

# FUSED PUMP SIGNAL WDM 980 nm

## Fused Fiber WDM

### DATASHEET

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The G&H fused pump signal WDM, 980 nm multiplexes signal and pump power in 980 nm, 960 nm or 1060 nm-pumped erbium doped fiber amplifiers.

G&H proprietary manufacturing technology provides uniquely low excess loss and wavelength dependence, along with low polarization and temperature dependence for all ports. The ultra-low loss of these components promotes high efficiency of use of pump power and low noise figure.

These high performance parts are available in many wavelength configurations, housing, fiber and connector options. They can therefore be readily specified in a wide variety of applications, enabling rapid design cycles and new project builds. Wavelength configurations allow for 960 nm, 980 nm or 1060 nm pumping and C, L or C+L signal bands.

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 sub-miniature pump signal WDM data sheet.



#### Key Features

- Promotes low amplifier noise figure
- Promotes low pump power wastage
- Ultra-low typical <0.05 dB excess loss
- Wide range of regular parts available
- High power handling
- <1 FITs

#### Applications

- C, L or C+L band EDFA
- 960, 980 or 1060 nm pump rejection
- Fiber lasers

#### Compliance

- Telcordia GR-1221

## Optical Specifications

Wavelength	Grade	housing Option <sup>5</sup>	Available Fiber Type <sup>5</sup>	Insertion Loss <sup>1</sup> (dB)	WDL <sup>2</sup> (dB)	PDL <sup>3</sup> (dB)	TDL <sup>4</sup> (dB)	Isolation (dB)	
Pump	Signal			Max	Max	Max	Max	Min	
980 nm 960 nm	C band	P	3,4,5,6,7,C	2	0.08	0.04	0.02	0.02	20
	C band L band	A	2,3,4,5,6,7,C	2	0.10	0.07	0.02	0.02	20
980 nm 960 nm	C band L band	M	2,3,4,5,6,7,C	2	0.10	0.07	0.02	0.02	18
1060 nm <sup>6</sup>	C band L band	N	2,3,4,5,6,7,C	2	0.15	0.10	0.02	0.02	18
	C band L band	B	2,3,4,5,6,7,C	2,5	0.20	0.10	0.02	0.02	16
980 nm	C+L band	P	3,4,5,6,7,C	2	0.25	0.20	0.02	0.02	16
980 nm	C+L band	A	2,3,4,5,6,7,C	2,5	0.40	0.30	0.02	0.02	14
980 nm	C+L band	B	2,3,4,5,6,7,C	2,5	0.50	0.40	0.05	0.05	10

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

2 Change in insertion loss over the operating wavelength range.

3 Change in insertion loss over all input polarization states in signal wavelength range.

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

5 Cross reference to ordering information table for available options.

6 1060 nm components not available in housing option 2 (miniature).

Parameter	Specification	
Operating wavelength range	C band	1528-1563 nm
	C + L band	1528-1605 nm
	L band	1570-1605 nm
	960 nm	955-970 nm
	980 nm	970-990 nm
	1060 nm	1050-1070 nm
Return loss/directivity <sup>1</sup>	55 dB	
Pigtail tensile load	5 N	
Optical power handling <sup>3,4</sup>	4 W	
Operating temperature range <sup>2</sup>	-40 – +75°C	
Storage temperature range	-40 – +85°C	
Environmental qualification	Telcordia GR 1221	

1 Measured reference port P3 input for signal wavelength, P2 input for pump wavelength and P1 input for signal and pump wavelengths.

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

3 For operation at powers of greater than 4 W the component housing and fibre 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.

4 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 55 (L)	Primary-coated fiber
4	Semi-ruggedized slim	3.0 (Ø) x 65 (L)	Ø0.9 mm loose-tube
5	Semi-ruggedized	5.0 (Ø) x 80 (L)	Ø0.9 mm loose-tube
6	Fully-ruggedized	80 (L) x 10 (W) x 8 (H)	Ø3.0 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 55 (L)	Primary-coated fiber

## Configuration



## Order code

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

**Sample:** FFW-5C31A2210 (Fused Fiber WDM, 980 nm pump, C band signal, regular housing, 1x2 port configuration, A grade, Lucent BFO5635-02 fiber, 1 m pigtail, no connector).

Order code		①	②	③	④	⑤	⑥	⑦	⑧	⑨
F	F	W	-				2			
①	<b>Pump wavelength</b>	980 nm			1060 nm			960 nm		
	Code	5			8			F		
②	<b>Signal wavelength</b>	C+L band			C band			L band		
	Code	1			C			L		
③	<b>Housing</b> <sup>4,5</sup>	Miniature	Regular	Semi-ruggedized slim	Semi-ruggedized	Fully-ruggedized	High power	Regular high power		
	Code	2	3	4	5	6	7	C		
④	<b>Port configuration</b> <sup>5</sup>	1x2				2x2				
	Code	1				2				
⑤	<b>Grade</b>	Grade P		Grade A		Grade M		Grade N		Grade B
	Code	P		A		M		N		B
⑦	<b>Fiber type</b>	Lucent BFO5635-02				Coming HI 1060 Flex				
	Code	2				5				
⑧	<b>Pigtail length</b> <sup>2</sup>	0.5 m				1 m				
	Code	0				1				
⑨	<b>Connector</b> <sup>3,4</sup>	None	FC/PC	FC/APC	SC/APC	FC/UPC	SC/UPC	LC <sup>1</sup>		
	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 Connectors may be fitted to housing types 4, 5 and 6. For connectorization of other housing types please contact the sales office.

5 7 and C not available as 1x2 port configuration.

<p><b>Ordering Information:</b></p>  <p>800 Village Walk #316 Guilford, CT 06437 Ph: 203-401-8093</p> <p>Email orders to: <a href="mailto:sales@xsoptix.com">sales@xsoptix.com</a> Fax orders to: 800-878-7282</p>
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