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THORLABS

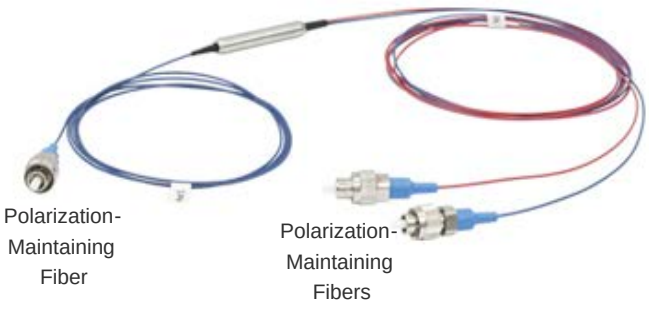
PBC1064PM-APC - October 14, 2020

Item # PBC1064PM-APC was discontinued on October 14, 2020. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

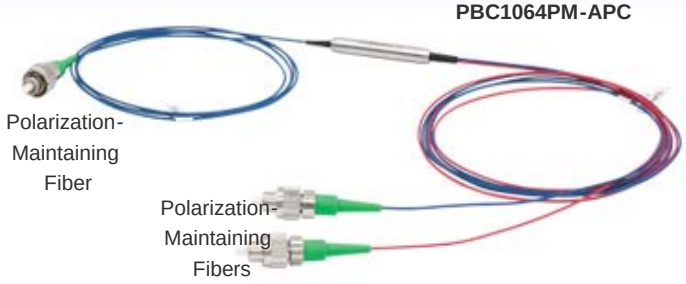
FIBER-BASED POLARIZATION BEAM COMBINERS/SPLITTERS, 3 PM PORTS

- **Combine or Split Orthogonal Polarizations**
- **980 nm and 1064 nm Operating Wavelengths**
- **Ideal for Combining Pump Laser Signals Prior to Amplification**

PBC980PM-FC



PBC1064PM-APC



Hide Overview

OVERVIEW

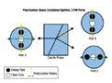
Features

- Combine or Split Orthogonal Polarizations in Fiber Optic Systems
- High Extinction Ratio
- Bidirectional: Three Polarization-Maintaining Ports
- 1 m of Ø900 µm Jacketed Fiber on Each Leg
- Choose from FC/PC (980 nm) or FC/APC (980 or 1064 nm) Connectors

General Specifications[a]	
Return Loss	FC/PC Connectors: ≥40 dB FC/APC Connectors: ≥45 dB
Fiber Length	1 m on Each Leg
Length Tolerance	+0.075 m / -0 m
Jacket	Ø900 µm Loose Furcation Tubing
Size	1.38 " x Ø0.22" (35.0 mm x Ø5.5 mm)
Connector Keys	Narrow (2.0 mm); Aligned to Slow Axis for all PM Fiber Legs

- a. Specified with Connectors

Thorlabs' Polarization-Maintaining Fiber-Based Polarization Beam Combiners (PBC) or Splitters are designed to either combine two orthogonal polarizations into a single fiber or split a single input into its orthogonal linear polarizations through two fiber outputs. The devices on this page feature two legs of polarization-maintaining fiber on one side of a calcite prism and one leg of polarization-maintaining fiber on the other. The legs on the side with the two PM fibers have the slow axis of the fiber aligned for maximum transmission of one polarization state.



Click to Enlarge

In the polarization-maintaining PBC, all three legs contain PM fiber. If a polarized beam is aligned to the slow axis of the fiber on port 3, as represented by the yellow arrows in the diagram on the right, then this beam will be deviated by the prism so that it emerges from port 1 with the polarization aligned to the slow axis. Conversely, if the beam entering port 3 is aligned with the fast axis of the fiber, as represented by the green arrows in the diagram on the right, then the light will be deviated by the prism such that it emerges from port 2 with the light aligned to the slow axis. Note that the slow axes of the fibers on port 1 and port 2 are orthogonal to each other to match the polarization emitted by the calcite prism. If the polarization incident on port 3

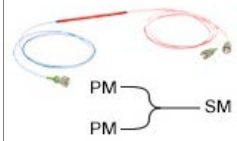
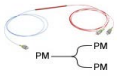
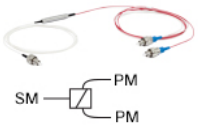
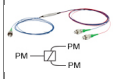
is at an angle with respect to the axes, the output at ports 1 and 2 will vary depending on the angle of the incident polarization state.

This PM PBC can also be used in reverse: light incident on port 1 along the slow axis will exit from port 3 aligned to the slow axis, and light incident at port 2 with the polarization aligned to the slow axis will exit from port 3 with the polarization aligned to the fast axis. Light incident at ports 1 and 2 aligned to the fast axis of the fibers will refract differently through the prism and will not exit port 3.

These polarization beam combiners are frequently utilized to combine the light from two pump lasers into a single fiber to increase the input into an erbium-doped fiber amplifier or Raman amplifier.

Alternative PBC Options

Versions of our fiber-based PBCs using single-mode fiber for the output leg are available here. Thorlabs also offers the FiberBench system, which is a line of products designed for free-space manipluation of light within fiber-based systems. This line includes polarizer and beamsplitter modules for constructing custom PBCs. A prebuilt FiberBench-based variable polarization beam combiner / splitter is also available.

Fiber Polarization Combiner / Splitter Selection Guide				
Fused Fiber		In-Line Micro Prism		Free-Space Polarization Beamsplitter Kits
				
2 PM Ports, 1 SM Port	3 PM Ports	1 SM Port, 2 PM Ports	3 PM Ports	3 FiberPort Assembly
Higher Power Handling and Higher Transmission		Bi-Directional, Polarizing, Larger Bandwidth		Can be Used with Multiple Fiber Types

Hide 980 nm Polarization Beam Combiners, Polarization-Maintaining Output

980 nm Polarization Beam Combiners, Polarization-Maintaining Output

Item #	Wavelength	Insertion Loss	Extinction Ratio[b]	Fiber Type	Connectors
PBC980PM-FC[a]	980 ± 20 nm	≤2.0 dB	≥18 dB	SM98-PS-U25D-H	FC/PC
PBC980PM-APC[a]	980 ± 20 nm	≤2.0 dB	≥18 dB	SM98-PS-U25D-H	FC/APC

- a. All specifications are based on connectorized models.
- b. When used as a splitter.

Part Number	Description	Price	Availability
PBC980PM-FC	**Fiber PBC, 980 ± 20 nm, 3 PM Ports, FC/PC**	**$710.95**	**Today**
PBC980PM-APC	**Fiber PBC, 980 ± 20 nm, 3 PM Ports, FC/APC**	**$745.58**	**Today**

Hide 1064 nm Polarization Beam Combiner, Polarization-Maintaining Output

1064 nm Polarization Beam Combiner, Polarization-Maintaining Output

Item #	Wavelength	Insertion Loss	Extinction Ratio[b]	Fiber Type	Connectors
PBC1064PM-APC[a]	1064 ± 20 nm	≤1.8 dB	≥20 dB	SM98-PS-U25D-H	FC/APC

- a. All specifications are based on connectorized models.
- b. When used as a splitter.

Part Number	Description	Price	Availability
PBC1064PM-APC	**Customer Inspired! Fiber PBC, 1064 ± 20 nm, 3 PM Ports, FC/APC**	**$745.58**	**Lead Time**