

# CATV Amplifier 6/125 Er:Yb-Doped Double Clad Fibers



Nufern's proprietary rare earth doping technology is used to deliver Er:Yb co-doped fibers with industry leading tolerances on the key parameters important for fiber based amplifiers. This ensures the essential lot-to-lot reproducibility required for volume manufacturing of high power CATV and telecom optical amplifiers at 1550 nm. Nufern's XP version offers an optimized design for higher efficiency and lower parasitic 1  $\mu$ m ASE delivering superior performance. All these fibers demonstrate high efficiency and high power operation without rollover, enabled by the optimized double clad fiber design.

## Typical Applications

- CATV and Telecom amplifiers

## Features & Benefits

- Optimized XP version — Higher efficiency and lower 1  $\mu$ m ASE
- Single-mode core design — Low splice loss to transmission fiber
- Double clad design — High power performance and high power conversion efficiency
- NuCOAT-FA fluoroacrylate coating — Greater fiber durability in extreme operating and storage conditions
- All fiber proof tested to > 100 kpsi — Critical for ensuring long term reliability when coiling

## Optical Specifications

	SM-EYDF-6/125-XP	SM-EYDF-6/125-HE	PM-EYDF-6/125-HE
Operating Wavelength	1530 – 1625 nm	1530 – 1625 nm	1530 – 1625 nm
Core NA	0.210	0.180	0.180
First Cladding NA (5%)	$\geq 0.46$	$\geq 0.46$	$\geq 0.46$
Mode Field Diameter	$5.9 \pm 0.3 \mu\text{m}$ @ 1550 nm	$6.8 \pm 0.8 \mu\text{m}$ @ 1550 nm	$6.8 \pm 0.8 \mu\text{m}$ @ 1550 nm
Cutoff	$1470 \pm 50$ nm	$1440 \pm 80$ nm	$1440 \pm 80$ nm
Cladding Attenuation	$\leq 30.0$ dB/km @ 1095 nm	N/A	N/A
Normalized Cross Talk	N/A	N/A	$\leq -25.0$ dB at 10 m @ 1300 nm
Cladding Absorption	$1.00 \pm 0.25$ dB/m at 915 nm	$0.75 \pm 0.15$ dB/m at 915 nm	$0.75 \pm 0.15$ dB/m at 915 nm
Core Absorption	$100.0 \pm 20.0$ dB/m near 1535 nm	$40.0 \pm 10.0$ dB/m near 1535 nm	$40.0 \pm 10.0$ dB/m near 1535 nm

## Geometrical & Mechanical Specifications

	SM-EYDF-6/125-XP	SM-EYDF-6/125-HE	PM-EYDF-6/125-HE
Cladding Diameter	N/A	N/A	$125.0 \pm 1.0 \mu\text{m}$
Cladding Diameter (flat-to-flat)	$125.0 \pm 2.0 \mu\text{m}$	$125.0 \pm 3.0 \mu\text{m}$	N/A
Core Diameter	$5.5 \mu\text{m}$	$6.0 \mu\text{m}$	$6.0 \mu\text{m}$
Coating Diameter	$245.0 \pm 15.0 \mu\text{m}$	$245.0 \pm 15.0 \mu\text{m}$	$245.0 \pm 15.0 \mu\text{m}$
Coating Concentricity	$< 5.0 \mu\text{m}$	N/A	N/A
Core/Clad Offset	$\leq 1.00 \mu\text{m}$	$\leq 1.00 \mu\text{m}$	$\leq 1.00 \mu\text{m}$
First Cladding Material	N/A	Low Index Polymer	N/A
Coating Material	N/A	N/A	Low Index Polymer
Prooftest Level	$\geq 100$ kpsi (0.7 GN/m <sup>2</sup> )	$\geq 100$ kpsi (0.7 GN/m <sup>2</sup> )	$\geq 100$ kpsi (0.7 GN/m <sup>2</sup> )

Coating Requirements: Low Index Polymer NuCoat-FA.



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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.

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# 6/125 Precision Matched Passive Single-Mode 1550-nm Double Clad Fiber



Nufern's precision matched single-mode passive double-clad fibers are available in two-versions — PANDA-style, polarization-maintaining (PM) and non-PM. These fibers feature a 6  $\mu\text{m}$  core diameter and a 125  $\mu\text{m}$  clad diameter optimized to match Nufern's active Er/Yb 6/125  $\mu\text{m}$  fibers. This precise matching allows for the lowest splice loss improving performance for all applications including telecom optical amplifiers at 1550 nm. They utilize the latest fiber design and NuCOAT™ coating technology to ensure excellent preservation of beam quality and extended operating life demanded by today's industrial fiber laser applications.

## Typical Applications

- Telecom amplifiers
- Laser delivery/fluorescence

## Features & Benefits

- NuCOAT™ fluoroacrylate coating — Greater fiber durability in extreme environmental operating & storage conditions
- Exceptional uniformity and core/clad concentricity — Low connectorization losses
- Bend insensitive — Survives application in tight confines
- All fiber proof tested to > 100 kpsi — Critical for ensuring long term reliability

## Optical Specifications

	PM-GDF-6/125-M	SM-GDF-6/125-M
Operating Wavelength	1530 – 1625 nm	1530 – 1625 nm
Core NA	0.180	0.180
First Cladding NA (5%)	$\geq 0.46$	$\geq 0.460$
Mode Field Diameter	$6.8 \pm 0.8 \mu\text{m}$ @ 1550 nm	$6.8 \pm 0.8 \mu\text{m}$ @ 1550 nm
Cutoff	$1440 \pm 80$ nm	$1440 \pm 80$ nm
Core Attenuation	$\leq 10.0$ dB/km @ 1550 nm	$\leq 6.00$ dB/km @ 1550 nm
Cladding Attenuation	$\leq 15.0$ dB/km @ 1095 nm	$\leq 15.0$ dB/km @ 1095 nm
Birefringence	$1 \times 10^{-4}$	N/A

## Geometrical & Mechanical Specifications

	PM-GDF-6/125-M	SM-GDF-6/125-M
Cladding Diameter	$125.0 \pm 1.0 \mu\text{m}$	$125.0 \pm 1.0 \mu\text{m}$
Core Diameter	6 $\mu\text{m}$	6 $\mu\text{m}$
Coating Diameter	$245.0 \pm 10.0 \mu\text{m}$	$245.0 \pm 10.0 \mu\text{m}$
Coating Concentricity	< 5.0 $\mu\text{m}$	< 5.0 $\mu\text{m}$
Core/Clad Offset	$\leq 0.50 \mu\text{m}$	$\leq 0.50 \mu\text{m}$
Proof test Level	$\geq 100$ kpsi (0.7 GN/m <sup>2</sup> )	$\geq 100$ kpsi (0.7 GN/m <sup>2</sup> )

Coating Requirements: Low Index Polymer Coating.  
Other Requirements: Round Fiber



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