

FUSED COUPLER C OR L BAND

Fused Fiber Coupler

DATASHEET

The fused coupler, C or L band enables the accurate splitting and monitoring of optical signals in single-mode fiber.

G&H proprietary manufacturing technology provides uniquely low excess loss and wavelength dependence, along with low polarization and temperature dependence for both signal and tap ports.

These high performance parts are available in a wide variety of tap ratios, wavelength ranges, housings and connector options. They can therefore be readily specified in a wide variety of applications. Enabling rapid design cycles and new project builds.

Reliability is assured through qualification to Telcordia GR-1221, with a field proven FIT rate of <1.



Key Features

- Ultra-low, typically <0.05 dB excess loss
- Low wavelength dependence
- Any coupling ratio available
- High power handling
- Proven reliability
- <1 FITs

Applications

- Signal monitoring in C or L band EDFA
- Also available at 1310 nm and 1480 nm
- Network monitoring
- Network expansion
- Fixed attenuation

Compliance

- Telcordia GR-1221

Optical Specifications

Coupling Ratio	Grade	Signal Path				Tap Path					
		Insertion Loss ^{1,2} (dB)		WDL ³ (dB)	PDL ⁴ (dB)	TDL ⁵ (dB)	Insertion Loss ^{1,2} (dB)		WDL ³ (dB)	PDL ⁴ (dB)	TDL ⁵ (dB)
Example ⁷		Min	Max	Max	Max	Max	Min	Max	Max	Max	Max
1%	P		0.15	0.03	0.03	0.02	18.4	21.2	0.25	0.20	0.20
1%	A		0.18	0.05	0.05	0.02	17.6	22.4	0.35	0.25	0.20
2%	P		0.18	0.03	0.03	0.02	16.0	17.8	0.22	0.15	0.15
2%	A		0.20	0.05	0.05	0.02	15.2	18.2	0.30	0.20	0.15
3%	P		0.23	0.03	0.03	0.04	14.3	16.0	0.18	0.14	0.15
3%	A		0.28	0.05	0.05	0.04	13.8	17.0	0.26	0.20	0.15
5%	P		0.32	0.03	0.03	0.08	12.2	13.9	0.15	0.12	0.15
5%	A		0.40	0.05	0.05	0.08	11.9	14.4	0.20	0.20	0.15
10%	P		0.60	0.05	0.04	0.08	9.6	10.8	0.13	0.10	0.13
10%	A		0.70	0.06	0.06	0.08	9.2	11.2	0.18	0.15	0.13
50%	P	2.80	3.20 ⁶	0.10	0.08	0.10	2.8	3.2	0.10	0.08	0.10
50%	A	2.70	3.40	0.15	0.10	0.10	2.7	3.4	0.15	0.10	0.10

1 Insertion loss over operating wavelength range (not including PDL, TDL or any connector losses).

2 In 2x2 couplers insertion loss is not specified for launch through the second input port, P4 (coloured blue).

3 Change in insertion loss over the operating wavelength range.

4 Change in insertion loss over all input polarization states at band center wavelength.

5 Change in insertion loss from -5 – +75°C.

6 Housing option 2 (miniature) insertion loss 2.8/3.30 dB.

7 Any coupling ratio available – contact G&H for specification of coupling ratios not listed.

Parameter	Specification	
Operating wavelength range ¹	C Band	1528-1563 nm
	L Band	1570-1605 nm
	1310 Band	1295-1325 nm
	1480 Band	1465-1495 nm
Return loss/directivity ²	55 dB	
Pigtail tensile load	5 N	
Optical power handling ^{4,5}	4 W	
Operating/storage temperature range ³	-40 - +75°C / -40 - +85°C	
Environmental qualification	Telcordia GR 1221	

- 1 For wavelengths within ± 5 nm of the specified range performance will be maintained for signal path insertion loss, PDL, TDL, directivity and return loss. The only parameters to increase will be tap insertion loss and WDL. Maximum values of increase for both parameters are 0.1 dB for 1% tap, 0.07 dB for 2-9%, 0.05 dB for 10-50%.
- 2 Return loss is the ratio of power launched to power reflected for port P1. Directivity for the 2x2 component is the ratio of power launched to P1 to the power reflected to P4.
- 3 For connectorized component, operating temperature range is $-5 - +75^{\circ}\text{C}$.
- 4 For operation at powers of greater than 4 W the component housing and fiber must be adequately heat-sunk (for additional information contact G&H sales). Components intended for high power operation are only available in the 2x2 configuration. Component performance and reliability under high power must be determined within the customer system.
- 5 The performance and reliability of optical connectors is not guaranteed for optical powers of greater than 1 W.

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Housing Option

Housing Code	Description	Dimensions (mm)	Pigtail
2	Miniature	3.0 (Ø) x 45 (L)	Primary-coated fiber
3	Regular	3.0 (Ø) x 50 (L)	Primary-coated fiber
4	Semi-ruggedized slim	3.0 (Ø) x 60 (L)	Ø 0.9 mm loose-tube
5	Semi-ruggedized	5.0 (Ø) x 75 (L)	Ø 0.9 mm loose-tube
6	Fully-ruggedized	80 (L) x 10 (W) x 8 (H)	Ø 3.0 mm fan-out sleeving
7	High power	5 (W) x 5 (H) x 85 (L max)	Primary-coated fiber
C	Regular high power	3.0 (Ø) x 50 (L)	Primary-coated fiber

Configuration



Order code

Order codes are comprised of a standard device prefix (e.g. FFC) followed by code letters or numbers, which correspond to available options.

Sample: FFC-CK31PB110 (Fused fiber coupler, C band, 50% coupling ratio, regular housing, 1x2 port configuration, P grade, coming SMF-28, 1 m pigtail length, no connectors).

Order code				①	②	③	④	⑤	⑥	⑦	⑧	⑨
F	F	C	-						B			
①	Passband	C band			L band			1310 nm band		1480 nm band		
	Code	C			L			4		3		
②	Coupling ratio ⁴	1%	2%	3%	5%	10%	50%					
	Code	1	2	3	5	A	K					
③	Housing ^{5,6}	Miniature	Regular	Semi-ruggedized slim	Semi-ruggedized	Fully-ruggedized	High power	Regular high power				
	Code	2	3	4	5	6	7	C				
④	Port configuration ⁶	1x2					2x2					
	Code	1					2					
⑤	Grade	Grade A						Premium				
	Code	A						P				
⑦	Fiber type	Corning SMF-28										
	Code	1										
⑧	Pigtail length ²	0.5 m						1 m				
	Code	0						1				
⑨	Connector ^{3,5}	None	FC/PC	FC/APC	SC/APC	FC/UPC	SC/UPC	LC ¹				
	Code	0	1	3	5	9	A	B				

1 Not available for housing option 6.

2 Minimum pigtail length. Further pigtail lengths available on request. Where connectorized, pigtail length is to connector end face.

3 Insertion loss in specification table does not include connector losses.

4 Any coupling ratio available – contact G&H for specification and ordering codes of coupling ratios not listed.

5 Connectors may be fitted to housing types 4, 5 and 6. For connectorization of other housing types please contact the sales office.

6 7 and C not available as 1x2 port configuration.

Ordering Information: 		800 Village Walk #316 Guilford, CT 06437 Ph: 203-401-8093 Email orders to: sales@xsoptix.com Fax orders to: 800-878-7282
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