iXblue Polarizing (PZ) fiber is designed so that only one state of polarization is guided along the fiber; any other state of polarization will be lost rapidly thus yielding a high built-in polarization extinction ratio. This particular mechanism is obtained through a specific waveguide design and a careful optimization of the glass composition resulting in both high birefringence and leakage behavior. PZ fibers are available at different wavelengths with a broad polarizing window (typically larger than 100 nm), low attenuation and high extinction ratio (≥ 30 dB), that can be tuned by coiling the proper fiber length at the appropriate coil diameter. If needed iXblue also offers ready to use polarizing solutions based on PZ fibers.

Applications
- Quantum optics, cold atoms
- All-Fiber polarizer
- Fiber optic current sensors and gyro

How it works
A Polarizing Fiber selectively attenuates the light propagating along one polarization axis (Fast Axis) and preserves only the polarized light along the other principal axis (Slow Axis).

Design wavelength (\(\lambda_{design}\))

Wavelength at which the fiber is typically used

Polarizing Bandwidth (\(\Delta \lambda\))

> 20 dB short wavelength edge

< 3 dB long wavelength edge

Contrary to In-line Polarizers, the PZ fiber based polarizer is an All-Fiber solution offering superior polarization extinction ratio, low loss and excellent stability over temperature. An all-fiber polarizer IXS-POL is a polarizing fiber with the optimal length coiled at the appropriate diameter to operate at the operational wavelength. iXblue also offers customized solutions including connectors, various packages, patch-cords and cables.

Key Features
- Polarizing wavelengths available: 780, 840, 980, 1060, 1310 or 1550 nm
- Fiber diameter: 60 or 125 µm
- Tiger design
- > 100 nm polarizing window
- > 30 dB extinction ratio

Related Products
- Polarization Maintaining Fibers
- Spun Fibers

Transmission spectra showing two separate cut-offs for the polarization modes in the fast and slow axes.

The concept of W-type fiber

Very High-Birefringence Fiber

Introduce separate HE\(_{m}\) mode cut-offs into the fast and slow axes at different spectral positions \(\lambda_{HE_{fast}}, \lambda_{HE_{slow}}\).