

Passive Optical Fiber Depolarizer: Broadband

750nm to 2000nm, DOP<5%, IL<1dB, PM Fiber Based



[Return to the Webpage](#)



The PFDP Passive Optical Fiber Depolarizer is an all-fiber solution designed to convert polarized input into randomly polarized output. It features ultrafast operation, low cost, high power handling, and requires no electrical power. Optimized for broadband lasers such as SLEDs, the device employs multiple segments of polarization-maintaining (PM) fibers spliced at specific angles to achieve efficient polarization scrambling. The input can be single-mode (SM) or PM fiber, while the output is always single-mode fiber, ensuring compatibility with a range of applications.

This depolarizer is highly effective in reducing polarization-dependent loss (PDL) and polarization mode dispersion (PMD) in optical communication test systems, eliminating artifacts in Optical Coherence Tomography (OCT), and stabilizing measurements in fiber sensing systems. However, it is not suitable for use with narrow-line lasers like Fiber Bragg Grating (FBG), Fabry-Perot (FP), or Distributed Feedback (DFB) lasers. The PFDP provides a passive, cost-effective solution for applications requiring reliable depolarization without the need for complex electronics.

Features

- Low Loss
- Low Cost
- Low Degree of Polarization
- High Reliability
- High Power Handling
- Wide Temperature Operation

Applications

- Laser System
- OCT
- Sensor Systems
- Instruments

Specifications

Parameter	Min	Typical	Max	Unit
Center Wavelength	750		2200	nm
Wavelength Range		60	400	nm
Insertion Loss ^[1]	0.4	0.7	1	dB
Return Loss	55	70		dB
Degree of Polarization ^[2]	over 60nm	4.5	5	%
	over 400nm	6.3	7	
Residual Extinction Ratio	0.2			dB
Operating Temperature	-40		70	°C
Storage Temperature	-40		85	°C
Optical Power Handling		5		W

Notes:

[1]. Without a connector, each connector adds 0.25dB

[2]. 1200-1600nm

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

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Rev 01/23/25

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Mechanical Dimensions (mm)

Ordering Information (Part Number)

Prefix	Type	Input Light	Wavelength	Package	Input Fiber	Fiber Cover	Connector ^[1]
PFDP-	PM Fiber = P Special = 0	SLED = SL Special = 00	1550nm = 1 1310nm = 2 1060nm = 3 980nm = 9 850nm = 8 780nm = 7 630nm = 6 Special = 0	Box = 1 Special = 0	PM1550 = 1 PM1310 = 3 PM1060 = 2 PM980 = 9 PM780 = 7 SM28 = 5 Hi1060 = 6 Hi980 = 8 780HP = A SM600 = B PM630 = C SM800 = D PM850 = E Special = 0	Bare = 1 0.9mm Tube = 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

Red color for special order

[1]. The connector cannot be installed directly onto bare fiber, as it 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 can remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SM28 fiber and decreases further with smaller core fibers.