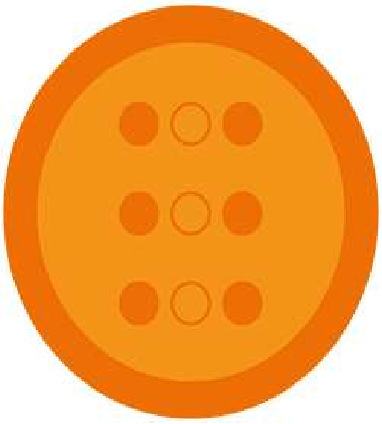
Advanced Ytterbium-Doped Very-Large-Mode Area Multi-Core PM Fiber

Drawing of fiber cross section:



Description:

Engineered specifically for coherent beam combining (CBC) applications, the Yb-3x35/350/420-VLMA-PM is an advanced triple-core Very-Large-Mode Area (VLMA) fiber, enabling further power scaling and system-level performance enhancements. This optimized fiber design offers exceptional optical quality and manufacturing repeatability, making it ideal for cutting-edge phase-coherent or independent-channel operations.

Key Features:

Key Features:	**Multi-Core Design:**	Features three parallel Ytterbium-doped cores designed with symmetry and spacing tailored for phase locking and CBC.
	High Stability and Beam Quality:	Each core leverages low-photodarkening Ytterbium-doped silica, ensuring consistent high beam quality ($M^2 < 1.2$) and stable long-term operation.
	Polarization Maintaining (PM):	Integrated PM structure in all cores allows efficient polarization control essential for phase coherence in CBC systems.
	Splicing-Friendly Architecture:	All-solid fiber structure ensures splicing repeatability.
	Robust Manufacturing:	Built using Kaizen principles on precision-controlled lines to ensure consistent dopant profiles and geometry.

heracle GmbH, Hans-Knöll-Straße 6, 07745 Jena
sales@heracle.de, Tel.: +49 3641-5277825
www.heracle.de

Advanced Ytterbium-Doped Very-Large-Mode Area Multi-Core PM Fiber

General Information:		
Product Name		**Yb-3x35-350-420-VLMA-PM**
Mode Properties		3 x Single Mode
Core Material		Yb-doped fused silica
Inner Cladding Material		Pure fused silica
Coating Type		High-temp dual layer, low RI
Typical Application		Coherent beam combining of ultrafast lasers
Performance Properties (per core)		
Parameter	**Unit**	**Specification**
Beam Quality @ 1030 nm	-	$M^2 < 1.2$
Polarization Extinction Ratio @ 1030 nm	dB	> 15
Optical Efficiency	%	> 70
Optical Properties (per core)		
Mode Field Diameter, $1/e^2$ @ 1030 nm	µm	32 ± 3
Inner Cladding Absorption @ 915 nm	dB/m	4.5 – 6.5
Inner Cladding Absorption @ 976 nm (calculated)	dB/m	~ 16
Inner Cladding NA	-	0.26 ± 0.02
Outer Cladding NA	-	~ 0.48
Geometrical Properties		
Core Diameter	µm	~ 3 x 35 µm
Pump Cladding Diameter	µm	340 – 360
Outer Cladding Diameter	µm	410 – 430
Secondary Coating Diameter	µm	560 – 610

heracle GmbH, Hans-Knöll-Straße 6, 07745 Jena
sales@heracle.de, Tel.: +49 3641-5277825
www.heracle.de