NuMKW Multi-kW Active Fibers

NuMKW Large Mode Area (LMA) Ytterbium-doped (YDF) active fibers eliminate Transverse Mode Instability (TMI) and Stimulated Raman Scattering (SRS) for power scaling to >3kW in existing laser architectures. With 1.5kW, 2kW and 3kW options, these fibers feature unmatched performance that benefit many applications, including the lowest photodarkening and the highest beam quality. NuMKW fibers also reduce the $/W value, eliminate the need to design and develop expensive solutions, and come with matched fiber designs for passive components and beam delivery.

Typical Applications

- High Power Fiber Lasers for Industrial Applications
  - Cutting and Welding
  - Laser Cladding
  - Additive Manufacturing

Features & Benefits

- Eliminates TMI & SRS to enable power scaling without changing architecture
- Highest beam quality
- Unmatched photodarkening performance
- Reduces $/W

Optical Specifications	LMA-YDF-20/400-1.5kW	LMA-YDF-20/400-HP-M	LMA-YDF-22/400-915-3KW	LMA-YDF-20/400-976-3KW
Output Power / Pumping	1.5kW at 915 nm & 976 nm Pumping	2kW at 915 nm & 976 nm Pumping	3kW at 915 nm Pumping	3kW at 976nm Pumping
Wavelength				
Operating Wavelength	1015 - 1115 nm	1015 - 1115 nm	1015 - 1115 nm	1015 - 1115 nm
Core NA	0.065 ± 0.005	0.065 ± 0.005	0.065 ± 0.005	0.065 ± 0.005
Cladding NA (5%)	≥ 0.46	≥ 0.46	≥ 0.46	≥ 0.46
Core Attenuation	≤ 15 dB/km at 1200 nm	≤ 15 dB/km at 1200 nm	≤ 15 dB/km at 1200 nm	≤ 15 dB/km at 1200 nm
Cladding Attenuation	≤ 15 dB/km at 1095 nm	≤ 15 dB/km at 1095 nm	≤ 15 dB/km at 1095 nm	≤ 15 dB/km at 1095 nm
Cladding Absorption	0.40 ± 0.05 dB/m at 915 nm 1.2dB/m at 976 nm	0.40 ± 0.05 dB/m at 915 nm	0.51 ± 0.03 dB/m at 915 nm	0.40 ± 0.02 dB/m at 915 nm 1.2dB/m at 976 nm
Slope Efficiency	70% at 915 nm	70% at 915 nm	70% at 915 nm	70% at 915 nm
Geometrical & Mechanical Specifications				
Cladding Diameter (flat to flat)	400 ± 10 µm	400 ± 10 µm	400 ± 10 µm	400 ± 10 µm
Core Diameter	20 ± 1.5 µm	20 ± 1.5 µm	23 ± 1.5 µm	20 ± 1.5 µm
Coating Diameter	550 ± 15 µm	550 ± 15 µm	550 ± 15 µm	550 ± 15 µm
Core/Clad Offset	≤ 2 µm	≤ 2 µm	≤ 2 µm	≤ 2 µm
Coating Material	Low Index Acrylate	Low Index Acrylate	Low Index Acrylate	Low Index Acrylate
Prooftest Level	≥100 kpsi (0.7 GN/m²)	≥100 kpsi (0.7 GN/m²)	≥100 kpsi (0.7 GN/m²)	≥100 kpsi (0.7 GN/m²)
Matched Passive Fiber	LMA-GDF-20/400-HP-M	LMA-GDF-20/400-HP-M	LMA-GDF-22/400-915-3KW	LMA-GDF-20/400-976-3KW

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www.coherent.com ; www.shop.coherent.com • Coherent products are manufactured under an ISO 9001:2008 certified quality management system.

RoHS compliant

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20/400 Precision Matched Passive LMA Double Clad Fibers

Coherent | Coherent's Large Mode Area (LMA) passive double clad fibers are ideal for high power fiber lasers and amplifiers used in military, industrial, and medical applications. These fibers feature a 20 micron diameter core and 400 micron diameter clad size with a low NA (0.065) core. They are precision matched to their active counterpart, LMA-YDF-20/400-HP-M, to ensure excellent splice compatability and low loss. As with all Coherent | Coherent standard Large Mode Area (LMA) fibers, these fibers are proof-tested to 100 kpsi, an industry requirement for long term reliability. They utilize the latest fiber design to ensure excellent preservation of beam quality. The new NuCOAT-FA-HP high performance coating technology extends the operating life at higher power levels demanded by today's industrial fiber laser applications.

Typical Applications

- High power fiber lasers
- CW and pulsed amplifiers
- Military, industrial and medical
- Fiber Bragg Gratings

Features & Benefits

- NuCOAT-FA-HP high performance fluoroacrylate coating — Greater fiber durability at the highest powers and in extreme environmental operating & storage conditions
- LMA core design — Useful for transmitting high CW powers
- "Few" moded core design — Easy to maintain single mode LP01 beam through fiber & components
- All fiber proof tested to > 100 kpsi — Critical for ensuring long term reliability when coiling

Optical Specifications	**LMA-GDF-20/400-HP-M 1364050**	**LMA-GDF-20/400-HP-M+ 1364049**
Operating Wavelength	1015 – 1115 nm	1015 – 1115 nm
Core NA	0.065 ± 0.005	0.065 ± 0.005
First Cladding NA (5%)	≥ 0.46	≥ 0.46
Mode Field Diameter	N/A	16.7 ± 1.0 µm @ 1060 nm
Core Attenuation	≤ 12.0 dB/km @ 1300 nm ≤ 8.0 dB/km @ 1200 nm	≤ 12.0 dB/km @ 1300 nm ≤ 8.0 dB/km @ 1200 nm
Cladding Attenuation	≤ 15.0 dB/km @ 1095 nm	≤ 15.0 dB/km @ 1095 nm
Geometrical & Mechanical Specifications		
Cladding Diameter	395.0 ± 5.0 µm	395.0 ± 3.0 µm
Core Diameter	20.0 ± 1.5 µm	20.0 ± 1.5 µm
Coating Diameter	550.0 ± 15.0 µm	550.0 ± 15.0 µm
Core/Clad Offset	≤ 2.00 µm	≤ 1.20 µm
Clad Non-Circularity	≤ 0.50 %	≤ 0.50 %
Coating Material	Low Index Acrylate	Low Index Acrylate
Prooftest Level	≥ 100 kpsi (0.7 GN/m²)	≥ 100 kpsi (0.7 GN/m²)

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Precision matched with LMA-YDF-20/400-HP-M
It is recommended that fibers with NuCOAT-FA-HP and NuCOAT-FA coatings are not used together.

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