-km OFL ≥ 500 MHz-km OFL	
Macrobend performance	@ 1550 nm			1 turn on 10 mm bend radius mandrel ≤ 0.2dB
Cable Design				
Cable construction		Tight-Buffered Simplex with braided strength member		
Outer cable diameter		1.8 ± 0.1 mm		
Cable weight		≤ 4.0 kg/km		
Outer jacket material		PFA		
Outer jacket color		Light purple		
Installation and Usage Specifications				
Maximum installation tensile load		19.3 lbs. (86 N)		
Maximum operating tensile load		9.7 lbs. (43 N)		
Minimum bend radius under load		25 mm		
Minimum bend radius uploaded		8 mm		
Cable tensile strength & elongation		< 3% elongation @ 35 kg load		
Operating temperature		-55 to +150 °C		
Storage temperature		-55 to +85 °C		
Flammability, Smoke, Toxicity				
Flammability: FAR 25.869 Time to extinguish Maximum burn length			0 seconds < 1.5 inches	
Smoke density: Ds @ 20 minutes			< 23.5	
Toxicity: Flaming mode ppm @ 20 minutes		HCN CO NOX SO HF HCL <10 161 11 36 <25 <3		
Order by Part Number		**C24712**	**C22251**	**C24895**
Typical Applications		Communications, navigation, displays, cabin systems, in-flight entertainment		

FlightLinkCable



NOTE:
All testing for **FlightLink 62.5 µm** was performed in accordance with ARINC 802 specifications by independent testing laboratories. A full qualification report is available upon request.

Cables have been tested up to 200 °C.

The operating temperature ranges are general guidelines. Consult with our Technical Sales department to determine the optimal coating and jacketing material for your specific application. 1.860.678.6636 fiber is then able to operate for an increased lifetime or at a higher stress level for the same lifetime than a non-carbon coated fiber. Carbon is applied to a thickness of only a few hundred Angstrom.

FlightGuide

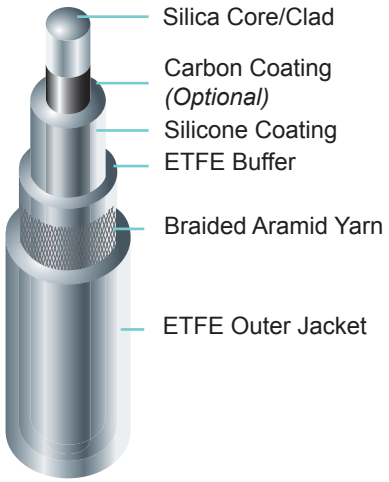
FlightGuide Cables are designed for use in military aircraft. The high performing construction starts with premium quality OFS fiber coated with carbon for increased reliability followed by silicone for cushioning during bend. The ETFE material used for the buffer and jacket provides abrasion and chemical resistance. The braided aramid yarn results in high tensile strength.

Carbon Coating

Carbon used as a primary coating dramatically increases the reliability of fibers. The carbon hermetically seals the glass surface and impedes the slow crack growth caused by moisture ingression. The fatigue factor (n-value), a measure of the fatigue resistance, is increased to greater than 100 as opposed to 20 for non-carbon coated fiber. The fiber is then able to operate for an increased lifetime or at a higher stress level for the same lifetime than a non-carbon coated fiber. Carbon is applied to a thickness of only a few hundred Angstrom.

