TATSUTA
Medical & Photonic Products

1550nm Wide Band Fused Fiber Coupler for OCT

SPEC SHEET

Key Features

- Available for any center wavelength, band width, coupling ratio
- Wide operating wavelength range and excellent flatness
- Available for various fiber options
- High stability of SOP against temperature
  *SOP: State of Polarization

Optical Specifications

Parameter	Unit	Value
Center Wavelength	nm	1550
Operating Wavelength Band Width	nm	±60
Max. Excess Loss	dB	0.2
Min. Retern Loss	dB	50 (Typ. ≧ 55 dB)
Min. Directivity	dB	50 (Typ. ≧ 55 dB)
Fiber Type	-	Single mode fiber (Standard: Corning SMF28e+)
Operating Temperature	℃	-5 to +75
Storage Temperature	℃	-40 to +85

Coupling Ratio	Grade	Coupling Ratio Tolerance	Signal Path (1x2: P1→P3) (2x2: P1→P3, P2→P4) Insertion Loss	Tap Path (1x2: P1→P4) (2x2: P1→P4, P2→P3) Insertion Loss
50 %	A	± 5.0 %	≦ 3.7 dB	≦ 3.7 dB
	P	± 3.5 %	≦ 3.5 dB	≦ 3.5 dB
30 %	A	± 4.0 %	≦ 2.0 dB	≦ 6.1 dB
	P	± 3.0 %	≦ 1.9 dB	≦ 5.9 dB
20 %	A	± 3.5 %	≦ 1.4 dB	≦ 8.0 dB
	P	± 2.5 %	≦ 1.3 dB	≦ 7.8 dB
10 %	A	± 3.0 %	≦ 0.8 dB	≦ 11.7 dB
	P	± 2.0 %	≦ 0.8 dB	≦ 11.2 dB
1 %	A	± 0.6 %	≦ 0.3 dB	≦ 24.2 dB
	P	± 0.5 %	≦ 0.3 dB	≦ 23.2 dB

※Custom-designed parts available.

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How to read the specification sheet

Center Wavelength

This is the center wavelength when designing a optical fiber coupler. And it is the center wavelength when conducting the inspection.
It is recommended to select the center wavelength of the optical fiber coupler according to the center wavelength of the light source used.

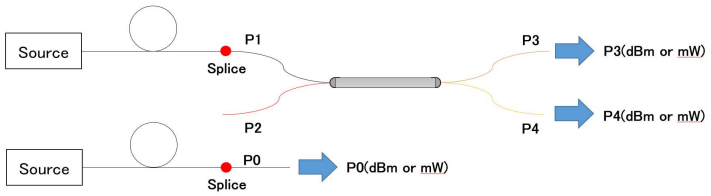
Operating Wavelength Band Width

If a light source with a wide wavelength band (such as an SLD light source or a swept source) is used, Select a coupler with a wide operating wavelength range.
However, it is not recommended to select a coupler with a wider operating wavelength than is necessary for the bandwidth of the light source used.
Optical fiber coupler with a wider operating wavelength range tend to have greater wavelength dependence. It is recommended that the operating wavelength range be determined appropriately according to the characteristics of the light source used.

Excess Loss: EL

The percentage of light lost in the coupler. The smaller the excess loss, the more efficient the power of the light source can be used. Excess loss at P1 input is calculated by the following formula.

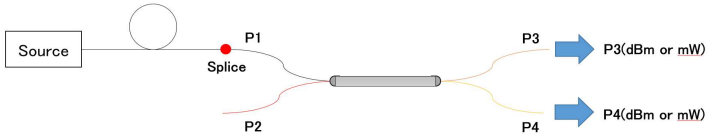
EL (P1)(dB)= −10log((P3(mW)+ P4(mW))/P0(mW))



Insertion Loss: IL

Insertion loss includes both branch loss and excess loss.
The optical path with low loss (optical path with high transmittance) is called Signal Path (straight port), and the optical path with high loss (optical path with low transmittance) is called Tap Path (cross port).
The insertion loss of the P1 → P3 optical path is calculated by the following formula.

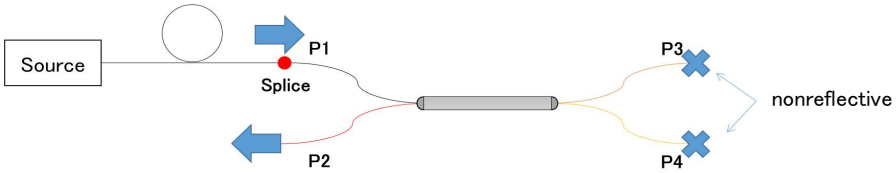
IL(P1→P3)(dB) = P3(dBm) − P0(dBm)



Directivity: Dir

Directivity is a measure of how well the coupler isolates two opposite-traveling (forward and reverse) signals at the coupled port.The figure below shows how to measure the directivity at P1 incidence.
The directivity for P1 input is calculated by the following formula.

Dir (P1→P3)(dB)= −10log((P2(mW)/P1(mW))



A low directivity value means that there is back reflection inside the optical fiber coupler.
This specification is important if you need to detect weak light in measurement and analysis equipment applications.

Return Loss: RL

Return loss is defined as the ratio of the output from that port to the port where the light source was input. The figure below shows an example of how to measure the return loss when P1 is incident.
Return loss for P1 input is calculated by the following formula.

RL (P1)(dB) = (P1(dBm) − P1'(dBm)) − 3(dB)