



HIGH RELIABILITY 980/1550 nm WDM

Fused Fiber WDM

DATASHEET

High reliability (HI REL) Components are deployed in environments such as undersea and space, where the costs of component replacement are prohibitive.

Gooch & Housego is established as a supplier of these components to major undersea equipment manufacturers.

G&H's HI REL capability is built upon the foundation of a long established history of manufacturing very reliable terrestrial components. Full facilities are available to carry out customer-specific HI REL qualification programs, which can consist of accelerated ageing and Weibull analysis.

Manufacturing is carried out on specially-developed workstations. Advanced fiber management, in-process screening and customer-specific validation tests are implemented, to further enhance component reliability.

Component types available include fused fiber couplers, tap couplers and wavelength division multiplexers. The ultra-low loss of G&H fused fiber components helps to promote low noise figure and improved system margin in undersea transmission systems.

Components are supplied in regular (bare fiber) or custom housings, depending on the installation environment.

Please contact us to discuss your specific requirements.



Key Features

- Established HI REL supplier
- High performance
- Full qualification facilities available
- Advanced in-process testing
- Ultra-low loss fused components
- Choice of housings
- Design standard 0.1FITs (failure in one billion field hours)

Applications

- Undersea equipment
- Terminal equipment
- Space
-



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HI RELIABILITY 980/1550 NM WDM

Optical Specifications

Wavelength		Grade	Insertion Loss ¹ (dB)	WDL ² (dB)	PDL ³ (dB)	TDL ⁴ (dB)	Signal Isolation ⁵ (dB)	Pump Isolation ⁶ (dB)
Pump	Signal		Max	Max	Max	Max	Min	Min
980 nm	C band	H	0.15	0.07	0.04	0.02	18	18

¹ Insertion loss over operating wavelength range and component life - not including PDL, TDL (25 years, typical service/storage conditions 40°C/60% RH).

² Change in insertion loss over the operating wavelength range

³ Change in insertion loss over all input polarization states in signal wavelength range, pump wavelength measured during build.

⁴ Change in insertion loss on signal path from -5 - 75°C. Guaranteed by design.

⁵ Insertion loss of signal light in pump path

⁶ Insertion loss of pump light in signal path

Parameter	Specification	
Operating wavelength range	980 nm band	970-990 nm
	C band	1528-1563 nm
Return loss/directivity ¹	55 dB	
Pigtail tensile load ²	5 N	
Optical power handling	4 W	
Environmental qualification	Component design to 0.1FIT, failures in 10 ⁹ hours	

¹ 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. Guaranteed by design.

² Stripped fiber proof tested on rig to confirm strength.

Housing Option

Housing Code	Description	Dimensions (mm)	Pigtails
3	Regular	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-5C31H220 (Fused fiber WDM, 980 nm pump, C band signal, regular housing, 1x2, HI REL grade, OFS BF05635-02, 1 m pigtail, no connector).

Order code				①	②	③	④	⑤	⑥	⑦	⑧	⑨
F	F	W	-	5	C	3		H	2	2		0
①	Pump wavelength			980 nm								
	Code			5								
②	Signal wavelength			C band								
	Code			C								
③	Housing			Regular								
	Code			3								
④	Port configuration			1x2				2x2				
	Code			1				2				
⑦	Fiber type			OFS BF05635-02								
	Code			2								
⑧	Pigtail length¹			0.5 m	1 m	2 m	3 m	4 m				
	Code			0	1	2	3	4				

¹ Minimum pigtail length. Further pigtail lengths available on request.

Other products which may be of interest

- Fiber-Q®
- High power multimode combiners
- Combiners with all types of signal feedthrough fiber
- Ultra-low ratio tap couplers
- WDMs for combining signals with red pointer lasers
- OCT wideband couplers



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HI RELIABILITY 980/1550 NM WDM



HIGH RELIABILITY 1480/1550 nm WDM

Fused Fiber WDM

DATASHEET

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Gooch & Housego is established as a supplier of these components to major undersea equipment manufacturers.

G&H's HI REL capability is built upon the foundation of a long established history of manufacturing very reliable terrestrial components. Full facilities are available to carry out customer-specific HI REL qualification programs, which can consist of accelerated ageing and Weibull analysis.

Manufacturing is carried out on specially-developed workstations. Advanced fiber management, in-process screening and customer-specific validation tests are implemented, to further enhance component reliability.

Component types available include fused fiber couplers, tap couplers and wavelength division multiplexers. The ultra-low loss of G&H fused fiber components helps to promote low noise figure and improved system margin in undersea transmission systems.

Components are supplied in regular (bare fiber) or custom housings, depending on the installation environment.

Please contact us to discuss your specific requirements.



Key Features

- Established HI REL supplier
- High performance
- Full qualification facilities available
- Advanced in-process testing
- Ultra-low loss fused components
- Choice of housings
- Design standard 0.1FITs (failure in one billion field hours)

Applications

- Undersea equipment
- Terminal equipment
- Space
- Defense and avionic

Compliance

- Customer specific

HI RELIABILITY 1480/1550 WDM



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Optical Specifications

Wavelength		Grade	Insertion Loss ^{1,5} (dB)	WDL ² (dB)	PDL ³ (dB)	TDL ⁴ (dB)	Signal Isolation ⁶ (dB)	Pump Isolation ⁷ (dB)
Pump	Signal		Max	Max	Max	Max	Min	Min
1480 nm	C band	H	0.50	0.20	0.20	0.16	13	10

1 Insertion loss over operating wavelength range and component life - not including PDL, TDL (25 years, typical service/storage conditions 40°C/60% RH).

2 Change in insertion loss over the operating wavelength range.

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

4 Change in insertion loss on signal path from -5 - 75°C. Guaranteed by design.

5 Center wavelength tolerance for repeatability in system ±2 nm.

6 Insertion loss of signal light in pump path.

7 Insertion loss of pump light in signal path.

Parameter	Specification	
Operating wavelength range	1480 nm band	1470-1480 nm
	C band	1540-1555 nm
Return loss/directivity ¹	55 dB	
Pigtail tensile load ²	5 N	
Optical power handling	4 W	
Operating/storage temperature range	-10 - +70°C/-25 - +85°C	
Environmental qualification	Component design to 0.1 FIT (Failures in billion hours)	

1 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. For 2x2 couplers return loss/directivity >60 dB and is guaranteed by design.

2 Stripped fiber proof tested on rig to confirm strength.

Housing Option

Housing Code	Description	Dimensions (mm)	Pigtail
3	Regular	3.0 (Ø) x 75 max (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-3C31H2110 (Fused fiber WDM, 1480 nm pump, C band signal, regular housing, 1x2, HI REL grade, Corning SMF-28e+ photonic fiber, 1 m pigtail, no connector).

Order code				①	②	③	④	⑤	⑥	⑦	⑧	⑨
F	F	W	-	3	C	3		H	2	1		0
①	Pump wavelength			1480 nm								
	Code			3								
②	Signal wavelength			C band								
	Code			C								
③	Housing			Regular								
	Code			3								
④	Port configuration			1x2				2x2				
	Code			1				2				
⑦	Fiber type			Corning SMF-28e+ Photonic								
	Code			1								
⑧	Pigtail length ¹			0.5 m	1 m	2 m	3 m	4 m				
	Code			0	1	2	3	4				

¹ Minimum pigtail length. Further pigtail lengths available on request.

Other products which may be of interest

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