

Polarization Beam Combiner/Splitter

(550 to 2200nm, optical power up to 20W)



DATASHEET

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Features

- Low Insertion Loss
- Epoxy-Free Optical Path
- High Extinction Ratio
- Compact Package
- High Reliability & Stability
- Cost Effective

Applications

- Optical Fiber Amplifier
- Fiber Optic Sensor
- Instrumentation

Agiltron's PB Series Polarization Beam Combiners/Splitters are designed to combine two polarized light signals into a single output or split one light signal into two polarized outputs. We offer both fused and micro-optic platforms, each with distinct advantages. The fused combiners are cost-effective, low-loss, high-power, and compact. In contrast, the micro-optic combiners provide a higher extinction ratio and improved temperature stability and are compatible with all types of fibers, including hollow core photonic fibers.

Regular couplers incur significant losses when combining light. For instance, a 50/50 coupler results in a 50% loss for each beam when combined.

Specifications

Parameter	Min	Typical	Max	Unit
Wavelength ^[1]	780		2300	nm
Insertion Loss ^[2] 1900 – 2300nm		0.8	1.2	
Insertion Loss ^[2] 1700 – 1900nm		0.7	1.1	
Insertion Loss ^[2] 1260 – 1650nm		0.6	1	dB
Insertion Loss ^[2] 960 – 1100nm		1	1.2	
Insertion Loss ^[2] 780 – 950nm		1.2	1.5	
Extinction Ratio ^[2]	20	22	29	dB
Return Loss	45	50	60	dB
Wavelength Dependent Loss			0.15	dB
Optical Power Handling ^[3]		0.3	5	W
Directivity (2→3 or 3→2)	50			dB
Operating Temperature	-10		50	°C
Storage Temperature	-40		80	°C

Notes:

[1]. Operation bandwidth is ± 40 nm approximately at 1550nm.

[2]. Measured without connectors. Each connector adds about 0.25dB loss

[3]. Defined at 1310nm/1550nm. For the shorter wavelength, the handling power may be reduced.

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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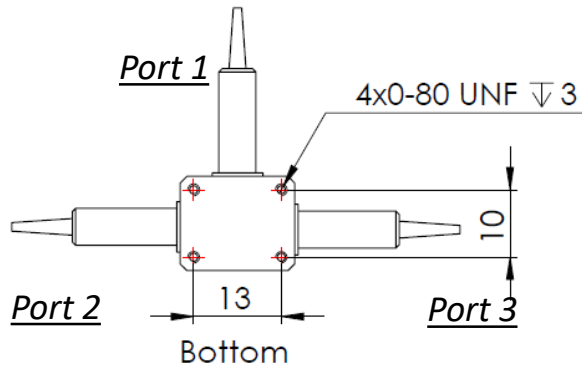
Rev 02/13/25

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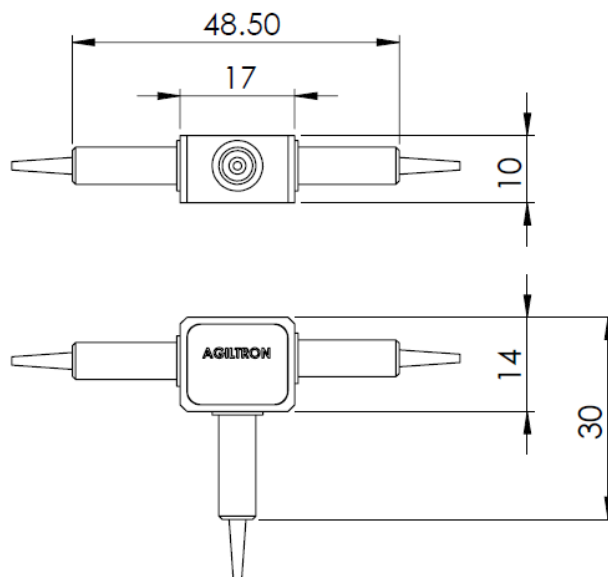
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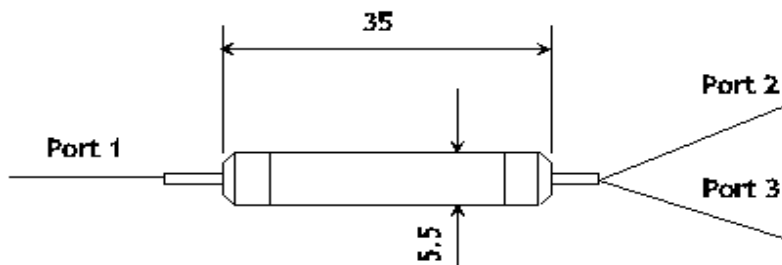
Mechanical Dimensions Standard (mm)



Micro-optic



Fused



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

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Ordering Information

Prefix	Power	Wavelength	PER ^[2]	Port 1 Fiber Type	Ports 2 Fiber Type	Ports 3 Fiber Type	Fiber Cover	Fiber Length	Connector ^[1]
PBCS-	Regular = 1 1W = A 2W = B 5W = C 8W = D 10W = E 15W = F 20W = G Special = 0	1060 = 1 1310 = 3 1480 = 4 1550 = 5 780 = 7 850 = 8 980 = 9 650 = 6 Special = 0	20dB = 1 26dB = 2 29dB = 3 Special = 0	SMF-28 = 1 HI 1060 = 9 Special = 0	SMF-28 = 1 PM1500 = 2 PM1310 = 3 PM1900 = 5 PM980 = 6 PM850 = 7 PM400 = 8 HI 1060 = 9 Special = 0	SMF-28 = 1 PM1500 = 2 PM1310 = 3 PM1900 = 5 PM980 = 6 PM850 = 7 PM400 = 8 HI 1060 = 9 Special = 0	Bare fiber = 1 900um tube = 3 Special = 0	0.25m = 1 0.5m = 2 1.0 m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 HERFC/PC = E HERFC/APC = F Special = 0

[1]. Connector will reduce PER.

Regular connectors FC/PC and FC/APC have PER~20. HERFC/PC and HERFC/APC have PER~29. They must be used in pair and **\$690** ea.

[2]. For 29dB, micro-optic package is used. Measured without connectors. Each connector adds about 0.25dB loss. Connector reduces ER

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 μm) 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.