

VISIBLE WAVELENGTH COUPLER

Fused Fiber Coupler

DATASHEET

The visible wavelength coupler splits or combines light in the visible region. Versions optimised for any wavelength within the range 450 - 700 nm may be selected.

Designed for applications in display systems, sensors and biomedical equipment, the coupler utilizes Gooch & Housego's low loss fused fiber technology.

No light leaves the fiber, therefore no alignment is required and there are no unwanted reflections. Furthermore the output fiber pigtails may be directly integrated into beam delivery systems.

For components and modules which combine different wavelengths within the visible region please refer to the datasheet visible wavelength combiners.



Key Features

- Visible wavelength operation
- Any coupling ratio available
- All fiber - no lens alignment
- No unwanted reflections
- Low light loss
- High power handling

Applications

- Visible and display systems
- Sensors
- Biomedical equipment
- Research

Optical Specifications

Coupling Ratio (%) ³	Available Housing Option	Grade ¹	Available Wavelength(nm)	Coupling Ratio Tolerance (%)	Excess Loss (dB) ²
10	3,4,5,6	A	500 to 700	±2	0.3
		B	450 to 700	±3	0.5
20	3,4,5,6	A	500 to 700	±3	0.3
		B	450 to 700	±4	0.5
30	3,4,5,6	A	500 to 700	±3	0.3
		B	450 to 700	±4	0.5
40	3,4,5,6	A	500 to 700	±4	0.3
		B	450 to 700	±5	0.5
50	3,4,5,6	A	500 to 700	±5	0.3
		B	450 to 700	±6	0.5

¹ In 2x2 couplers, performance is not specified for launch through second input port P4 (coloured blue).

² Includes fibre losses for up to 1 m pigtail length. Does not include connector losses.

³ Any coupling ratio available. Please contact us for specifications of coupling ratios not listed.

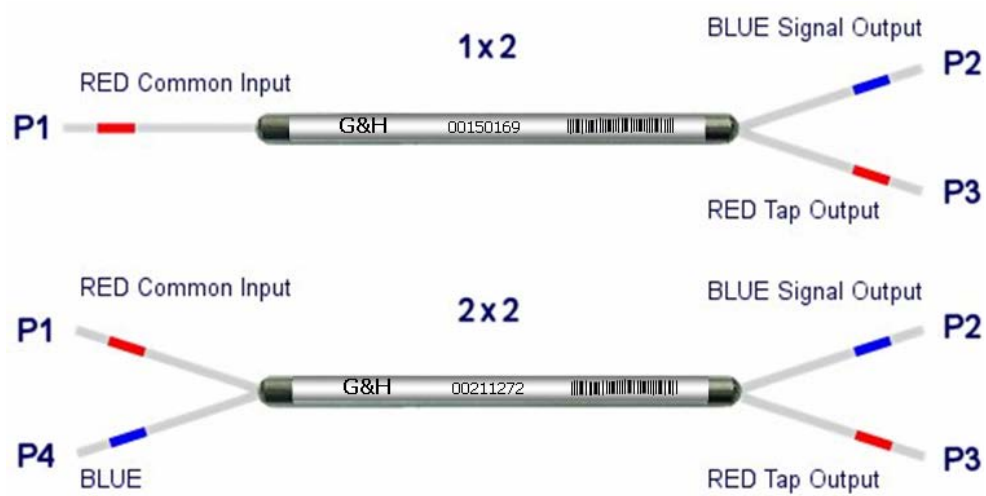
Parameter	Specification
Operating wavelength	Specified wavelength within the range 450-700 nm
Operating/storage temperature range ¹	-40 - +75°C/-40 - + 85°C
Pigtail tensile load	5 N
Fiber type	Short wavelength speciality fiber

¹ For connectorized component, operating temperature range is -5 - +75°C.

Housing Option

Housing Code	Description	Dimensions (mm)	Pigtail
3	Regular	3.0 (Ø) x 55 (L) max.	Primary-coated fiber
4	Ø0.9 mm slim	3.0 (Ø) x 76 (L) max	Ø0.9 mm loose-tube
5	Ø0.9 mm semi-ruggedized	5.0 (Ø) x 85 (L) max	Ø0.9 mm loose-tube
6	Ø3.0mm fully-ruggedized	80 (L) x 10 (W) x 8 (H)	Ø3.0 mm fan-out sleeving

Configuration¹



¹ 1x2 couplers for blue wavelengths i.e. <500 nm are supplied as a 2x2 with an external termination on port P4.

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-R50C32A10 (650 nm center channel wavelength, 20% tap coupling ratio, regular housing, 2x2 port configuration, A grade, 1 m pigtail length, no connectors).

Order code				①	②	③	④	⑤	⑥	⑦	⑧	⑨
F	F	S	-									
①	Passband			4XX		5XX			6XX			
	Code			B		G			R			
②	Last two digits of center wavelength			e.g. X20		e.g. X50		e.g. X70		e.g. X80		
③	Code			20		50		70		80		
④	Coupling ratio⁴			10%	20%	30%	40%	50%				
	Code			A	C	E	H	K				
⑤	Housing⁶			Regular		Semi-ruggedized slim		Semi-ruggedized		Fully-ruggedized		
	Code			3		4		5		6		
⑥	Port configuration³			1x2				2x2				
	Code			1				2				
⑦	Grade			Grade A				Grade B				
	Code			A				B				
⑧	Pigtail length¹			0.5 m				1 m				
	Code			0				1				
⑨	Connector^{2,6}			None	FC/PC	FC/APC	SC/APC	FC/UPC	SC/UPC	LC ⁵		
	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 Excess Loss in specification table does not include connector losses.

