Gooch & Housego
ENABLING PHOTONIC TECHNOLOGIES

FUSED COUPLER C+L OR S BAND

Fused Fiber Coupler

DATASHEET

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

Gooch & Housego 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 components are available in a wide variety of tap ratios, wavelength ranges, housings and connector options. Devices can 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.

For the sub-miniature version of this product please refer to the datasheet sub-miniature tap couplers.

Key Features

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

Applications

- Signal monitoring in C+L band EDFA or RAMAN amplifier.
- 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	0.04	0.03	0.02	18.2	23.0	0.90	0.20	0.20
1%	A		0.18	0.06	0.05	0.02	17.4	23.0	1.20	0.25	0.20
2%	P		0.18	0.05	0.03	0.02	16.0	18.6	0.60	0.15	0.15
2%	A		0.20	0.07	0.05	0.02	15.2	20.0	1.00	0.20	0.15
3%	P		0.23	0.05	0.03	0.04	14.2	16.5	0.50	0.14	0.15
3%	A		0.28	0.07	0.05	0.04	13.7	17.4	0.90	0.20	0.15
5%	P		0.32	0.06	0.03	0.08	12.1	14.3	0.45	0.12	0.15
5%	A		0.40	0.08	0.05	0.08	11.8	14.8	0.80	0.20	0.15
10%	P		0.60	0.07	0.04	0.08	9.4	11.1	0.40	0.10	0.13
10%	A		0.70	0.09	0.06	0.08	9.0	11.4	0.60	0.15	0.13
50%	P	2.65	3.35[6]	0.25	0.08	0.10	2.7	3.3	0.25	0.08	0.10
50%	A	2.60	3.50	0.40	0.10	0.10	2.6	3.5	0.40	0.10	0.10

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

2 In 2x2 couplers insertion loss is not specified for launch through 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 2.65/3.40 dB.

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

Parameter		Specification
Operating wavelength range[1]	C+L band	1528-1605 nm
	S band	1425-1500 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 to +75˚C / -40 to +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 0.15 dB for 1% tap, 0.10 dB for 2–9%, 0.08 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°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 (∅) x 45 (L)	Primary-coated fiber
3	Regular	3.0 (∅) x 50 (L)	Primary-coated fiber
4	Semi-ruggedized slim	3.0 (∅) x 60 (L)	∅0.9 mm loose-tube
5	Semi-ruggedized	5.0 (∅) x 75 (L)	∅0.9 mm loose-tube
6	Fully-ruggedized	80 (L) x 10 (W) x 8 (H)	∅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 (∅) 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-1231PB110 (C+L Band, 2% tap, regular housing, premium grade, SMF-28 fiber, 1 m pigtail, no connector).

Order code	①	②	③	④	⑤	⑥	⑦	⑧	⑨
F F C -						B			

①	**Passband**	C+L band			S band		
	Code	1			S		
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**	Coming 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 & C not available as 1x2 port configuration.

For further information

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