# 850 nm PM Gyroscope & Sensor Fibers


Coherent's 850 nm 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 operation for extended periods of time on low earth orbits, near and deep space, and applications where exposure to man-made radiation is expected. The Panda-style configuration is preferred over bow-tie or elliptical clad designs because of its advantages in process scalability and product uniformity. These fibers are offered in industry standard specifications and Coherent's high performance (HP) versions optimized for exceptional splicability and offering the tightest tolerance specifications available.

**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
- Bend insensitive — Smaller diameter coils possible
- Excellent crosstalk stability over temperature range — Minimize Shupe (insensitive to temperature drift) effects
- HP version with best specifications available — Improved repeatability, coil winding accuracy and splicability

| **Optical Specifications** | **PM850G-80/135-2HP** | **PM850G-80/170-5** | **PM850G-80/170-2HP** |
|---|---|---|---|
| Operating Wavelength | 810 – 870 nm | 810 – 870 nm | 810 – 870 nm |
| Core NA | 0.160 | 0.160 | 0.160 |
| Mode Field Diameter | 4.5 ± 0.5 µm @ 850 nm | 4.5 ± 0.5 µm @ 850 nm | 4.5 ± 0.5 µm @ 850 nm |
| Cutoff | 720 ± 60 nm | 720 ± 60 nm | 720 ± 60 nm |
| Core Attenuation | ≤ 4.2 dB/km @ 850 nm<br>≤ 4.5 dB/km @ 820 nm | ≤ 5.0 dB/km @ 820 nm | ≤ 4.2 dB/km @ 850 nm<br>≤ 4.5 dB/km @ 820 nm |
| Beat Length | ≤ 1.2 mm @ 633 nm | ≤ 1.20 mm @ 633 nm | ≤ 1.20 mm @ 633 nm |
| H-Parameter | ≤ $3.00000 \times 10^{-5}$ $m^{-1}$@ 850 nm | ≤ $3.00000 \times 10^{-5}$ $m^{-1}$@ 850 nm | ≤ $3.00000 \times 10^{-5}$ $m^{-1}$@ 850 nm |
| Normalized Cross Talk | ≤ - 25.0 dB at 100 m @ 850 nm | ≤ - 25.0 dB at 100 m @ 850 nm | ≤ - 25.0 dB at 100 m @ 850 nm |
| **Geometrical & Mechanical Specifications** | | | |
| Cladding Diameter | 80.0 ± 1.0 µm | 80.0 ± 1.0 µm | 80.0 ± 1.0 µm |
| Core Diameter | 3.5 µm | 3.5 µm | 3.5 µm |
| Coating Diameter | 135.0 ± 2.0 µm | 170.0 ± 5.0 µm | 170.0 ± 2.0 µm |
| Coating Concentricity | < 5.0 µm | < 5.0 µm | < 5.0 µm |
| Core/Clad Offset | ≤ 0.50 µm | ≤ 0.50 µm | ≤ 0.50 µm |
| Coating Material | Low Tg Acrylate | Acrylate | Low Tg Acrylate |
| Operating Temperature Range | -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 |
| Prooftest Level | ≥ 100 kpsi (0.7 GN/m²) | ≥ 100 kpsi (0.7 GN/m²) | ≥ 100 kpsi (0.7 GN/m²) |

HP versions with NuCOAT-LTg exclusively

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