Polarization Beam Combiner/Splitter

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

DATASHEET

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Agiltron's PB Series Polarization Beam Combiners/Splitters are passive optical devices designed to combine two polarized optical signals into a single output or to split one optical signal into two polarized outputs. The products are available in fused fiber and micro-optic platforms; the fused versions offer low insertion loss, compact size, high power handling, and a typical polarization extinction ratio of about 22 dB, while the micro-optic versions provide higher extinction ratios up to 29 dB, broader wavelength coverage, improved temperature stability, and compatibility with a wide range of fiber types, including hollow-core photonic fibers..

Features

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

Specifications

Parameter		Min	Typical	Max	Unit
Wavelength		780		2300	nm
Wavelength Range [1]	Micro-optic		120		nm
	Fused		80		
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	
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	10	W
Directivity (2→3 or 3→2)		50			dB
Operating Temperature		-10		50	°C
Storage Temperature		-40		80	°C

Notes:

[1]. 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.

Applications

- Optical Fiber Amplifier
- Fiber Optic Sensor
- Instrumentation

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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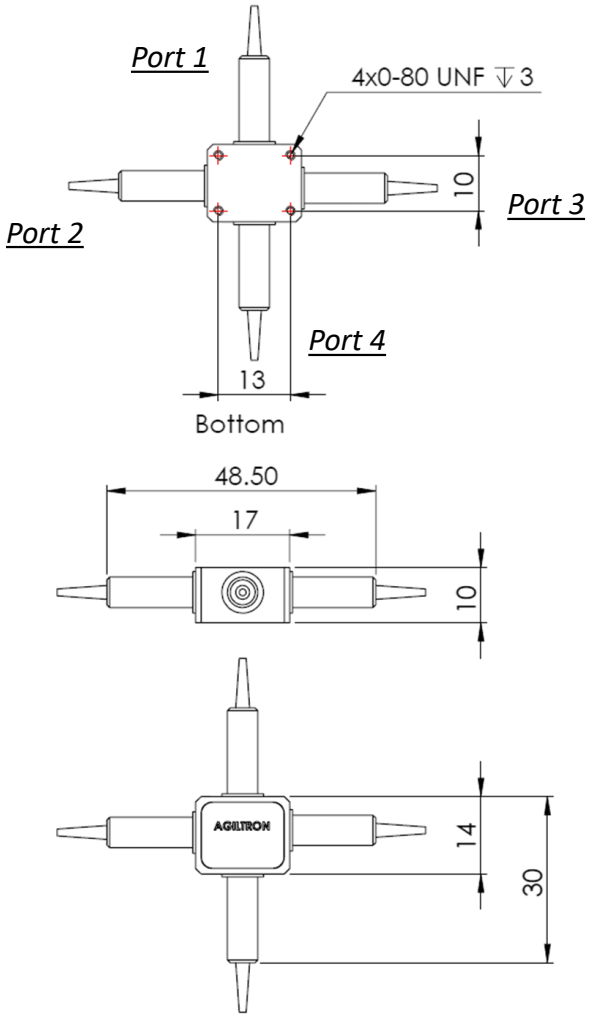
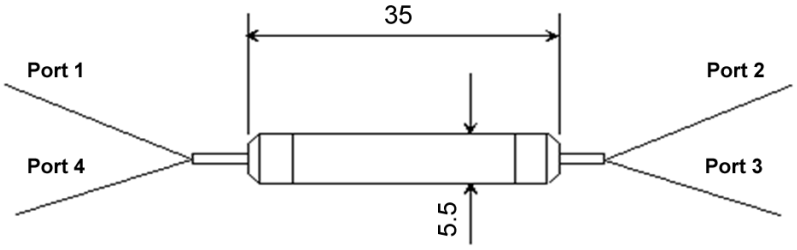
Mechanical Dimensions Standard (mm)

Micro-optic PER~29dB



Fused PER~22dB



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

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Ordering Information (Part Number)

	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Prefix	**Power**	**Wavelength**	**PER [1]**	**Port 1 Fiber Type**	**Ports 2 Fiber Type**	**Ports 3 Fiber Type**	**Ports 4 Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector [2][3]**
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 = 6 550 = A 490 = B 350 = C 1750-2050=R Special = 0	22dB Fused = 1 26dB Micro = 2 29dB = 3 Special = 0	SMF-28 = 1 HI 1060 = 9 Special = 0	PM1550 = 2 PM1310 = 3 PM1950 = 5 PM980 = 6 PM850 = 7 PM400 = 8 HI 1060 = 9 Special = 0	PM1550 = 2 PM1310 = 3 PM1950 = 5 PM980 = 6 PM850 = 7 PM400 = 8 HI 1060 = 9 Special = 0	None = N SMF-28 = 1 PM1550 = 2 PM1310 = 3 PM1950 = 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]. For 26 and 29dB, micro-optic package is used. Measured without connectors. Each connector adds about 0.25dB loss. Connector reduces ER

[2]. 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 **$490** ea.

[3]. 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.

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.