

Erbium and Ytterbium-Doped Non-PM Fibers for LiDAR Applications



As "eye-safe" LiDAR applications continue to proliferate, the need for high efficiency and reliable fibers capable of delivering high pulse energies and good beam quality becomes critical. Coherent offers a family of high-performance Erbium and Erbium/Ytterbium doped single and double clad fibers. These fibers are optimized to achieve record efficiencies in the 1.5 μm wavelength range while suppressing parasitic 1 μm Amplified Spontaneous Emission (ASE). By balancing the trade-offs between efficiency, power threshold, and 1 μm ASE, Coherent offers the highest performance Erbium/Ytterbium-doped fibers available. Our product portfolio includes fibers with a variety of core sizes, each optimized for the rigorous demands of a harsh environment and/or mobile LiDAR applications.

Typical Applications

- Autonomous Vehicles
- Digital Mapping
- Defense
- Remote Sensing

Features & Benefits

- Designs spanning preamplifier to power amplifier stages to achieve high pulse energies and narrow linewidths
- Singlemode designs offer exceptional beam quality for limited diffraction resolution
- NuCOAT™ coating for long-term reliability in extreme environments

Optical Specifications

	SM-ESF-7/125	MM-EYDF-10/125-XPB	MM-EYDF-12/130-XPB 1392602	LMA-EYDF-25P/300-XPB 1395386
Operating Wavelength	1530 – 1625 nm	1530 – 1625 nm	1530 – 1625 nm	1530 – 1625 nm
Core NA	0.150	0.210	0.210	0.090
First Cladding NA (5%)	N/A	≥ 0.46	≥ 0.46	≥ 0.46
Mode Field Diameter	8.8 \pm 1.0 μm @ 1550 nm 9.1 \pm 1.0 μm @ 1620 nm	N/A	N/A	N/A
Cutoff	1400 \pm 60 nm	N/A	N/A	N/A
Cladding Attenuation	N/A	≤ 30.0 dB/km @ 1095 nm	≤ 30.0 dB/km @ 1095 nm	≤ 30.0 dB/km @ 1095 nm
Cladding Absorption	N/A	2.90 \pm 0.60 dB/m at 915 nm	3.80 \pm 0.60 dB/m at 915 nm	2.80 \pm 0.50 dB/m at 915 nm
Core Absorption	55.0 \pm 5.0 dB/m near 1530 nm	100.0 \pm 20.0 dB/m near 1530 nm	100.0 \pm 20.0 dB/m near 1530 nm	100.0 \pm 20.0 dB/m near 1535 nm

Geometrical & Mechanical Specifications

Cladding Diameter	125.0 \pm 1.5 μm	N/A	N/A	N/A
Cladding Diameter (flat-to-flat)	N/A	125.0 \pm 2.0 μm	130.0 \pm 3.0 μm	300.0 \pm 8.0 μm
Core Diameter	7.0 \pm 0.2 μm	10.0 \pm 1.0 μm	12.0 \pm 1.5 μm	25.0 \pm 2.0 μm
Coating Diameter	245.0 \pm 15.0 μm	215.0 \pm 5.0 μm	215.0 \pm 5.0 μm	450.0 \pm 15.0 μm
Coating Concentricity	< 5.0 μm	< 5.0 μm	N/A	N/A
Core/Clad Offset	≤ 0.50 μm	≤ 1.00 μm	≤ 1 μm	≤ 2.00 μm
Coating Material	Acrylate	Low Index Acrylate	Low Index Acrylate	Low Index Acrylate
Operating Temperature Range	-40 to 85 $^{\circ}\text{C}$			
Proof Test Level	≥ 100 kpsi (0.7 GN/m ²)			

Single and double clad passive fibers are also available for amplifier components and beam delivery requirements.



7 Airport Park Road, East Granby, CT 06026 • 860.408.5000 • E-mail eby_info@coherent.com • www.nufern.com • Products are manufactured under an ISO 9001:2008 certified quality management system.



Custom developed fiber (FUD) specifications are subject to change without notice. Other configurations such as alternative form factors, optimized cut-off and UV cured color coating may be available. Let us know how Nufern can assist with your requirements.

NU0331- 07/14/2019