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Fiber Optic Cables for Laser Beam Delivery



FlexiRay[®]

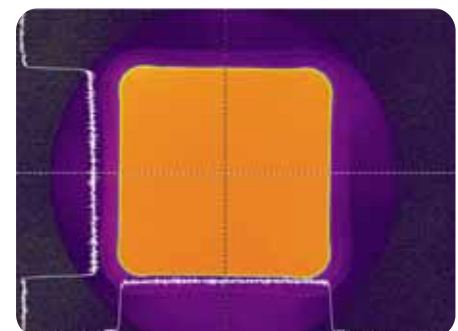
- Flexible and robust design
- Precise fiber alignment
- Heat dissipation by proper design of power connector
- Chance to use metal coated fibers for laser combiners
- Advanced quality control

FlexiRay[®] Fiber Optic Laser cables enable reliable laser power delivery with high brightness and high beam quality. Robust design and special connectors secure FlexiRay[®] laser cables exploitations for long term in industrial and medical laser systems. Design of single/ double/ triple clad fibers and core shape can be selected to match customer application.

Unique advantage to combine power up to multi-kW range from many diode lasers can be achieved with bundles of FlexiRay[®] Metal-Coated Silica Fibers. Laser cables and bundles made from them can be used at high temperatures (>600°C) and in vacuum.

Applications:

- Laser Welding of Metal & Plastics
- Laser Cutting & Drilling
- Laser Surface Treatment
- Medical Laser Power Delivery
- Laser Spectroscopy (LIBS)



Types of **FlexiRay®** Fiber Optic Laser Cables:

- **FlexiRay® SMA Laser Cables** with standard SMA-905 connectors (P<5W);
- **FlexiRay® P-SMA Laser Cables** with fiber free end P-SMA connectors (P<30W);
- **FlexiRay® P+SMA Laser Cables** with fiber free end P+SMA connectors (P<150W);
- **FlexiRay® HP-SMA Laser Cables** with fiber free end, epoxy free High Power HP-SMA connectors (P<300W);
- **FlexiRay® HP-D80 Laser Cables** with D80 connectors, copper-alloy ferrule (P<900W).



Power connectors with copper-alloy ferrule enhance heat dissipation caused by cable misalignment.

Specification					
Laser Cable Type	SMA	P-SMA	P+SMA	HP-SMA	HP-D80
Max Laser Beam Power, W	5	30	150	300	900
Connector Type*	SMA 905	SMA 905 free fiber end	SMA 905 free fiber end	SMA, free fiber end, epoxy free, long coupling nut	D80 free fiber end, epoxy free, metal radiator
Ferrule Material	ARCAP	ARCAP	ARCAP; Copper-Alloy	ARCAP; Copper-Alloy	Copper-Alloy
Fiber Centricity, μm	<6	<6	<6	<10	<10
Fiber Core Material	Pure fused silica: High OH ⁻ (λ= 0.25 – 1.2 μm); Low OH ⁻ (λ= 0.4 – 2.3 μm)				
Core Diameter*, μm	200, 400, 600, 800 (optional: other diameter and core shape)				
Fiber Cladding Material	Fluorine doped fused silica				
Numerical Aperture*	0.22 ± 0.02 (Full Acceptance Angle 25°), (optional: NA= 0.12 ± 0.02)				
Fiber Cable Length*, m	1.5, 3.0, 5.0 (optional: from 5cm to 200m)				
Protective Tubing*	Simplex	Polymer coated metal protection tube (optional PEEK)			
Protective tubing OD*, mm	3.0 or 3.2	5.3; 6.4	5.3; 6.4	6.4	8.9

* Others available on request.

Manufacturing technologies of art photonics assure precise fiber position in the center of connector ferrule and perfect surface quality of the fiber end. Our quality control procedures and equipment include digital fiber microscopes, infrared vision camera, power meter, profiler of output beam intensity and various diode lasers used to test each cable before its shipment to the customer.

