

Faraday Reflector 350 - 1060nm

90 degree rotation and reflect back



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Features

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

Applications

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

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.

Specifications

Parameter	Min	Typical	Max	Unit
Central Wavelength (λ_c)	350		1100	nm
Typical Spectral Width ($\Delta\lambda$)		30		nm
Minimum Spectral Width ($\Delta\lambda$)		50		nm
Insertion Loss ^[1] (λ_c , 23°C, no connector)	0.6	0.8	1.5	dB
Faraday Rotation Angle (λ_c , 23°C)	89	90	91	deg
Polarization Dependent Loss (SM Fiber)		≤ 0.05		dB
Polarization Extinction Ratio (PM Fiber)		20	30	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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Faraday Reflector

90 degree rotation, 1310, 1480, 1550nm



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Mechanical Dimension (mm)

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

Ordering Information (Part Number) System

	☐	☐	☐	☐	☐	☐	☐	☐
Prefix	Type	Fiber Port #	Wavelength	Power	Fiber Type	Fiber Cover	Fiber Length	Connector ^[1]
FRMR-	Standard = 1	One = 1 Two = 2	488 nm = 4 360 nm = 3 430 nm = B 532 nm = 5 630 nm = 6 780 nm = 7 850 nm = 8 980 nm = 9 1060 nm = 1 Special = 0	Standard = 1 High Power = H	Select Below Special = 00	0.9mm Loose Tube = 3 Bare Fiber = 1 Special = 0	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

[1]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

Fiber Type Selection Table:

04	SM450	37	PM400
05	SM1950	38	PM480
06	SM600	39	PM630
07	780HP	40	PM850
08	SM800	41	PM980
09	SM980	42	PM780
10	Hi1060	43	
11	SM400	44	PM405
12	MM 50/125µm	45	PM460

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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 ($<5\text{ }\mu\text{m}$) 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 how handling by expanding the core side at the fiber ends.