		FlightGuide 50 µm OM3	FlightGuide 62.5 µm	FlightGuide Bend Optimized Single-mode
Subcomponent Fiber Properties				
Mode field diameter	@ 1310 nm @ 1550 nm			8.9 + 0.4 µm 9.7 + 1.0 µm
Fiber cutoff wavelength				1260 + 50 nm
Core diameter		50 ± 3 µm	62.5 ± 3 µm	
Cladding diameter		125 ± 1 µm	125 ± 1 µm	125 ± 1 µm
Numerical aperture		0.200 ± 0.015	0.275 ± 0.015	
Coating Type I		Carbon	Carbon	Carbon
Coating Type II		Silicone	Silicone	Silicone
Coating Type II Diameter		450 ± 25 µm	450 ± 25 µm	400 ± 25 µm
Buffer		ETFE	ETFE	ETFE
Buffer Diameter		900 ± 50 µm	900 ± 50 µm	900 ± 50 µm
Cable Optical Properties				
Attenuation	@ 850 nm @ 1300 nm @ 1310 nm @ 1550 nm	≤ 6.0 dB/km ≤ 4.0 dB/km	≤ 6.0 dB/km ≤ 4.0 dB/km	 ≤ 1.2 dB/km ≤ 1.0 dB/km
Bandwidth	@ 850 nm @ 1300 nm	≥ 2000 MHz-km EMB ≥ 500 MHz-km EMB	≥ 160 MHz-km OFL ≥ 300 MHz-km OFL	
Macrobend performance	@ 1550 nm			1 turn on 10 mm bend radius mandrel ≤ 0.2dB
Cable Design				
Outer cable diameter		1.8 ± 0.1 mm	1.8 ± 0.1 mm	1.8 ± 0.1 mm
Cable weight		4.0 kg/km	4.0 kg/km	4.0 kg/km
Outer jacket material		ETFE	ETFE	ETFE
Standard jacket color		Orange	Slate	Yellow
Installation and Usage Specifications				
Maximum installation tensile load		90 lbs. (400 N)	90 lbs. (400 N)	90 lbs. (400 N)
Maximum operating tensile load		30 lbs. (133 N)	30 lbs. (133 N)	30 lbs. (133 N)
Minimum bend radius under load		25 mm	25 mm	25 mm
Minimum bend radius uploaded		8 mm	8 mm	8 mm
Operating temperature		-55 to +150 °C	-55 to +150 °C	-55 to +150 °C
Storage temperature		-55 to +85 °C	-55 to +85 °C	-55 to +85 °C
Order by Part Number:		C25964	C10028	C25364
Typical Applications		Data transmission • Communication systems • Corrosive chemical environments • Harsh industrial environments • Aircraft sensors		

FlightGuide Cable



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Avioptics Cable

Based on standard HCS® Optical Fiber, Avioptics is configured to withstand exposure to corrosive and other chemicals, including jet fuel, oil, solvents, and hydrolytic liquids.

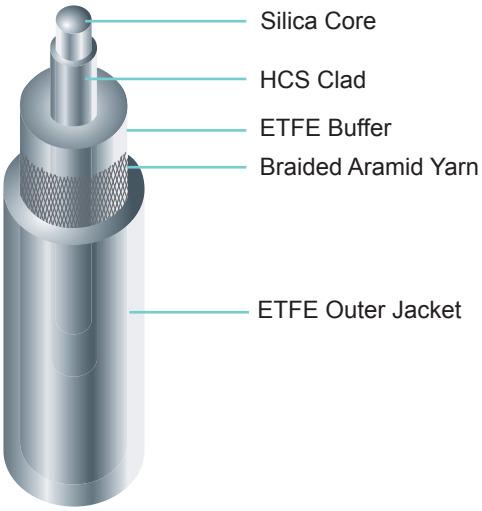
The step-index choice for high-performance aircraft and military vehicles, Avioptics brand simplex cable offers many advantages, including fast crimp & cleave termination.

Crimp & Cleave Termination

The OFS Crimp & Cleave termination process requires no epoxy or polishing and is a fast and easy alternative to the traditional epoxy polish termination method. Using the OFS Crimp & Cleave Termination Kit, the process can be completed in 3 minutes or less in the field. OFS recommends the Harsh Environment SMA for use with Avioptics Cable.

Avioptics Simplex Step-Index 200 µm	
Optical Properties	
Attenuation @ 850	≤8 db/km
Cable Design	
Fiber core diameter	200 µm ± 4 µm
Outer cable diameter	1.8 ± 0.1 mm
Cable weight	≤4.0 kg/km
Outer jacket material	ETFE
Outer jacket color	Violet
Installation and Usage Specifications	
Maximum installation tensile load	100 lbs. (445 N)
Maximum operating tensile load	30 lbs. (133 N)
Minimum bend radius under load	25 mm
Minimum bend radius uploaded	10 mm
Operating temperature	-65 to +125 °C
Storage temperature	-65 to +85 °C
Product Description Code:	HCP-M0200T-D01FS
Order by Part Number:	AC02201-10
Typical Applications	Aircraft sensors • Data transmission • Radio systems Communication systems • Land vehicle wire harnesses High temperature environments • Corrosive chemical environments • Laser power delivery • Laser initation Spectroscopy
Crimp & Cleave Compatibility	SMA Connector

Avioptics Cable



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For additional information please contact your sales representative.
You can also visit our website at **www.ofsoptics.com**
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or 1-770-798-5555 from outside the USA.
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