3 1x2 couplers for blue wavelengths i.e. < 500nm are supplied as a 2x2 with an external termination on port P4.

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

5 LC connector not available for housing code 6, fully ruggedized housing.

6 Connectors may be fitted to housing types 4, 5 and 6. For connectorization of housing type 3 please contact the sales office.

For further information

E: torquaysales@goochandhousego.com

goochandhousego.com

VISIBLE WAVELENGTH COUPLER

NEAR INFRARED COUPLER

Fused Fiber Coupler

DATASHEET

The near infrared coupler splits light at any selected wavelength from 700 nm to 1199 nm.

Designed for applications in fiber laser, sensor and avionics applications, the coupler utilizes the Gooch & Housego low loss fused fiber technology.

No light leaves the fiber, therefore no alignment is required and there are no unwanted reflections. Furthermore the output fiber pigtails may be directly integrated into beam delivery systems.

For components and modules which combine different wavelengths within the near infrared region please refer to the datasheet near infrared WDM.



Key Benefits

- 700-1199 nm operation
- Any coupling ratio available
- All fiber - no alignment required
- No unwanted reflections
- Low light loss
- High power handling

Applications

- Fiber lasers
- Sensors
- Avionics
- Biomedical equipment
- Research

Optical Specifications

Coupling Ratio (%) ³	Grade	Available Wavelengths (nm)	Signal Path Insertion Loss (dB) ^{1,2}	Tap Path Insertion Loss (dB) ^{1,2}
1	A	700-1199	0.15	24.9
	B		0.20	25.3
5	A	700-1199	0.40	15.9
	B		0.50	16.2
10	A	700-1199	0.9	12.2
	B		1.1	12.4
20	A	700-1199	1.5	8.4
	B		1.7	8.6
30	A	700-1199	2.2	6.4
	B		2.4	6.5
40	A	700-1199	3.0	4.9
	B		3.2	5.1
50	A	700-1199	3.8	3.8
	B		4.0	4.0

¹ In 2x2 couplers insertion loss is not specified for launch through second input port P4 (colored blue).

² Maximum insertion loss at operating wavelength. Not including TDL, PDL or connector losses.

³ Any coupling ratio available. Please contact us for specifications of coupling ratios not listed.

Parameter	Specification
Operating wavelength	Specified wavelength within the range 700 nm-1199 nm
Operating/storage temperature range ¹	-40 - +75°C/-40 - +85°C
Optical power handling ^{2,3}	4 W
Pigtail tensile load	5 N
Fiber type	Speciality single-mode fiber

¹ For connectorized component, operating temperature range is -5 - +75°C.

² 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.

³ The performance and reliability of optical connectors is not guaranteed for optical powers of greater than 1 W.

Housing Options

Housing Code	Description	1x2, 2x2 Dimensions (mm)	Pigtail
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	10 (W) x 8 (H) x 80 (L)	Ø 3.0 mm fan-out sleeving
7	High power housing	5 (W) x 5 (H) x 85 max (L)	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. FFS) followed by code letters or numbers which correspond to available options.

Sample: FFS-060A32A13 (1060 nm center channel wavelength, 10% tap coupling ratio, regular housing, 2x2 port configuration, A grade, 1 m pigtail length, FC/APC connectors).

Order code				①	②	③	④	⑤	⑥	⑦	⑧	⑨
F	F	S	-									
①	Passband			7XX	8XX	9XX	10XX	11XX				
	Code			7	8	9	0	1				
②	Last two digits of center wavelength			e.g. XX20	e.g. XX50	e.g. XX70	e.g. XX80					
③	Code			20	50	70	80					
④	Coupling ratio³			1%	5%	10%	20%	30%	40%	50%		
	Code			1	5	A	C	E	H	K		
⑤	Housing^{2,4,5}			Regular	Semi-ruggedized slim	Semi-ruggedized	Fully-ruggedized	High power	Regular high power			
	Code			3	4	5	6	7	C			
⑥	Port configuration⁵			1x2			2x2					
	Code			1			2					
⑦	Grade			Grade A				Grade B				
	Code			A				B				
⑧	Pigtail length¹			0.5 m				1 m				
	Code			0				1				
⑨	Connector²			None	FC/PC	FC/APC	SC/APC	FC/UPC	SC/UPC	LC ⁴		
	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, 5 and 6. For connectorization of other housing types contact G&H sales. Note that insertion loss stated does not include connector losses.
- 3 Any coupling ratio available. Please contact G&H sales for codes of coupling ratios not listed.
- 4 LC connector not available for housing code 6, fully ruggedized housing.
- 5 7 & C not available as 1x2 configuration.

For further information

E: torquaysales@goochandhousego.com

goochandhousego.com

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.

Gooch & Housego 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 (Ø) x 50 (L)	Primary-coated fiber
4	Semi-ruggedized slim	3.0 (Ø) x 60 (L)	Ø0.9 mm loose-tube
5	Semi-ruggedized	5.0 (Ø) x 75 (L)	Ø0.9 mm loose-tube
7	High power	5 (W) x 5 (H) x 85 (L max)	Primary-coated fiber
C	Regular high power	3.0 (Ø) 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
F	F	S	-									
①	Passband			7XX	8XX	9XX	10XX	11XX	12XX	13XX	14XX	15XX
	Code			7	8	9	0	1	2	3	4	5
②	Last two digits of center wavelength			e.g. XX20		e.g. XX50		e.g. XX70		e.g. XX80		
				Code			20		50		70	
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 & C not available as 1x2 configuration.



info@amstechnologies.com
www.amstechnologies-webshop.com

Contact us 

where technologies meet solutions

For further information

E: torquaysales@goochandhousego.com

goochandhousego.com

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