

# High ER PM Fiber Coupler/Combiner/Splitter



PER 28- 30, 450 -2400nm, 1x2, 2x2, axis blocking option

DATASHEET

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The FC Series PM fiber optic coupler uses micro-optic technology in a compact package, offering exceptionally high polarization extinction ratio and broad operational wavelength coverage. It is designed for applications where fused PM couplers fall short of stringent performance requirements and is compatible with all PM fiber types. The compact platform supports seamless integration of additional components without increasing size. It operates by transmitting one polarization state while blocking the orthogonal one. These couplers efficiently split light with minimal loss — approximately 0.2 dB per junction — but experience significant loss in beam-combining applications; for instance, a 50/50 coupler results in a 50% loss per beam when combining. For efficient beam combining, see our dedicated PM fiber combiners.

## Features

- Low Loss
- High Reliability
- High Repeatability

## Applications

- Instrumentation
- Sensor

## Specifications

Parameter	Min	Typical	Max	Unit	
Coupling Ratio	1/99 to 50/50			%	
Center Wavelength	450		2400	nm	
Wavelength Bandwidth	± 20		± 40	nm	
Directivity		> 55		dB	
Excess Loss <sup>[1]</sup>	1310-1550nm	≤ 0.7	≤ 0.8	≤ 1	dB
	980-1060nm	≤ 0.9	≤ 0.9	≤ 1	dB
Polarization Extinction Ratio (PER) <sup>[2]</sup>	28		33	dB	
Return Loss <sup>[3]</sup>		> 55		dB	
Split Ratio Tolerance	± 3.8		± 3.8	%	
Optical Power Handling	Regular	0.3		W	
	High Power	5		W	
Operating Temperature	-40		85	°C	
Storage Temperature	-50		85	°C	

### Notes:

- [1]. Without connector. Each connector adds 0.3dB and 0.5dB for short wavelength
- [2]. Without connector. Each connector adds 2dB
- [3]. Without connector. Each connector adds 5dB
- [4]. Regular power only, High power version is special package

**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 10/02/25

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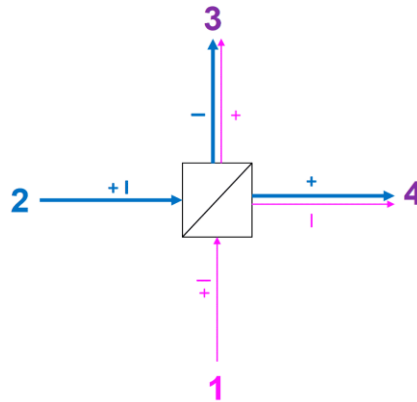


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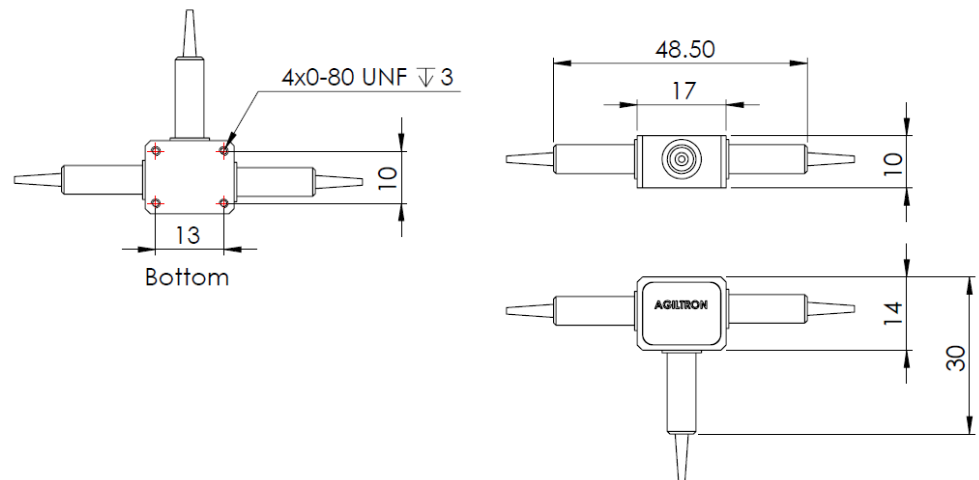
### Function Diagram

■ 2x2 Combiner

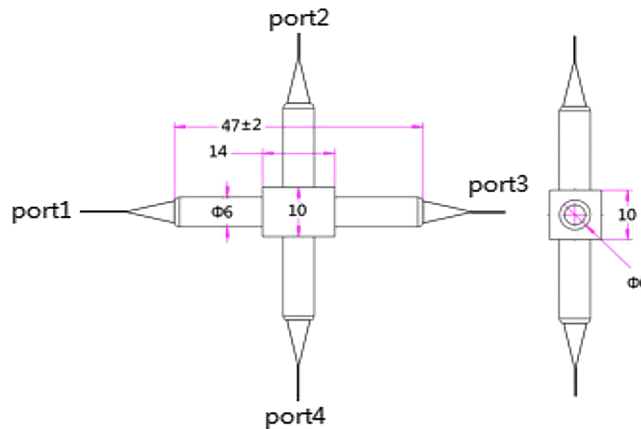


### Mechanical Dimensions (mm)

■ 1x2



■ 2x2



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

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### Ordering Information (Part Number)

Prefix	Wavelength	Power <sup>[1]</sup>	Configuration	Ratio	Port	Fiber Type	Fiber Cover	Connector <sup>[3] [4]</sup>	PER
HEPC-	1060 = 1 1310 = 3 1550 = 5 780 = 7 850 = 8 980 = 9 1600 = 6 2000 = 2 480 = A 530 = B 540 = C 560 = D 630 = E 670 = F 1480 = G Special = 0	0.3W = 1 1W = 2 5W = 3 10W = 4	Splitter Slow AW, FAB <sup>[2]</sup> = 1 Combiner = 2	05/95 = 5 03/97 = 3 10/90 = 4 20/80 = 6 30/70 = 7 40/60 = 8 50/50 = 9 Special = 0	1x2 = 1 2x2 = 2	PM1550 = 1 PM400 = 4 PM460 = 5 PM480 = C PM630 = 6 PM780 = 7 PM850 = 8 PM980 = 9 PM1950 = A Special = 0	250µm = 1 900µm tube = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 27PERFC/PC = 6 27PERFC/APC = 7 Special = 0	>28 = 1

[1]. For 1550nm, shorter wavelength power reduced substantially.

[2]. Slow axis working, Fast axis blocked

[3]. The default connector is key aligned to slow axis with narrow key with ER>22. >26 PER connector \$490 ea.,  
Each connector adds 0.3dB IL, 5dB RL, and 2dB RE increases

[4]. 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 handling by expanding the core side at the fiber ends.