Polarization Maintaining Gyroscope & Sensor Fibers

Nufern's 80 µm PANDA-style PM Gyroscope fibers have extremely high birefringence and exceptionally tight dimensional specifications, critical for manufacturing high precision, high-performance gyro-coils. High consistency and extreme end-to-end control of optical properties provide particular advantage in this application by reducing fiber generated signal artifacts. The intrinsically high level of radiation resistance allows this family to operate for extended periods of time on low earth orbits, near and deep space, and in applications where risk of exposure to man-made radiation is great. The Panda-style configuration is preferred over bow-tie or elliptical clad designs because of its advantages in process scalability (for its cost impact) and product uniformity. These fibers are available for operation at 850, 1300 and 1550 nm wavelengths and a 40-um clad version is available for even smaller form factors operating at 1550 nm.

Typical Applications

- Fiber optic gyroscopes (FOGs)
- Fiber optic voltage and current sensors
- Laser pigtailing
- Small form factor couplers
- Specialty sensors

Features & Benefits

- PANDA-style PM — Superior performance, intrinsically good radiation performance
- Extremely high birefringence — Less gyroscope drift
- Exceptionally tight dimensional control — Uniform, deterministic gyroscope coil performance
- Bend insensitive — Smaller diameter coils possible
- Excellent crosstalk stability over temperature range — Minimize Shupe (insensitive to temperature drift) effects

Optical Specifications	**PM850G-80**	**PM1300G-80**	**PM1550G-40**	**PM1550G-80**
Operating Wavelength	810 – 870 nm	1280 – 1340 nm	1520 – 1620 nm	1520 – 1620 nm
Core NA	0.160	0.180	0.220	0.200
Mode Field Diameter	4.5 ± 0.5 µm @ 850 nm	6.0 ± 0.5 µm @ 1300 nm	5.5 ± 0.5 µm @ 1550 nm	6.3 ± 0.5 µm @ 1550 nm
Cutoff	720 ± 60 nm	1210 ± 60 nm	1350 ± 150 nm	1460 ± 60 nm
Core Attenuation	≤ 5.0 dB/km @ 820 nm	≤ 2.0 dB/km @ 1300 nm	≤ 2.0 dB/km @ 1550 nm	≤ 2.0 dB/km @ 1550 nm
Beat Length	≤ 1.20 mm @ 633 nm	≤ 1.2 mm @ 633 nm	≤ 1.50 mm @ 633 nm	≤ 1.2 mm @ 633 nm
H-Parameter	≤ 3.00000×10^{-5} m^{-1}@ 850 nm	≤ 3.00000×10^{-5} m^{-1}@ 1300 nm	N/A	≤ 3.00000×10^{-5} m^{-1}@ 1500 nm
Normalized Cross Talk	≤ - 25.0 dB at 100 m @ 850 nm	≤ - 25.0 dB at 100 m @ 1300 nm	≤ - 20.0 dB at 100 m @ 1550 nm	≤ - 25.0 dB at 100 m @ 1550 nm
Geometrical & Mechanical Specifications				
Cladding Diameter	80.0 ± 1.0 µm	80.0 ± 1.0 µm	40.0 ± 1.0 µm	80.0 ± 1.0 µm
Core Diameter	3.5 µm	5.0 µm	4.0 µm	5.5 µm
Coating Diameter	170.0 ± 5.0 µm	170.0 ± 5.0 µm	90.0 ± 5.0 µm	170.0 ± 5.0 µm
Coating Concentricity	< 5.0 µm	< 5.0 µm	< 5.0 µm	< 5.0 µm
Core/Clad Offset	≤ 0.50 µm	≤ 0.50 µm	≤ 1.00 µm	≤ 0.50 µm
Coating Material	UV Cured, Dual Acrylate	UV Cured, Dual Acrylate	N/A	UV Cured, Dual Acrylate
Operating Temperature Range	-60 to 105 °C	-60 to 105 °C	-60 to 105 °C	-60 to 105 °C
Storage Temperature	-65 to 105 °C	-65 to 105 °C	-65 to 105 °C	-65 to 105 °C
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)

7 Airport Park Road, East Granby, CT 06026 • 860.408.5000 • Toll-free 866.466.0214 • Fax 860.844.0210 E-mail info @ nufern.com • www.nufern.com Nufern products are manufactured under an ISO 9001:2008 certified quality management system.

RoHS

Standard specifications and design parameters are listed above. 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.