ULTRA-LOW RATIO TAP COUPLER

Fused Fiber Coupler

DATASHEET

The ultra-low ratio tap coupler splits a very small amount of light from a signal path to a tap port.

Suitable for very high optical power, its main application is in the monitoring of optical sources such as fiber lasers.

Low tap ratios such as 0.1%, 0.01% or 0.001% enable the monitoring photodetector to operate without damage or saturation.

G&H proprietary manufacturing technology provides ultra-low loss in the signal path, thereby maximising optical power handling. Consistently high return loss (>55 dB) reduces the amount of optical power reflected back along the input fiber.

This helps the fiber laser operate in a stable manner.

Standard parts are available for wavelengths from 700–1599 nm. For other wavelengths, coupling ratios or customized fiber types please contact the sales office.

Key Features

- Tap ratio up to 50 dB
- High return loss
- Ultra-low signal insertion loss
- High power handling
- Available at wide variety of laser wavelengths
- Custom product

Applications

- Fiber lasers
- RAMAN amplifiers
- High power EDFA

Specifications

Parameter	Specification		
Coupling ratio	0.1%	0.01%	0.001%
Tap insertion loss	30 ±3 dB	40 ±4 dB	50 ±5 dB
Signal insertion loss[1,2]	0.1 dB		
Return loss	≥55 dB		
Operating wavelength[3]	Any selected wavelength from 700 to 1599 nm		
Optical power handling[5, 6]	4 W		
Housing type codes	3, 4, 5, 7 & C		
Operating temperature	-40 – +75°C		
Storage temperature	-40 – +85°C		
Pigtail tensile load	5 N		
Fiber type[4]	Single mode		

1 Maximum insertion loss at operating wavelength. Not including TDL or PDL.
2 In 2x2 couplers insertion loss is not specified for launch through second input port P4 (coloured blue).
3 Other wavelengths available as custom components. Please contact the G&H sales team.
4 For customized fiber types please contact the G&H sales team.
5 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.
6 The performance and reliability of optical connectors is not guaranteed for optical powers of greater than 1 W.
7 For connectorized component, operating temperature range is –5 – +75° C.

Housing Options

Housing Code	Description	Dimensions (mm)	Pigtail
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
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. FFS) followed by code letters or numbers which correspond to available options.

Sample: FFS-550N72A10 (1550 nm center channel wavelength, 0.01% tap coupling ratio, high power housing, 2x2 port configuration, A grade, 1 m pigtail length, no connectors).

Order code	①	②	③	④	⑤	⑥	⑦	⑧	⑨
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①	**Passband**	7XX	8XX	9XX	10XX	11XX	12XX	13XX	14XX	15XX
	Code	7	8	9	0	1	2	3	4	5

②③	**Last two digits of center wavelength**	e.g. XX20	e.g. XX50	e.g. XX70	e.g. XX80
	Code	20	50	70	80

④	**Coupling ratio**	0.1%(30dB)	0.01%(40dB)	0.001%(50dB)
	Code	M	N	P

⑤	**Housing** [2,3]	Regular	Semi-ruggedized slim	Semi-ruggedized	High power	Regular high power
	Code	3	4	5	7	C

⑥	**Port configuration** [3]	1x2	2x2
	Code	1	2

⑦	**Grade**	Grade A
	Code	A

⑧	**Pigtail length**[1]	0.5 m	1 m
	Code	0	1

⑨	**Connector**[2]	None	FC/PC	FC/APC	SC/APC	FC/UPC	SC/UPC	LC
	Code	0	1	3	5	9	A	B

1 Minimum pigtail length. Further pigtail lengths available on request. Where connectorized, pigtail length is to connector end face.
2 Connectors may be fitted to housing types 4 and 5. For connectorization of other housing types contact G&H sales. Note that insertion loss stated does not include connector losses.
5 7 and C not available as 1x2 configuration.