

Faraday Reflector 1310, 1480, 1550nm

90 degree rotation and reflect back



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The FRMR Series Faraday Mirror Reflector rotates the state of polarization (SOP) by 90° upon reflection, eliminating polarization sensitivity in optical systems such as fiber interferometers, sensors, fiber lasers, Brillouin amplifiers, and fiber optic modules. It features low insertion loss, a compact design, and an epoxy-free optical path for enhanced reliability and thermal stability. Available in a standard single-port configuration, where light reflects back along the same fiber, or a two-port version, where light reflects through a second fiber port. The FRMR series ensures superior performance and flexibility for polarization-sensitive applications.

Features

- Low Insertion Loss
- High Isolation
- Low PDL
- High Reliability
- Low Cost

Applications

- Fiber Interferometer
- Fiber Laser
- Fiberoptic Sensor
- Brillouin Amplifier
- Fiberoptic Module

Specifications

Parameter	Min	Typical	Max	Unit
Central Wavelength (λ_c)	1310, 1480, 1550			nm
Typical Spectral Width ($\Delta\lambda$)		30		nm
Minimum Spectral Width ($\Delta\lambda$)		50		nm
Typical Insertion Loss ^[1] (λ_c , 23°C, no connector)		≤ 0.35		dB
Maximum Insertion Loss (Over λ_o ^[2] , 23°C, no connector)		≤ 0.6		dB
Faraday Rotation Angle (λ_c , 23°C)	89	90	91	deg
Polarization Dependant Loss		≤ 0.05		dB
Polarization Mode Dispersion		≤ 0.05		ps
Operating Temperature	-5		+70	°C
Storage Temperature	-40		+85	°C
Optical Power Handling		≤ 300		mW

Notes:

[1]. Special order for 50nm spectral width

[2]. $\lambda_o = (\lambda_c - \Delta\lambda/2) \sim (\lambda_c + \Delta\lambda/2)$

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Mechanical Dimension (mm)

*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Ordering Information

Prefix	Type	Wavelength	Fiber Port #	Package	Fiber Type	Fiber Cover	Fiber Length	Connector
FRMR-	Standard = 00 5W = 05 10W = 10	1310 = 3 1480 = 4 1550 = 5 Special = 0	One = 1 Two = 2	∅4.5x20 = 1 Special = 0	SMF-28 = 1 Special = 0	0.9mm Loose Tube = 3 Bare Fiber = 1 Special = 0	0.25m = 1 0.5m = 2 1.0m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 LC/APC = A LC/UPC = U Special = 0

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Application Notes

Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness

Fibers with smaller core diameters ($<5 \mu\text{m}$) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the handling by expanding the core side at the fiber ends.